

Series 13

No. 124



Vital and Health Statistics

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

Trends in Hospital Utilization: United States, 1988–92

June 1996



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



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Suggested Citation

Gillum BS, Graves EJ, Kozak LJ. Trends in hospital utilization: United States 1988–92. National Center for Health Statistics. Vital Health Stat 13(124). 1996.

Library of Congress Catalog Card Number

Gillum, Brenda.

Trends in hospital utilization : United States, 1988–92 / [B.S. Gillum, E.J. Graves, L.J. Kozak].

p. cm. — (Vital and health statistics. Series 13, Data from the national health survey ; no. 124) (DHHS publication ; no. (PHS) 96-1785)

ISBN 0-8406-0516-1

1. Hospital utilization—United States—Statistics. I. Graves, Edmund. II. Kozak, Lola Jean. III. National Center for Health Statistics (U.S.) IV. Title. V. Series. VI. Series: DHHS publication ; no. (PHS) 96-1785.

RA981.A2G486 1996

362.1'30973021—dc20

96-8988

CIP

For sale by the U.S. Government Printing Office
Superintendent of Documents
Mail Stop: SSOP
Washington, DC 20402-9328

Vital and Health Statistics

Trends in Hospital Utilization: United States, 1988–92

Series 13:
Data From the National Health
Survey
No. 124

This report presents statistics on the utilization of non-Federal short-stay hospitals based on data collected through the National Hospital Discharge Survey for the years 1988 through 1992. The survey is a national sample of hospital records of discharged patients. Estimates are provided by the demographic characteristics of patients discharged, by geographic region of hospitals, and by selected conditions diagnosed and procedures performed. Measurements of hospital use include frequency, rate, percent, and average length of stay.

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

Hyattsville, Maryland
June 1996
DHHS Publication No. (PHS) 96-1785

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

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

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Trends in Hospital Utilization: United States, 1988–92

by Brenda S. Gillum, Edmund J. Graves, and Lola Jean Kozak, Division of Health Care Statistics

Introduction

The National Hospital Discharge Survey (NHDS) has been conducted annually since 1965. Hospital utilization statistics from the NHDS are routinely published by the National Center for Health Statistics for individual years. Because almost 30 years of data are available, there is much demand for NHDS data on trends in hospital use. Some trend data have been included in previous NHDS reports. In addition, a detailed description of trends in hospital utilization from 1965 through 1986 was presented in a previous report (1). The purpose of this report is to present general statistics from 1988 through 1992 on hospital utilization by patient characteristics, geographic region, and selected diagnoses and procedures.

The period beginning with 1988 was chosen for this report because that was the first year a new design was used for the NHDS (see [methods section](#)). Estimates based on this new design could differ from those based on the 1965–87 design due to changes in the survey rather than actual changes in hospital utilization. Because 1988–92 data are all from the same survey design, trends for this period are not affected by design effects.

However, many users of NHDS data are interested in a longer perspective on hospital use than can be seen in 5 years of data. For historical information, estimates for 1980 and 1985 are included in most of the tables in this report. Because hospital use trends during the first half of the 1980's were discussed in depth in an earlier report (1), they will not be discussed again here.

ACKNOWLEDGMENTS: This report was prepared in the Division of Health Care Statistics. Lester Curtin and Iris Shimizu, Office of Research and Methodology, provided methodological advice. Maria Owings, Hospital Care Statistics Branch, provided specific standard errors used in statistical tests. Virginia Freid and Deborah Ingram, Office of Analysis, Epidemiology, and Health Promotion, were the peer reviewers. The report was edited by Klaudia Cox and typeset by Annette F. Holman, Division of Data Services.

Data from the National Hospital Discharge Survey are used to examine a wide array of health issues. Topics such as morbidity from cerebrovascular disease, the frequency of vaginal births after previous cesarean section delivery (VBAC), and hospital use for cardiovascular disease have been studied using NHDS data (2–5). Trend analyses of NHDS data on HIV, hysterectomy, diabetes, and obstetrical procedures have been published (6–10). NHDS data are used to track objectives related to the 22 priority areas targeted in *Healthy People 2000* (11), including objectives on unintentional injuries, environmental health, maternal and infant health, diabetes and chronically disabling conditions, and sexually transmitted diseases. Data for several of these topics are shown in the numbered tables.

This report is organized into several sections. The methods section briefly describes the survey design and discusses issues related to the production of the statistics shown in the [tables A–G and 1–32](#) and [figures 1–15](#). The methods section is followed by sections that present selected findings by sex, region, diagnoses, and procedures. Detailed tables are shown after the text. The appendixes describe technical aspects of the survey ([appendix I](#)), definitions of terms ([appendix II](#)), and recent NCHS publications of data from the National Hospital Discharge Survey ([appendix III](#)).

The 32 numbered tables show hospital utilization data for 1980, 1985, and 1988–92. Trend data are presented by age and sex ([tables 1–3](#)), by age and region ([tables 4–6](#)), by hospital deaths ([table 7](#)), by selected diagnoses by sex ([tables 8–16](#)), by discharges with procedures ([table 17](#)), and by selected procedures by sex ([tables 18–23](#)). Trends in the use of selected sex-specific procedures are shown in [tables 24–28](#). These include hysterectomy, cesarean section and other obstetrical procedures, prostatectomy, and circumcision. [Tables 29–32](#) present trend data by age and sex for selected heart-related procedures. This includes open heart surgery, removal of coronary artery obstruction, coronary artery bypass graft, and cardiac catheterizations.

Highlights

- The rate of discharges did not change significantly between 1988 and 1992, but the rate of days of care declined 10 percent.
- The average length of stay declined 6 percent for both males and females from 1988 to 1992.
- Deliveries, heart disease, and malignant neoplasms were common reasons for hospitalization and represented approximately 30 percent of first-listed diagnoses in 1988 and 1992.
- Each year from 1988 to 1992, episiotomy, arteriography and angiocardiology using contrast material, computerized axial tomography (CAT scan), diagnostic ultrasound, and fetal EKG and other fetal monitoring were each performed over 1 million times on hospital inpatients.
- In 1992, 61 percent of male newborn infants were circumcised before they were discharged from the hospital; the proportion circumcised ranged from 38 percent in the West to 78 percent in the Midwest.
- The rate for removal of coronary artery obstruction increased 57 percent for males and 96 percent for female discharges from 1988 to 1992.
- Males accounted for 67 percent of four heart-related procedures (open heart surgeries, removal of coronary obstruction, coronary artery bypass graft, and cardiac catheterizations) performed in 1988, and 65 percent in 1992.

Methods

Data for the National Hospital Discharge Survey (NHDS) come from a sample of inpatient records obtained from a national sample of non-Federal general and short-stay specialty hospitals in the United States. Information concerning the universe from which the sample is drawn, sample size, response rate, and number of medical abstracts collected for each data year shown in this report, is in [appendix I](#).

NHDS data have been collected continuously since 1965. The original sample was selected from a frame of short-stay hospitals listed in the 1963 National Master Facility Inventory of Hospitals. The frame and sample were updated periodically to include newly opened hospitals. Beginning in 1988, the NHDS was redesigned and a new sample of hospitals was selected. Differences between NHDS statistics based on the 1965–87 sample and statistics based on the new sample may be due to sample design rather than to real changes in hospital use patterns. A brief description of the sample design and survey methods is in [appendix I](#). Detailed reports on the original design of the NHDS and on a comparison between the two designs have been published (12,13).

The frame of hospitals for the redesigned survey was based on hospitals contained in the April 1987 SMG Hospital Market Database (14). Only hospitals accepting inpatients by August 1987 were included. The definition of hospitals in the NHDS was modified slightly in the redesign. Prior to 1988, hospitals with an average length of stay of 30 days or more were excluded. Beginning in 1988, general medical and surgical and children's general hospitals were included regardless of the overall average length of stay of the inpatient population. However, the term "short-stay" continues to be used because 98 percent of hospitals in the NHDS universe fall into this category. In 1991, the frame and sample were updated to include hospitals from the 1991 SMG Hospital Database (15).

Medical data for hospitalized patients are coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification*, or ICD–9–CM (16). A maximum of seven diagnoses and four procedures are coded from the medical record for each discharge in the sample. Although diagnoses included in the ICD–9–CM section, "Supplementary classification of external causes of injury and poisoning," (coded E800–E999) are collected in the NHDS, these diagnoses are excluded from the report. Beginning October 1, 1986, annual addenda to the ICD–9–CM have been published. They add, delete, or change diagnostic and procedure codes or

their titles. Changes in codes that affect diagnostic or procedure categories in this report are discussed in [appendix I](#).

Data for newborn infants are shown in [tables D](#) and [28](#). Because these data are based on a sample of hospital births, they may not agree with data on births published in the *Monthly Vital Statistics Report* and *Vital Statistics of the United States*, which report all births.

[Tables 1–6](#) contain numbers, age-specific rates, and age-adjusted rates for discharges and days of care, and age-specific and age-adjusted average lengths of stay. Age-adjustment was computed using the direct method (17) with the 1980 civilian population, as described in [appendix II](#). Age-adjusted average stays shown in [tables 3](#) and [6](#) were computed by dividing the adjusted days of care by the adjusted number of discharges. Because the age distribution of the population did not change substantially in the 5-year period 1988–92 that is the focus of this report, crude (unadjusted) rates and average lengths of stay were used in the weighted regression analysis and are shown in [tables 7–32](#) and [figures 1–15](#).

Researchers wanting to eliminate the effects of differences in the age structure of the population when comparing rates can age-adjust rates using a standard population. [Tables A](#) and [B](#) and [figures 1](#) and [2](#) show examples of crude and age-adjusted rates for two diagnoses and two procedures, respectively. In these tables, the crude rate is the number of discharges or procedures divided by the midyear population, expressed as a rate per 10,000 or per 100,000 population. To age-adjust, rates for specific diagnoses or procedures were computed for four age groups (under 15 years, 15–44 years, 45–64 years, and 65 years and over) of both sexes. These age-specific rates were multiplied by the standard population (see [appendix II](#)) for the corresponding age group and summed. The sum was divided by the total standard population to produce an age-adjusted rate. Age-specific data needed to compute age-adjusted rates are available in NHDS publications (see [appendix III](#)) or from the NHDS. Crude rates, which reflect the actual frequency of hospital use, should not be compared with age-adjusted rates. However, one can compare age-adjusted rates to control for differences in age distributions by year, region, race, sex, or other variables. Further discussion of age-adjustment is available in *Healthy People 2000 Statistical Notes* (18).

[Table 7](#) shows the estimated numbers of hospital deaths and hospital fatality rates for selected conditions. A hospital fatality rate is the number of stated deaths for a category of

Table A. Crude and age-adjusted rates of discharges from short-stay hospitals by first-listed diagnosis of malignant neoplasm or pneumonia and sex: United States, 1988–92

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

Diagnosis and ICD–9–CM code	Crude rates			Age-adjusted rates ¹		
	Total	Male	Female	Total	Male	Female
Malignant neoplasm, 140–208,230–234						
Rate per 10,000 population						
1988	68.8	65.7	71.7	67.0	70.7	66.0
1989	65.6	64.8	66.3	63.4	69.6	60.1
1990	63.4	60.8	65.9	61.4	64.9	60.3
1991	63.6	64.3	63.0	61.2	68.5	56.7
1992	62.2	62.2	62.3	59.4	65.5	56.0
Pneumonia, 480–486						
1988	38.1	40.2	36.1	37.0	42.5	33.0
1989	42.2	45.8	38.7	40.8	48.1	35.3
1990	42.5	44.1	40.9	40.9	46.1	37.0
1991	43.4	44.8	42.1	41.6	46.8	37.9
1992	41.8	43.5	40.1	39.9	45.0	35.9

¹See appendix II for method of computation.

Table B. Crude and age-adjusted rates of cardiac catheterizations and diagnostic ultrasounds for discharges from short-stay hospitals, by sex: United States, 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Groupings of procedures and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD–9–CM)*]

Procedure category and ICD–9–CM code	Crude rates			Age-adjusted rates ¹		
	Total	Male	Female	Total	Male	Female
Cardiac catheterizations, 37.21–37.23						
Rate per 100,000 population						
1988	382.9	508.4	265.2	379.1	542.3	243.3
1989	390.7	506.1	282.3	384.6	538.1	256.5
1990	401.8	515.8	294.5	395.4	548.0	268.7
1991	399.2	496.0	307.9	391.2	526.3	277.5
1992	405.6	517.1	300.4	391.4	541.9	265.7
Diagnostic ultrasound, 88.7						
1988	643.2	509.3	768.9	626.8	538.4	715.6
1989	635.7	528.8	736.1	618.8	557.1	685.0
1990	649.2	555.3	737.6	627.6	584.9	677.1
1991	635.2	536.2	728.5	612.6	564.0	668.7
1992	575.2	477.2	667.6	552.0	497.9	607.6

¹See appendix II for method of computation.

first-listed diagnoses, divided by the total number of discharges for that category, and multiplied by 100. This rate is conservative because the formula is based on the assumption that all patients whose discharge status was not stated were discharged alive. The hospital fatality rate differs from the mortality rate, which reflects complete reporting of deaths regardless of where the death occurred. In addition to being a 100 percent enumeration of deaths, mortality data are for the underlying cause of death, which may not be identical to the first-listed diagnosis. Mortality rates are regularly published by NCHS in the *Monthly Vital Statistics Report* and in the *Vital Statistics of the United States*.

The conditions diagnosed and procedures performed appearing in tables 8–16 and 18–23 are the same categories shown in the 1990–93 NHDS annual summaries published in

Advance Data From Vital and Health Statistics and series 13 of *Vital and Health Statistics*. Data for a more detailed list of ICD–9–CM codes are in the annual report, “Detailed Diagnoses and Procedures, National Hospital Discharge Survey,” also published in series 13 of *Vital and Health Statistics*.

The number of discharges with procedures in table 17 and the total number of procedures per year in tables 18–23 were affected by changes in NHDS coding practices. As described in appendix II, not all procedures were coded when the ICD–9–CM was first used for the 1979 NHDS data. Additional procedures began to be coded in the 1983 and 1989 NHDS, and beginning with the 1991 data, all the ICD–9–CM codes were used. In addition, the number of discharges with surgical procedures in table 17 was affected by a revision in the classification of procedures as surgical or nonsurgical. This

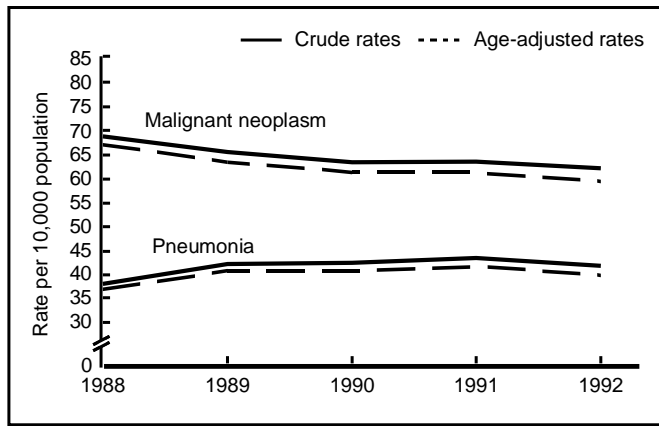


Figure 1. Crude and age-adjusted rates of discharges with a first-listed diagnosis of malignant neoplasm or pneumonia: United States, 1988-92

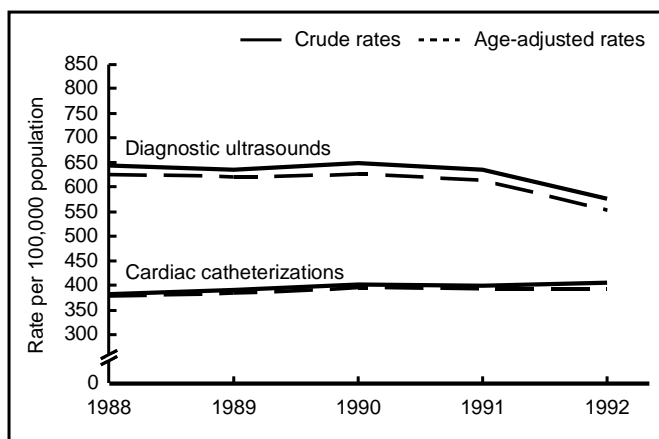


Figure 2. Crude and age-adjusted rates of diagnostic ultrasounds and cardiac catheterizations: United States, 1988-92

became effective with 1989 NHDS data. This revision is also discussed in [appendix II](#). [Tables 18-23](#) present estimates for all-listed procedures. That is, all occurrences of a procedure are counted, regardless of the order, up to a maximum of four procedures per discharge.

[Table 25](#) contains trend data on obstetrical procedures for females with deliveries. Rates for some obstetric procedures

are shown per 100 deliveries. Rates for other obstetric procedures are shown per 100 vaginal deliveries because these procedures are not expected to be done for women who had cesarean delivery. In addition to NHDS data, information on deliveries (e.g., obstetric procedures and pregnancy complications) is obtained from birth certificates and published by NCHS in the *Monthly Vital Statistics Report*, and *Vital Statistics of the United States*.

The estimates in [table 31](#) are for discharges with at least one coronary artery bypass graft (CABG)(ICD-9-CM code 36.1). A surgeon may perform more than one CABG procedure during a single operation. For example, in 1992, a total of 468,000 CABG procedures ([table 18](#)) were performed on 309,000 discharges ([table 31](#)). Thus, the number of CABG procedures should not be equated with the number of patients having the procedure.

The rates presented in this report are based on estimates of the civilian population as revised by the U.S. Bureau of the Census after the 1990 census. These rates differ somewhat from rates in previous NCHS publications, which were based on earlier population estimates from the U.S. Bureau of the Census. However, as shown in [appendix I](#), the differences between previously published rates and the rates in this report are small.

Weighted linear regression was used to analyze trends for selected variables. Specific standard errors for rates analyzed in the regression were produced using the SUDAAN program (19). See [appendix I](#) for a detailed explanation of the techniques used for weighted regression.

Familiarity with the definitions used in the NHDS is important for interpreting the data and for making comparisons with data on hospital utilization available from other sources. Definitions of terms used in this report are presented in [appendix II](#).

Information on short-stay hospital utilization also is collected in another program of NCHS, the National Health Interview Survey (NHIS). Estimates from this survey generally differ from those of the NHDS because of differences in collection procedures, the population sampled, and definitions. Data from the NHIS are published in series 10 of *Vital and Health Statistics*.

Hospital utilization

The focus of the report is hospital utilization from 1988 to 1992 as measured by data from the National Hospital Discharge Survey. Estimates of hospital use in 1980 and 1985 are included in the tables to provide a broader historical perspective.

A previous report on trends in hospital utilization discussed the dramatic rise of hospital discharges and days of care in the 1970's and their decline in the 1980's due to major influences from technology, an aging population, and health care policy (1). One of the strongest influences on hospital use in the late 1980's and 1990's was the growth of outpatient surgery. Patients who previously would have been hospitalized were undergoing surgery and returning home the same day. According to the American Hospital Association (AHA), the rise in outpatient surgery was facilitated by the development of new technologies, such as endoscopic techniques, and new anesthetic drugs that allow patients to wake up more quickly after surgery, as well as changes in reimbursement policy that promote outpatient surgery (20).

Outpatient or ambulatory surgeries are performed in free-standing or hospital-based ambulatory surgery centers. In 1988, 1.7 million surgical procedures were performed in approximately 980 free-standing ambulatory surgical centers (FASC's) in the United States (21). In 1993, this number had grown to 3.2 million surgical procedures performed in approximately 1,860 FASC's. However, the majority of outpatient surgeries occur in hospitals. Ambulatory surgeries in these hospitals increased from 10.6 million in 1988 to 12.8 million in 1992 for AHA-registered hospitals (21). Outpatient surgeries done in either hospitals or free-standing surgical centers are not included in the NHDS nor in this report because only hospital inpatients are within the scope of the survey. Additional information about the use of ambulatory surgery centers is being gathered in the National Survey of Ambulatory Surgery begun in 1994 by the National Center for Health Statistics.

In addition to the growth of ambulatory surgery, the aging of the U.S. population continues to influence inpatient hospital use. As shown in [table C](#), the median age of the civilian population was 30.1 years of age in 1980, 32.3 years in 1988, and 33.5 years in 1992. The median age for hospital discharges was 43.9 years in 1980, 48.5 years in 1988, and 50.7 years in 1992. The aging of the hospital population also can be seen in [tables 1](#) and [2](#). In 1980, persons 45 years and over accounted for 49 percent of total discharges and 64 percent of

Table C. Median age of discharges from short-stay hospitals and the U.S. civilian population: United States, 1980, 1985, and 1988–92

Year	Hospital discharges ¹	U.S. civilian population ²
Median age in years		
1980	43.9	30.1
1985	46.6	31.5
1988	48.5	32.3
1989	48.4	32.6
1990	48.9	32.9
1991	49.0	33.2
1992	50.7	33.5

¹Discharges of inpatients from non-Federal hospitals excluding newborn infants.

²Based on population estimates consistent with Series P-25, *Current Population Reports*, U.S. Bureau of the Census.

the days of care. In 1992, persons 45 years and over made up 56 percent of the discharges and 68 percent of the days of care ([tables 1](#) and [2](#)).

Changing health care policies also affect hospital utilization. A recent example is the efforts by managed-care plans and other insurers to shorten hospital stays for women after delivery and for their newborn infants (22–24). [Table D](#) shows the trends in lengths of stay for newborn infants. In 1980, 31 percent of newborn infants stayed in the hospital 2 days or less, and 63 percent stayed 3 to 7 days. In 1988, 55 percent of newborn infants had hospital stays of 2 days or less, and 41 percent stayed 3–7 days. By 1992, 66 percent of newborn infants were hospitalized for 2 days or less and only 29 percent had stays of 3–7 days.

Table D. Number and percent distribution of newborn infants discharged from short-stay hospitals by length of stay and average length of stay by health status: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals]

<i>Length of stay or health status</i>	1980	1985	1988	1989	1990	1991	1992
Number in thousands							
All newborn infants	3,824	3,794	3,733	3,884	3,869	3,880	3,689
Less than 1 day	69	84	72	89	79	81	73
1 day	270	428	531	596	693	779	873
2 days	842	1,057	1,436	1,601	1,624	1,612	1,506
3 days	1,175	1,034	704	649	636	658	632
4 days	618	528	502	485	447	385	284
5–7 days	633	497	329	298	232	198	161
8 days or more	218	167	159	166	157	167	160
Percent distribution							
All newborn infants	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 1 day	1.8	2.2	1.9	2.3	2.0	2.1	2.0
1 day	7.1	11.3	14.2	15.3	17.9	20.1	23.7
2 days	22.0	27.9	38.5	41.2	42.0	41.5	40.8
3 days	30.7	27.3	18.9	16.7	16.4	17.0	17.1
4 days	16.2	13.9	13.4	12.5	11.6	9.9	7.7
5–7 days	16.6	13.1	8.8	7.7	6.0	5.1	4.4
8 days or more	5.7	4.4	4.3	4.3	4.1	4.3	4.3
Average length of stay in days							
All newborn infants	4.3	3.8	3.5	3.4	3.3	3.2	3.1
Well ¹	3.2	2.8	2.5	2.4	2.3	2.3	2.0
Sick ²	7.1	5.7	4.9	4.8	4.8	4.6	4.7

¹Without any illness or risk-related diagnoses.

²With at least one illness or risk-related diagnosis.

Utilization by sex

The number of discharges from short-stay hospitals was approximately 31 million in both 1988 and 1992. Weighted linear regression was used to analyze trends in discharge rates, rates of days of care, and average length of stay from 1988 to 1992. The rate of discharges per 1,000 population did not change significantly during this period; it was 128.3 in 1988 and 122.1 in 1992. However, the rate of days of care per 1,000 population declined 10 percent, from 838.8 in 1988 to 751.0 in 1992. The average length of stay declined 5 percent from 1988 (6.5 days) to 1992 (6.2 days). [Tables 1–3](#) present numbers and rates of discharges and days of care, and average lengths of stay, by age and sex.

- Discharge rates for males and females did not change significantly from 1988 to 1992 ([figure 3](#)). Males had 107.5 discharges per 1,000 population in 1988 and 100.8 in 1992. For females, the discharge rates were 147.7 in 1988 and 142.2 in 1992.

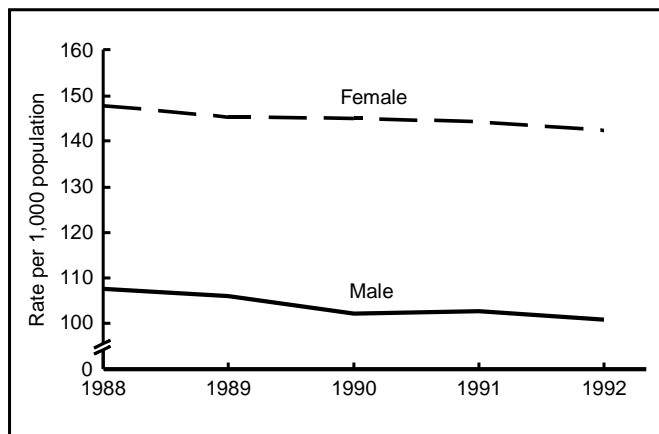


Figure 3. Rate of discharges by sex: United States, 1988–92

- Males accounted for approximately 40 percent (12 to 13 million) of total discharges in 1988 and 1992. Females had about 19 million discharges in both these years. Over 10 percent of all discharges in 1988 and 1992 were for females with deliveries (see section on [utilization by diagnosis and sex](#)).
- Rates of days of care per 1,000 population declined significantly for males and females from 1988 to 1992 ([figure 4](#)). For males, the rate declined 11 percent from

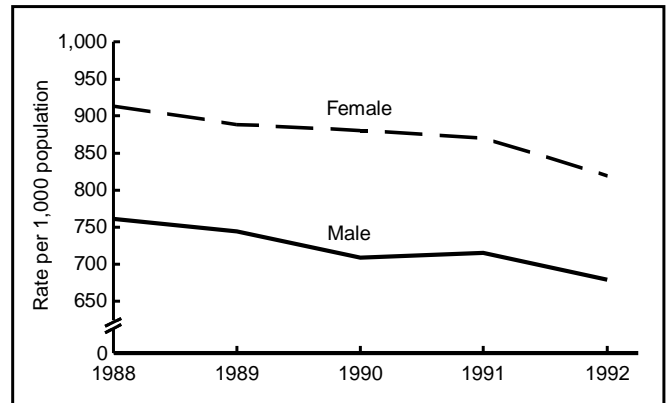


Figure 4. Rate of days of care by sex: United States, 1988–92

760.7 in 1988 to 679.7 in 1992. For females, there was a 10 percent decrease, from 912.1 in 1988 to 818.3 in 1992.

- In both 1988 and 1992, males accounted for 44 percent of days of care and females used 56 percent of days of care.
- The average stay for males declined 6 percent from 7.1 days in 1988 to 6.7 days in 1992. For females, the average length of stay also declined 6 percent from 6.2 days in 1988 to 5.8 days in 1992 ([figure 5](#)).

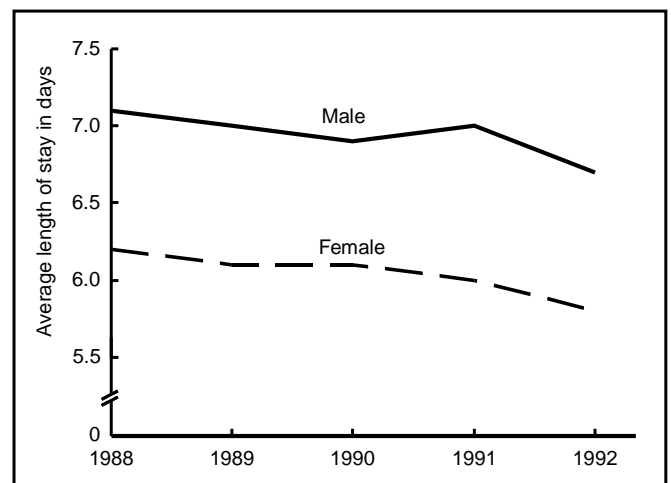


Figure 5. Average length of stay by sex: United States, 1988–92

Utilization by region

Weighted linear regression analysis of the rates of discharges and days of care showed that these rates did not change significantly from 1988 to 1992 for any of the four geographic regions of the country. Tables 4–6 present hospital utilization data by age and region. Regional trends in discharge rates are shown in figure 6, and average lengths of stay by region are displayed in figure 7.

- In 1988, discharge rates per 1,000 population ranged from 107.4 per 1,000 population in the West to 140.3 in the Northeast. In 1992 the range was from 99.5 in the West to 139.9 in the Northeast.
- Rates of days of care per 1,000 population ranged from 624.3 in the West to 1,081.0 in the Northeast in 1988 and from 513.9 in the West to 1,005.1 in the Northeast in 1992.
- Average lengths of stay varied from 5.8 days in the West to 7.7 days in the Northeast in 1988 and from 5.2 days in the West to 7.2 days in the Northeast in 1992.
- In 1988, 35 percent of discharges were in the South, 25 percent were in the Midwest, 23 percent were in the Northeast, and 17 percent were in the West. The percents for 1992 were 36 percent of discharges in the South, 23 percent in the Midwest, 23 percent in the Northeast, and 18 percent in the West.
- In 1988 and 1992, persons 45 years of age and over used two-thirds or more of days of care in the Northeast, Midwest, and South, but 55–62 percent of the days of care in the West.

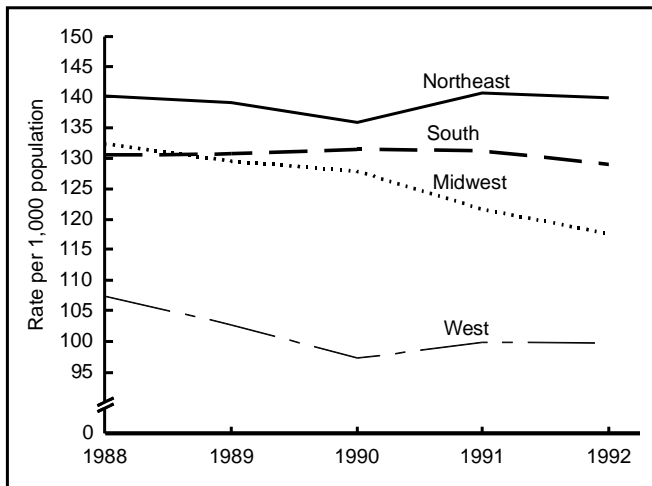


Figure 6. Rate of discharges by region: United States, 1988–92

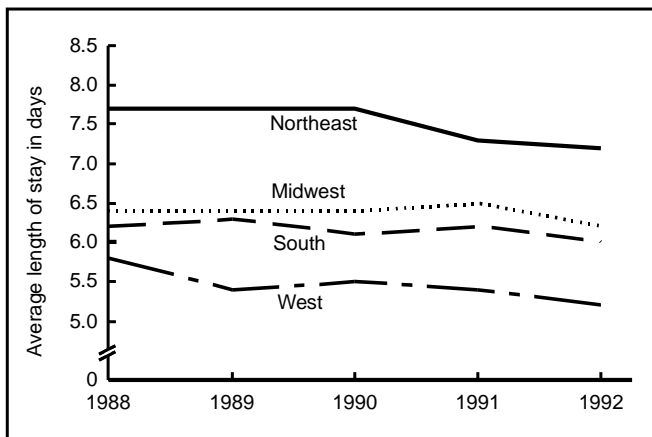


Figure 7. Average length of stay by region: United States, 1988–92

Utilization by diagnosis and sex

Hospital use measures for selected first-listed diagnoses are shown in [table E](#). The categories shown accounted for half or more of all discharges and days of care in 1988 and 1992. [Table F](#) lists the diagnostic categories with 200,000 or more male discharges in 1988 or 1992. These categories made up nearly half of male discharges. Diagnostic categories with 200,000 or more female discharges in 1988 or 1992 are in [table G](#), and these categories include more than half of female discharges. Diagnostic data in [tables E–G](#) and [table 7](#) are highlighted below. Additional diagnostic data are in [tables 8–16](#).

- Heart disease was the first-listed diagnosis for 12 percent (3.6 million) of discharges in 1988 and 13 percent (3.9

million) in 1992. These discharges had an average length of stay of 7.1 days in 1988 and 6.7 days in 1992. They used 13–14 percent of total days of care, and made up 23 percent of hospital deaths.

- Females hospitalized for deliveries accounted for 12 percent (3.8 million) of first-listed diagnoses in 1988 and 13 percent (3.9 million) in 1992. Because their average lengths of stay were short—2.9 days in 1988 and 2.6 days in 1992—females with deliveries made up only 5 percent of the total days of care.
- Malignant neoplasms (cancers) were first-listed diagnoses for 5 percent of discharges in 1988 and 1992. These discharges used 7–8 percent of total days of care and had

Table E. Number of discharges from short-stay hospitals, days of care, and average length of stay, by selected first-listed diagnoses: United States, 1988 and 1992

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

Diagnosis and ICD–9–CM codes	Discharges		Days of care		Average length of stay	
	1988	1992	1988	1992	1988	1992
	Number in thousands				Days	
All conditions ¹	31,146	30,951	203,678	190,386	6.5	6.2
Heart disease 391–392.0,393–398,402,404,410–416,420–429	3,641	3,935	25,883	26,256	7.1	6.7
Acute myocardial infarction 410	716	747	6,432	6,058	9.0	8.1
Coronary atherosclerosis 414.0	411	416	2,502	2,342	6.1	5.6
Other ischemic heart disease 411–413,414.1–414.9	921	971	4,871	4,831	5.3	5.0
Cardiac dysrhythmias 427	491	542	2,758	2,835	5.6	5.2
Congestive heart failure 428.0	634	822	5,560	6,506	8.8	7.9
Females with deliveries V27	3,781	3,910	11,029	10,040	2.9	2.6
Malignant neoplasms 140–208,230–234	1,670	1,577	15,676	13,433	9.4	8.5
Pneumonia 480–486	924	1,059	7,801	8,793	8.4	8.3
Fractures 800–829	1,014	1,016	8,558	7,842	8.4	7.7
Psychosis 290–299	781	908	11,812	11,746	15.1	12.9
Cerebrovascular disease 430–438	784	829	7,611	7,302	9.7	8.8
Arthropathies and related disorders 710–719	459	554	3,416	4,027	7.4	7.3
Cholelithiasis 574	484	512	3,162	2,236	6.5	4.4
Diabetes mellitus 250	454	476	3,734	3,274	8.2	6.9
Asthma 493	479	463	2,279	2,008	4.8	4.3
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	428	422	2,117	1,947	4.9	4.6
Intervertebral disc disorders 722	417	407	2,466	1,786	5.9	4.4
Acute respiratory infection 460–466	445	376	2,282	1,495	5.1	4.0

¹Includes data for diagnostic conditions not shown in table.

NOTE: This table includes diagnostic categories that accounted for 400,000 or more discharges in 1988 or 1992.

Table F. Number and rate of male discharges from short-stay hospitals by selected first-listed diagnoses: United States, 1988 and 1992[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Diagnostic categories and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*]

Diagnosis and ICD-9-CM codes	1988	1992	1988	1992
	Number in thousands		Rate per 10,000 population	
All conditions ¹	12,642	12,406	1,075.3	1,008.0
Heart disease	1,955	2,083	166.3	169.3
Acute myocardial infarction	451	458	38.4	37.2
Coronary atherosclerosis	278	285	23.6	23.2
Other ischemic heart disease	491	505	41.7	41.0
Cardiac dysrhythmias	228	256	19.4	20.8
Congestive heart failure	277	373	23.6	30.3
Malignant neoplasms	772	765	65.7	62.2
Pneumonia	472	535	40.2	43.5
Fractures	506	465	43.0	37.8
Psychosis	341	408	29.0	33.2
Cerebrovascular disease	336	375	28.5	30.5
Intervertebral disc disorders	247	222	21.0	18.0
Hyperplasia of prostate	247	221	21.0	18.0
Arthropathies and related disorders	191	212	16.3	17.2
Diabetes mellitus	209	207	17.7	16.8
Asthma	210	201	17.8	16.3
Acute respiratory infection	224	187	19.1	15.2
Inguinal hernia	232	98	19.7	7.9

¹Includes data for diagnostic conditions not shown in table.

NOTE: This table includes diagnostic categories that accounted for 200,000 or more male discharges in 1988 or 1992.

Table G. Number and rate of female discharges from short-stay hospitals by selected first-listed diagnoses: United States, 1988 and 1992[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Diagnostic categories and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*]

Diagnosis and ICD-9-CM codes	1988	1992	1988	1992
	Number in thousands		Rate per 10,000 population	
All conditions ¹	18,504	18,545	1,477.4	1,422.0
Females with deliveries	3,781	3,910	301.9	299.8
Heart disease	1,686	1,852	134.6	142.0
Acute myocardial infarction	265	289	21.2	22.1
Coronary atherosclerosis and other ischemic heart disease	565	597	45.1	45.8
Cardiac dysrhythmias	263	286	21.0	21.9
Congestive heart failure	357	449	28.5	34.4
Malignant neoplasms	898	812	71.7	62.3
Fractures	508	552	40.6	42.3
Fracture of neck of femur	186	205	14.9	15.7
Pneumonia	452	524	36.1	40.1
Psychosis	440	500	35.1	38.3
Cerebrovascular disease	448	454	35.8	34.8
Cholelithiasis	352	358	28.1	27.5
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature	350	342	27.9	26.3
Arthropathies and related disorders	267	342	21.3	26.3
Diabetes mellitus	245	269	19.6	20.6
Asthma	270	263	21.5	20.1
Noninfectious enteritis and colitis	230	220	18.4	16.8
Acute respiratory infection	221	189	17.7	14.5
Abortions and ectopic and molar pregnancies	266	179	21.2	13.7

¹Includes data for diagnostic conditions not shown in table.

NOTE: This table includes diagnostic categories that accounted for 200,000 or more female discharges in 1988 or 1992.

17–18 percent of hospital deaths in 1988 and 1992. Their average length of stay was 9.4 days in 1988 and 8.5 days in 1992.

- Pneumonia, fractures, psychoses, and cerebrovascular disease each accounted for more than 700,000 discharges in 1988 and 1992. Discharges with each of these four diagnoses used more than 7 million days of care in 1988 and 1992.
- Females hospitalized for deliveries made up 20 percent of female discharges in 1988 and 21 percent in 1992.
- For males, heart disease was the first-listed diagnosis for 15 percent (2.0 million) of discharges in 1988 and 17 percent (2.1 million) in 1992. For females, 9 percent (1.7 million) of hospitalizations in 1988 and 10 percent (1.9 million) in 1992 were for heart disease.
- For males, malignant neoplasms made up 6 percent of first-listed diagnoses—772,000 in 1988 and 765,000 in 1992. Females had 898,000 discharges (5 percent) with a first-listed diagnosis of malignant neoplasms in 1988 and 812,000 (4 percent) in 1992.
- Only males had more than 200,000 discharges for intervertebral disc disorders in 1988 and 1992. Discharges for hyperplasia of prostate also exceeded 200,000 in both years.
- Only females had more than 200,000 discharges for cholelithiasis, benign neoplasms and neoplasms of uncertain behavior and unspecified nature, and noninfectious enteritis and colitis in 1988 and 1992.

Utilization of procedures by sex

Neither the number of discharges with procedures nor the number with surgical procedures changed significantly from 1988 to 1992 (table 17), using weighted linear regression analysis. However, the estimates are not comparable across all years because of coding changes and a revision in the classification of procedures as surgical or nonsurgical. These modifications are discussed in appendix II. The coding changes also affected the total number of all-listed procedures shown in tables 18–23.

- In 1988, 19.9 million discharges (64 percent) had a procedure during hospitalization. In 1992, procedures were performed on 20.4 million, or 66 percent of discharges.
- Discharges with surgical procedures made up 49 and 47 percent of all discharges in 1988 and 1992, respectively.
- At least two-thirds of all procedures performed in short-stay hospitals in 1988 and 1992 were in four procedure categories: miscellaneous diagnostic and therapeutic procedures (10.9–13.9 million), obstetrical procedures (6.0–6.7 million), operations on the digestive system (5.3–5.4 million), and operations on the cardiovascular system (3.6–4.4 million).
- In 1988 and 1992, procedures performed a million or more times on hospital inpatients included episiotomy, arteriography and angiocardiology using contrast material, computerized axial tomography (CAT scan), diagnostic ultrasound, and fetal EKG and other fetal monitoring. In 1992, respiratory therapy and cardiac catheterization were also done more than a million times.
- Males had 15.7 million procedures in 1988, compared with 23.5 million for females. Likewise, in 1992, males had 16.8 million procedures, but females underwent 25.8 million procedures.
- Frequent procedures for males in 1988 and 1992 were arteriography and angiocardiology using contrast material, cardiac catheterization, computerized axial tomography, and diagnostic ultrasound.
- Procedures commonly performed on females in 1988 and 1992 were episiotomy, fetal EKG and other fetal monitoring, cesarean section, and diagnostic ultrasound.

Utilization of selected sex-specific procedures

Female-specific procedures

Trend data for selected procedures that are only performed on females are shown in tables 24–26. The data for obstetrical procedures in tables 25 and 26 are for females with deliveries. Rates are per 100 deliveries, or per 100 vaginal deliveries when the procedure would not be done during a cesarean section delivery. The rates for most female-specific procedures did not change significantly from 1988 to 1992, using weighted linear regression analysis. For example, there were no significant changes in the rates for hysterectomy, episiotomy, or cesarean section.

- Women had 578,000 hysterectomies in 1988 and 580,000 in 1992. In both years, approximately two-thirds of hysterectomies were performed on women 30–49 years of age, a fourth on those aged 50 years and over, and 8–9 percent on women 15–29 years of age. Figure 8 illustrates trends in hysterectomy rates for these age groups.

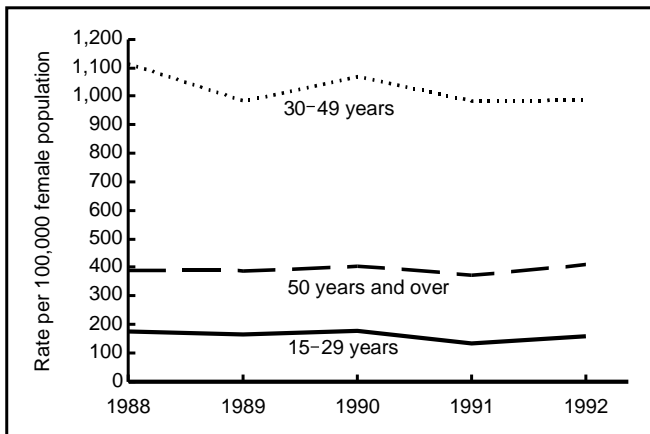


Figure 8. Rate of hysterectomies for females by age: United States, 1988–92

- In 1988, 1.7 million episiotomies were performed, for a rate of 59.0 per 100 vaginal deliveries. In 1992, there were 1.6 million episiotomies, for a rate of 53.8 per 100 vaginal deliveries.
- In 1988, cesarean sections were performed 24.7 times per 100 deliveries. In 1992, there were 23.6 cesarean sections

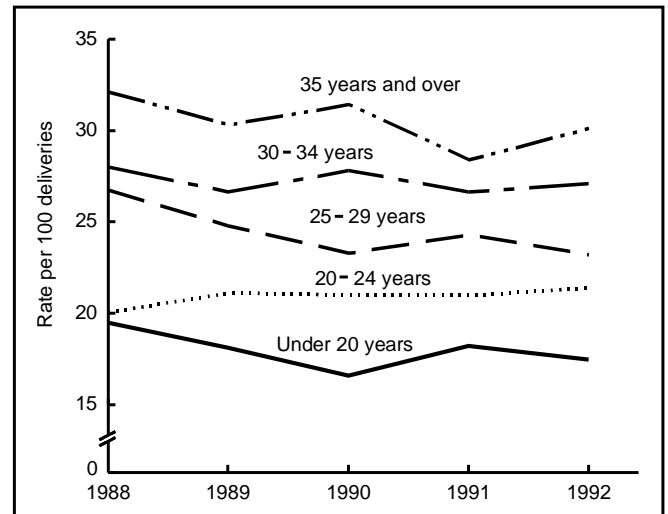


Figure 9. Rate of cesarean sections for females by age: United States, 1988–92

per 100 deliveries. Figure 9 shows the trends in cesarean section rates by age.

Male-specific procedures

Two frequent procedures performed only on males are prostatectomy and circumcision of the penis. Trends for prostatectomy are shown by age in table 27, and table 28 shows circumcision trends by region. The circumcision data only reflect circumcisions performed in short-stay hospitals on newborn infants and thus underestimate the total number of circumcisions performed. From 1988 to 1992, there were no significant changes in the rates of prostatectomy or male circumcision, using weighted linear regression analysis.

- Men had 358,000 prostatectomies in 1988 and 353,000 in 1992. Men 65–74 years of age accounted for 41 percent of prostatectomies in 1988 and 42 percent in 1992. Those aged 75 years and over had 40 percent of prostatectomies in 1988 and 37 percent in 1992. Figure 10 shows the trends in prostatectomy rates for these two age groups.
- The proportion of male newborn infants who were circumcised was 58 percent in 1988 and 61 percent in 1992. The percent circumcised ranged from 45 percent in the West to 73 percent in the Midwest in 1988, and from 38 percent in the West to 78 percent in the Midwest in 1992 (figure 11).

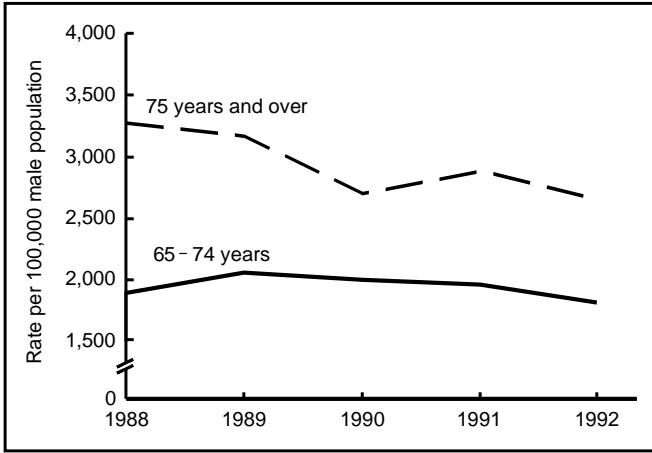


Figure 10. Rate of prostatectomies for males aged 65–74 years and 75 years and over: United States, 1988–92

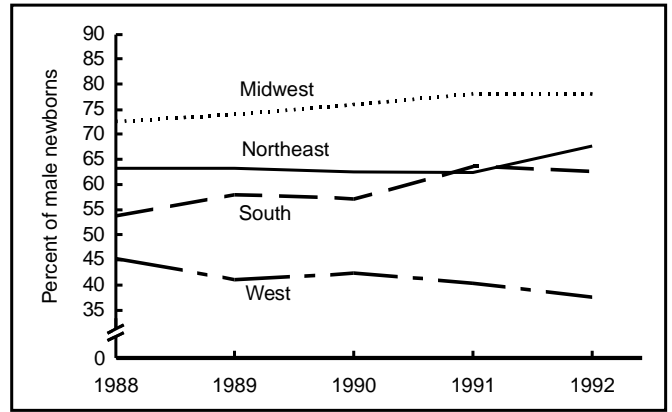


Figure 11. Percent of male newborn infants circumcised by region: United States, 1988–92

Utilization of selected heart-related procedures by sex

Open-heart surgery, removal of coronary artery obstruction, coronary artery bypass graft, and cardiac catheterizations together accounted for 1.6 million procedures in 1988 and 2.0 million in 1992. Among these four procedures, only one significant change in rates during the 1988–92 period was found using weighted linear regression analysis. This was a 68 percent increase in the rate of removal of coronary artery obstruction. Tables 29–32 show trend data for the four procedures by age and sex. It should be noted that the data for open-heart surgery, shown in table 29, do not include coronary artery bypass graft. Estimates for discharges with at least one coronary artery bypass graft are shown in table 31. The number of all-listed bypass procedures are shown in tables 18, 20, and 22.

- Two-thirds (67 percent) of the four heart-related procedures listed above were performed on males in 1988, and males had 65 percent of these procedures in 1992.
- In 1988, a total of 92,000 open-heart procedures were performed—53,000 on males and 39,000 on females. In 1992, there were 104,000 open-heart surgeries—57,000 on males and 48,000 on females. Figure 12 shows trends in rates of open-heart surgery by sex.

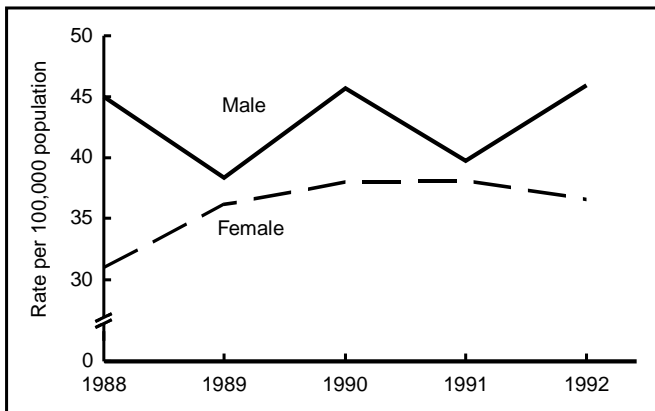


Figure 12. Rate of open-heart surgery by sex: United States, 1988–92

- The rate per 100,000 population for removal of coronary artery obstruction increased from 93.3 in 1988 to 157.2 in 1992. The rate for males increased 57 percent (from 136.1 to 213.3 per 100,000 population) and the rate for females

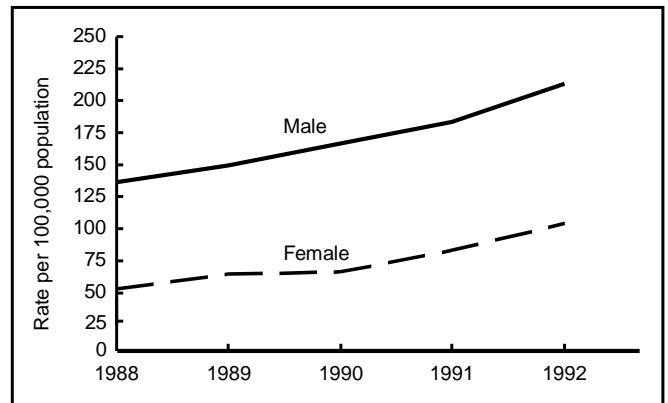


Figure 13. Rate of removal of coronary artery obstructions by sex: United States, 1982–92

increased 96 percent (from 53.1 to 104.3 per 100,000 population) from 1988 to 1992 (figure 13).

- There were 253,000 discharges with coronary artery bypass grafts in 1988 and 309,000 in 1992. Males made up 75 percent of discharges with bypass surgery (189,000) in 1988 and 72 percent (221,000) in 1992. Female discharges with bypass surgery numbered 63,000 in 1988 and 88,000 in 1992. Rates of discharges with bypass surgery are shown by sex in figure 14.

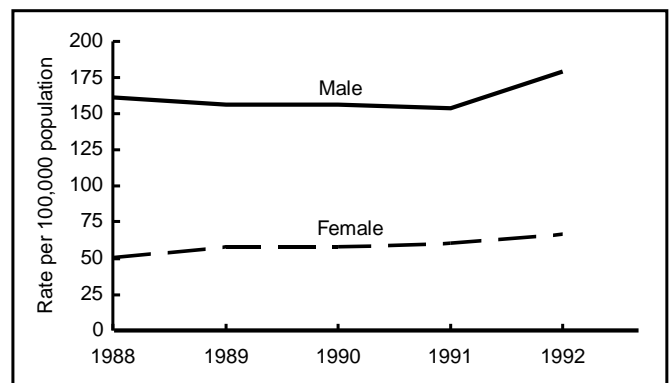


Figure 14. Rate of discharges with one or more coronary artery bypass grafts by sex: United States, 1988–92

- An estimated 930,000 cardiac catheterizations were performed in 1988 and 1,028,000 were performed in 1992. Males underwent 598,000 catheterizations and females had 332,000 catheterizations in 1988. In 1992, the estimates were 636,000 cardiac catheterizations for males and 392,000 catheterizations for females. Figure 15 displays trends in rates of cardiac catheterizations by sex.

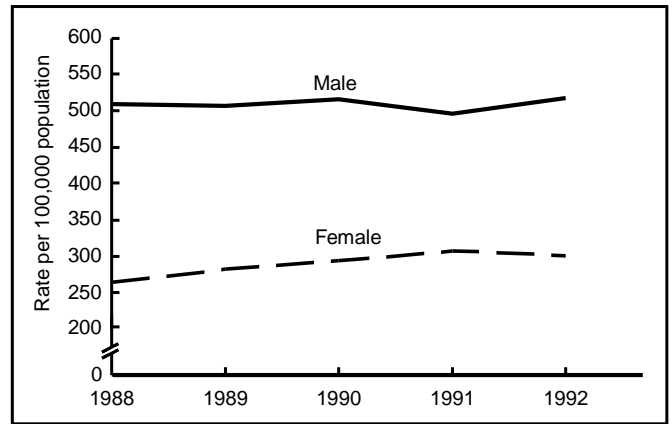


Figure 15. Rate of cardiac catheterizations by sex: United States, 1988–92

Summary

After a large increase in the 1970's and an abrupt decrease in the 1980's, the discharge rates for short-stay hospitals leveled off in the 1988–92 period. However, the rate of days of care continued to decline, falling 10 percent from 1988 to 1992. Average length of stay also declined 5 percent from 1988 to 1992. Discharge rates did not change significantly in any of the four geographic regions of the country.

The major reasons for hospitalization in both 1988 and 1992 were delivery, heart disease, and malignant neoplasm. Throughout this period, the majority of procedures performed were in one of four categories—miscellaneous diagnostic and therapeutic procedures, obstetrical procedures, operations on the digestive system, and operations on the cardiovascular system.

Particular attention was given to commonly performed sex-specific procedures. Obstetrical procedures, such as

episiotomy, fetal EKG and other fetal monitoring, and cesarean section, were among the leading procedures performed on females. Other female-specific procedures, such as hysterectomy, were also commonly done. Frequent male-specific procedures were prostatectomy and circumcision. No significant changes in rates occurred in the 1988–92 period for any of these sex-specific procedures.

The four heart-related procedures—open-heart surgery, removal of coronary artery obstruction, coronary artery bypass graft, and cardiac catheterization—were also examined by sex. Males accounted for 67 percent of these procedures in 1988 and 64 percent in 1992. The rate for one procedure, removal of coronary artery obstruction, increased significantly for both males and females during the 1988–92 period.

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Table 1. Number and rate of discharges from short-stay hospitals by sex and age, and age-adjusted rate by sex: United States, 1980, 1985, and 1988–92

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

<i>Sex and year</i>	<i>All ages</i>	<i>Under 15 years</i>	<i>15–44 years</i>	<i>45–64 years</i>	<i>65 years and over</i>	<i>Age- adjusted rate¹</i>
Both sexes		Number of discharges in thousands				
1980	37,832	3,672	15,635	8,660	9,864	...
1985	35,056	2,972	13,966	7,610	10,508	...
1988	31,146	2,610	11,934	6,456	10,146	...
1989	30,947	2,597	11,848	6,271	10,230	...
1990	30,788	2,412	11,799	6,244	10,333	...
1991	31,098	2,498	11,620	6,173	10,806	...
1992	30,951	2,531	11,227	6,329	10,864	...
Male						
1980	15,145	2,063	4,687	4,127	4,268	...
1985	14,160	1,698	4,153	3,776	4,533	...
1988	12,642	1,486	3,485	3,221	4,450	...
1989	12,583	1,521	3,405	3,179	4,478	...
1990	12,280	1,362	3,330	3,115	4,472	...
1991	12,478	1,435	3,248	3,088	4,708	...
1992	12,406	1,416	3,162	3,135	4,692	...
Female						
1980	22,686	1,609	10,949	4,533	5,596	...
1985	20,896	1,274	9,813	3,834	5,975	...
1988	18,504	1,125	8,448	3,235	5,696	...
1989	18,364	1,077	8,443	3,092	5,752	...
1990	18,508	1,049	8,469	3,129	5,861	...
1991	18,620	1,064	8,372	3,085	6,098	...
1992	18,545	1,115	8,064	3,194	6,172	...
Both sexes		Rate of discharges per 1,000 population				
1980	167.7	71.6	150.1	194.8	383.7	167.7
1985	148.4	57.7	125.0	170.8	369.8	146.6
1988	128.3	49.8	103.9	142.1	336.8	125.7
1989	126.2	48.8	102.7	136.8	333.4	123.5
1990	124.3	44.6	101.6	135.0	330.9	121.3
1991	124.1	45.3	99.3	132.2	340.3	121.0
1992	122.1	45.2	96.0	131.0	336.5	118.8
Male						
1980	139.0	78.7	91.5	195.3	411.8	145.6
1985	124.0	64.4	75.3	177.6	397.9	129.7
1988	107.5	55.3	61.3	148.0	367.8	112.0
1989	106.0	55.8	59.5	144.6	363.1	110.0
1990	102.2	49.2	57.8	140.2	356.1	106.1
1991	102.7	50.8	55.9	137.5	368.1	106.4
1992	100.8	49.4	54.4	134.7	359.7	103.9
Female						
1980	194.4	64.2	206.8	194.3	364.7	189.9
1985	171.2	50.6	173.5	164.6	351.0	164.0
1988	147.7	43.9	145.8	136.7	316.0	140.2
1989	145.3	41.5	145.1	129.7	313.5	137.7
1990	145.0	39.7	144.7	130.2	314.0	137.3
1991	144.3	39.5	142.1	127.2	321.6	136.3
1992	142.2	40.8	137.1	127.6	320.8	134.3

... Category not applicable.

¹See [appendix II](#) for method of computation.

Table 2. Number and rate of days of care for discharges from short-stay hospitals by sex and age, and age-adjusted rate by sex: United States, 1980, 1985, and 1988–92

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

<i>Sex and year</i>	<i>All ages</i>	<i>Under 15 years</i>	<i>15–44 years</i>	<i>45–64 years</i>	<i>65 years and over</i>	<i>Age-adjusted rate¹</i>
Both sexes		Number of days of care in thousands				
1980	274,508	16,191	81,951	71,008	105,358	...
1985	226,217	13,554	67,397	53,541	91,726	...
1988	203,678	13,028	56,558	43,901	90,191	...
1989	200,827	12,632	55,420	41,979	90,795	...
1990	197,422	11,655	54,062	42,153	89,552	...
1991	199,099	12,037	54,020	40,100	92,942	...
1992	190,386	12,289	48,660	39,952	89,484	...
Male						
1980	116,267	8,950	29,748	33,589	43,981	...
1985	97,269	7,647	25,268	26,135	38,219	...
1988	89,435	7,493	21,996	21,855	38,091	...
1989	88,493	7,408	21,155	21,429	38,501	...
1990	85,067	6,484	20,388	20,961	37,234	...
1991	86,930	6,981	20,698	20,157	39,095	...
1992	83,664	6,946	19,108	20,082	37,527	...
Female						
1980	158,241	7,241	52,204	37,420	61,377	...
1985	128,948	5,907	42,128	27,405	53,507	...
1988	114,242	5,536	34,562	22,045	52,100	...
1989	112,334	5,225	34,265	20,551	52,294	...
1990	112,355	5,171	33,674	21,191	52,318	...
1991	112,168	5,056	33,322	19,944	53,846	...
1992	106,722	5,342	29,552	19,870	51,957	...
Both sexes		Rate of days of care per 1,000 population				
1980	1,216.7	315.7	786.8	1,596.9	4,098.4	1,216.7
1985	957.7	263.0	603.3	1,201.6	3,228.0	942.9
1988	838.8	248.4	492.6	966.5	2,994.1	815.5
1989	819.3	237.4	480.3	915.9	2,959.2	793.4
1990	796.9	215.4	465.3	911.5	2,867.7	770.2
1991	794.6	218.3	461.8	858.5	2,927.0	765.5
1992	751.0	219.6	416.1	827.1	2,771.7	720.8
Male						
1980	1,067.4	341.3	580.9	1,589.5	4,243.6	1,142.5
1985	851.9	289.9	458.2	1,229.0	3,354.9	901.9
1988	760.7	279.0	386.8	1,004.5	3,148.5	798.7
1989	745.1	271.9	369.9	974.6	3,121.8	780.3
1990	708.2	234.1	353.6	943.6	2,964.7	740.2
1991	715.2	247.3	356.5	897.4	3,056.5	745.9
1992	679.7	242.4	328.8	862.9	2,876.7	704.7
Female						
1980	1,356.0	288.8	985.9	1,603.7	4,000.3	1,292.7
1985	1,056.6	234.8	744.8	1,176.5	3,143.0	987.2
1988	912.1	216.2	596.4	931.5	2,890.3	837.4
1989	888.9	201.1	588.8	861.7	2,849.9	812.1
1990	880.3	195.8	575.4	881.9	2,802.6	803.3
1991	869.3	187.9	565.6	822.4	2,839.6	789.4
1992	818.3	195.6	502.3	793.8	2,700.5	740.5

... Category not applicable.

¹See appendix II for method of computation.

Table 3. Average length of stay for discharges from short-stay hospitals by sex and age, and age-adjusted average stay by sex: United States, 1980, 1985, and 1988–92

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

<i>Sex and year</i>	<i>All ages</i>	<i>Under 15 years</i>	<i>15–44 years</i>	<i>45–64 years</i>	<i>65 years and over</i>	<i>Age adjusted¹</i>
Both sexes		Average length of stay in days				
1980	7.3	4.4	5.2	8.2	10.7	7.3
1985	6.5	4.6	4.8	7.0	8.7	6.4
1988	6.5	5.0	4.7	6.8	8.9	6.5
1989	6.5	4.9	4.7	6.7	8.9	6.4
1990	6.4	4.8	4.6	6.8	8.7	6.3
1991	6.4	4.8	4.6	6.5	8.6	6.3
1992	6.2	4.9	4.3	6.3	8.2	6.1
Male						
1980	7.7	4.3	6.3	8.1	10.3	7.8
1985	6.9	4.5	6.1	6.9	8.4	7.0
1988	7.1	5.0	6.3	6.8	8.6	7.1
1989	7.0	4.9	6.2	6.7	8.6	7.1
1990	6.9	4.8	6.1	6.7	8.3	7.0
1991	7.0	4.9	6.4	6.5	8.3	7.0
1992	6.7	4.9	6.0	6.4	8.0	6.8
Female						
1980	7.0	4.5	4.8	8.3	11.0	6.8
1985	6.2	4.6	4.3	7.1	9.0	6.0
1988	6.2	4.9	4.1	6.8	9.1	6.0
1989	6.1	4.9	4.1	6.6	9.1	5.9
1990	6.1	4.9	4.0	6.8	8.9	5.9
1991	6.0	4.8	4.0	6.5	8.8	5.8
1992	5.8	4.8	3.7	6.2	8.4	5.5

¹See [appendix II](#) for method of computation.

Table 4. Number and rate of discharges from short-stay hospitals by region and age, and age-adjusted rate by region: United States, 1980, 1985, and 1988–92

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

Region and year	All ages	Under 15 years	15–44 years	45–64 years	65 years and over	All ages	Under 15 years	15–44 years	45–64 years	65 years and over	Age-adjusted rate ¹
United States											
1980	37,832	3,672	15,635	8,660	9,864	167.7	71.6	150.1	194.8	383.7	167.7
1985	35,056	2,972	13,966	7,610	10,508	148.4	57.7	125.0	170.8	369.8	146.6
1988	31,146	2,610	11,934	6,456	10,146	128.3	49.8	103.9	142.1	336.8	125.7
1989	30,947	2,597	11,848	6,271	10,230	126.2	48.8	102.7	136.8	333.4	123.5
1990	30,788	2,412	11,799	6,244	10,333	124.3	44.6	101.6	135.0	330.9	121.3
1991	31,098	2,498	11,620	6,173	10,806	124.1	45.3	99.3	132.2	340.3	121.0
1992	30,951	2,531	11,227	6,329	10,864	122.1	45.2	96.0	131.0	336.5	118.8
Northeast											
1980	7,868	700	3,107	1,886	2,176	160.3	67.7	140.3	179.6	356.7	156.2
1985	7,168	529	2,673	1,614	2,353	144.1	54.2	114.1	161.1	358.2	137.6
1988	7,078	634	2,503	1,514	2,428	140.3	64.4	105.0	151.7	356.0	133.6
1989	7,044	621	2,579	1,455	2,389	139.1	62.3	108.3	146.0	346.4	132.4
1990	6,895	550	2,566	1,425	2,354	135.9	54.5	108.1	143.5	337.7	129.1
1991	7,153	662	2,522	1,455	2,515	140.6	64.5	106.7	146.4	357.0	133.5
1992	7,141	570	2,494	1,553	2,524	139.9	55.0	106.8	152.3	354.2	132.2
Midwest											
1980	10,878	1,105	4,465	2,488	2,820	185.1	81.3	165.5	217.3	419.1	185.4
1985	9,111	754	3,538	1,996	2,823	155.3	57.6	129.5	181.3	389.4	153.0
1988	7,832	654	2,868	1,607	2,703	132.5	50.4	104.2	145.1	357.8	129.0
1989	7,676	646	2,792	1,553	2,685	129.4	49.3	101.7	139.9	350.7	125.7
1990	7,620	575	2,760	1,583	2,703	127.8	43.5	100.3	142.0	348.5	123.9
1991	7,315	570	2,602	1,441	2,702	121.7	42.7	94.0	128.6	343.9	117.6
1992	7,121	659	2,394	1,386	2,683	117.5	49.1	86.6	119.8	336.9	113.2
South											
1980	12,983	1,387	5,416	2,883	3,297	173.4	79.3	157.4	199.4	385.8	174.0
1985	12,274	1,274	5,006	2,650	3,344	152.4	71.0	132.2	175.0	349.2	151.5
1988	10,845	704	4,340	2,293	3,508	130.6	38.6	111.3	147.4	341.8	128.2
1989	10,960	796	4,350	2,269	3,545	130.7	43.3	110.9	144.1	337.6	127.9
1990	11,173	770	4,342	2,318	3,743	131.6	41.3	109.8	145.2	348.9	128.4
1991	11,290	803	4,216	2,293	3,978	131.2	42.3	105.4	141.7	363.5	127.6
1992	11,256	819	4,066	2,396	3,975	128.9	42.5	101.4	142.7	356.4	125.2
West											
1980	6,103	480	2,647	1,403	1,572	142.2	48.6	128.3	174.2	362.5	145.9
1985	6,502	415	2,749	1,350	1,988	137.6	38.6	118.9	161.0	396.0	140.5
1988	5,391	618	2,224	1,042	1,507	107.4	54.1	90.8	118.3	274.7	108.8
1989	5,268	535	2,128	994	1,611	102.6	45.4	85.4	110.2	286.1	104.1
1990	5,100	516	2,131	919	1,533	97.1	42.5	84.0	99.8	265.6	98.4
1991	5,340	464	2,281	983	1,612	99.7	37.0	88.8	104.8	272.6	101.1
1992	5,433	484	2,273	994	1,683	99.5	37.4	87.9	101.8	278.4	100.9

¹See appendix II for method of computation.

Table 5. Number and rate of days of care for discharges from short-stay hospitals by region and age, and age-adjusted rate by region: United States, 1980, 1985, and 1988–92

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

Region and year	All ages	Under 15 years	15–44 years	45–64 years	65 years and over	All ages	Under 15 years	15–44 years	45–64 years	65 years and over	Age-adjusted rate ¹
	Number of days of care in thousands					Rate of days of care per 1,000 population					
United States											
1980	274,508	16,191	81,951	71,008	105,358	1,216.7	315.7	786.8	1,596.9	4,098.4	1,216.7
1985	226,217	13,554	67,397	53,541	91,726	957.7	263.0	603.3	1,201.6	3,228.0	942.9
1988	203,678	13,028	56,558	43,901	90,191	838.8	248.4	492.6	966.5	2,994.1	815.5
1989	200,827	12,632	55,420	41,979	90,795	819.3	237.4	480.3	915.9	2,959.2	793.4
1990	197,422	11,655	54,062	42,153	89,552	796.9	215.4	465.3	911.5	2,867.7	770.2
1991	199,099	12,037	54,020	40,100	92,942	794.6	218.3	461.8	858.5	2,927.0	765.5
1992	190,386	12,289	48,660	39,952	89,482	751.0	219.6	416.1	827.1	2,771.7	720.8
Northeast											
1980	67,238	3,196	17,592	17,784	28,666	1,370.1	309.2	794.7	1,693.7	4,699.3	1,306.4
1985	55,513	2,391	13,956	13,240	25,925	1,115.6	245.1	595.9	1,321.8	3,947.1	1,041.1
1988	54,554	3,193	13,126	11,809	26,426	1,081.0	324.5	550.9	1,183.3	3,875.4	1,002.8
1989	54,182	3,273	13,953	11,116	25,840	1,069.9	328.1	586.2	1,115.6	3,747.6	992.0
1990	52,823	2,669	13,931	11,177	25,045	1,041.4	264.3	587.1	1,125.7	3,592.8	962.3
1991	52,518	3,334	13,227	10,465	25,491	1,032.4	324.9	559.9	1,052.9	3,619.4	952.2
1992	51,288	2,681	12,507	10,984	25,116	1,005.1	258.7	535.8	1,077.1	3,525.1	920.1
Midwest											
1980	82,000	5,014	25,142	21,286	30,559	1,395.7	369.0	931.7	1,859.0	4,542.0	1,397.9
1985	61,514	3,932	18,987	14,376	24,219	1,048.5	300.6	694.9	1,305.7	3,340.0	1,027.0
1988	50,118	2,887	13,526	10,706	22,999	847.8	222.5	491.7	966.5	3,044.6	815.0
1989	49,046	3,026	13,328	10,180	22,513	826.7	230.7	485.4	916.8	2,940.9	792.3
1990	48,698	2,674	12,971	10,613	22,441	816.4	202.2	471.3	952.3	2,893.7	780.9
1991	47,448	2,746	12,625	9,298	22,780	789.6	205.7	456.2	829.8	2,899.3	751.3
1992	43,903	3,087	10,914	8,519	21,384	724.6	230.0	394.8	736.9	2,685.7	685.8
South											
1980	88,216	6,072	27,154	22,325	32,665	1,178.0	347.4	789.3	1,544.1	3,822.7	1,183.2
1985	73,817	5,479	23,212	17,862	27,265	916.7	305.3	613.2	1,179.1	2,846.9	909.2
1988	67,658	3,139	19,690	15,139	29,690	814.9	172.3	505.0	972.9	2,892.7	793.7
1989	68,983	3,458	19,851	14,951	30,723	822.9	188.3	506.2	949.2	2,926.0	797.0
1990	67,810	3,438	18,642	14,962	30,769	799.0	184.6	471.3	937.3	2,868.1	771.0
1991	70,331	3,646	19,054	14,658	32,973	817.2	192.3	476.5	905.7	3,013.4	785.5
1992	67,141	3,962	17,227	15,147	30,804	769.1	205.8	429.5	902.3	2,761.5	737.6
West											
1980	37,054	1,909	12,065	9,613	13,469	863.6	193.1	584.7	1,193.4	3,106.9	903.0
1985	35,373	1,751	11,242	8,062	14,318	748.4	162.9	486.4	961.8	2,852.1	776.1
1988	31,347	3,810	10,216	6,246	11,075	624.3	333.5	417.1	709.3	2,018.4	638.1
1989	28,615	2,875	8,288	5,733	11,719	557.5	244.4	332.6	635.8	2,080.9	571.5
1990	28,091	2,874	8,519	5,401	11,297	535.0	236.5	335.8	586.5	1,956.5	547.3
1991	28,802	2,311	9,114	5,679	11,698	538.0	184.0	354.8	605.5	1,979.1	550.5
1992	28,053	2,559	8,012	5,302	12,180	513.9	198.0	309.9	543.4	2,015.6	524.8

¹See appendix II for method of computation.

Table 6. Average length of stay for discharges from short-stay hospitals by region and age, and age-adjusted average stay by region: United States, 1980, 1985, and 1988–92

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

<i>Region and year</i>	<i>All ages</i>	<i>Under 15 years</i>	<i>15–44 years</i>	<i>45–64 years</i>	<i>65 years and over</i>	<i>Age adjusted¹</i>
United States		Average length of stay in days				
1980	7.3	4.4	5.2	8.2	10.7	7.3
1985	6.5	4.6	4.8	7.0	8.7	6.4
1988	6.5	5.0	4.7	6.8	8.9	6.5
1989	6.5	4.9	4.7	6.7	8.9	6.4
1990	6.4	4.8	4.6	6.8	8.7	6.3
1991	6.4	4.8	4.6	6.5	8.6	6.3
1992	6.2	4.9	4.3	6.3	8.2	6.1
Northeast						
1980	8.5	4.6	5.7	9.4	13.2	8.4
1985	7.7	4.5	5.2	8.2	11.0	7.6
1988	7.7	5.0	5.2	7.8	10.9	7.5
1989	7.7	5.3	5.4	7.6	10.8	7.5
1990	7.7	4.8	5.4	7.8	10.6	7.5
1991	7.3	5.0	5.2	7.2	10.1	7.1
1992	7.2	4.7	5.0	7.1	10.0	7.0
Midwest						
1980	7.5	4.5	5.6	8.6	10.8	7.5
1985	6.8	5.2	5.4	7.2	8.6	6.7
1988	6.4	4.4	4.7	6.7	8.5	6.3
1989	6.4	4.7	4.8	6.6	8.4	6.3
1990	6.4	4.6	4.7	6.7	8.3	6.3
1991	6.5	4.8	4.9	6.5	8.4	6.4
1992	6.2	4.7	4.6	6.1	8.0	6.1
South						
1980	6.8	4.4	5.0	7.7	9.9	6.8
1985	6.0	4.3	4.6	6.7	8.2	6.0
1988	6.2	4.5	4.5	6.6	8.5	6.2
1989	6.3	4.3	4.6	6.6	8.7	6.2
1990	6.1	4.5	4.3	6.5	8.2	6.0
1991	6.2	4.5	4.5	6.4	8.3	6.2
1992	6.0	4.8	4.2	6.3	7.7	5.9
West						
1980	6.1	4.0	4.6	6.8	8.6	6.2
1985	5.4	4.2	4.1	6.0	7.2	5.5
1988	5.8	6.2	4.6	6.0	7.3	5.9
1989	5.4	5.4	3.9	5.8	7.3	5.5
1990	5.5	5.6	4.0	5.9	7.4	5.6
1991	5.4	5.0	4.0	5.8	7.3	5.4
1992	5.2	5.3	3.5	5.3	7.2	5.2

¹See [appendix II](#) for method of computation.

Table 8. Number of discharges from short-stay hospitals by first-listed diagnosis: United States, 1980, 1985, and 1988–92

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

First-listed diagnosis and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Number of discharges in thousands						
All conditions	37,832	35,056	31,146	30,947	30,788	31,098	30,951
Infectious and parasitic diseases 001–139	649	669	693	726	737	759	808
Septicemia 038	59	149	193	196	216	240	279
Neoplasms 140–239	2,476	2,411	2,098	2,001	1,965	2,001	1,999
Malignant neoplasms 140–208,230–234	1,873	1,911	1,670	1,608	1,571	1,594	1,577
Malignant neoplasm of large intestine and rectum 153–154,197.5	200	197	165	167	175	168	161
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	277	315	236	239	231	236	215
Malignant neoplasm of breast 174–175,198.81	213	208	177	163	164	158	170
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	604	500	428	392	393	407	422
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	1,145	1,068	1,038	1,097	1,089	1,143	1,178
Diabetes mellitus 250	645	480	454	438	420	429	476
Volume depletion 276.5	100	239	266	285	319	329	308
Diseases of the blood and blood-forming organs 280–289	336	342	295	318	324	348	322
Mental disorders 290–319	1,692	1,700	1,559	1,514	1,538	1,657	1,711
Psychoses 290–299	507	701	781	773	812	902	908
Alcohol dependence syndrome 303	439	388	237	218	239	228	258
Diseases of the nervous system and sense organs 320–389	1,762	1,211	922	819	770	755	708
Diseases of the central nervous system 320–336,340–349	408	425	348	341	342	331	314
Diseases of the ear and mastoid process 380–389	405	259	200	177	157	144	145
Diseases of the circulatory system 390–459	5,140	5,470	5,296	5,197	5,161	5,338	5,597
Heart disease 391–392.0,393–398,402,404,410–416,420–429	3,201	3,584	3,641	3,534	3,556	3,704	3,935
Acute myocardial infarction 410	431	755	716	695	675	697	747
Coronary atherosclerosis 414.0	562	304	411	407	410	384	416
Other ischemic heart disease 411–413,414.1–414.9	793	992	921	893	870	876	971
Cardiac dysrhythmias 427	389	511	491	487	483	536	542
Congestive heart failure 428.0	401	557	634	643	701	764	822
Cerebrovascular disease 430–438	796	916	784	795	812	835	829
Diseases of the respiratory system 460–519	3,445	3,238	2,937	2,996	2,966	3,052	2,923
Acute respiratory infections 460–466	523	464	445	475	487	518	376
Chronic disease of tonsils and adenoids 474	457	288	197	134	102	76	73
Pneumonia 480–486	782	854	924	1,033	1,052	1,088	1,059
Asthma 493	408	462	479	475	476	490	463
Diseases of the digestive system 520–579	4,650	3,873	3,268	3,295	3,239	3,256	3,187
Ulcers of the stomach and small intestine 531–534	363	292	256	256	244	237	232
Appendicitis 540–543	266	250	242	227	238	232	227
Inguinal hernia 550	509	384	257	213	168	135	112
Noninfectious enteritis and colitis 555–558	621	474	362	378	373	351	354
Cholelithiasis 574	458	474	484	482	506	552	512
Diseases of the genitourinary system 580–629	3,599	2,805	2,204	2,191	2,175	2,071	2,018
Calculus of kidney and ureter 592	310	325	287	278	272	241	218
Hyperplasia of prostate 600	276	246	247	249	259	229	221
Complications of pregnancy, childbirth, and the puerperium ¹ 630–676	1,010	968	837	756	734	723	662
Abortions and ectopic and molar pregnancies 630–639	531	382	266	229	208	180	179
Diseases of the skin and subcutaneous tissue 680–709	597	542	460	480	462	462	462
Cellulitis and abscess 681–682	201	257	280	303	288	297	307
Diseases of the musculoskeletal system and connective tissue 710–739	2,245	2,170	1,647	1,569	1,592	1,600	1,610
Arthropathies and related disorders 710–719	543	465	459	431	479	526	554
Intervertebral disc disorders 722	385	508	417	396	425	391	407
Congenital anomalies 740–759	343	269	227	207	182	192	191
Certain conditions originating in the perinatal period 760–779	91	159	158	152	163	147	141
Symptoms, signs, and ill-defined conditions 780–799	637	534	398	381	410	386	350
Injury and poisoning 800–999	3,593	3,303	2,817	2,806	2,774	2,768	2,701
Fractures, all sites 800–829	1,163	1,129	1,014	1,021	1,017	1,034	1,016
Fracture of neck of femur 820	210	258	254	265	281	300	278
Intracranial injuries (excluding those with skull fracture) 850–854	295	268	201	186	184	180	152
Lacerations and open wounds 870–904	334	277	232	224	240	193	180
Supplementary classifications V01–V82	4,421	4,324	4,295	4,444	4,507	4,438	4,383
Females with deliveries V27	3,762	3,854	3,781	3,937	4,025	3,973	3,910

¹The first-listed diagnosis for females with deliveries is coded V27, shown under "Supplementary classifications."

NOTE: See "Medical Coding and Edit," appendix I, for information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 9. Rate of discharges from short-stay hospitals by first-listed diagnosis: United States, 1980, 1985, and 1988–92[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD–9–CM)*]

First-listed diagnosis and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Rate of discharges per 10,000 population						
All conditions	1,676.8	1,484.1	1,282.7	1,262.5	1,242.7	1,241.1	1,221.0
Infectious and parasitic diseases 001–139	28.8	28.3	28.5	29.6	29.7	30.3	31.9
Septicemia 038	2.6	6.3	8.0	8.0	8.7	9.6	11.0
Neoplasms 140–239	109.8	102.1	86.4	81.6	79.3	79.9	78.9
Malignant neoplasms 140–208,230–234	83.0	80.9	68.8	65.6	63.4	63.6	62.2
Malignant neoplasm of large intestine and rectum 153–154,197.5	8.9	8.3	6.8	6.8	7.1	6.7	6.3
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	12.3	13.3	9.7	9.8	9.3	9.4	8.5
Malignant neoplasm of breast 174–175,198.81	9.4	8.8	7.3	6.7	6.6	6.3	6.7
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	26.8	21.2	17.6	16.0	15.9	16.2	16.6
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	50.8	45.2	42.7	44.7	44.0	45.6	46.5
Diabetes mellitus 250	28.6	20.3	18.7	17.9	17.0	17.1	18.8
Volume depletion 276.5	4.4	10.1	10.9	11.6	12.9	13.1	12.2
Diseases of the blood and blood-forming organs 280–289	14.9	14.5	12.1	13.0	13.1	13.9	12.7
Mental disorders 290–319	75.0	72.0	64.2	61.8	62.1	66.1	67.5
Psychoses 290–299	22.5	29.7	32.2	31.5	32.8	36.0	35.8
Alcohol dependence syndrome 303	19.5	16.4	9.8	8.9	9.6	9.1	10.2
Diseases of the nervous system and sense organs 320–389	78.1	51.3	38.0	33.4	31.1	30.1	27.9
Diseases of the central nervous system 320–336,340–349	18.1	18.0	14.3	13.9	13.8	13.2	12.4
Diseases of the ear and mastoid process 380–389	18.0	11.0	8.3	7.2	6.4	5.8	5.7
Diseases of the circulatory system 390–459	227.8	231.6	218.1	212.0	208.3	213.1	220.8
Heart disease 391–392,0,393–398,402,404,410–416,420–429	141.9	151.7	150.0	144.1	143.5	147.8	155.2
Acute myocardial infarction 410	19.1	31.9	29.5	28.3	27.2	27.8	29.5
Coronary atherosclerosis 414.0	24.9	12.9	16.9	16.6	16.5	15.3	16.4
Other ischemic heart disease 411–413,414.1–414.9	35.1	42.0	37.9	36.4	35.1	35.0	38.3
Cardiac dysrhythmias 427	17.2	21.6	20.2	19.9	19.5	21.4	21.4
Congestive heart failure 428.0	17.8	23.6	26.1	26.2	28.3	30.5	32.4
Cerebrovascular disease 430–438	35.3	38.8	32.3	32.4	32.8	33.3	32.7
Diseases of the respiratory system 460–519	152.7	137.1	120.9	122.2	119.7	121.8	115.3
Acute respiratory infections 460–466	23.2	19.7	18.3	19.4	19.7	20.7	14.8
Chronic disease of tonsils and adenoids 474	20.3	12.2	8.1	5.5	4.1	3.0	2.9
Pneumonia 480–486	34.7	36.2	38.1	42.2	42.5	43.4	41.8
Asthma 493	18.1	19.5	19.7	19.4	19.2	19.6	18.3
Diseases of the digestive system 520–579	206.1	164.0	134.6	134.4	130.7	129.9	125.7
Ulcers of the stomach and small intestine 531–534	16.1	12.4	10.5	10.4	9.8	9.5	9.1
Appendicitis 540–543	11.8	10.6	10.0	9.3	9.6	9.2	9.0
Inguinal hernia 550	22.6	16.3	10.6	8.7	6.8	5.4	4.4
Noninfectious enteritis and colitis 555–558	27.5	20.1	14.9	15.4	15.1	14.0	13.9
Cholelithiasis 574	20.3	20.0	19.9	19.7	20.4	22.0	20.2
Diseases of the genitourinary system 580–629	159.5	118.8	90.8	89.4	87.8	82.7	79.6
Calculus of kidney and ureter 592	13.7	13.8	11.8	11.3	11.0	9.6	8.6
Hyperplasia of prostate 600	12.2	10.4	10.2	10.1	10.5	9.2	8.7
Complications of pregnancy, childbirth, and the puerperium ¹ 630–676	44.8	41.0	34.5	30.8	29.6	28.8	26.1
Abortions and ectopic and molar pregnancies 630–639	23.5	16.2	10.9	9.4	8.4	7.2	7.0
Diseases of the skin and subcutaneous tissue 680–709	26.5	22.9	18.9	19.6	18.6	18.4	18.2
Cellulitis and abscess 681–682	8.9	10.9	11.5	12.3	11.6	11.9	12.1
Diseases of the musculoskeletal system and connective tissue 710–739	99.5	91.9	67.8	64.0	64.3	63.9	63.5
Arthropathies and related disorders 710–719	24.1	19.7	18.9	17.6	19.4	21.0	21.9
Intervertebral disc disorders 722	17.1	21.5	17.2	16.2	17.1	15.6	16.0
Congenital anomalies 740–759	15.2	11.4	9.3	8.4	7.4	7.7	7.6
Certain conditions originating in the perinatal period 760–779	4.0	6.7	6.5	6.2	6.6	5.9	5.6
Symptoms, signs, and ill-defined conditions 780–799	28.2	22.6	16.4	15.5	16.6	15.4	13.8
Injury and poisoning 800–999	159.2	139.8	116.0	114.5	112.0	110.5	106.6
Fractures, all sites 800–829	51.5	47.8	41.8	41.7	41.0	41.3	40.1
Fracture of neck of femur 820	9.3	10.9	10.5	10.8	11.3	12.0	11.0
Intracranial injuries (excluding those with skull fracture) 850–854	13.1	11.4	8.3	7.6	7.4	7.2	6.0
Lacerations and open wounds 870–904	14.8	11.7	9.6	9.2	9.7	7.7	7.1
Supplementary classifications V01–V82	195.9	183.1	176.9	181.3	181.9	177.1	172.9
Females with deliveries V27	166.8	163.2	155.7	160.6	162.5	158.6	154.2

¹The first-listed diagnoses for females with deliveries is coded V27, shown under "Supplementary classifications."

NOTE: See "Medical Coding and Edit," appendix I, for information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 10. Number of days of care for discharges from short-stay hospitals by first-listed diagnosis: United States, 1980, 1985, and 1988–92

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

First-listed diagnosis and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Number of days of care in thousands						
All conditions	274,508	226,217	203,678	200,827	197,422	199,099	190,386
Infectious and parasitic diseases 001–139	4,509	4,664	5,603	5,560	6,725	6,432	6,401
Septicemia 038	849	1,770	2,484	2,173	2,858	2,790	3,014
Neoplasms 140–239	26,004	19,740	17,792	16,692	16,771	16,414	15,379
Malignant neoplasms 140–208,230–234	22,273	17,001	15,676	14,843	14,693	14,602	13,433
Malignant neoplasms of large intestine and rectum 153–154,197.5	3,143	2,430	2,150	2,337	2,402	2,448	1,848
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	3,561	2,884	2,233	2,068	1,961	2,034	1,783
Malignant neoplasm of breast 174–175,198.81	2,330	1,489	990	882	751	695	695
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	3,731	2,740	2,117	1,849	2,078	1,812	1,947
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	10,972	7,845	7,784	7,514	7,610	8,092	7,488
Diabetes mellitus 250	6,754	3,901	3,734	3,308	3,295	3,043	3,274
Volume depletion 276.5	895	1,481	1,879	1,931	2,085	2,479	1,985
Diseases of the blood and blood-forming organs 280–289	2,420	2,050	1,826	1,907	1,877	2,163	1,950
Mental disorders 290–319	19,578	20,956	20,339	19,254	18,824	18,966	18,581
Psychoses 290–299	7,480	10,435	11,812	11,194	11,861	12,153	11,746
Alcohol dependence syndrome 303	4,424	4,169	2,643	2,312	2,366	2,167	2,438
Diseases of the nervous system and sense organs 320–389	9,597	6,595	4,988	4,527	4,268	4,271	3,907
Diseases of the central nervous system 320–336,340–349	4,372	4,092	3,276	2,937	2,955	2,924	2,772
Diseases of the ear and mastoid process 380–389	1,277	729	499	461	437	409	381
Diseases of the circulatory system 390–459	51,431	43,144	39,927	39,291	37,899	38,965	39,379
Heart disease 391–392.0,393–398,402,404,410–416,420–429	30,500	26,082	25,883	24,706	24,557	25,279	26,256
Acute myocardial infarction 410	5,432	7,152	6,432	5,947	5,674	5,666	6,058
Coronary atherosclerosis 414.0	5,625	2,016	2,502	2,521	2,393	2,735	2,342
Other ischemic heart disease 411–413,414.1–414.9	6,078	5,379	4,871	4,661	4,503	4,423	4,831
Cardiac dysrhythmias 427	2,963	3,148	2,758	2,805	2,795	2,825	2,835
Congestive heart failure 428.0	4,154	4,459	5,560	5,387	5,604	6,070	6,506
Cerebrovascular disease 430–438	10,114	9,600	7,611	8,130	7,727	7,805	7,302
Diseases of the respiratory system 460–519	21,649	19,583	19,435	20,133	20,433	20,651	19,753
Acute respiratory infections 460–466	2,439	2,073	2,282	2,341	2,494	2,467	1,495
Chronic disease of tonsils and adenoids 474	870	437	241	160	128	91	95
Pneumonia 480–486	6,497	6,788	7,801	8,343	8,744	8,954	8,793
Asthma 493	2,435	2,275	2,279	2,130	2,222	2,224	2,008
Diseases of the digestive system 520–579	32,342	23,950	20,179	20,727	19,197	19,347	18,404
Ulcers of the stomach and small intestine 531–534	3,101	2,088	1,850	1,882	1,593	1,643	1,607
Appendicitis 540–543	1,457	1,248	1,254	1,113	1,044	982	1,009
Inguinal hernia 550	2,404	1,231	636	547	383	324	280
Noninfectious enteritis and colitis 555–558	3,459	2,372	2,031	2,069	1,814	1,948	1,732
Cholelithiasis 574	4,254	3,558	3,162	3,055	2,925	2,745	2,236
Diseases of the genitourinary system 580–629	20,068	14,531	11,600	11,451	10,989	10,011	9,448
Calculus of kidney and ureter 592	1,542	1,217	884	847	838	663	678
Hyperplasia of prostate 600	2,459	1,572	1,550	1,299	1,283	1,215	971
Complications of pregnancy, childbirth, and the puerperium ¹ 630–676	2,531	2,461	2,286	2,119	1,913	2,105	1,703
Abortions and ectopic and molar pregnancies 630–639	1,129	821	609	531	438	432	352
Diseases of the skin and subcutaneous tissue 680–709	4,803	4,292	3,710	3,857	3,670	3,889	3,583
Cellulitis and abscess 681–682	1,618	1,968	1,963	2,208	2,059	2,121	2,070
Diseases of the musculoskeletal system and connective tissue 710–739	18,679	14,609	10,403	10,231	10,222	10,224	10,017
Arthropathies and related disorders 710–719	5,090	3,584	3,416	3,321	3,752	3,891	4,027
Intervertebral disc disorders 722	3,791	3,693	2,466	2,149	2,167	1,955	1,786
Congenital anomalies 740–759	2,265	1,506	1,349	1,211	1,099	1,187	1,212
Certain conditions originating in the perinatal period 760–779	787	2,062	1,968	1,720	1,657	1,572	1,743
Symptoms, signs, and ill-defined conditions 780–799	2,897	2,023	1,319	1,243	1,163	1,168	1,038
Injury and poisoning 800–999	27,640	21,917	19,147	19,086	18,891	19,138	16,856
Fractures, all sites 800–829	12,583	9,864	8,558	8,691	8,435	8,733	7,842
Fracture of neck of femur 820	4,333	3,784	3,405	3,492	3,610	3,692	3,250
Intracranial injuries (excluding those with skull fracture) 850–854	1,665	1,497	1,108	1,302	1,016	1,041	839
Lacerations and open wounds 870–904	1,720	1,196	957	838	1,031	940	684
Supplementary classifications V01–V82	16,337	14,288	14,023	14,303	14,212	14,504	13,542
Females with deliveries V27	14,158	12,640	11,029	11,468	11,225	11,028	10,040

¹The first-listed diagnoses for females with deliveries is coded V27, shown under "Supplementary classifications."

NOTE: See "Medical Coding and Edit," appendix I, for information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 11. Rate of days of care for discharges from short-stay hospitals by first-listed diagnosis: United States, 1980, 1985, and 1988–92

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

First-listed diagnosis and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Rate of days of care per 10,000 population						
All conditions	12,166.8	9,576.6	8,388.1	8,192.6	7,968.6	7,946.0	7,510.4
Infectious and parasitic diseases 001–139	199.9	197.5	230.8	226.8	271.4	256.7	252.5
Septicemia 038	37.6	75.0	102.3	88.6	115.4	111.3	118.9
Neoplasms 140–239	1,152.6	835.7	732.7	680.9	676.9	655.1	606.7
Malignant neoplasms 140–208,230–234	987.2	719.7	645.6	605.5	593.0	582.8	529.9
Malignant neoplasm of large intestine and rectum 153–154,197.5	139.3	102.9	88.6	95.3	96.9	97.7	72.9
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	157.8	122.1	92.0	84.4	79.2	81.2	70.3
Malignant neoplasm of breast 174–175,198.81	103.3	63.1	40.8	36.0	30.3	27.8	27.4
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	165.4	116.0	87.2	75.4	83.9	72.3	76.8
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	486.3	332.1	320.6	306.5	307.2	322.9	295.4
Diabetes mellitus 250	299.4	165.1	153.8	134.9	133.0	121.4	129.2
Volume depletion 276.5	39.7	62.7	77.4	78.8	84.1	98.9	78.3
Diseases of the blood and blood-forming organs 280–289	107.3	86.8	75.2	77.8	75.8	86.3	76.9
Mental disorders 290–319	867.8	887.1	837.6	785.4	759.8	756.9	733.0
Psychoses 290–299	331.5	441.7	486.5	456.6	478.7	485.0	463.3
Alcohol dependence syndrome 303	196.1	176.5	108.9	94.3	95.5	86.5	96.2
Diseases of the nervous system and sense organs 320–389	425.4	279.2	205.4	184.7	172.3	170.4	154.1
Diseases of the central nervous system 320–336,340–349	193.8	173.2	134.9	119.8	119.3	116.7	109.3
Diseases of the ear and mastoid process 380–389	56.6	30.8	20.6	18.8	17.6	16.3	15.0
Diseases of the circulatory system 390–459	2,279.5	1,826.4	1,644.3	1,602.9	1,529.7	1,555.1	1,553.4
Heart disease 391–392.0,393–398,402,404,410–416,420–429	1,351.8	1,104.2	1,065.9	1,007.9	991.2	1,008.9	1,035.7
Acute myocardial infarction 410	240.7	302.8	264.9	242.6	229.0	226.1	239.0
Coronary atherosclerosis 414.0	249.3	85.3	103.0	102.8	96.6	109.1	92.4
Other ischemic heart disease 411–413,414.1–414.9	269.4	227.7	200.6	190.1	181.8	176.5	190.6
Cardiac dysrhythmias 427	131.3	133.3	113.6	114.4	112.8	112.7	111.8
Congestive heart failure 428.0	184.1	188.8	229.0	219.8	226.2	242.2	256.7
Cerebrovascular disease 430–438	448.3	406.4	313.5	331.7	311.9	311.5	288.0
Diseases of the respiratory system 460–519	959.5	829.0	800.4	821.3	824.8	824.2	779.2
Acute respiratory infections 460–466	108.1	87.8	94.0	95.5	100.6	98.5	59.0
Chronic disease of tonsils and adenoids 474	38.6	18.5	9.9	6.5	5.2	3.6	3.8
Pneumonia 480–486	288.0	287.3	321.3	340.4	352.9	357.4	346.8
Asthma 493	107.9	96.3	93.9	86.9	89.7	88.8	79.2
Diseases of the digestive system 520–579	1,433.5	1,013.9	831.1	845.6	774.9	772.1	726.0
Ulcers of the stomach and small intestine 531–534	137.4	88.4	76.2	76.8	64.3	65.6	63.4
Appendicitis 540–543	64.6	52.9	51.6	45.4	42.2	39.2	39.8
Inguinal hernia 550	106.5	52.1	26.2	22.3	15.5	12.9	11.0
Noninfectious enteritis and colitis 555–558	153.3	100.4	83.6	84.4	73.2	77.7	68.3
Cholelithiasis 574	188.5	150.6	130.2	124.6	118.1	109.6	88.2
Diseases of the genitourinary system 580–629	889.4	615.1	477.7	467.1	443.5	399.5	372.7
Calculus of kidney and ureter 592	68.3	51.5	36.4	34.5	33.8	26.5	26.7
Hyperplasia of prostate 600	109.0	66.6	63.8	53.0	51.8	48.5	38.3
Complications of pregnancy, childbirth, and the puerperium ¹ 630–676	112.2	104.2	94.1	86.5	77.2	84.0	67.2
Abortions and ectopic and molar pregnancies 630–639	50.0	34.8	25.1	21.7	17.7	17.2	13.9
Diseases of the skin and subcutaneous tissue 680–709	212.9	181.7	152.8	157.4	148.1	155.2	141.3
Cellulitis and abscess 681–682	71.7	83.3	80.8	90.1	83.1	84.6	81.6
Diseases of the musculoskeletal system and connective tissue 710–739	827.9	618.5	428.4	417.4	412.6	408.0	395.2
Arthropathies and related disorders 710–719	225.6	151.7	140.7	135.5	151.4	155.3	158.9
Intervertebral disc disorders 722	168.0	156.4	101.6	87.7	87.4	78.0	70.5
Congenital anomalies 740–759	100.4	63.7	55.6	49.4	44.4	47.4	47.8
Certain conditions originating in the perinatal period 760–779	34.9	87.3	81.0	70.2	66.9	62.8	68.7
Symptoms, signs, and ill-defined conditions 780–799	128.4	85.7	54.3	50.7	47.0	46.6	40.9
Injury and poisoning 800–999	1,225.0	927.8	788.5	778.6	762.5	763.8	664.9
Fractures, all sites 800–829	557.7	417.6	352.4	354.5	340.5	348.5	309.3
Fracture of neck of femur 820	192.1	160.2	140.2	142.5	145.7	147.3	128.2
Intracranial injuries (excluding those with skull fracture) 850–854	73.8	63.4	45.6	53.1	41.0	41.6	33.1
Lacerations and open wounds 870–904	76.2	50.6	39.4	34.2	41.6	37.5	27.0
Supplementary classifications V01–V82	724.1	604.8	577.5	583.5	573.6	578.9	534.2
Females with deliveries V27	627.5	535.1	454.2	467.8	453.1	440.1	396.1

¹The first-listed diagnoses for females with deliveries is coded V27, shown under "Supplementary classifications."

NOTE: See "Medical Coding and Edit," appendix I, for information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 12. Average length of stay for discharges from short-stay hospitals by first-listed diagnosis: United States, 1980, 1985, and 1988–92

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

First-listed diagnosis and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Average length of stay in days						
All conditions	7.3	6.5	6.5	6.5	6.4	6.4	6.2
Infectious and parasitic diseases 001–139	6.9	7.0	8.1	7.7	9.1	8.5	7.9
Septicemia 038	14.3	11.9	12.8	11.1	13.3	11.6	10.8
Neoplasms 140–239	10.5	8.2	8.5	8.3	8.5	8.2	7.7
Malignant neoplasms 140–208,230–234	11.9	8.9	9.4	9.2	9.4	9.2	8.5
Malignant neoplasm of large intestine and rectum 153–154,197.5	15.7	12.3	13.1	14.0	13.7	14.6	11.5
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	12.8	9.2	9.5	8.6	8.5	8.6	8.3
Malignant neoplasm of breast 174–175,198.81	10.9	7.2	5.6	5.4	4.6	4.4	4.1
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	6.2	5.5	4.9	4.7	5.3	4.5	4.6
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	9.6	7.3	7.5	6.8	7.0	7.1	6.4
Diabetes mellitus 250	10.5	8.1	8.2	7.6	7.8	7.1	6.9
Volume depletion 276.5	8.9	6.2	7.1	6.8	6.5	7.5	6.4
Diseases of the blood and blood-forming organs 280–289	7.2	6.0	6.2	6.0	5.8	6.2	6.0
Mental disorders 290–319	11.6	12.3	13.0	12.7	12.2	11.4	10.9
Psychoses 290–299	14.8	14.9	15.1	14.5	14.6	13.5	12.9
Alcohol dependence syndrome 303	10.1	10.7	11.2	10.6	9.9	9.5	9.4
Diseases of the nervous system and sense organs 320–389	5.4	5.4	5.4	5.5	5.5	5.7	5.5
Diseases of the central nervous system 320–336,340–349	10.7	9.6	9.4	8.6	8.6	8.8	8.8
Diseases of the ear and mastoid process 380–389	3.1	2.8	2.5	2.6	2.8	2.8	2.6
Diseases of the circulatory system 390–459	10.0	7.9	7.5	7.6	7.3	7.3	7.0
Heart disease 391–392.0,393–398,402,404,410–416,420–429	9.5	7.3	7.1	7.0	6.9	6.8	6.7
Acute myocardial infarction 410	12.6	9.5	9.0	8.6	8.4	8.1	8.1
Coronary atherosclerosis 414.0	10.0	6.6	6.1	6.2	5.8	7.1	5.6
Other ischemic heart disease 411–413,414.1–414.9	7.7	5.4	5.3	5.2	5.2	5.0	5.0
Cardiac dysrhythmias 427	7.6	6.2	5.6	5.8	5.8	5.3	5.2
Congestive heart failure 428.0	10.4	8.0	8.8	8.4	8.0	7.9	7.9
Cerebrovascular disease 430–438	12.7	10.5	9.7	10.2	9.5	9.3	8.8
Diseases of the respiratory system 460–519	6.3	6.0	6.6	6.7	6.9	6.8	6.8
Acute respiratory infections 460–466	4.7	4.5	5.1	4.9	5.1	4.8	4.0
Chronic disease of tonsils and adenoids 474	1.9	1.5	1.2	1.2	1.3	1.2	1.3
Pneumonia 480–486	8.3	7.9	8.4	8.1	8.3	8.2	8.3
Asthma 493	6.0	4.9	4.8	4.5	4.7	4.5	4.3
Diseases of the digestive system 520–579	7.0	6.2	6.2	6.3	5.9	5.9	5.8
Ulcers of the stomach and small intestine 531–534	8.6	7.1	7.2	7.3	6.5	6.9	6.9
Appendicitis 540–543	5.5	5.0	5.2	4.9	4.4	4.2	4.4
Inguinal hernia 550	4.7	3.2	2.5	2.6	2.3	2.4	2.5
Noninfectious enteritis and colitis 555–558	5.6	5.0	5.6	5.5	4.9	5.6	4.9
Cholelithiasis 574	9.3	7.5	6.5	6.3	5.8	5.0	4.4
Diseases of the genitourinary system 580–629	5.6	5.2	5.3	5.2	5.1	4.8	4.7
Calculus of kidney and ureter 592	5.0	3.7	3.1	3.0	3.1	2.7	3.1
Hyperplasia of prostate 600	8.9	6.4	6.3	5.2	4.9	5.3	4.4
Complications of pregnancy, childbirth, and the puerperium ¹ 630–676	2.5	2.5	2.7	2.8	2.6	2.9	2.6
Abortions and ectopic and molar pregnancies 630–639	2.1	2.1	2.3	2.3	2.1	2.4	2.0
Diseases of the skin and subcutaneous tissue 680–709	8.0	7.9	8.1	8.0	7.9	8.4	7.8
Cellulitis and abscess 681–682	8.0	7.7	7.0	7.3	7.2	7.1	6.7
Diseases of the musculoskeletal system and connective tissue 710–739	8.3	6.7	6.3	6.5	6.4	6.4	6.2
Arthropathies and related disorders 710–719	9.4	7.7	7.4	7.7	7.8	7.4	7.3
Intervertebral disc disorders 722	9.9	7.3	5.9	5.4	5.1	5.0	4.4
Congenital anomalies 740–759	6.6	5.6	5.9	5.9	6.0	6.2	6.3
Certain conditions originating in the perinatal period 760–779	8.7	13.0	12.4	11.3	10.2	10.7	12.4
Symptoms, signs, and ill-defined conditions 780–799	4.5	3.8	3.3	3.3	2.8	3.0	3.0
Injury and poisoning 800–999	7.7	6.6	6.8	6.8	6.8	6.9	6.2
Fractures, all sites 800–829	10.8	8.7	8.4	8.5	8.3	8.4	7.7
Fracture of neck of femur 820	20.6	14.7	13.4	13.2	12.8	12.3	11.7
Intracranial injuries (excluding those with skull fracture) 850–854	5.6	5.6	5.5	7.0	5.5	5.8	5.5
Lacerations and open wounds 870–904	5.1	4.3	4.1	3.7	4.3	4.9	3.8
Supplementary classifications V01–V82	3.7	3.3	3.3	3.2	3.2	3.3	3.1
Females with deliveries V27	3.8	3.3	2.9	2.9	2.8	2.8	2.6

¹The first-listed diagnoses for females with deliveries is coded V27, shown under "Supplementary classifications."

NOTE: See "Medical Coding and Edit," appendix I, for information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 13. Number of male discharges from short-stay hospitals by first-listed diagnosis: United States, 1980, 1985, and 1988–92

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

First-listed diagnosis and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Number of male discharges in thousands						
All conditions	15,145	14,160	12,642	12,583	12,280	12,478	12,406
Infectious and parasitic diseases 001–139	309	308	333	362	356	363	403
Septicemia 038	28	64	86	96	99	103	131
Neoplasms 140–239	1,028	1,008	851	842	804	860	845
Malignant neoplasms 140–208,230–234	878	892	772	770	730	781	765
Malignant neoplasm of large intestine and rectum 153–154,197.5	91	93	77	84	85	86	78
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	193	206	136	147	141	147	124
Malignant neoplasm of breast 174–175,198.81	*	*	*	*	*	*	*
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	150	116	78	72	74	78	79
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	396	409	414	453	436	437	487
Diabetes mellitus 250	245	194	209	197	190	185	207
Volume depletion 276.5	35	93	102	126	127	121	122
Diseases of the blood and blood-forming organs 280–289	145	149	140	154	158	167	137
Mental disorders 290–319	885	918	765	778	777	840	868
Psychoses 290–299	248	325	341	351	360	416	408
Alcohol dependence syndrome 303	342	312	179	165	184	172	196
Diseases of the nervous system and sense organs 320–389	794	537	430	364	356	352	330
Diseases of the central nervous system 320–336,340–349	194	196	169	158	155	160	147
Diseases of the ear and mastoid process 380–389	205	117	99	87	77	72	72
Diseases of the circulatory system 390–459	2,590	2,783	2,722	2,670	2,668	2,728	2,866
Heart disease 391–392.0,393–398,402,404,410–416,420–429	1,688	1,910	1,955	1,892	1,913	1,977	2,083
Acute myocardial infarction 410	272	466	451	421	413	422	458
Coronary atherosclerosis 414.0	303	190	278	282	277	263	285
Other ischemic heart disease 411–413,414.1–414.9	474	549	491	471	465	461	505
Cardiac dysrhythmias 427	185	244	228	220	244	249	256
Congestive heart failure 428.0	176	247	277	304	315	360	373
Cerebrovascular disease 430–438	371	416	336	344	359	370	375
Diseases of the respiratory system 460–519	1,755	1,591	1,464	1,507	1,430	1,508	1,436
Acute respiratory infections 460–466	251	236	224	244	235	258	187
Chronic disease of tonsils and adenoids 474	192	124	87	58	41	32	32
Pneumonia 480–486	414	433	472	544	530	545	535
Asthma 493	180	195	210	204	191	221	201
Diseases of the digestive system 520–579	2,171	1,839	1,515	1,501	1,449	1,455	1,392
Ulcers of the stomach and small intestine 531–534	191	156	137	134	131	125	115
Appendicitis 540–543	145	143	141	135	138	129	135
Inguinal hernia 550	458	343	232	193	149	120	98
Noninfectious enteritis and colitis 555–558	255	197	132	150	151	142	134
Cholelithiasis 574	115	140	132	132	132	159	154
Diseases of the genitourinary system 580–629	1,100	958	828	851	803	781	730
Calculus of kidney and ureter 592	210	215	183	180	177	160	143
Hyperplasia of prostate 600	276	246	247	249	259	229	221
Diseases of the skin and subcutaneous tissue 680–709	288	268	234	238	234	245	230
Cellulitis and abscess 681–682	110	141	145	149	151	165	158
Diseases of the musculoskeletal system and connective tissue 710–739	971	939	774	745	735	738	714
Arthropathies and related disorders 710–719	215	188	191	193	197	228	212
Intervertebral disc disorders 722	212	281	247	219	241	225	222
Congenital anomalies 740–759	167	156	128	112	105	101	102
Certain conditions originating in the perinatal period 760–779	52	82	92	88	93	79	81
Symptoms, signs, and ill-defined conditions 780–799	291	260	200	191	201	202	173
Injury and poisoning 800–999	2,025	1,800	1,535	1,514	1,476	1,437	1,405
Fractures, all sites 800–829	582	550	506	480	466	481	465
Fracture of neck of femur 820	52	62	68	61	72	80	73
Intracranial injuries (excluding those with skull fracture) 850–854	179	162	124	114	112	106	97
Lacerations and open wounds 870–904	255	203	176	171	179	137	130
Supplementary classifications V01–V82	178	156	217	214	198	188	207

* Figure does not meet standard of reliability or precision.

NOTE: See "Medical Coding and Edit," appendix I, for information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 14. Rate of male discharges from short-stay hospitals by first-listed diagnosis: United States, 1980, 1985, and 1988–92

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

First-listed diagnosis and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Rate of male discharges per 10,000 population						
All conditions	1,390.4	1,240.2	1,075.3	1,059.5	1,022.2	1,026.7	1,008.0
Infectious and parasitic diseases 001–139	28.4	27.0	28.3	30.5	29.7	29.8	32.8
Septicemia 038	2.5	5.6	7.3	8.1	8.3	8.5	10.6
Neoplasms 140–239	94.4	88.2	72.4	70.9	66.9	70.7	68.6
Malignant neoplasms 140–208,230–234	80.6	78.1	65.7	64.8	60.8	64.3	62.2
Malignant neoplasm of large intestine and rectum 153–154,197.5	8.4	8.2	6.6	7.1	7.0	7.0	6.3
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	17.7	18.0	11.5	12.4	11.8	12.1	10.1
Malignant neoplasm of breast 174–175,198.81	*	*	*	*	*	*	*
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	13.7	10.2	6.7	6.1	6.2	6.4	6.4
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	36.3	35.8	35.2	38.1	36.3	35.9	39.5
Diabetes mellitus 250	22.5	17.0	17.7	16.6	15.8	15.2	16.8
Volume depletion 276.5	3.2	8.1	8.7	10.6	10.6	10.0	9.9
Diseases of the blood and blood-forming organs 280–289	13.3	13.0	11.9	12.9	13.2	13.7	11.2
Mental disorders 290–319	81.3	80.4	65.1	65.5	64.7	69.1	70.5
Psychoses 290–299	22.7	28.5	29.0	29.5	30.0	34.2	33.2
Alcohol dependence syndrome 303	31.4	27.4	15.2	13.9	15.3	14.2	15.9
Diseases of the nervous system and sense organs 320–389	72.9	47.0	36.6	30.6	29.6	28.9	26.8
Diseases of the central nervous system 320–336,340–349	17.8	17.2	14.4	13.3	12.9	13.1	11.9
Diseases of the ear and mastoid process 380–389	18.8	10.3	8.4	7.3	6.4	6.0	5.8
Diseases of the circulatory system 390–459	237.8	243.8	231.5	224.8	222.1	224.4	232.9
Heart disease 391–392.0,393–398,402,404,410–416,420–429	155.0	167.3	166.3	159.3	159.3	162.6	169.3
Acute myocardial infarction 410	25.0	40.8	38.4	35.4	34.4	34.7	37.2
Coronary atherosclerosis 414.0	27.8	16.7	23.6	23.7	23.0	21.7	23.2
Other ischemic heart disease 411–413,414.1–414.9	43.5	48.1	41.7	39.7	38.7	37.9	41.0
Cardiac dysrhythmias 427	17.0	21.4	19.4	18.5	20.3	20.5	20.8
Congestive heart failure 428.0	16.2	21.6	23.6	25.6	26.2	29.6	30.3
Cerebrovascular disease 430–438	34.0	36.4	28.5	29.0	29.9	30.4	30.5
Diseases of the respiratory system 460–519	161.1	139.3	124.5	126.9	119.0	124.1	116.7
Acute respiratory infections 460–466	23.0	20.6	19.1	20.6	19.6	21.2	15.2
Chronic disease of tonsils and adenoids 474	17.7	10.8	7.4	4.9	3.4	2.6	2.6
Pneumonia 480–486	38.1	37.9	40.2	45.8	44.1	44.8	43.5
Asthma 493	16.6	17.1	17.8	17.2	15.9	18.2	16.3
Diseases of the digestive system 520–579	199.3	161.0	128.8	126.4	120.7	119.7	113.1
Ulcers of the stomach and small intestine 531–534	17.5	13.6	11.7	11.3	10.9	10.3	9.3
Appendicitis 540–543	13.3	12.5	12.0	11.4	11.5	10.6	11.0
Inguinal hernia 550	42.0	30.0	19.7	16.2	12.4	9.9	7.9
Noninfectious enteritis and colitis 555–558	23.4	17.3	11.2	12.6	12.5	11.7	10.9
Cholelithiasis 574	10.6	12.3	11.2	11.1	11.0	13.1	12.5
Diseases of the genitourinary system 580–629	101.0	83.9	70.4	71.7	66.8	64.2	59.3
Calculus of kidney and ureter 592	19.3	18.8	15.6	15.2	14.7	13.2	11.6
Hyperplasia of prostate 600	25.3	21.5	21.0	20.9	21.6	18.9	18.0
Diseases of the skin and subcutaneous tissue 680–709	26.5	23.5	19.9	20.0	19.5	20.1	18.7
Cellulitis and abscess 681–682	10.1	12.4	12.3	12.5	12.6	13.6	12.9
Diseases of the musculoskeletal system and connective tissue 710–739	89.2	82.3	65.9	62.7	61.2	60.7	58.0
Arthropathies and related disorders 710–719	19.8	16.5	16.3	16.3	16.4	18.7	17.2
Intervertebral disc disorders 722	19.5	24.6	21.0	18.5	20.1	18.5	18.0
Congenital anomalies 740–759	15.3	13.7	10.9	9.4	8.8	8.3	8.3
Certain conditions originating in the perinatal period 760–779	4.8	7.2	7.8	7.4	7.7	6.5	6.6
Symptoms, signs, and ill-defined conditions 780–799	26.8	22.7	17.0	16.0	16.7	16.6	14.0
Injury and poisoning 800–999	185.9	157.6	130.6	127.5	122.9	118.2	114.1
Fractures, all sites 800–829	53.5	48.2	43.0	40.5	38.8	39.6	37.8
Fracture of neck of femur 820	4.7	5.5	5.8	5.2	6.0	6.6	5.9
Intracranial injuries (excluding those with skull fracture) 850–854	16.5	14.2	10.5	9.6	9.3	8.7	7.9
Lacerations and open wounds 870–904	23.4	17.8	15.0	14.4	14.9	11.3	10.5
Supplementary classifications V01–V82	16.4	13.6	18.4	18.0	16.5	15.5	16.8

*Figure does not meet standard of reliability or precision.

NOTE: See "Medical Coding and Edit," appendix I, for information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 15. Number of female discharges from short-stay hospitals by first-listed diagnosis: United States, 1980, 1985, and 1988–92

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

First-listed diagnosis and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Number of female discharges in thousands						
All conditions	22,686	20,896	18,504	18,364	18,508	18,620	18,545
Infectious and parasitic diseases 001–139	340	361	359	363	380	396	404
Septicemia 038	32	85	108	100	116	137	148
Neoplasms 140–239	1,448	1,403	1,247	1,159	1,161	1,141	1,154
Malignant neoplasms 140–208,230–234	994	1,019	898	838	841	812	812
Malignant neoplasm of large intestine and rectum 153–154,197.5	109	104	87	83	90	82	83
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	84	110	100	92	90	89	91
Malignant neoplasm of breast 174–175,198.81	212	207	176	162	163	156	169
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	454	384	350	320	319	329	342
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	750	659	623	644	653	706	691
Diabetes mellitus 250	400	286	245	241	230	245	269
Volume depletion 276.5	65	147	163	159	192	208	186
Diseases of the blood and blood-forming organs 280–289	191	193	155	164	166	181	185
Mental disorders 290–319	807	782	793	736	761	817	843
Psychoses 290–299	259	376	440	422	452	486	500
Alcohol dependence syndrome 303	97	76	58	53	55	56	63
Diseases of the nervous system and sense organs 320–389	968	674	492	455	414	404	378
Diseases of the central nervous system 320–336,340–349	214	229	179	183	187	171	167
Diseases of the ear and mastoid process 380–389	200	142	102	90	81	72	73
Diseases of the circulatory system 390–459	2,549	2,686	2,574	2,527	2,493	2,611	2,730
Heart disease 391–392.0,393–398,402,404,410–416,420–429	1,513	1,674	1,686	1,642	1,643	1,727	1,852
Acute myocardial infarction 410	159	289	265	274	261	275	289
Coronary atherosclerosis 414.0	259	114	134	125	133	121	130
Other ischemic heart disease 411–413,414.1–414.9	319	443	431	422	406	415	467
Cardiac dysrhythmias 427	204	267	263	267	239	287	286
Congestive heart failure 428.0	224	310	357	339	386	405	449
Cerebrovascular disease 430–438	425	500	448	451	452	466	454
Diseases of the respiratory system 460–519	1,691	1,647	1,473	1,489	1,536	1,544	1,486
Acute respiratory infections 460–466	272	229	221	230	252	261	189
Chronic disease of tonsils and adenoids 474	265	164	110	76	61	44	41
Pneumonia 480–486	368	421	452	489	522	543	524
Asthma 493	228	266	270	271	285	269	263
Diseases of the digestive system 520–579	2,479	2,034	1,753	1,794	1,790	1,801	1,795
Ulcers of the stomach and small intestine 531–534	172	137	118	122	113	112	117
Appendicitis 540–543	122	107	101	92	101	103	92
Inguinal hernia 550	51	42	25	20	18	14	14
Noninfectious enteritis and colitis 555–558	366	277	230	228	223	209	220
Cholelithiasis 574	342	333	352	351	374	393	358
Diseases of the genitourinary system 580–629	2,500	1,848	1,376	1,340	1,373	1,291	1,289
Calculus of kidney and ureter 592	99	110	104	98	95	81	75
Complications of pregnancy, childbirth, and the puerperium ¹ 630–676	1,010	968	837	756	734	723	662
Abortions and ectopic and molar pregnancies 630–639	531	382	266	229	208	180	179
Diseases of the skin and subcutaneous tissue 680–709	309	273	226	242	228	217	232
Cellulitis and abscess 681–682	92	115	135	154	137	132	148
Diseases of the musculoskeletal system and connective tissue 710–739	1,273	1,231	872	825	857	862	896
Arthropathies and related disorders 710–719	328	276	267	237	283	298	342
Intervertebral disc disorders 722	172	227	170	177	183	166	185
Congenital anomalies 740–759	177	113	98	95	77	91	89
Certain conditions originating in the perinatal period 760–779	39	77	66	63	70	68	60
Symptoms, signs, and ill-defined conditions 780–799	346	275	198	190	209	184	177
Injury and poisoning 800–999	1,568	1,503	1,281	1,292	1,298	1,331	1,296
Fractures, all sites 800–829	580	579	508	541	551	553	552
Fracture of neck of femur 820	158	196	186	204	209	219	205
Intracranial injuries (excluding those with skull fracture) 850–854	116	107	78	73	72	74	56
Lacerations and open wounds 870–904	79	74	56	53	61	56	50
Supplementary classifications V01–V82	4,243	4,168	4,078	4,230	4,309	4,250	4,176
Females with deliveries V27	3,762	3,854	3,781	3,937	4,025	3,973	3,910

¹The first-listed diagnoses for females with deliveries is coded V27, shown under "Supplementary classifications."

NOTE: See "Medical Coding and Edit," appendix I, for information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 16. Rate of female discharges from short-stay hospitals by first-listed diagnosis: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Diagnostic grouping and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modifications (ICD–9–CM)*]

First-listed diagnosis and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Rate of female discharges per 10,000 population						
All conditions	1,944.0	1,712.2	1,477.4	1,453.2	1,450.2	1,443.3	1,422.0
Infectious and parasitic diseases 001–139	29.1	29.6	28.7	28.8	29.8	30.7	31.0
Septicemia 038	2.7	6.9	8.6	7.9	9.1	10.6	11.4
Neoplasms 140–239	124.1	115.0	99.6	91.7	90.9	88.4	88.5
Malignant neoplasms 140–208,230–234	85.2	83.5	71.7	66.3	65.9	63.0	62.3
Malignant neoplasm of large intestine and rectum 153–154,197.5	9.3	8.5	7.0	6.6	7.1	6.4	6.4
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	7.2	9.0	8.0	7.3	7.1	6.9	7.0
Malignant neoplasm of breast 174–175,198.81	18.2	16.9	14.1	12.8	12.8	12.1	13.0
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	38.9	31.5	27.9	25.3	25.0	25.5	26.3
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	64.2	54.0	49.8	50.9	51.2	54.7	53.0
Diabetes mellitus 250	34.3	23.4	19.6	19.0	18.0	19.0	20.6
Volume depletion 276.5	5.6	12.0	13.0	12.6	15.0	16.1	14.2
Diseases of the blood and blood-forming organs 280–289	16.3	15.8	12.4	13.0	13.0	14.1	14.2
Mental disorders 290–319	69.2	64.1	63.3	58.2	59.6	63.4	64.7
Psychoses 290–299	22.2	30.8	35.1	33.4	35.4	37.7	38.3
Alcohol dependence syndrome 303	8.3	6.2	4.6	4.2	4.3	4.3	4.8
Diseases of the nervous system and sense organs 320–389	83.0	55.2	39.3	36.0	32.5	31.3	29.0
Diseases of the central nervous system 320–336,340–349	18.3	18.7	14.3	14.4	14.6	13.3	12.8
Diseases of the ear and mastoid process 380–389	17.2	11.6	8.1	7.1	6.3	5.6	5.6
Diseases of the circulatory system 390–459	218.5	220.1	205.5	199.9	195.3	202.3	209.4
Heart disease 391–392.0,393–398,402,404,410–416,420–429	129.6	137.1	134.6	129.9	128.7	133.9	142.0
Acute myocardial infarction 410	13.6	23.7	21.2	21.7	20.5	21.3	22.1
Coronary atherosclerosis 414.0	22.2	9.3	10.7	9.9	10.4	9.3	10.0
Other ischemic heart disease 411–413,414.1–414.9	27.3	36.3	34.4	33.4	31.8	32.1	35.8
Cardiac dysrhythmias 427	17.5	21.8	21.0	21.1	18.7	22.3	21.9
Congestive heart failure 428.0	19.2	25.4	28.5	26.8	30.2	31.4	34.4
Cerebrovascular disease 430–438	36.5	41.0	35.8	35.7	35.5	36.1	34.8
Diseases of the respiratory system 460–519	144.9	134.9	117.6	117.9	120.3	119.7	114.0
Acute respiratory infections 460–466	23.3	18.7	17.7	18.2	19.8	20.2	14.5
Chronic disease of tonsils and adenoids 474	22.7	13.4	8.7	6.0	4.8	3.4	3.2
Pneumonia 480–486	31.5	34.5	36.1	38.7	40.9	42.1	40.1
Asthma 493	19.5	21.8	21.5	21.5	22.3	20.9	20.1
Diseases of the digestive system 520–579	212.4	166.7	140.0	141.9	140.2	139.6	137.7
Ulcers of the stomach and small intestine 531–534	14.7	11.2	9.5	9.7	8.9	8.7	8.9
Appendicitis 540–543	10.4	8.8	8.1	7.3	7.9	8.0	7.1
Inguinal hernia 550	4.4	3.4	2.0	1.6	1.4	1.1	1.1
Noninfectious enteritis and colitis 555–558	31.4	22.7	18.4	18.0	17.4	16.2	16.8
Cholelithiasis 574	29.3	27.3	28.1	27.7	29.3	30.4	27.5
Diseases of the genitourinary system 580–629	214.2	151.4	109.9	106.0	107.6	100.0	98.8
Calculus of kidney and ureter 592	8.5	9.0	8.3	7.7	7.5	6.3	5.8
Complications of pregnancy, childbirth, and the puerperium ¹ 630–676	86.5	79.3	66.8	59.8	57.5	56.0	50.8
Abortions and ectopic and molar pregnancies 630–639	45.5	31.3	21.2	18.1	16.3	13.9	13.7
Diseases of the skin and subcutaneous tissue 680–709	26.5	22.4	18.0	19.2	17.8	16.8	17.8
Cellulitis and abscess 681–682	7.9	9.4	10.8	12.2	10.7	10.2	11.4
Diseases of the musculoskeletal system and connective tissue 710–739	109.1	100.9	69.6	65.3	67.1	66.8	68.7
Arthropathies and related disorders 710–719	28.1	22.6	21.3	18.8	22.2	23.1	26.3
Intervertebral disc disorders 722	14.8	18.6	13.6	14.0	14.4	12.9	14.2
Congenital anomalies 740–759	15.1	9.3	7.9	7.5	6.0	7.1	6.8
Certain conditions originating in the perinatal period 760–779	3.3	6.3	5.3	5.0	5.5	5.3	4.6
Symptoms, signs, and ill-defined conditions 780–799	29.6	22.5	15.8	15.0	16.4	14.3	13.6
Injury and poisoning 800–999	134.4	123.2	102.3	102.3	101.7	103.2	99.4
Fractures, all sites 800–829	49.7	47.4	40.6	42.8	43.2	42.9	42.3
Fracture of neck of femur 820	13.6	16.1	14.9	16.1	16.4	17.0	15.7
Intracranial injuries (excluding those with skull fracture) 850–854	9.9	8.7	6.2	5.7	5.6	5.7	4.3
Lacerations and open wounds 870–904	6.8	6.1	4.5	4.2	4.8	4.4	3.8
Supplementary classifications V01–V82	363.5	341.6	325.6	334.7	337.6	329.4	320.2
Females with deliveries V27	322.4	315.8	301.9	311.5	315.4	307.9	299.8

¹The first-listed diagnoses for females with deliveries is coded V27, shown under "Supplementary classifications."

NOTE: See "Medical Coding and Edit," appendix I, for information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 17. Number of discharges from short-stay hospitals with and without procedures and percent with procedures: United States, 1980, 1985, and 1988–92

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

Year	All discharges	Discharges without procedures	Discharges with procedures ¹			
			Total	With surgical procedures	Total	With surgical procedures
			Number in thousands		Percent	
1980	37,832	18,065	19,766	17,005	52.2	44.9
1985 ²	35,056	14,406	20,651	16,097	58.9	45.9
1988	31,146	11,216	19,930	15,269	64.0	49.0
1989 ²	30,947	10,840	20,106	14,690	65.0	47.5
1990	30,788	10,562	20,226	14,563	65.7	47.3
1991 ²	31,098	10,121	20,977	14,628	67.5	47.0
1992	30,951	10,525	20,426	14,483	66.0	46.8

¹Procedures are classified for the National Hospital Discharge Survey as surgical or nonsurgical. This classification was revised in 1989. See [appendix II](#) for further information.

²Includes procedures not coded in previous years. See [appendix II](#).

Table 18. Number of all-listed procedures for discharges from short-stay hospitals by procedure category: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Groupings of procedures and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD–9–CM)*]

Procedure category and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992	
	Number of all-listed procedures in thousands							
All procedures	31,412	36,760	39,192	40,043	40,506	43,922	42,627	
Operations on the nervous system	01–05	728	898	896	909	952	970	921
Spinal tap	03.31	216	305	353	377	396	380	339
Operations on the endocrine system	06–07	117	95	111	113	96	103	102
Operations on the eye	08–16	1,050	718	547	448	350	399	332
Operations on the ear	18–20	415	256	198	168	137	129	121
Operations on the nose, mouth, and pharynx	21–29	1,603	1,173	820	734	585	541	533
Tonsillectomy with or without adenoidectomy	28.2–28.3	464	317	213	155	117	86	80
Operations on the respiratory system	30–34	868	981	991	1,051	975	956	1,031
Bronchoscopy with or without biopsy ¹	33.21–33.24,33.27	269	292	313	318	298	309	315
Operations on the cardiovascular system	35–39	1,352	2,414	3,626	3,722	3,881	4,123	4,424
Removal of coronary artery obstruction	36.0	*6	82	227	259	285	331	399
Coronary artery bypass graft ²	36.1	137	230	353	368	392	407	468
Cardiac catheterization	37.21–37.23	348	681	930	958	995	1,000	1,028
Insertion, replacement, removal, and revision of pacemaker leads or device	37.7–37.8	187	223	291	275	259	300	274
Shunt or vascular bypass	39.0–39.2	98	140	140	167	162	168	178
Hemodialysis	39.95	38	125	188	192	216	261	322
Operations on the hemic and lymphatic system	40–41	321	397	392	385	361	392	398
Operations on the digestive system	42–54	5,320	5,740	5,257	5,360	5,271	5,559	5,358
Endoscopy of small intestine with or without biopsy	45.11–45.14,45.16	282	537	595	752	785	804	864
Endoscopy of large intestine with or without biopsy	45.21–45.25	535	614	537	545	548	574	573
Partial excision of large intestine	45.7	139	182	202	197	204	220	217
Appendectomy, excluding incidental	47.0	291	283	273	253	274	255	261
Cholecystectomy	51.2	458	475	497	504	522	571	525
Repair of inguinal hernia	53.0–53.1	537	416	290	243	205	172	139
Lysis of peritoneal adhesions	54.5	228	309	296	329	323	339	344
Operations on the urinary system	55–59	1,921	1,729	1,706	1,594	1,664	1,558	1,413
Cystoscopy with or without biopsy	57.31–57.33	875	666	581	525	527	458	414
Operations on the male genital organs	60–64	799	744	633	648	594	584	539
Prostatectomy	60.2–60.6	335	367	358	376	364	363	353
Operations on the female genital organs	65–71	4,274	3,318	2,501	2,385	2,440	2,308	2,302
Oophorectomy and salpingo-oophorectomy	65.3–65.6	483	525	451	421	476	458	464
Bilateral destruction or occlusion of fallopian tubes	66.2–66.3	641	466	406	389	419	401	380
Hysterectomy	68.3–68.7	649	670	578	541	591	546	580
Dilation and curettage of uterus	69.0	1,251	597	279	265	220	196	173
Repair of cystocele and rectocele	70.5	162	165	136	135	137	139	141
Obstetrical procedures	72–75	3,603	4,304	6,042	6,383	6,792	6,867	6,664
Episiotomy with or without forceps or vacuum extraction	72.1,72.21,72.31,72.71,73.6	2,014	1,820	1,680	1,704	1,717	1,684	1,611
Artificial rupture of membranes	73.0	120	316	586	654	691	775	729
Cesarean section	74.0–74.2,74.4,74.99	619	877	933	938	945	933	921
Fetal EKG (scalp) and fetal monitoring, not otherwise specified	75.32,75.34	124	275	1,143	1,206	1,377	1,327	1,241
Repair of current obstetric laceration	75.5–75.6	355	548	690	762	795	795	790
Operations on the musculoskeletal system	76–84	3,215	3,523	3,143	3,171	3,132	3,323	3,266
Partial excision of bone	76.2–76.3,77.6–77.8	205	225	190	215	193	216	222
Open reduction of fracture with internal fixation	79.3	301	393	394	409	391	418	417
Excision or destruction of intervertebral disc	80.5	142	228	250	262	305	306	319
Total hip replacement ³	81.51	58	111	129	---	119	117	127
Total knee replacement	81.41,81.54	45	73	105	94	129	160	167
Operations on the integumentary system	85–86	1,896	1,653	1,475	1,428	1,387	1,324	1,371
Mastectomy	85.4	109	116	124	120	122	118	117
Debridement of wound, infection, or burn	86.22,86.28	196	265	322	351	332	326	308
Skin graft	86.6–86.7	183	157	148	124	110	99	108
Miscellaneous diagnostic and therapeutic procedures	87–99	3,930	8,819	10,854	11,544	11,890	14,785	13,854
Computerized axial tomography	87.03,87.41,87.71,88.01,88.38	306	1,378	1,613	1,519	1,506	1,459	1,266
Pyelogram	87.73–87.75	466	443	325	288	291	245	203
Arteriography and angiocardiography using contrast material	88.4–88.5	569	1,117	1,624	1,620	1,735	1,718	1,771
Diagnostic ultrasound	88.7	318	1,234	1,562	1,558	1,608	1,592	1,458
Circulatory monitoring	89.6	76	635	846	779	724	703	596
Radioisotope scan	92.0–92.1	525	838	704	635	603	539	464
Respiratory therapy	93.9,96.7	*7	62	272	927	1,164	1,214	1,195

--- Data not available.

*Figure does not meet standard of reliability or precision.

¹ICD–9–CM code 33.27 was not included in the category before 1987.

²Number of coronary artery bypass graft procedures. See [table 31](#) for number of discharges with coronary artery bypass grafts.

³Total hip replacement was not available in 1989 due to a change in codes. Before 1989, the ICD–9–CM code was 81.5.

NOTE: See “[Medical Coding and Edit](#),” appendix I, for additional information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 19. Rate of all-listed procedures for discharges from short-stay hospitals by procedure category: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Groupings of procedures and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD–9–CM)*]

Procedure category and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Rate of all-listed procedures per 100,000 population						
All procedures	13,922.3	15,561.8	16,140.4	16,335.2	16,349.3	17,529.3	16,815.7
Operations on the nervous system 01–05	322.6	380.1	369.0	370.9	384.1	387.3	363.2
Spinal tap 03.31	95.9	129.1	145.6	154.0	159.8	151.6	133.7
Operations on the endocrine system 06–07	51.9	40.2	45.6	46.2	38.6	41.0	40.0
Operations on the eye 08–16	465.3	304.1	225.2	182.7	141.1	159.2	130.9
Operations on the ear 18–20	183.9	108.5	81.3	68.6	55.1	51.6	47.7
Operations on the nose, mouth, and pharynx 21–29	710.5	496.6	337.9	299.5	236.2	216.1	210.1
Tonsillectomy with or without adenoidectomy 28.2–28.3	205.6	134.4	87.8	63.2	47.4	34.1	31.4
Operations on the respiratory system 30–34	384.5	415.1	408.2	428.7	393.6	381.7	406.7
Bronchoscopy with or without biopsy ¹ 33.21–33.24,33.27	119.2	123.6	128.7	129.9	120.3	123.4	124.4
Operations on the cardiovascular system 35–39	599.4	1,021.8	1,493.2	1,518.2	1,566.4	1,645.5	1,745.1
Removal of coronary artery obstruction 36.0	*2.6	34.7	93.3	105.6	115.2	131.9	157.2
Coronary artery bypass graft ² 36.1	60.8	97.5	145.4	150.2	158.3	162.6	184.8
Cardiac catheterization 37.21–37.23	154.4	288.1	382.9	390.7	401.8	399.1	405.6
Insertion, replacement, removal, and revision of pacemaker leads or device 37.7–37.8	83.0	94.6	119.8	112.1	104.5	119.6	108.1
Shunt or vascular bypass 39.0–39.2	43.6	59.1	57.7	68.3	65.2	67.2	70.3
Hemodialysis 39.95	17.0	52.8	77.4	78.4	87.3	104.0	127.2
Operations on the hemic and lymphatic system 40–41	142.5	168.0	161.6	157.0	145.7	156.3	156.8
Operations on the digestive system 42–54	2,357.9	2,430.1	2,165.1	2,186.6	2,127.5	2,218.8	2,113.6
Endoscopy of small intestine with or without biopsy 45.11–45.14,45.16	124.8	227.4	244.9	306.6	316.8	320.9	341.0
Endoscopy of large intestine with or without biopsy 45.21–45.25	237.2	260.1	221.1	222.2	221.2	229.0	226.0
Partial excision of large intestine 45.7	61.5	77.0	83.2	80.2	82.5	87.7	85.6
Appendectomy, excluding incidental 47.0	128.8	119.9	112.4	103.1	110.5	101.8	102.9
Cholecystectomy 51.2	203.0	201.0	204.7	205.4	210.7	227.8	207.1
Repair of inguinal hernia 53.0–53.1	238.1	176.0	119.3	99.2	82.7	68.8	54.9
Lysis of peritoneal adhesions 54.5	101.2	130.7	121.8	134.2	130.5	135.4	135.5
Operations on the urinary system 55–59	851.5	731.7	702.5	650.4	671.7	621.8	557.4
Cystoscopy with or without biopsy 57.31–57.33	387.9	282.0	239.5	214.1	212.8	182.6	163.5
Operations on the male genital organs 60–64	354.0	314.8	260.6	264.3	239.8	233.2	212.5
Prostatectomy 60.2–60.6	148.5	155.3	147.2	153.5	146.8	145.1	139.1
Operations on the female genital organs 65–71	1,894.3	1,404.4	1,030.1	973.1	984.8	921.3	908.2
Oophorectomy and salpingo-oophorectomy 65.3–65.6	214.1	222.1	185.7	171.6	192.1	182.7	183.1
Bilateral destruction or occlusion of fallopian tubes 66.2–66.3	284.0	197.5	167.2	158.5	169.0	160.1	149.8
Hysterectomy 68.3–68.7	287.8	283.8	238.2	220.6	238.6	218.0	228.8
Dilation and curettage of uterus 69.0	554.5	252.9	115.0	107.9	88.9	78.0	68.3
Repair of cystocele and rectocele 70.5	71.7	69.7	56.0	55.1	55.2	55.3	55.7
Obstetrical procedures 72–75	1,597.0	1,821.9	2,488.2	2,603.8	2,741.6	2,740.4	2,628.9
Episiotomy with or without forceps or vacuum extraction 72.1,72.21,72.31,72.71,73.6	892.5	770.6	692.1	695.0	693.1	672.2	635.4
Artificial rupture of membranes 73.0	53.2	133.8	241.4	266.7	278.9	309.2	287.5
Cesarean section 74.0–74.2,74.4,74.99	274.6	371.2	384.4	382.6	381.6	372.5	363.3
Fetal EKG (scalp) and fetal monitoring, not otherwise specified 75.32,75.34	55.1	116.2	470.7	492.0	555.7	529.5	489.6
Repair of current obstetric laceration 75.5–75.6	157.2	231.8	284.3	310.9	320.8	317.3	311.8
Operations on the musculoskeletal system 76–84	1,425.0	1,491.4	1,294.5	1,293.5	1,264.3	1,326.4	1,288.3
Partial excision of bone 76.2–76.3,77.6–77.8	91.1	95.1	78.1	87.8	77.9	86.2	87.6
Open reduction of fracture with internal fixation 79.3	133.6	166.4	162.2	166.9	157.8	166.7	164.4
Excision or destruction of intervertebral disc 80.5	63.2	96.4	103.0	107.1	123.0	122.2	125.9
Total hip replacement ³ 81.51	25.7	46.8	53.1	---	48.0	46.6	50.1
Total knee replacement 81.41,81.54	20.2	30.9	43.4	38.3	52.1	64.0	66.1
Operations on the integumentary system 85–86	840.2	699.6	607.3	582.4	559.8	528.5	540.9
Mastectomy 85.4	48.2	49.1	51.0	49.1	49.2	47.2	46.0
Debridement of wound, infection, or burn 86.22,86.28	86.9	112.1	132.7	143.0	134.1	130.0	121.4
Skin graft 86.6–86.7	81.1	66.3	60.8	50.7	44.4	39.5	42.5
Miscellaneous diagnostic and therapeutic procedures 87–99	1,741.8	3,733.4	4,470.2	4,709.3	4,799.1	5,900.5	5,465.1
Computerized axial tomography 87.03,87.41,87.71,88.01,88.38	135.6	583.2	664.1	619.5	607.8	582.4	499.4
Pyelogram 87.73–87.75	206.7	187.3	133.9	117.3	117.5	97.8	79.9
Arteriography and angiocardiology using contrast material 88.4–88.5	252.3	472.9	668.7	661.0	700.4	685.8	698.7
Diagnostic ultrasound 88.7	141.2	522.3	643.2	635.7	649.2	635.2	575.2
Circulatory monitoring 89.6	33.7	268.8	348.2	318.0	292.4	280.5	234.9
Radioisotope scan 92.0–92.1	232.6	354.8	290.0	259.0	243.4	215.0	183.1
Respiratory therapy 93.9,96.7	*3.3	26.1	112.0	378.2	469.8	484.5	471.4

--- Data not available. *Figure does not meet standard of reliability or precision.

¹ICD–9–CM code 33.27 was not included in the category before 1987.

²Rate of coronary artery bypass graft procedures. See table 31 for rate of discharges with coronary artery bypass grafts.

³Total hip replacement was not available in 1989 due to a change in codes. Before 1989, the ICD–9–CM code was 81.5.

NOTE: See "Medical Coding and Edit," appendix I, for additional information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 20. Number of all-listed procedures for male discharges from short-stay hospitals by procedure category: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Groupings of procedures and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD–9–CM)*]

Procedure category and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Number of all-listed procedures for males in thousands						
All procedures	11,891	14,694	15,735	16,088	15,916	17,264	16,791
Operations on the nervous system 01–05	362	451	467	475	479	500	442
Spinal tap 03.31	107	159	183	203	204	208	184
Operations on the endocrine system 06–07	32	24	31	31	26	28	29
Operations on the eye 08–16	451	309	243	198	174	189	162
Operations on the ear 18–20	218	130	109	93	73	75	68
Operations on the nose, mouth, and pharynx 21–29	779	589	436	386	327	288	280
Tonsillectomy with or without adenoidectomy 28.2–28.3	195	135	94	69	49	40	33
Operations on the respiratory system 30–34	538	582	561	608	555	561	575
Bronchoscopy with or without biopsy ¹ 33.21–33.24,33.27	167	181	182	192	175	186	178
Operations on the cardiovascular system 35–39	821	1,425	2,220	2,236	2,317	2,383	2,630
Removal of coronary artery obstruction 36.0	*5	58	160	177	200	223	262
Coronary artery bypass graft ² 36.1	108	172	270	271	286	296	347
Cardiac catheterization 37.21–37.23	228	439	598	601	620	603	636
Insertion, replacement, removal, and revision of pacemaker leads or device 37.7–37.8	102	118	165	142	138	145	140
Shunt or vascular bypass 39.0–39.2	60	79	85	97	95	92	99
Hemodialysis 39.95	20	62	99	105	105	129	156
Operations on the hemic and lymphatic system 40–41	156	190	192	190	187	212	202
Operations on the digestive system 42–54	2,334	2,530	2,277	2,309	2,194	2,319	2,258
Endoscopy of small intestine with or without biopsy 45.11–45.14,45.16	117	250	274	348	357	391	405
Endoscopy of large intestine with or without biopsy 45.21–45.25	228	269	230	218	212	234	238
Partial excision of large intestine 45.7	58	80	86	88	89	94	91
Appendectomy, excluding incidental 47.0	146	150	147	141	147	135	143
Cholecystectomy 51.2	122	147	132	144	147	166	165
Repair of inguinal hernia 53.0–53.1	483	370	261	220	181	155	121
Lysis of peritoneal adhesions 54.5	32	44	51	59	62	60	67
Operations on the urinary system 55–59	1,087	1,049	1,018	962	946	884	776
Cystoscopy with or without biopsy 57.31–57.33	548	472	424	379	377	333	291
Operations on the male genital organs 60–64	799	744	633	648	594	584	539
Prostatectomy 60.2–60.6	335	367	358	376	364	363	353
Operations on the musculoskeletal system 76–84	1,666	1,734	1,648	1,676	1,624	1,710	1,652
Partial excision of bone 76.2–76.3,77.6–77.8	91	112	102	120	112	119	115
Open reduction of fracture with internal fixation 79.3	153	178	193	186	177	193	187
Excision or destruction of intervertebral disc 80.5	85	136	158	157	175	181	175
Total hip replacement ³ 81.51	21	41	47	---	48	50	49
Total knee replacement 81.41,81.54	13	28	34	30	46	60	53
Operations on the integumentary system 85–86	754	658	639	633	580	552	563
Mastectomy 85.4	*6	*	*	*	*	*	*
Debridement of wound, infection, or burn 86.22,86.28	130	152	196	218	184	181	178
Skin graft 86.6–86.7	106	96	91	75	66	60	59
Miscellaneous diagnostic and therapeutic procedures 87–99	1,894	4,279	5,262	5,644	5,842	6,981	6,615
Computerized axial tomography 87.03,87.41,87.71,88.01,88.38	152	671	775	721	736	702	608
Pyelogram 87.73–87.75	241	243	192	161	149	133	105
Arteriography and angiocardiology using contrast material 88.4–88.5	355	693	995	1,000	1,051	989	1,060
Diagnostic ultrasound 88.7	114	478	599	628	667	652	587
Circulatory monitoring 89.6	39	332	430	388	344	339	287
Radioisotope scan 92.0–92.1	236	375	315	287	268	228	203
Respiratory therapy 93.9,96.7	*	34	148	472	586	596	579

* Figure does not meet standard of reliability or precision.

--- Data not available.

¹ICD–9–CM code 33.27 was not included in the category before 1987.

²Number of coronary artery bypass graft procedures. See [table 31](#) for number of discharges with coronary artery bypass grafts.

³Total hip replacement was not available in 1989 due to a change in codes. Before 1989, the ICD–9–CM code was 81.5.

NOTE: See “[Medical Coding and Edit](#),” appendix I, for additional information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 21. Rate of all-listed procedures for male discharges from short-stay hospitals by procedure category: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Groupings of procedures and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD–9–CM)*]

Procedure category and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Rate of all-listed procedures per 100,000 male population						
All procedures	10,916.7	12,868.6	13,383.1	13,546.6	13,249.7	14,204.6	13,642.3
Operations on the nervous system 01–05	332.4	395.0	397.6	399.7	399.1	411.5	359.1
Spinal tap 03.31	98.2	139.0	155.4	171.3	170.0	171.1	149.4
Operations on the endocrine system 06–07	29.0	20.7	26.7	25.8	21.4	22.9	23.6
Operations on the eye 08–16	414.1	270.5	206.5	166.6	144.6	155.7	131.9
Operations on the ear 18–20	200.6	114.3	92.8	78.5	60.5	61.7	54.9
Operations on the nose, mouth, and pharynx 21–29	715.2	515.5	370.4	325.3	272.1	236.7	227.7
Tonsillectomy with or without adenoidectomy 28.2–28.3	179.3	117.9	79.7	57.9	41.1	32.5	26.9
Operations on the respiratory system 30–34	493.8	510.0	477.2	512.3	461.8	461.2	467.0
Bronchoscopy with or without biopsy ¹ 33.21–33.24,33.27	153.0	158.8	154.7	161.4	145.8	153.4	144.4
Operations on the cardiovascular system 35–39	753.7	1,248.1	1,888.2	1,882.7	1,928.5	1,960.3	2,136.9
Removal of coronary artery obstruction 36.0	*4.6	50.4	136.1	149.1	166.8	183.5	213.3
Coronary artery bypass graft ² 36.1	99.1	151.1	229.3	228.1	238.3	243.5	281.8
Cardiac catheterization 37.21–37.23	209.6	384.6	508.4	506.1	515.8	496.0	517.1
Insertion, replacement, removal, and revision of pacemaker leads or device 37.7–37.8	94.1	103.4	140.7	119.7	114.8	119.3	113.5
Shunt or vascular bypass 39.0–39.2	54.9	69.3	72.6	81.5	78.9	75.7	80.8
Hemodialysis 39.95	18.0	54.0	83.9	88.6	87.6	106.0	126.5
Operations on the hemic and lymphatic system 40–41	143.3	166.1	163.6	160.2	155.3	174.3	164.4
Operations on the digestive system 42–54	2,142.8	2,215.6	1,936.3	1,944.0	1,826.5	1,908.0	1,834.4
Endoscopy of small intestine with or without biopsy 45.11–45.14,45.16	107.7	218.7	232.9	293.0	297.2	321.9	329.1
Endoscopy of large intestine with or without biopsy 45.21–45.25	209.6	236.0	195.7	183.7	176.4	192.6	193.5
Partial excision of large intestine 45.7	53.3	69.7	73.5	74.3	73.9	77.7	74.0
Appendectomy, excluding incidental 47.0	134.1	131.4	124.7	118.5	122.5	111.4	116.1
Cholecystectomy 51.2	112.4	129.1	112.0	121.5	122.7	136.9	133.9
Repair of inguinal hernia 53.0–53.1	443.8	323.8	221.7	184.9	150.6	127.4	98.2
Lysis of peritoneal adhesions 54.5	29.3	38.6	43.3	49.9	51.5	49.4	54.4
Operations on the urinary system 55–59	998.1	918.9	865.8	809.6	787.5	727.4	630.5
Cystoscopy with or without biopsy 57.31–57.33	503.4	413.0	360.4	319.2	314.0	273.9	236.5
Operations on the male genital organs 60–64	733.4	651.2	538.1	545.6	494.5	480.8	437.8
Prostatectomy 60.2–60.6	307.5	321.2	304.1	316.9	302.8	299.1	286.6
Operations on the musculoskeletal system 76–84	1,529.7	1,518.2	1,401.5	1,411.3	1,351.8	1,406.7	1,342.3
Partial excision of bone 76.2–76.3,77.6–77.8	84.0	98.3	86.7	101.3	93.3	97.6	93.7
Open reduction of fracture with internal fixation 79.3	140.2	156.1	164.2	156.7	147.0	158.4	151.9
Excision or destruction of intervertebral disc 80.5	78.2	119.3	134.4	131.9	145.7	149.3	142.4
Total hip replacement ³ 81.51	19.6	36.2	40.0	---	40.1	41.1	39.4
Total knee replacement 81.41,81.54	12.1	24.2	29.1	25.5	37.9	49.4	42.9
Operations on the integumentary system 85–86	691.8	576.6	543.2	533.1	482.5	453.8	457.7
Mastectomy 85.4	*5.4	*	*	*	*	*	*
Debridement of wound, infection, or burn 86.22,86.28	119.0	133.5	166.7	183.9	153.0	149.0	145.0
Skin graft 86.6–86.7	97.1	84.4	77.7	63.1	54.9	49.0	48.1
Miscellaneous diagnostic and therapeutic procedures 87–99	1,738.8	3,747.9	4,475.3	4,751.9	4,863.5	5,743.6	5,374.2
Computerized axial tomography 87.03,87.41,87.71,88.01,88.38	139.1	587.5	659.2	607.2	612.3	577.4	493.9
Pyelogram 87.73–87.75	221.6	212.5	163.1	135.1	123.9	109.3	85.0
Arteriography and angiocardiology using contrast material 88.4–88.5	325.6	606.5	846.2	841.9	874.6	813.8	861.3
Diagnostic ultrasound 88.7	104.8	418.4	509.3	528.8	555.3	536.2	477.2
Circulatory monitoring 89.6	35.6	290.8	365.9	327.0	286.7	278.9	232.9
Radioisotope scan 92.0–92.1	216.5	328.1	267.6	242.0	223.1	187.5	165.3
Respiratory therapy 93.9,96.7	*	30.1	126.0	397.2	487.6	490.1	470.3

--- Data not available.

* Figure does not meet standard of reliability or precision.

¹ICD–9–CM code 33.27 was not included in the category before 1987.

²Rate of coronary artery bypass graft procedures. See [table 31](#) for rate of discharges with coronary artery bypass grafts.

³Total hip replacement was not available in 1989 due to a change in codes. Before 1989, the ICD–9–CM code was 81.5.

NOTE: See "Medical Coding and Edit," appendix I, for additional information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 22. Number of all-listed procedures for female discharges from short-stay hospitals by procedure category: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Groupings of procedures and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD–9–CM)*]

Procedure category and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
Number of all-listed procedures for females in thousands							
All procedures	19,521	22,066	23,457	23,954	24,590	26,658	25,836
Operations on the nervous system 01–05	366	447	429	435	472	470	479
Spinal tap 03.31	110	146	171	174	192	172	155
Operations on the endocrine system 06–07	85	71	79	83	70	75	72
Operations on the eye 08–16	599	409	304	250	176	210	169
Operations on the ear 18–20	197	126	88	75	64	54	53
Operations on the nose, mouth, and pharynx 21–29	824	584	385	348	258	254	252
Tonsillectomy with or without adenoidectomy 28.2–28.3	269	183	119	86	68	46	46
Operations on the respiratory system 30–34	330	398	430	442	420	396	456
Bronchoscopy with or without biopsy ¹ 33.21–33.24,33.27	102	111	131	127	123	123	138
Operations on the cardiovascular system 35–39	531	989	1,406	1,486	1,564	1,740	1,794
Removal of coronary artery obstruction 36.0	*	24	67	82	85	107	136
Coronary artery bypass graft ² 36.1	29	58	83	97	106	111	122
Cardiac catheterization 37.21–37.23	120	241	332	357	376	397	392
Insertion, replacement, removal, and revision of pacemaker leads or device 37.7–37.8	85	105	125	133	121	155	134
Shunt or vascular bypass 39.0–39.2	39	61	55	71	67	76	79
Hemodialysis 39.95	19	63	89	87	111	132	167
Operations on the hemic and lymphatic system 40–41	165	207	200	195	174	180	195
Operations on the digestive system 42–54	2,986	3,210	2,981	3,051	3,077	3,241	3,100
Endoscopy of small intestine with or without biopsy 45.11–45.14,45.16	164	287	321	404	428	413	459
Endoscopy of large intestine with or without biopsy 45.21–45.25	307	345	307	326	336	340	335
Partial excision of large intestine 45.7	81	102	116	108	116	125	126
Appendectomy, excluding incidental 47.0	145	133	126	112	127	120	118
Cholecystectomy 51.2	336	327	365	359	375	404	360
Repair of inguinal hernia 53.0–53.1	54	46	29	24	24	17	18
Lysis of peritoneal adhesions 54.5	197	265	245	270	261	279	277
Operations on the urinary system 55–59	834	679	688	633	718	674	637
Cystoscopy with or without biopsy 57.31–57.33	327	195	158	146	150	125	123
Operations on the female genital organs 65–71	4,274	3,318	2,501	2,385	2,440	2,308	2,302
Oophorectomy and salpingo-oophorectomy 65.3–65.6	483	525	451	421	476	458	464
Bilateral destruction or occlusion of fallopian tubes 66.2–66.3	641	466	406	389	419	401	380
Hysterectomy 68.3–68.7	649	670	578	541	591	546	580
Dilation and curettage of uterus 69.0	1,251	597	279	265	220	196	173
Repair of cystocele and rectocele 70.5	162	165	136	135	137	139	141
Obstetrical procedures 72–75	3,603	4,304	6,042	6,383	6,792	6,867	6,664
Episiotomy with or without forceps or vacuum extraction 72.1,72.21,72.31,72.71,73.6	2,014	1,820	1,680	1,704	1,717	1,684	1,611
Artificial rupture of membranes 73.0	120	316	586	654	691	775	729
Cesarean section 74.0–74.2,74.4,74.99	619	877	933	938	945	933	921
Fetal EKG (scalp) and fetal monitoring, not otherwise specified 75.32,75.34	124	275	1,143	1,206	1,377	1,327	1,241
Repair of current obstetrical laceration 75.5–75.6	355	548	690	762	795	795	790
Operations on the musculoskeletal system 76–84	1,549	1,789	1,496	1,495	1,508	1,614	1,614
Partial excision of bone 76.2–76.3,77.6–77.8	114	112	88	95	81	97	107
Open reduction of fracture with internal fixation 79.3	149	215	201	223	214	225	230
Excision or destruction of intervertebral disc 80.5	57	92	92	106	130	125	144
Total hip replacement ³ 81.51	37	69	82	---	71	67	79
Total knee replacement 81.41,81.54	32	45	71	64	83	100	115
Operations on the integumentary system 85–86	1,142	994	836	795	807	773	808
Mastectomy 85.4	103	114	123	118	121	117	116
Debridement of wound, infection, or burn 86.22,86.28	67	112	126	132	148	145	129
Skin graft 86.6–86.7	77	60	56	49	44	39	48
Miscellaneous diagnostic and therapeutic procedures 87–99	2,036	4,540	5,593	5,900	6,048	7,804	7,239
Computerized axial tomography 87.03,87.41,87.71,88.01,88.38	154	707	838	798	770	757	658
Pyelogram 87.73–87.75	225	200	133	127	142	112	98
Arteriography and angiocardiology using contrast material 88.4–88.5	215	425	629	620	685	729	711
Diagnostic ultrasound 88.7	204	756	963	930	941	940	871
Circulatory monitoring 89.6	37	303	415	391	380	364	309
Radioisotope scan 92.0–92.1	289	463	390	347	335	311	261
Respiratory therapy 93.9,96.7	*	27	124	455	578	618	616

* Figure does not meet standard of reliability or precision.

--- Data not available.

¹ICD–9–CM code 33.27 was not included in the category before 1987.

²Number of coronary artery bypass graft procedures. See [table 31](#) for number of discharges with coronary artery bypass grafts.

³Total hip replacement was not available in 1989 due to a change in codes. Before 1989, the ICD–9–CM code was 81.5.

NOTE: See “[Medical Coding and Edit](#),” appendix I, for additional information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 23. Rate of all-listed procedures for female discharges from short-stay hospitals by procedure category: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Groupings of procedures and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD–9–CM)*]

Procedure category and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
	Rate of all-listed procedures per 100,000 female population						
All procedures	16,727.7	18,081.6	18,728.8	18,956.0	19,266.8	20,661.0	19,810.6
Operations on the nervous system 01–05	313.4	366.2	342.2	343.9	370.0	364.5	367.1
Spinal tap 03.31	93.8	119.9	136.3	137.7	150.2	133.2	118.8
Operations on the endocrine system 06–07	73.2	58.5	63.3	65.4	54.8	58.1	55.6
Operations on the eye 08–16	513.0	335.5	242.7	197.8	137.8	162.4	129.9
Operations on the ear 18–20	168.4	103.0	70.6	59.2	50.0	42.0	41.0
Operations on the nose, mouth, and pharynx 21–29	706.1	478.9	307.3	275.3	202.5	196.7	193.6
Tonsillectomy with or without adenoidectomy 28.2–28.3	230.1	149.8	95.3	68.3	53.2	35.7	35.6
Operations on the respiratory system 30–34	282.5	326.3	343.4	350.1	329.4	306.6	349.8
Bronchoscopy with or without biopsy ¹ 33.21–33.24,33.27	87.6	90.7	104.4	100.3	96.2	95.2	105.5
Operations on the cardiovascular system 35–39	455.4	810.1	1,122.5	1,175.6	1,225.7	1,348.9	1,375.4
Removal of coronary artery obstruction 36.0	*	19.9	53.1	64.7	66.6	83.3	104.3
Coronary artery bypass graft ² 36.1	25.1	47.4	66.5	77.0	83.0	86.4	93.2
Cardiac catheterization 37.21–37.23	102.9	197.8	265.2	282.3	294.5	307.9	300.4
Insertion, replacement, removal, and revision of pacemaker leads or device 37.7–37.8	72.7	86.3	100.2	105.1	94.8	119.9	102.9
Shunt or vascular bypass 39.0–39.2	33.1	49.6	43.8	55.9	52.3	59.1	60.4
Hemodialysis 39.95	16.0	51.7	71.3	68.8	87.1	102.2	127.8
Operations on the hemic and lymphatic system 40–41	141.7	169.8	159.6	154.0	136.7	139.4	149.7
Operations on the digestive system 42–54	2,558.7	2,630.7	2,379.9	2,414.5	2,410.7	2,511.9	2,377.0
Endoscopy of small intestine with or without biopsy 45.11–45.14,45.16	140.7	235.5	256.1	319.4	335.2	320.0	352.1
Endoscopy of large intestine with or without biopsy 45.21–45.25	263.0	282.6	245.0	258.3	263.3	263.4	256.7
Partial excision of large intestine 45.7	69.1	83.8	92.4	85.8	90.6	97.1	96.6
Appendectomy, excluding incidental 47.0	123.8	109.1	100.9	88.6	99.2	92.7	90.4
Cholecystectomy 51.2	287.6	268.3	291.7	284.3	293.5	313.4	276.1
Repair of inguinal hernia 53.0–53.1	46.1	37.7	23.3	18.6	18.8	13.6	14.1
Lysis of peritoneal adhesions 54.5	168.4	217.0	195.5	213.3	204.7	216.5	212.1
Operations on the urinary system 55–59	714.6	556.7	549.2	500.8	562.7	522.3	488.5
Cystoscopy with or without biopsy 57.31–57.33	280.1	159.5	126.0	115.3	117.6	96.7	94.6
Operations on the female genital organs 65–71	3,662.5	2,718.5	1,997.1	1,887.7	1,911.6	1,789.0	1,765.4
Oophorectomy and salpingo-oophorectomy 65.3–65.6	413.9	429.8	359.9	332.8	373.0	354.8	355.9
Bilateral destruction or occlusion of fallopian tubes 66.2–66.3	549.1	382.3	324.2	307.5	328.1	310.9	291.1
Hysterectomy 68.3–68.7	556.5	549.3	461.8	427.8	463.1	423.4	444.7
Dilation and curettage of uterus 69.0	1,072.1	489.5	223.0	209.4	172.6	151.6	132.8
Repair of cystocele and rectocele 70.5	138.6	134.8	108.5	106.9	107.2	107.4	108.2
Obstetrical procedures 72–75	3,087.6	3,526.6	4,823.9	5,050.9	5,322.1	5,321.8	5,109.9
Episiotomy with or without forceps or vacuum extraction 72.1,72.21,72.31,72.71,73.6	1,725.5	1,491.5	1,341.7	1,348.1	1,345.5	1,305.5	1,235.1
Artificial rupture of membranes 73.0	102.8	258.9	468.0	517.3	541.4	600.4	558.9
Cesarean section 74.0–74.2,74.4,74.99	530.9	718.4	745.3	742.2	740.7	723.4	706.1
Fetal EKG (scalp) and fetal monitoring, not otherwise specified 75.32,75.34	106.4	224.9	912.6	954.5	1,078.7	1,028.1	951.6
Repair of current obstetric laceration 75.5–75.6	304.0	448.7	551.2	603.1	622.6	616.1	606.1
Operations on the musculoskeletal system 76–84	1,327.3	1,466.2	1,194.2	1,182.8	1,181.9	1,250.6	1,237.4
Partial excision of bone 76.2–76.3,77.6–77.8	97.7	92.1	70.0	75.1	63.3	75.5	81.7
Open reduction of fracture with internal fixation 79.3	127.5	176.1	160.3	176.5	167.9	174.6	176.3
Excision or destruction of intervertebral disc 80.5	49.1	75.1	73.5	83.7	101.6	96.6	110.4
Total hip replacement ³ 81.51	31.3	56.8	65.3	---	55.4	51.8	60.2
Total knee replacement 81.41,81.54	27.7	37.2	56.8	50.3	65.4	77.8	87.9
Operations on the integumentary system 85–86	978.6	814.6	667.6	628.8	632.5	598.8	619.4
Mastectomy 85.4	88.2	93.7	97.8	93.2	94.7	90.9	88.8
Debridement of wound, infection, or burn 86.22,86.28	57.1	92.2	100.9	104.6	116.2	112.1	99.1
Skin graft 86.6–86.7	66.2	49.4	45.0	39.2	34.5	30.6	37.1
Miscellaneous diagnostic and therapeutic procedures 87–99	1,744.7	3,720.0	4,465.4	4,669.2	4,738.5	6,048.2	5,551.0
Computerized axial tomography 87.03,87.41,87.71,88.01,88.38	132.3	579.2	668.8	631.2	603.5	587.0	504.7
Pyelogram 87.73–87.75	192.7	163.8	106.4	100.5	111.5	86.9	75.1
Arteriography and angiocardiology using contrast material 88.4–88.5	183.8	347.9	502.3	490.9	536.4	565.3	545.2
Diagnostic ultrasound 88.7	175.1	619.6	768.9	736.1	737.6	728.5	667.6
Circulatory monitoring 89.6	31.9	248.3	331.6	309.5	297.7	282.0	236.9
Radioisotope scan 92.0–92.1	247.6	379.8	311.0	274.9	262.5	240.7	199.9
Respiratory therapy 93.9,96.7	*	22.4	98.9	360.4	453.1	479.1	472.6

* Figure does not meet standard of reliability or precision.

--- Data not available.

¹ICD–9–CM code 33.27 was not included in the category before 1987.

²Rate of coronary artery bypass graft procedures. See table 31 for rate of discharges with coronary artery bypass grafts.

³Total hip replacement was not available in 1989 due to a change in codes. Before 1989, the ICD–9–CM code was 81.5.

NOTE: See "Medical Coding and Edit," appendix I, for additional information about changes in coding system and coding modifications for the National Hospital Discharge Survey.

Table 24. Number and rate of hysterectomies for female discharges from short-stay hospitals by age: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Data are for *International Classification of Diseases, 9th Revision, Clinical Modification* codes 68.3–68.7]

Year	All ages ¹	15–29 years	30–49 years	50 years and over	Rate per 100,000 female population			
					All ages ¹	15–29 years	30–49 years	50 years and over
	Number in thousands				Rate per 100,000 female population			
1980	649	84	409	157	556.5	272.4	1,471.2	474.8
1985	670	74	440	156	549.3	242.7	1,372.6	453.6
1988	578	52	390	137	461.8	175.1	1,110.5	389.7
1989	541	48	355	138	427.8	165.9	982.6	389.1
1990	591	51	396	144	463.1	177.6	1,068.2	404.8
1991	546	37	375	135	423.4	131.3	983.1	374.8
1992	580	44	387	149	444.7	159.1	990.1	409.5

¹Includes age groups not shown in table.

Table 25. Number and rate of selected obstetrical procedures for females with deliveries discharged from short-stay hospitals by type of procedure: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Procedure groupings and code numbers are based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD–9–CM). Data are for selected procedures performed on discharges with code V27, females with deliveries]

Procedure category and ICD–9–CM code	1980	1985	1988	1989	1990	1991	1992
Number of all-listed procedures in thousands							
Episiotomy 72.1,72.21,72.31,72.71,73.6	2,012	1,820	1,679	1,703	1,714	1,683	1,609
Fetal EKG and fetal monitoring, not otherwise specified . . . 75.32,75.34	106	250	1,094	1,147	1,306	1,259	1,180
Cesarean section 74.0–74.2,74.4,74.99	619	877	933	937	945	933	921
Manually assisted delivery 73.5	70	193	628	638	750	792	806
Repair of current obstetric laceration 75.5–75.6	350	543	684	759	789	790	785
Artificial rupture of membranes 73.0	120	315	585	652	691	774	727
Medical induction of labor 73.4	42	66	152	196	225	258	276
Vacuum extraction ¹ 72.7	22	66	114	156	190	223	238
Forceps delivery ¹ 72.0–72.4,72.51,72.53,72.6,73.3	555	376	294	294	269	230	220
Rate per 100 deliveries ²							
Fetal EKG and fetal monitoring, not otherwise specified . . . 75.32,75.34	2.8	6.5	28.9	29.1	32.4	31.7	30.2
Cesarean section 74.0–74.2,74.4,74.99	16.5	22.7	24.7	23.8	23.5	23.5	23.6
Artificial rupture of membrane 73.0	3.2	8.2	15.5	16.6	17.2	19.5	18.6
Medical induction of labor 73.4	1.1	1.7	4.0	5.0	5.6	6.5	7.1
Rate per 100 vaginal deliveries ³							
Episiotomy 72.1,72.21,72.31,72.71,73.6	64.0	61.1	59.0	56.8	55.7	55.4	53.8
Manually assisted delivery 73.5	2.2	6.5	22.1	21.3	24.3	26.0	27.0
Repair of current obstetric laceration 75.5–75.6	11.1	18.2	24.0	25.3	25.6	26.0	26.3
Vacuum extraction ¹ 72.7	0.7	2.2	4.0	5.2	6.2	7.3	8.0
Forceps delivery ¹ 72.0–72.4,72.51,72.53,72.6,73.3	17.7	12.6	10.3	9.8	8.7	7.6	7.4

¹Vacuum extraction and forceps delivery with episiotomy are also included in the episiotomy category.

²Per 100 discharges with ICD–9–CM code V27, females with deliveries.

³Per 100 discharges with ICD–9–CM code V27, excluding those with a cesarean section.

Table 26. Number and rate of cesarean sections for females with deliveries discharged from short-stay hospitals by age: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Data are coded based on the *International Classification of Diseases, 9th Revision, Clinical Modification*. Includes female discharges with diagnostic code V27 and procedure codes 74.0–74.2, 74.4, and 74.99]

Year	All ages	Under 20 years	20–24 years	25–29 years	30–34 years	35 years and over
Number in thousands						
1980	619	85	194	199	107	35
1985	877	77	243	288	192	76
1988	933	94	206	322	217	94
1989	937	89	224	312	210	103
1990	945	89	219	287	238	113
1991	933	98	218	283	227	107
1992	921	86	220	264	230	120
Rate per 100 deliveries						
1980	16.5	14.5	15.8	16.7	18.0	20.6
1985	22.7	16.1	21.2	22.9	26.6	30.7
1988	24.7	19.5	20.1	26.7	28.0	32.1
1989	23.8	18.1	21.1	24.8	26.6	30.3
1990	23.5	16.6	21.0	23.3	27.8	31.4
1991	23.5	18.2	21.0	24.3	26.6	28.4
1992	23.6	17.5	21.4	23.2	27.1	30.1

Table 27. Number and rate of prostatectomies for male discharges from short-stay hospitals by age: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Data are for *International Classification of Diseases, 9th Revision, Clinical Modification* codes 60.2–60.6]

Year	All ages ¹	45–64 years	65 years and over		
			Total	65–74 years	75 years and over
Number in thousands					
1980	335	83	251	139	112
1985	367	81	284	150	134
1988	358	67	290	146	144
1989	376	71	304	162	143
1990	364	80	284	159	125
1991	363	68	295	158	138
1992	353	74	278	148	131
Rate per 100,000 male population					
1980	307.5	392.1	2,423.0	2,051.2	3,128.5
1985	321.2	382.0	2,495.9	2,041.6	3,318.4
1988	304.1	309.9	2,394.2	1,892.4	3,276.0
1989	316.9	322.5	2,468.9	2,064.9	3,170.0
1990	302.8	357.9	2,261.5	2,003.6	2,703.4
1991	299.1	302.7	2,308.8	1,965.1	2,887.0
1992	286.6	318.3	2,131.5	1,815.5	2,653.4

¹Includes age groups not shown in table.

Table 28. Number of male newborn infants and number and percent circumcised in short-stay hospitals by region: United States, 1980, 1985, and 1988–92

[Infants born in non-Federal hospitals. Circumcision data are for *International Classification of Diseases, 9th Revision, Clinical Modification* code 64.0]

<i>Year</i>	<i>United States</i>	<i>Northeast</i>	<i>Midwest</i>	<i>South</i>	<i>West</i>
Number of male newborn infants in thousands					
1980	1,950	376	531	676	366
1985	1,953	339	469	701	445
1988	1,882	373	443	614	452
1989	1,989	392	481	643	472
1990	1,982	379	449	693	461
1991	2,003	366	465	685	487
1992	1,926	365	424	656	482
Number circumcised in thousands					
1980	1,261	253	403	379	226
1985	1,163	221	331	393	218
1988	1,092	235	322	330	204
1989	1,170	248	356	372	194
1990	1,169	238	341	396	195
1991	1,224	228	363	436	197
1992	1,170	247	331	411	181
Percent circumcised					
1980	64.7	67.4	75.9	56.0	61.8
1985	59.5	65.2	70.6	56.0	49.0
1988	58.0	63.2	72.7	53.8	45.2
1989	58.8	63.2	74.0	57.9	41.0
1990	59.0	62.6	76.0	57.1	42.4
1991	61.1	62.4	78.2	63.6	40.4
1992	60.7	67.6	78.2	62.7	37.5

Table 29. Number and rate of open-heart surgeries for discharges from short-stay hospitals, by sex and age: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Data are for *International Classification of Diseases, 9th Revision, Clinical Modification* codes 35.1–35.51, 35.53–35.95, 35.98–35.99, 36.2, 36.9, 37.10–37.11, 37.32–37.33, and 37.4–37.5]

Sex and year	All ages	Under 45 years	45–64 years	65 years and over	All ages	Under 45 years	45–64 years	65 years and over
	Number in thousands				Rate per 100,000 population			
Both sexes								
1980	54	20	18	16	23.8	12.7	41.6	60.4
1985	67	22	20	25	28.6	13.4	45.1	89.6
1988	92	30	28	34	37.8	18.0	61.0	112.6
1989	91	33	19	39	37.3	19.7	42.0	126.5
1990	103	33	23	47	41.8	19.6	49.4	151.2
1991	97	32	24	41	38.9	18.6	52.2	129.0
1992	104	33	25	46	41.2	19.3	51.1	143.7
Male								
1980	26	10	9	*7	24.0	12.4	43.9	69.3
1985	35	12	10	13	30.4	14.6	47.9	111.2
1988	53	18	14	21	45.0	21.2	65.9	171.8
1989	46	18	11	17	38.4	20.9	51.5	134.8
1990	55	18	14	23	45.7	21.5	63.3	179.6
1991	48	18	12	19	39.8	20.6	51.4	148.8
1992	57	19	13	24	46.0	21.8	57.8	186.0
Female								
1980	28	10	9	*8	23.7	13.0	39.4	54.5
1985	33	10	10	13	26.8	12.3	42.4	75.2
1988	39	12	13	13	31.0	14.8	56.4	73.0
1989	46	16	*8	22	36.2	18.5	33.3	121.0
1990	49	15	*9	25	38.0	17.8	36.5	132.1
1991	49	14	13	22	38.1	16.7	53.0	115.7
1992	48	14	11	22	36.6	16.7	44.8	115.0

*Figure does not meet standard of reliability or precision.

Table 30. Number and rate of removal of coronary artery obstructions for discharges from short-stay hospitals by sex and age: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Data are for *International Classification of Diseases, 9th Revision, Clinical Modification* code 36.0]

Sex and year	All ages ¹	65 years and over				All ages ¹	65 years and over			
		45–64 years	Total	65–74 years	75 years and over		45–64 years	Total	65–74 years	75 years and over
Both sexes										
Number in thousands										
1980	*6	*	*	*	–	*2.6	*	*	*	–
1985	82	47	23	20	*	34.7	105.4	82.5	118.4	*
1988	227	117	92	71	21	93.3	257.9	304.5	401.7	167.3
1989	259	133	107	74	33	105.6	289.8	348.9	412.0	261.0
1990	285	148	115	89	26	115.2	320.4	368.3	490.3	200.0
1991	331	163	143	98	45	131.9	350.0	449.1	536.5	330.5
1992	399	177	192	129	63	157.2	366.2	594.4	699.9	453.6
Male										
1980	*5	*	*	*	–	*4.6	*	*	*	–
1985	58	34	13	11	*	50.4	162.1	115.2	153.2	*
1988	160	88	58	46	12	136.1	403.5	475.6	594.6	266.6
1989	177	100	61	42	19	149.1	453.5	497.1	539.4	423.7
1990	200	111	72	58	15	166.8	498.3	575.7	725.4	319.0
1991	223	119	84	60	24	183.5	530.3	654.8	746.6	500.2
1992	262	127	110	79	31	213.3	546.5	842.4	976.0	621.7
Female										
1980	*	–	*	*	–	*	–	*	*	–
1985	24	12	10	*9	*	19.9	53.7	60.5	*91.5	*
1988	67	29	34	25	9	53.1	124.2	189.6	251.8	113.5
1989	82	33	46	31	14	64.7	138.8	249.3	312.7	172.7
1990	85	37	43	31	12	66.6	155.9	228.7	306.8	135.3
1991	107	44	59	38	21	83.3	183.0	310.4	372.1	237.5
1992	136	50	82	50	32	104.3	198.6	426.3	482.9	360.6

¹Includes age groups not shown in table.

* Figure does not meet standard of reliability or precision.

– Quantity zero.

Table 31. Number and rate of discharges from short-stay hospitals with one or more coronary artery bypass grafts by sex and age: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Data are for discharges with *International Classification of Diseases, 9th Revision, Clinical Modification* code 36.1]

Sex and year	All ages ¹	65 years and over				All ages ¹	65 years and over				
		45–64 years	Total	65–74 years	75 years and over		45–64 years	Total	65–74 years	75 years and over	
Both sexes		Number in thousands					Rate per 100,000 population				
1980	136	87	38	33	*5	60.2	195.6	149.1	212.5	*50.4	
1985	201	109	79	61	18	85.2	245.1	278.7	361.6	157.6	
1988	253	111	130	101	29	104.0	244.9	430.3	572.8	229.3	
1989	260	113	138	102	36	105.9	246.1	449.0	569.0	281.8	
1990	262	108	143	93	50	105.9	233.6	457.6	516.0	377.1	
1991	265	111	140	97	44	105.8	237.2	442.3	530.4	322.8	
1992	309	125	174	118	56	121.9	259.7	539.4	641.3	403.4	
Male											
1980	106	71	27	23	*	97.7	334.9	256.7	345.9	*	
1985	150	88	51	41	11	131.5	412.9	450.2	552.9	264.3	
1988	189	88	91	75	16	160.9	402.7	755.2	976.2	367.0	
1989	186	88	90	67	23	156.6	402.3	729.4	861.9	499.4	
1990	188	83	95	66	30	156.6	375.2	757.2	826.2	638.7	
1991	187	83	93	67	27	153.8	371.5	730.0	831.8	558.8	
1992	221	100	113	79	34	179.8	429.1	864.5	971.6	687.7	
Female											
1980	29	16	12	10	*	25.1	69.4	76.3	110.3	*	
1985	51	21	28	20	*8	41.8	92.0	163.9	214.2	*100.0	
1988	63	24	38	26	13	50.7	99.9	212.2	259.1	154.9	
1989	74	24	48	34	14	58.3	102.0	260.6	340.8	163.7	
1990	74	25	48	28	20	58.2	102.7	256.1	273.9	234.7	
1991	78	27	47	30	17	60.5	112.9	248.3	294.6	193.6	
1992	88	26	61	39	22	67.2	102.1	319.0	381.5	246.3	

*Figure does not meet standard of reliability or precision.

¹Includes age groups not shown in table.

NOTE: Patients that had more than one coronary artery bypass graft during a single operation were counted once in this table. For number and rate of coronary artery bypass procedures, see tables 18–23. See appendix II.

Table 32. Number and rate of cardiac catheterizations for discharges from short-stay hospitals by sex and age: United States, 1980, 1985, and 1988–92

[Discharges of inpatients from non-Federal hospitals. Excludes newborn infants. Data are for *International Classification of Diseases 9th Revision, Clinical Modification* codes 37.21–37.23]

Sex and year	65 years and over						65 years and over					
	All ages ¹	15–44 years	45–64 years	Total	65–74 years	75 years and over	All ages ¹	15–44 years	45–64 years	Total	65–74 years	75 years and over
Both sexes												
Number in thousands												
1980	348	51	187	84	71	13	154.4	49.4	420.3	326.5	454.3	127.7
1985	681	79	350	227	178	50	288.1	71.1	785.0	800.3	1,055.1	428.7
1988	930	93	432	385	286	99	382.9	81.4	951.4	1,276.6	1,620.0	792.3
1989	958	95	425	414	306	108	390.7	82.7	927.9	1,350.5	1,714.4	843.4
1990	995	100	457	421	296	125	401.8	86.0	988.5	1,348.4	1,637.0	950.8
1991	1,000	89	447	446	296	150	399.1	75.9	956.3	1,404.8	1,620.7	1,111.8
1992	1,028	95	432	486	330	156	405.6	81.3	893.8	1,506.3	1,787.5	1,130.8
Male												
1980	228	35	129	52	46	*6	209.6	68.0	611.2	501.3	673.9	173.9
1985	439	58	241	126	102	24	384.6	104.8	1,135.4	1,106.5	1,390.5	592.1
1988	598	67	296	222	172	49	508.4	118.4	1,361.2	1,831.0	2,232.4	1,125.6
1989	601	70	291	230	175	55	506.1	122.3	1,321.5	1,861.6	2,234.8	1,213.8
1990	620	68	306	236	170	66	515.8	118.1	1,379.3	1,879.8	2,143.7	1,426.8
1991	603	61	296	235	169	66	496.0	105.7	1,317.4	1,835.5	2,106.5	1,379.5
1992	636	71	291	266	194	72	517.1	122.1	1,251.2	2,040.7	2,387.1	1,468.7
Female												
1980	120	17	58	32	25	*7	102.9	31.3	247.4	208.4	286.1	102.1
1985	241	22	108	101	76	26	197.8	38.3	465.2	595.5	796.6	340.4
1988	332	26	136	163	113	50	265.2	45.1	574.7	904.4	1,143.8	611.9
1989	357	26	135	185	131	53	282.3	43.9	565.0	1,007.1	1,308.9	642.5
1990	376	32	151	185	126	59	294.5	54.4	627.1	991.0	1,241.3	691.7
1991	397	27	151	211	127	84	307.9	46.5	621.9	1,114.2	1,240.7	965.1
1992	392	24	141	220	136	84	300.4	41.0	561.4	1,144.0	1,316.1	944.1

*Figure does not meet standard of reliability or precision.

¹Includes age groups not shown in table.

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Appendix I

Technical notes on methods

Statistical design of the National Hospital Discharge Survey

Scope of the survey

The National Hospital Discharge Survey (NHDS) covers discharges from noninstitutional hospitals, except Federal, military, and Department of Veterans Affairs hospitals, located in the 50 States and the District of Columbia. Only hospitals with at least six beds and an average length of stay of less than 30 days for all patients were included in the survey from 1965–87. Beginning in 1988, the universe also included hospitals whose specialty was general (medical or surgical) or children’s general, even if the hospital’s average length of stay was 30 days or more.

NHDS history

The National Center for Health Statistics (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 newly opened hospitals. 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 description of the development and design of the original NHDS has been published (12).

Until 1985, all data were collected by a manual system in which sample selection and transcription of information were done manually. Starting in 1985, some data were also collected by using an automated system whereby NCHS purchased data tapes containing discharge medical abstracts from commercial abstracting services and State data systems. Samples were selected from these tapes.

In 1988, NCHS redesigned the NHDS to link it with other surveys conducted by NCHS and to improve efficiency through use of information and technologies not available when the survey was designed in 1964. Details of the new design are outlined below.

The changes in the survey may affect trend data. That is, some of the differences between NHDS estimates based on the 1965–87 design and estimates based on the new design may be due to survey redesign rather than to changes in hospital utilization. A report describing the two survey designs and

discussing the effects of the design changes on estimates from the survey has been published (13).

New sampling design

The 1988 sampling frame consisted of hospitals that were listed in the April 1987 SMG Hospital Market Database (14) and that began to accept inpatients by August 1987. The sampling frame was updated in 1991 to include hospitals from the 1991 SMG Hospital Market Database (15). 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 112 primary sampling units (PSU’s) that comprise a probability subsample of PSU’s used in the 1985–94 National Health Interview Survey (NHIS). The PSU’s are counties, groups of counties, county equivalents (such as parishes or independent cities), or towns and townships (for some PSU’s in New England). The NHDS sample includes with certainty the 26 PSU’s with the largest populations. In addition, the sample includes half of the next 26 largest PSU’s and one PSU from each of 73 PSU strata formed from the remaining PSU’s for the NHIS sample design. Those 73 PSU strata were defined within four geographical regions and were assigned metropolitan statistical area (MSA) or non-MSA status by using 1980 census data and a computer program that minimized the between-PSU variances for NHIS stratification variables. (MSA is a metropolitan statistical area defined by the U.S. Office of Management and Budget on the basis of the 1980 Census.) From the 73 strata thus formed, the PSU’s were selected with probability proportional to the projected 1985 population. A more detailed analysis of the NHIS PSU sample design is presented in a series 2, *Vital and Health Statistics* report (25).

The second stage consists of noncertainty hospitals selected from the sample PSU’s. To ensure distribution of the sample across PSU’s and to maximize the potential for automated data collection, the noncertainty hospitals in those PSU’s were stratified. The strata were defined by region, PSU, and in the 12 largest PSU’s by abstracting status (whether the hospital subscribed to a commercial abstracting service). Within the strata, the hospitals were ordered by PSU, abstracting service status, and hospital specialty-size groups. Group 1 consisted of hospitals with 6–999 beds that specialized in psychiatry, tuberculosis and other respiratory diseases, rehabilitation, chronic disease, mental retardation, alcoholism and other

chemical dependencies, or children's psychiatry. Groups 2–4 included general medical and surgical hospitals and specialty hospitals other than those in group 1. Group 2 hospitals had 6–174 beds, group 3 hospitals had 175–349 beds, and group 4 hospitals had 350–999 beds.

Within each specialty-size group, hospitals were arrayed by their annual numbers of discharges recorded in the April 1987 SMG Hospital Market Database. Hospitals were then selected from each stratum's ordered array by systematic random sampling with probability proportional to their SMG-recorded 1987 annual numbers of discharges. At least three hospitals were selected from every PSU containing three eligible hospitals or more. In PSU's with fewer than three hospitals, all hospitals in the PSU were selected.

For 1992, the sample consisted of 528 hospitals. Of the 528 hospitals, 14 were found to be out of scope (ineligible) because prior to 1992 they went out of business or otherwise failed to meet the criteria for the NHDS universe. Of the 514 in-scope (eligible) hospitals, 494 hospitals responded (NCHS collected data for at least half of the number of sample discharges expected in half or more of the months these hospitals were in scope). The number of hospitals in the universe, the sample, and the responding sample are shown for 1980, 1985, and 1988–92 in [table I](#).

At the third stage, a sample of discharges from each hospital was selected by a systematic random sampling technique. For hospitals using the manual system of data collection, the discharges were selected at the hospital from daily listing sheets, computer files, or other lists in which discharges were listed in some chronological order. For most of these hospitals, the sample discharges were selected on the basis of the terminal digit(s) of the patient's medical record. In some cases, an admission number, billing number, or other number was used. If no patient numbers useful for sampling purposes were available in a hospital's list of discharges, the sample was selected by starting with a randomly selected discharge and taking every *k*th discharge thereafter.

For hospitals whose data were collected via the automated system, the discharges were selected by NCHS from discharge medical abstract files after sorting by the first two digits of the

ICD–9–CM code of the first-listed diagnosis, the patient's age at time of admission (under 1 year, 1–14 years, 15–44 years, 45–64 years, 65–74 years, 75–84 years, 85 years and over, and age unknown), the patient's sex, and the date of discharge. These samples were selected by starting with a randomly selected discharge and taking every *k*th discharge thereafter.

The third-stage sampling rate was determined by the hospital's sampling stratum and the system (manual or automated) used to collect data from the hospital. One percent and 5 percent of discharges in the certainty hospitals were selected under the manual and automated systems, respectively. Except for certainty hospitals, the target sample size was 250 discharges each from all manual system hospitals and from the automated system hospitals that had fewer than 4,000 discharges annually according to the 1987 sampling frame data. Samples of 2,000 were targeted for each of the remaining noncertainty automated system hospitals. The final sample for 1992 included 274,000 discharge medical record abstracts. The number of abstracts collected for 1980, 1985, and 1988–92 are shown in [table I](#).

Data collection and processing

Data collection

Two data collection procedures were used for the survey. One was a manual system of sample selection and data abstraction. The other, first used in 1985, was an automated system involving the purchase of data tapes from abstracting service organizations and selected State systems. The automated system was used by 17 percent of respondent hospitals in 1985 and by 33–37 percent in 1988–92.

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 then forwarded to NCHS for coding, editing, and weighting. A few of these hospitals submitted their data via computer printout or tape. In 1980, 1985, and 1988–92, half to two-thirds of the hospitals participating in the manual system had the work

Table I. Number of hospitals in the National Hospital Discharge Survey universe and sample, number of in-scope and responding sample hospitals, response rates, and number of abstracts collected: 1980, 1985, and 1988–92

Year	Universe	Total sample	Sample in-scope ¹	Respondents ²	Response rate	Abstracts collected
					Percent	Number
Number of hospitals						
1980	³ 8,017	544	492	420	85	224,000
1985	6,007	558	496	414	83	195,000
1988	6,400	542	531	422	79	250,000
1989	6,400	542	526	408	78	233,000
1990	6,400	542	519	474	91	266,000
1991	6,250	528	521	484	93	274,000
1992	6,250	528	514	494	96	274,000

¹Excludes hospitals that were out of business for the whole year or that failed to meet the definition of a short-stay hospital in 1980 and 1985, or of a general, children's general, or short-stay hospital in 1988–92.

²In 1980 and 1985, all hospitals participating in the survey; in 1988–92, hospitals for which data were collected by the National Center for Health Statistics for at least half the number of sample discharges expected in half or more of the months the hospitals were in scope.

³All hospitals added to universe from 1965–79, including those that had gone out of business, which were excluded from totals in 1985 and 1988–92.

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

FORM **HDS-1**
(10-29-90)

DEPARTMENT OF HEALTH AND HUMAN SERVICES
U.S. PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL
NATIONAL CENTER FOR HEALTH STATISTICS

MEDICAL ABSTRACT — NATIONAL HOSPITAL DISCHARGE SURVEY

A. PATIENT IDENTIFICATION

1. Hospital number

2. HDS number

3. Medical record number

Month Day Year

4. Date of admission ... - -

5. Date of discharge ... - -

6. Residence ZIP code ..

B. PATIENT CHARACTERISTICS

7. Date of birth Month Day Year

- -

8. Age (Complete only if date of birth not given) Units

1 Years
2 Months
3 Days

9. Sex (Mark (X) one) 1 Male 2 Female 3 Not stated

10. Race 1 White 3 American Indian/Eskimo/Aleut 5 Other (Specify) _____
2 Black 4 Asian/Pacific Islander 6 Not stated

11. Ethnicity (Mark (X) one) 1 Hispanic origin 2 Non-Hispanic 3 Not stated

12. Marital status (Mark (X) one) 1 Married 3 Widowed 5 Separated
2 Single 4 Divorced 6 Not stated

13. Expected source(s) of payment

	Principal (Mark one only)	Other additional sources (Mark accordingly)
Government sources	1. Worker's compensation <input type="checkbox"/>	<input type="checkbox"/>
	2. Medicare <input type="checkbox"/>	<input type="checkbox"/>
	3. Medicaid <input type="checkbox"/>	<input type="checkbox"/>
	4. Title V <input type="checkbox"/>	<input type="checkbox"/>
Private sources	5. Other government payments <input type="checkbox"/>	<input type="checkbox"/>
	6. Blue Cross <input type="checkbox"/>	<input type="checkbox"/>
Other sources	7. Other private or commercial insurance ... <input type="checkbox"/>	<input type="checkbox"/>
	8. Self pay <input type="checkbox"/>	<input type="checkbox"/>
	9. No charge <input type="checkbox"/>	<input type="checkbox"/>
	10. Other (Specify) _____ <input type="checkbox"/>	<input type="checkbox"/>

No source of payment indicated

14. Status/Disposition of patient (Mark (X) appropriate box(es))

Status	Disposition
1 <input type="checkbox"/> Alive →	a. <input type="checkbox"/> Routine discharge/ discharged home
	b. <input type="checkbox"/> Left against medical advice
	c. <input type="checkbox"/> Discharged, transferred to another short-term hospital
	d. <input type="checkbox"/> Discharged, transferred to long-term care institution
	e. <input type="checkbox"/> Other disposition/not stated
2 <input type="checkbox"/> Died	
3 <input type="checkbox"/> Status not stated	

C. FINAL DIAGNOSES (including E- code diagnoses)

Principal: _____

Other/additional: _____

See reverse side for additional diagnoses

Optional — ICD-9-CM Nos.				
ICD-9-CM	ICD-9-CM	ICD-9-CM	ICD-9-CM	ICD-9-CM

D. SURGICAL AND DIAGNOSTIC PROCEDURES

Principal: 1. _____

Other/additional: 2. _____

3. _____

4. _____

NONE See reverse side for additional procedures

Date	Date		
	Month	Day	Year

Completed by _____ Date _____

Figure I. Medical abstract for the National Hospital Discharge Survey, 1992

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 this work on behalf of NCHS. For the automated system, NCHS purchased tapes containing machine-readable medical record data and selected sample discharges from these tapes.

The medical abstract form (figure I) and the abstract service data tapes contain items relating to the personal characteristics of the patient. These items include birth date, sex, race, ethnicity, marital status, ZIP Code (but not name or address), and expected sources of payment. Administrative data such as admission and discharge dates, discharge status, and medical record number are also included. The medical information about patients includes diagnoses, surgical and nonsurgical operations and procedures, and dates of surgery. These data items conform with the Uniform Hospital Discharge Data Set (UHDDS)(26). The PSU, hospital name, medical record number, date of birth, and patient ZIP Code are confidential information not available to the public.

Medical coding and edit

The medical information recorded on the sample patient abstracts, collected by the manual system, was coded by NCHS staff. A maximum of seven diagnostic codes were assigned for each sample abstract. In addition, if the medical information included surgical or nonsurgical procedures, a maximum of four codes for these procedures were assigned. The system currently used for coding the diagnoses and procedures is the *International Classification of Diseases, 9th Revision, Clinical Modification*, or ICD-9-CM (16).

Although the ICD-9-CM has been used for coding NHDS data since 1979, it should be noted that this coding system is not static, but undergoes periodic updating. Beginning in 1986, addenda to the ICD-9-CM have been published annually and go into effect on October 1. They include additions, deletions, and changes in codes or titles. The actual dates when these coding changes went into effect in the NHDS varied over time and by source of data. For 1988-91, part of the data for certain hospitals were coded according to that year's addenda, but the addenda changes were not fully implemented until the following year. To improve the consistency of the coding, beginning with the 1992 data, no use was made of the addenda until the beginning of the calendar year following their effective date. Thus, the 1992 data were coded using the 1986-91 addenda, and the 1992 addenda were not used until 1993 data were coded.

Changes in codes affecting diagnostic or procedure categories in this report are shown in tables II and III. These conversion tables show the new ICD-9-CM codes from 1986-91 addenda, the date the codes were introduced, and the code to which the diagnosis or procedure had been assigned prior to the development of the new code. Information about all coding changes in the 1986-91 addenda has been published (27).

Among the changes affecting categories in this report was the 1987 revision of ICD-9-CM code 33.27 from "other biopsy of lung," to "closed endoscopic biopsy of lung."

Table II. Conversion table of changes in diagnosis codes that affect diagnostic categories in this report

[Codes are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*]

Current code(s) assignment	Effective October 1	Previous code(s) assignment
042.0-042.9	1986	279.19
043.0-043.9	1986	279.19
044.0-044.9	1986	279.19
203.01	1991	V10.79
203.11	1991	V10.79
203.81	1991	V10.79
204.01	1991	V10.61
204.11	1991	V10.61
204.21	1991	V10.61
204.81	1991	V10.61
204.91	1991	V10.61
205.01	1991	V10.62
205.11	1991	V10.62
205.21	1991	V10.62
205.31	1991	V10.62
205.81	1991	V10.62
205.91	1991	V10.62
206.01	1991	V10.63
206.11	1991	V10.63
206.21	1991	V10.63
206.81	1991	V10.63
206.91	1991	V10.63
207.01	1991	V10.69
207.11	1991	V10.69
207.21	1991	V10.69
207.81	1991	V10.69
208.01	1991	V10.60
208.11	1991	V10.60
208.21	1991	V10.60
208.81	1991	V10.60
208.91	1991	V10.60
411.81	1989	410.9
429.71	1989	410.0-410.9
429.79	1989	410.0-410.9
518.81	1987	799.1
569.84	1990	557.1

Before 1987, code 33.27 was not included in the category, "bronchoscopy with or without biopsy," but after the revision it was included.

The codes for joint replacement, revision, and arthroplasty were substantially revised in the 1989 addenda. "Total knee replacement," which had been coded 81.41, was changed to 81.54. "Total hip replacement," which had been coded 81.51 and 81.59 became 81.51 only; 81.59 was redefined to "revision of joint replacement not otherwise classified." Because there were two definitions for code 81.59 during 1989, it was not possible to make an estimate of total hip replacement for that year.

In the 1991 addenda, code 93.92, "other mechanical assistance to respiration," was deleted from the respiratory therapy category and new codes 96.70-96.72 for "other continuous mechanical ventilation" were added to the coding system. These new codes were included in the "respiratory therapy" category in this report.

Table III. Conversion table of changes in procedure codes that affect procedure categories in this report

[Codes are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*]

Current code(s) assignment	Effective October 1	Previous code(s) assignment
29.31	1991	83.02
33.27	1987	33.22+33.27
33.28	1987	33.27
35.96	1986	35.03
36.04	1986	39.97
37.79	1987	86.09
44.44	1989	38.86
45.16	1988	45.14 (45.15 before 1987)
45.75 (Hartmann resection added)	1988	48.66 (code deleted)
56.35	1987	45.12
77.56	1989	77.89,78.49,81.18
77.57	1989	77.89,80.48,81.18,83.85
81.51	1989	81.51,81.59
81.53	1989	81.51,81.59,81.61,81.62, 81.63,81.64
81.54-81.55	1989	81.41
86.27	1986	86.22-86.23
86.28	1988	86.22
96.70	1991	93.92 (code deleted)
96.71	1991	93.92 (code deleted)
96.72	1991	93.92 (code deleted)
97.05	1989	51.97
98.51-98.52	1989	59.96 (code deleted)
98.59	1989	59.96 (code deleted)

With two exceptions, the order of diagnoses and procedures for sampled discharges is preserved to reflect the order on the medical record face sheet or in the abstracting service file. One exception is for women admitted for delivery. In this case, a code of V27 from the supplemental classification is assigned as the first-listed code in order to provide an estimate of all deliveries. In the other exception, whenever an acute myocardial infarction is encountered with other circulatory diagnoses and is other than the first entry, it is reordered to the first position.

An ongoing quality control program is undertaken on the coding and entering of data from abstracts to machine-readable form. Approximately 5 percent of the abstracts are independently recoded by an NHDS coder, with discrepancies resolved by the chief coder. Overall error rates for records manually coded by NCHS for the 1988-92 data years ranged from 1.6 to 3.5 percent for medical (ICD-9-CM) coding and entering and from 0.4 to 0.8 percent for demographic coding and entering.

Following conversion of the data on the medical abstract to computer tape and combining the data with the automated data tapes, a final medical edit was performed by computer inspection and by a manual review of rejected abstracts. If the sex or age of the patient was incompatible with the recorded

medical information, priority was given to the medical information.

Presentation of estimates

Grouping of diagnoses and procedures

In this report, the broadest groupings of diseases and injuries shown correspond to the ICD-9-CM chapters 1-17 and the supplementary classification of factors influencing health status and contact with health services. Diagnostic categories, the most detailed groupings of diseases and injuries shown, are subsets of the major groups or chapters.

The procedure groupings used in this report are the groups numbered 1-16 in the ICD-9-CM section entitled "Procedure Classification." Specific categories of operations or procedures, the most detailed of these groups shown, are subsets of the major groups.

In developing tables of diagnoses and of procedures, an effort was made to present data for the most frequently occurring conditions or procedures, as well as those of significant public health interest. The diagnostic and procedure categories in tables 8-16 and 18-23 are the same categories shown in the 1990-93 NHDS annual summaries published in *Advance Data From Vital and Health Statistics* and series 13 of *Vital and Health Statistics*.

Patient characteristics not stated

Age or sex of the patient was not stated for 0.5 to 2 percent of sample discharges for 1988-92. These data were imputed by assigning the patient an age or sex consistent with the age or sex of other sampled patients with the same diagnostic code. In addition to the edits performed by NCHS, data obtained through the automated system may have been edited by an abstract service and may have had data imputed. The extent of this imputation, if any, is unknown.

Rounded numbers

Estimates in this report have been rounded. Therefore, detailed figures may not add to totals. Rates and percents were calculated using unrounded figures and may not agree with computations made from the rounded data.

Population estimates

The population estimates used in computing rates are from published and unpublished estimates for the U.S. civilian population, including institutionalized persons, on July 1 of the data year provided by the U.S. Bureau of the Census. The estimates by age, sex, and geographic region are presented in table IV and are consistent with population estimates published in *Current Population Reports*, Series P-25.

The population estimates in table IV are based on the 1990 census as enumerated. They are generally somewhat smaller than the population estimates used in the NHDS annual summaries for 1985 and 1988-90 (28-31), which were based on the 1980 census. As a result, the population-based rates in this report are generally slightly higher than the previously reported rates for 1985 and 1988-90 (table V), although the differences are not statistically significant. The

Table IV. Civilian population by age, sex, and geographic region: United States, 1980, 1985, and 1988–92[Population estimates consistent with Series P-25, *Current Population Reports*, U.S. Bureau of the Census]

<i>Age, sex, and geographic region</i>	1980	1985	1988	1989	1990	1991	1992
All ages		Population in thousands					
Total	225,621	236,219	242,817	245,131	247,751	250,566	253,497
Sex:							
Male	108,924	114,182	117,571	118,763	120,124	121,539	123,081
Female	116,697	122,037	125,246	126,368	127,627	129,027	130,416
Region:							
Northeast	49,075	49,759	50,467	50,642	50,725	50,871	51,026
Midwest	58,752	58,667	59,115	59,327	59,647	60,090	60,586
South	74,886	80,526	83,026	83,830	84,872	86,067	87,299
West	42,908	47,267	50,209	51,332	52,507	53,537	54,586
Under 15 years							
Total	51,290	51,534	52,451	53,222	54,103	55,130	55,962
Sex:							
Male	26,219	26,374	26,851	27,245	27,698	28,225	28,653
Female	25,071	25,160	25,600	25,977	26,405	26,906	27,309
Region:							
Northeast	10,337	9,756	9,841	9,978	10,097	10,263	10,361
Midwest	13,589	13,080	12,974	13,113	13,226	13,350	13,422
South	17,480	17,945	18,213	18,367	18,625	18,957	19,251
West	9,884	10,753	11,423	11,764	12,154	12,561	12,929
15–44 years							
Total	104,158	111,711	114,819	115,393	116,178	116,973	116,946
Sex:							
Male	51,209	55,151	56,866	57,198	57,653	58,063	58,110
Female	52,949	56,560	57,953	58,195	58,525	58,910	58,836
Region:							
Northeast	22,137	23,419	23,827	23,805	23,729	23,625	23,342
Midwest	26,985	27,325	27,510	27,455	27,522	27,676	27,641
South	34,402	37,856	38,988	39,213	39,557	39,984	40,106
West	20,634	23,112	24,494	24,921	25,371	25,687	25,856
45–64 years							
Total	44,465	44,558	45,423	45,835	46,243	46,710	48,304
Sex:							
Male	21,132	21,265	21,757	21,987	22,214	22,461	23,274
Female	23,333	23,293	23,667	23,848	24,029	24,249	25,031
Region:							
Northeast	10,500	10,017	9,980	9,964	9,929	9,939	10,198
Midwest	11,450	11,010	11,077	11,104	11,144	11,206	11,561
South	14,459	15,148	15,561	15,751	15,962	16,185	16,787
West	8,055	8,383	8,806	9,016	9,208	9,379	9,758
65 years and over							
Total	25,707	28,416	30,123	30,682	31,228	31,753	32,285
65–74 years	15,651	16,859	17,626	17,864	18,098	18,280	18,461
75 years and over	10,057	11,557	12,497	12,818	13,129	13,474	13,824
Male	10,364	11,392	12,098	12,333	12,559	12,791	13,045
65–74 years	6,787	7,339	7,710	7,824	7,934	8,022	8,125
75 years and over	3,577	4,053	4,388	4,509	4,626	4,769	4,920
Female	15,343	17,024	18,026	18,349	18,668	18,963	19,240
65–74 years	8,863	9,520	9,916	10,040	10,165	10,258	10,336
75 years and over	6,480	7,504	8,109	8,308	8,504	8,705	8,904
Region:							
Northeast	6,100	6,568	6,819	6,895	6,971	7,043	7,125
Midwest	6,728	7,251	7,554	7,655	7,755	7,857	7,962
South	8,545	9,577	10,264	10,500	10,728	10,942	11,155
West	4,335	5,020	5,487	5,632	5,774	5,911	6,043

Table V. Rate of discharges from short-stay hospitals reported in annual summary and revised using population based on 1990 census by sex and age: United States, 1985 and 1988–90

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

Sex and age	1985		1988		1989		1990	
	Annual summary	Revised	Annual summary	Revised	Annual summary	Revised	Annual summary	Revised
Rate of discharges per 1,000 population								
Both sexes	147.9	148.4	127.6	128.3	125.5	126.2	123.5	124.3
Under 15 years	57.2	57.7	49.2	49.8	48.2	48.8	43.9	44.6
15–44 years	125.1	125.0	104.0	103.9	102.8	102.7	101.7	101.6
45–64 years	169.5	170.8	140.5	142.1	135.0	136.8	133.1	135.0
65 years and over	368.3	369.8	334.1	336.8	330.2	333.4	327.1	330.9
Male	123.5	124.0	106.9	107.5	105.3	106.0	101.5	102.2
Under 15 years	63.8	64.4	54.6	55.3	55.1	55.8	48.5	49.2
15–44 years	75.4	75.3	61.5	61.3	59.8	59.5	58.0	57.8
45–64 years	176.2	177.6	146.4	148.0	142.8	144.6	138.3	140.2
65 years and over	393.2	397.9	360.3	367.8	354.4	363.1	346.2	356.1
Female	170.7	171.2	147.0	147.7	144.5	145.3	144.1	145.0
Under 15 years	50.2	50.6	43.4	43.9	40.9	41.5	39.2	39.7
15–44 years	173.4	173.5	145.6	145.8	144.9	145.1	144.5	144.7
45–64 years	163.4	164.6	135.1	136.7	127.9	129.7	128.2	130.2
65 years and over	351.4	351.0	316.2	316.0	313.5	313.5	313.8	314.0

estimate of the 1980 population changed very little when the 1990 census was taken into account. However, the rates in the 1980 annual summary (32) differ from rates presented here because institutionalized persons were not included in the population used to compute rates in the 1980 annual summary (33). The populations used to compute rates in the 1991 and 1992 annual summaries (34,35) were based on the 1990 census.

Rates using civilian population estimates will be overestimated to the extent that military personnel and non-U.S. citizens use NHDS-eligible hospitals and will be underestimated to the extent that civilians (for example, military dependents or retirees) use hospitals that are not in the NHDS universe, that is, hospitals that are institutional, Federal, military, veteran, or long-stay hospitals that are not general, maternal, or children’s general hospitals.

Published and flagged estimates

Estimates are not presented unless a reasonable assumption regarding the probability of distribution of the sampling error is possible on the basis of the Central Limit Theorem. The Central Limit Theorem states that, given a sufficiently large sample size, the sample estimate approximates the population estimate, and upon repeated sampling, its distribution would be approximately normal.

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 5,000–9,000 are presented with an asterisk (*) to indicate that they may not be reliable. These estimates are generally based on less than 60 cases.

Estimation procedures

Statistics from the NHDS are derived by a multistage estimation procedure that produces essentially unbiased national estimates. The estimation procedure was changed as part of the 1988 redesign of the survey. The procedure used before 1988 is described in detail in [appendix I](#) of two publications (36,37), and is compared with the new estimation procedure in a recent report (13).

The estimation procedure used for 1988–92 data has three basic components: (a) inflation by reciprocals of the probabilities of sample selection, (b) adjustment for nonresponse, and (c) population weighting ratio adjustments. The second and third components were made separately by admission type—that is, for discharges of newborn infants (whose hospital stay began with their births) and for discharges of other than newborn infants.

Inflation by reciprocals of probabilities of selection

There is one probability for each stage of sampling: (a) the probability of selecting the PSU, (b) the probability of selecting the hospital, and (c) the probability of selecting the discharge within the hospital. The last probability varies monthly and is calculated to be the sample size from the hospital for the month divided by the total number of discharges occurring at the hospital that month. The overall probability of selection is the product of the probabilities at each stage. The inverse of the overall selection probability is the basic inflation weight.

Adjustment for nonresponse

NHDS data were adjusted to account for two types of nonresponse. The first type of nonresponse occurred when an in-scope (NHDS-eligible) sample hospital did not respond for

more than half the months during which it was in scope, thus making it a nonrespondent hospital. In this case, the weights of discharges from hospitals similar to the nonrespondent hospitals were inflated to account for discharges represented by the nonrespondent hospitals. For this purpose, hospitals were judged to be similar if they were in the same region, hospital specialty-size group, and if possible, the same sampling stratum (that is, the same abstracting status group if the nonrespondent hospital was in the 12 largest PSU's and in the same PSU, otherwise). The adjustments for this nonresponse were made separately for admission types—that is, for discharges of newborn infants and for all other discharges. The adjustment consisted of a ratio for which the numerator was the weighted number of discharges of the admission type in all similar sample hospitals (regardless of response status) and the denominator was the weighted total of discharges of that admission type from the hospitals similar to the nonrespondent hospitals. Data on the number of discharges for each admission type came from either the hospitals or the 1989–93 SMG Hospital Market Databases (15,38–41).

The second type of nonresponse occurred when NCHS failed to collect all the discharge abstracts expected (the number expected is the product of the hospital's total discharges each month and the discharge sampling rate assigned to the hospital). In each month when the hospital was respondent (at least half the expected abstracts were collected), the weights of abstracts collected for the month were inflated to account for the missing abstracts. For a hospital's month(s) of nonresponse, the weights of discharges in the hospital's respondent months were inflated by ratios that varied with discharge groups defined by the ICD–9–CM diagnostic classes of those discharges' first-listed diagnoses. The adjustment ratio for each partially respondent hospital and each discharge group was calculated using only data from sample hospitals that were both NHDS eligible and respondent for all 12 months of the data year. The ratio had as its numerator the weighted sum of discharges in that discharge group for all months in which the partially respondent hospital was in scope and had as its denominator the weighted sum of discharges in that discharge group that occurred in the months when the partially respondent hospital did not respond to the NHDS.

Population weighting ratio adjustment

Adjustments were made within each of 16 noncertainty hospital groups defined by region and hospital specialty-size classes to adjust for oversampling or undersampling of discharges reported in the sampling frame for the data year. For discharges other than newborn infants, the adjustment is a multiplicative factor that had as its numerator the number of admissions reported for the year at sampling frame hospitals within each region-specialty-size group and as its denominator the estimated number of those admissions for that same hospital group. The adjustment for discharges of newborn infants was similar, but numbers of births were used in place of admissions. The ratio numerators were based on the figures obtained from the SMG Hospital Market Databases (15,38–

41) and the ratio denominators were obtained through a simple inflation of the SMG figures for the NHDS sample hospitals.

Reliability of estimates

Nonsampling errors

As from any survey, results are subject to nonsampling errors, which include errors due to sampling frame errors, hospital nonresponse, missing abstracts, and recording processing errors. The magnitude of the nonsampling errors cannot be determined. However, errors resulting from the exclusion of in-scope hospitals from the sampling frame are believed to be small because the hospitals excluded are ones that opened after the frame was constructed, and hence, they tend to have few discharges relative to hospitals that are in the frame.

Other nonsampling errors are kept to a minimum by methods built into the survey procedures, such as training the data collectors in sampling and data abstraction, quality checks of sampling and abstracting, manual and computer editing, and verification of keypunching and coding. Some nonsampling errors are discussed under “Presentation of estimates.”

Sampling errors

Because the statistics presented in this report are based on a sample, they may differ from the figures that would be obtained if a complete census had been taken using the same forms, definitions, instructions, and procedures. However, the probability design of NHDS permits the calculation of sampling errors.

The standard error (SE) is primarily a measure of sampling variability that occurs by chance because only a sample rather than the entire population is surveyed. The standard error, as calculated for the NHDS, also reflects part of the variation that arises in the measurement process, but does not include any systematic bias.

The chances are about 68 in 100 that an estimate from the sample would differ from a complete census by less than the standard error. The chances are 95 in 100 that the difference would be less than twice the standard error, and about 99 in 100 that it would be less than 2.5 times as large.

The relative standard error (RSE) of an estimate is obtained by dividing the standard error by the estimate. The resulting value can be multiplied by 100 to express the relative standard error as a percent of the estimate.

Relative standard errors for aggregate estimates

Estimates of standard errors for 1980 and 1985 data were calculated using a customized computer routine described in a previous publication (12). Approximate relative standard errors were calculated from these estimates and are shown in [tables VI–VIII](#). The approximate relative standard errors for discharges or first-listed diagnoses are in [table VI](#), those for days of care are in [table VII](#), and those for procedures are in [table VIII](#). For the 1985 estimates and the 1980 procedure estimates, the standard errors of regional estimates differed from the standard errors of estimates for other characteristics

Table VI. Approximate relative standard errors of estimated number of discharges or first-listed diagnoses by size of estimate: 1980 and 1985

Size of estimate	1985		
	1980 ¹	Region	All other characteristics ²
5,000	18.0	22.4	13.2
10,000	14.9	18.3	10.6
25,000	11.9	14.3	8.1
50,000	10.1	12.0	6.7
100,000	8.8	10.3	5.7
250,000	7.4	8.5	4.6
500,000	6.5	7.5	4.0
1,000,000	5.8	6.6	3.5
3,000,000	5.0	5.6	2.9
5,000,000	4.7	5.2	2.7
10,000,000	4.3	4.8	2.4
20,000,000	4.0	4.4	2.2
30,000,000	3.8	4.2	2.1
40,000,000	3.7	4.1	2.1

¹Applicable to all 1980 estimates of discharges or first-listed diagnoses shown in this report.

²Applicable to all 1985 estimates of discharges or first-listed diagnoses shown in this report except regional estimates.

Table VII. Approximate relative standard errors of estimated number of days of care by size of estimate: 1980 and 1985

Size of estimate	1985		
	1980 ¹	Region	All other characteristics ²
10,000	24.7	35.4	16.9
30,000	18.9	26.4	13.0
50,000	16.8	23.2	11.6
100,000	14.3	19.4	9.9
300,000	11.2	14.9	7.8
500,000	10.1	13.2	7.1
1,000,000	8.8	11.2	6.2
3,000,000	7.1	8.8	5.0
5,000,000	6.5	7.9	4.6
10,000,000	5.7	6.9	4.1
50,000,000	4.4	5.1	3.2
100,000,000	4.0	4.5	2.9
250,000,000	3.5	3.9	2.6

¹Applicable to all 1980 estimates of days of care shown in this report.

²Applicable to all 1985 estimates of days of care shown in this report except regional estimates.

shown in this report. Thus, one set of approximate relative standard errors was derived for regional estimates and another set for the other estimates. For 1980 estimates of discharges and days of care, only one set of approximate relative standard errors was required for the characteristics in this report as the standard errors computed for these characteristics were similar to each other.

The estimated parameters for the approximate relative standard error equations for 1988–92 aggregate statistics are derived from standard error estimates calculated with SESUDAAN software. SESUDAAN computes standard errors by using a first-order Taylor series approximation of the deviation of estimates from their expected values (42). Estimated parameters for discharges or first-listed diagnoses are

Table VIII. Approximate relative standard errors of estimated number of procedures by size of estimate: 1980 and 1985

Size of estimate	1980		1985	
	Region	All other characteristics ¹	Region	All other characteristics ²
5,000	29.8	17.3	31.3	18.2
10,000	24.3	14.7	26.4	15.1
25,000	19.1	12.1	21.4	12.0
50,000	16.1	10.6	18.6	10.3
100,000	13.8	9.4	16.3	8.9
250,000	11.4	8.1	13.9	7.5
500,000	10.0	7.3	12.5	6.7
1,000,000	8.9	6.7	11.3	6.0
3,000,000	7.5	5.9	9.9	5.1
5,000,000	7.0	5.6	9.3	4.8
10,000,000	6.4	5.2	8.7	4.4
20,000,000	5.9	4.9	8.1	4.1
30,000,000	5.7	4.7	7.8	4.0

¹Applicable to all 1980 estimates of procedures shown in this report except regional estimates.

²Applicable to all 1985 estimates of procedures shown in this report except regional estimates.

shown in table IX, those for days of care in table X, and those for procedures in table XI. The approximate relative standard error (RSE) of an estimate X , expressed as a percent of X , may be calculated using the formula:

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

where a , and b are as defined in tables IX–XI.

Relative standard errors for estimates of percents

The approximate relative standard error for a percent p , expressed as a percent of p , in which the numerator (N) and the denominator (D) are estimates from the NHDS and the numerator is a subclass of the denominator, can be computed using the formula:

$$RSE(p = N/D) = 100 \sqrt{(SE_N^2/N^2) - (SE_D^2/D^2)}$$

This formula can be used for percents based on data from all years of the NHDS. For the 1988–92 data, the approximate relative standard error for a percent p , expressed as a percent of p , also can be calculated directly using the formula:

$$RSE(p) = 100 \sqrt{b(1-p)/(pX)}$$

where $100p$ is the percent of interest, X is the denominator of the percent, and b is the parameter b in the formula for approximating the $RSE(X)$. The values for b are given in tables IX–XI.

These approximations are valid if the relative standard error of the denominator is less than 5 percent or the relative standard errors of the numerator and denominator are both less than 10 percent (43,44).

Relative standard errors where the numerator is not a subclass of the denominator

If the denominator of the rate is an estimate produced by the U.S. Bureau of the Census for the total U.S. population or

Table IX. Estimated parameters for approximate relative standard error equations for number of discharges or first-listed diagnoses by selected characteristics: 1988–92

Selected characteristic	1988		1989		1990		1991		1992	
	a	b	a	b	a	b	a	b	a	b
Total	0.00358	173.173	0.00360	171.428	0.00213	228.834	0.00101	546.321	0.00097	449.059
Sex										
Male	0.00273	263.937	0.00271	348.880	0.00152	313.079	0.00447	213.042	0.00377	355.244
Female	0.00214	355.406	0.00235	338.538	0.00125	311.632	0.00099	442.186	0.00089	404.530
Age										
Under 15 years	0.01984	109.886	0.02168	107.150	0.01597	47.116	0.01786	65.842	0.06075	81.775
15–44 years	0.00312	158.564	0.00341	165.558	0.00142	299.762	0.00956	111.147	0.01291	44.505
45–64 years	0.00361	139.812	0.00295	252.955	0.00157	234.543	0.01292	44.094	0.00656	147.706
65 years and over	0.00262	248.331	0.00281	202.073	0.00161	263.223	0.01149	25.788	0.00175	464.831
Region										
Northeast	0.00432	154.474	0.00380	132.181	0.00274	56.268	0.00293	243.156	0.00275	277.031
Midwest	0.01049	215.711	0.01126	252.898	0.00487	183.531	0.00603	331.780	0.00358	296.767
South	0.00637	194.720	0.00588	175.845	0.00375	343.892	0.00247	547.686	0.00375	464.132
West	0.00858	221.258	0.01397	245.475	0.00564	318.914	0.00513	403.340	0.00006	1,168.044

NOTE: The approximate relative standard error (RSE) for an estimate (X) can be determined from the equation $RSE(X) = 100 \sqrt{a + b/x}$.

Table X. Estimated parameters for approximate relative standard error equations for number of days of care by selected characteristics: 1988–92

Selected characteristic	1988		1989		1990		1991		1992	
	a	b	a	b	a	b	a	b	a	b
Total	0.00446	1,222.400	0.00404	1,438.643	0.00358	452.582	0.00173	2,343.213	0.00150	2,671.104
Sex										
Male	0.00331	1,554.308	0.00311	1,853.369	0.00293	292.127	0.00518	5,120.963	0.00823	995.275
Female	0.00241	1,602.350	0.00253	1,907.568	0.00213	701.564	0.00194	1,634.957	0.00149	1,914.510
Age										
Under 15 years	0.01604	708.124	0.01976	1,248.390	0.00224	140.764	0.07618	737.582	0.12836	71.171
15–44 years	0.00289	1,097.768	0.00298	1,225.181	0.00301	460.089	0.02384	475.352	0.02014	222.396
45–64 years	0.00366	1,102.740	0.00278	1,551.060	0.00920	432.971	0.02949	92.219	0.01746	151.920
65 years and over	0.00312	2,314.965	0.00295	2,110.341	0.00251	762.854	0.01849	25.558	0.01680	456.313
Region										
Northeast	0.00421	1,003.567	0.00432	972.782	0.00368	146.195	0.00451	1,967.234	0.00489	2,079.029
Midwest	0.01152	1,086.414	0.01289	1,493.015	0.00605	970.001	0.01037	608.558	0.00557	1,297.946
South	0.00733	1,722.863	0.00436	1,408.247	0.00540	929.232	0.00400	1,435.185	0.00457	1,148.825
West	0.01053	1,188.078	0.01456	1,361.642	0.01036	830.740	0.00891	871.769	0.02108	1,902.219

NOTE: The approximate relative standard error (RSE) for an estimate (X) can be determined from the equation $RSE(X) = 100 \sqrt{a + b/x}$.

one or more of the age and sex groups of the population, then the approximate relative standard error of the rate is equivalent to the approximate relative standard error of the numerator that can be obtained from tables VI–XI.

If the numerator X and the denominator Y are both estimated from the NHDS, then the approximate relative standard error of the ratio X/Y , expressed as a percent of X/Y , is calculated using the formula:

$$RSE(X/Y) = 100 \sqrt{[RSE(X)]^2 + [RSE(Y)]^2}$$

This approximation is valid if the relative standard error of the denominator is less than 5 percent or the relative standard errors of the numerator and denominator are both less than 10 percent (43,44).

Weighted least squares as a test for trend

A weighted least squares regression method has been used to analyze data from the National Hospital Discharge Survey (45). This method was adapted to analyze selected trends in rates for the years 1988–92. Exact standard errors were obtained for use in the weighted least squares test for trends. These standard errors were computed using SUDAAN software, which uses a first-order Taylor series approximation of the deviation of estimates from their expected values. The SUDAAN software and the approach it uses is described in the user’s manual (19).

If it is hypothesized that a linear relationship exists between an independent variable and a dependent variable (for

Table XI. Estimated parameters for approximate relative standard error equations for number of procedures by selected characteristics: 1988–92

Selected characteristic	1988		1989		1990		1991		1992	
	a	b	a	b	a	b	a	b	a	b
Total	0.00415	464.814	0.00440	477.756	0.00547	92.597	0.00153	427.265	0.00143	377.158
Sex										
Male	0.00376	428.402	0.00388	444.732	0.00410	89.724	0.00568	139.827	0.00465	336.276
Female	0.00332	467.482	0.00373	457.376	0.00337	83.021	0.00164	342.466	0.00124	416.841
Age										
Under 15 years	0.02228	428.541	0.02644	386.539	0.03171	44.124	0.03313	53.065	0.10248	74.715
15–44 years	0.00362	443.165	0.00376	445.183	0.00302	139.070	0.00986	87.726	0.00903	153.675
45–64 years	0.00374	463.928	0.00376	483.766	0.00491	68.024	0.01182	125.847	0.00494	295.564
65 years and over	0.00351	442.050	0.00383	468.438	0.00436	47.886	0.01629	12.837	0.00986	288.155
Region										
Northeast	0.00493	285.834	0.00456	331.430	0.00588	108.765	0.00746	181.945	0.00556	166.484
Midwest	0.01138	464.393	0.01426	491.416	0.00886	107.681	0.00781	333.914	0.00587	240.949
South	0.00833	449.500	0.00854	452.325	0.00781	50.919	0.00298	468.737	0.00298	430.632
West	0.01193	571.693	0.01387	541.125	0.01235	144.582	0.00753	251.058	0.00831	735.033

NOTE: The approximate relative standard error (RSE) for an estimate (X) can be determined from the equation $RSE(X) = 100 = \frac{a}{a + b/x}$.

example, year and discharge rate), then a useful test for this relationship is to fit a regression line to the data, determine the slope of the line, and then determine whether or not this slope is significantly different from zero. That is, a regression line of the form

$$Y_i = a + bX_i$$

is fitted to the data, where, for this example, Y_i = predicted discharge rate, X_i = year, a = the estimated Y -intercept, that is the estimated discharge rate if year equals zero, and b = the estimated slope of Y on X , that is, the estimated rate of change in the discharge rate per unit change in year.

The data available from the National Hospital Discharge Survey present certain basic problems that discourage the use of classical regression procedures. Among these problems are violation of the assumptions of independence of the original observations, violation of homoscedasticity, that is, equal variances of the dependent variable within each category of the independent variable, perhaps violation of the normality assumption, and so forth. Dr. Paul Levy, formerly of NCHS, has devised a modified regression model that makes no assumptions about the original observations and that makes no stronger assumptions about the sample estimates than are made in testing whether two means are equal when the estimated means and their standard errors are obtained from complex surveys (45,46).

The proposed model is as follows:

1. Let Y_i be the estimate of interest and S_{y_i} be the estimated standard error for the i th group.
2. Let X_i be the independent variable for the group.
3. Assume S_{y_i} is based on a large enough number of observations that it can be assumed to be equal to

s_{y_i} and thus without sampling error.

4. Further assume that

$$E(Y_i) = \alpha + \beta X_i$$

$$V(Y_i) = S_{y_i}^2 \text{ for } i = 1, 2, \dots, K$$

where α is the true Y -intercept, β is the true slope, and K is the number of groups.

5. Finally, assume that the Y_i are normally distributed and are statistically independent of each other.

The weighting procedure proposed weights all observations by the reciprocal of the variance. That is, $w_i = 1/S_{y_i}^2$ and the mean $\bar{X} = \sum w_i X_i / \sum w_i$ and the mean $\bar{Y} = \sum w_i Y_i / \sum w_i$.

The slope is computed in a manner similar to the classical least squares regression, by using the following formula:

$$b = \frac{\sum w_i (X_i - \bar{X}) Y_i}{\sum w_i (X_i - \bar{X})^2}$$

This is easily computed by using

$$b = \frac{\sum w_i X_i Y_i - (\sum w_i) (\bar{X}) (\bar{Y})}{\sum w_i X_i^2 - (\sum w_i) \bar{X}^2}$$

The variance of the slope is

$$s_b^2 = \frac{\sum w_i (X_i - \bar{X})^2 \sigma_y^2}{[\sum w_i (X_i - \bar{X})^2]^2}$$

Because $w_i = 1/\sigma_{y_i}^2$, this formula can be simplified to

$$\sigma_b^2 = \frac{\sum w_i (X_i - \bar{X})^2}{[\sum w_i (X_i - \bar{X})^2]^2} = \frac{1}{\sum w_i (X_i - \bar{X})^2}$$

and computationally

$$S_b = \sqrt{\frac{1}{\sum w_i X_i^2 - (\sum w_i) \bar{X}^2}}$$

For the weighted least squares test, the null hypothesis is that the slope of the regression line does not significantly differ from zero, and the alternate hypothesis is that it does differ from zero (i.e., $H_0: \beta=0$, and $H_A: \beta \neq 0$). An approximate normal deviate test of the null hypothesis can be performed by computing $z = b/S_b$ and comparing the absolute value of the result to the appropriate critical value.

For example, the discharge rate (Y) by year (X) is recorded as shown in [table XII](#). Exact standard errors, computed using SUDAAN software are shown in [table XII](#). These may not agree with approximate standard errors calculated from [tables IX–XI](#). By applying the method described to the data shown, we have:

$$\sum w_i X_i Y_i = 96,721.547$$

$$\sum w_i = 0.390$$

$$\sum w_i X_i = 776.196$$

$$\sum w_i Y_i = 48.598$$

$$\sum w_i X_i^2 = 1,544,821.826$$

$$\bar{X} = 1,990.246$$

$$\bar{Y} = 124.611$$

$$b = -1.429$$

$$S_b = 1.177$$

$$z = -1.215$$

Table XII. Worksheet for weighted least squares regression of discharge rate on year: United States, 1988–92

Year (X_i)	Discharge rate per 1,000 population (Y_i)	Standard error of discharge rate (S_{y_i})	$w_i = 1/S_{y_i}^2$
1988	128.3	4.093	0.060
1989	126.2	4.329	0.053
1990	124.3	3.170	0.100
1991	124.1	3.426	0.085
1992	122.1	3.301	0.092

Because the z value is less than the critical value ($| -1.215 | < 1.96$), no association between the discharge rate and year is demonstrated.

Tests of significance

In this report, the statistical significance of the weighted least squares test for trends is based on the two-sided z -test with a critical value of 1.96 (0.05 level of significance). The determination of statistical inference for the testing of differences between rates in [table V](#) is based on the two-sided t -test with a critical value of 1.96 (0.05 level of significance). Terms such as “higher” and “less” that relate to 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 significant.

Appendix II

Definitions of terms

Terms relating to hospitalization

Hospitals—Hospitals with an average length of stay of less than 30 days for all patients. For 1988–92, hospitals whose specialty was general (medical or surgical) or children’s general were also included, even if the average length of stay for all patients was 30 days or more. Federal hospitals, hospital units of institutions, and hospitals with less than six beds staffed for patients’ use are not included.

Inpatient—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. The terms “inpatient” and “patient” 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 the 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.

Rate of days of care—The ratio of the number of days of care accumulated during a year to the number of persons in the civilian population on July 1 of that year.

Average length of stay—The number of days of care accumulated by patients discharged during the year divided by the number of these discharges.

Fatality rate—The ratio of the number of hospital deaths to the number of discharges, multiplied by 100.

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) listed 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 diagnosis specified as the principal diagnosis on the face sheet or discharge summary of the medical record, or if the principal diagnosis is not specified, the diagnosis listed first on the face sheet or discharge summary of the medical record (see the “[Medical coding and edit](#)” section of appendix I). The number of first-listed diagnoses is equivalent to the number of discharges.

Terms relating to procedures

Discharges with procedures—The estimated number of patients discharged from non-Federal short-stay hospitals during the year who underwent at least one procedure during their hospitalization.

Procedure—A surgical or nonsurgical operation, diagnostic procedure, or special treatment reported on the medical record of a patient. (See the “[Medical coding and edit](#)” section of appendix I for further details.)

Procedures have been categorized into four classes according to UHDDS guidelines (47). Classes 1–3 consist of procedures that carry an operative or anesthetic risk or require highly trained personnel, special facilities, or special equipment. Class 4 procedures do not meet these criteria, and reporting class 4 procedures was optional in 1979. Only three class 4 procedures were coded for the NHDS from 1979 until 1983. The decision was made to code additional class 4 procedures in 1983, and the number coded was further expanded in 1989. Beginning with the 1991 data, all ICD–9–CM procedure codes have been used for the NHDS. [Table XIII](#) shows the code numbers for class 4 procedures and the year each code was first used in the NHDS.

All-listed procedures—All occurrences of a procedure on medical record, regardless of the order. In the NHDS a maximum of four procedures are coded for each discharge.

Surgical procedures—All procedures except those shown in [table XIV](#) are considered surgical procedures.

Nonsurgical procedures—Procedures generally not regarded as surgical, including diagnostic endoscopy and radiotherapy, physical medicine and rehabilitation, and other diagnostic and therapeutic procedures. The ICD–9–CM codes classified as nonsurgical procedures for the NHDS are shown in [table XIV](#). The classification of procedures as surgical or nonsurgical was revised beginning with the 1989 data. Many of the procedures added to the nonsurgical category were class 4 procedures that had not been coded until 1983 or 1989. All obstetrical procedures were classified as surgical until 1989.

Table XIII. Code numbers for class 4 procedures and year first used to code data from the National Hospital Discharge Survey

[Code numbers are from the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*]

Procedure code	First used	Procedure code	First used	Procedure code	First used	Procedure code	First used
01.18-01.19	1983	38.29	1983	71.19	1983	89.66	1989
03.39	1983	40.19	1983	73.6	1979	89.7	1991
04.19	1983	41.38-41.39	1989	73.91-73.92	1989	90.01-91.99	1991
05.19	1983	42.29	1989	75.35	1989	93.01-93.25	1991
06.19	1983	44.91	1989	76.19	1983	93.27-93.28	1991
07.19	1983	45.19	1989	78.80-78.89	1983	93.31-93.39	1991
08.19	1989	45.28-45.29	1989	81.98	1983	93.42-93.44	1989
08.91-08.93	1983	48.23	1989	83.29	1983	93.61-93.89	1991
09.19	1983	48.29	1989	85.19	1989	93.91	1991
09.41-09.49	1983	49.21	1989	86.19	1989	93.94	1989
10.29	1983	49.29	1989	86.92	1989	93.96	1989
11.29	1983	49.41	1989	87.09-87.12	1991	93.99	1989
12.29	1983	50.19	1983	87.16-87.17	1991	94.01-94.23	1991
14.19	1983	51.19	1983	87.22-87.29	1991	94.25	1991
15.09	1983	52.19	1983	87.36-87.37	1989	94.29-94.59	1991
16.21	1989	54.29	1983	87.39	1991	95.01-95.03	1991
16.29	1983	55.29	1983	87.43-87.49	1991	95.05-95.11	1991
18.01	1989	56.39	1983	87.69	1989	95.14-95.15	1991
18.11	1989	57.39	1983	87.79	1989	95.31-95.48	1991
18.19	1989	58.29	1989	87.85-87.89	1991	95.49	1989
20.39	1983	59.29	1983	87.92	1991	96.09	1989
21.21	1989	60.18	1983	87.95-87.99	1991	96.11-96.19	1991
21.29	1989	61.19	1989	88.09	1991	96.26-96.28	1991
22.19	1989	62.19	1983	88.16-88.31	1991	96.34-96.59	1991
24.19	1989	63.09	1983	88.33	1991	97.01-97.04	1991
25.09	1989	64.0	1979	88.35	1991	97.14-97.69	1991
25.91	1989	64.19	1989	88.37	1991	97.71	1979
26.19	1989	64.91	1989	88.39	1991	97.72-97.89	1991
27.29	1989	64.94	1989	89.01-89.09	1991	99.02-99.14	1991
27.91	1989	65.19	1983	89.11-89.13	1991	99.16-99.24	1991
28.19	1983	66.19	1983	89.15-89.16	1991	99.26-99.59	1991
29.19	1989	67.19	1983	89.26-89.31	1991	99.71-99.79	1989
31.48-31.49	1989	68.19	1983	89.33-89.39	1991	99.82-99.84	1990
33.28-33.29	1983	69.92	1989	89.45-89.49	1989	99.91-99.99	1990
34.28-34.29	1983	70.21	1989	89.51-89.53	1989		
37.29	1989	70.29	1983	89.55-89.59	1989		

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.

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

Age adjustment—Age adjustment, using the direct method, is the application of the age-specific rates in a population of interest to a standardized age distribution in order to eliminate the differences in observed rates that result from age differences in population composition. In this report, rates of discharges and days of care are age adjusted to the U.S. standard million population (relative age distribution of the 1980 civilian population totaling 1,000,000) (table XV). Adjustment is based on four age groups. Adjusted average lengths of stay were computed by dividing adjusted days of care by adjusted discharges.

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

Table XIV. Code numbers for procedures considered nonsurgical in the National Hospital Discharge Survey by chapter and year

[Code numbers and chapters are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*]

<i>Procedure chapter and ICD-9-CM code</i>	<i>1979-88</i>	<i>1989-92</i>
		Nonsurgical codes
Operations on the nervous system 01-05	03.31	01.18-01.19,03.31,03.39, 04.19,05.19
Operations on the endocrine system 06-07		06.19, 07.19
Operations on the eye 08-16	11.21,12.21,14.11,16.22	08.19,09.19,09.41-09.49, 10.29,11.29,12.29,14.19, 15.09,16.21,16.29
Operations on the ear 18-20	20.31	18.01,18.11,18.19,20.31, 20.39
Operations on the nose, mouth, and pharynx 21-29	29.11	21.00-21.02,21.21,21.29, 22.19,24.19,25.09,26.19, 27.29,28.19,29.11,29.19
Operations on the respiratory system 30-34	31.41-31.42,33.21-33.23 34.21-34.22	31.41-31.42,31.48-31.49, 33.21-33.23,33.29, 34.21-34.22,34.28-34.29
Operations on the cardiovascular system 35-39	39.95	37.26-37.27,37.29,38.29,39.95
Operations on the hemic and lymphatic system 40-41		40.19,41.38-41.39
Operations on the digestive system 42-54	42.21-42.23,44.11-44.13, 45.11-45.13,45.21-45.24, 48.21-48.22,51.11,54.21	42.22-42.23,42.29, 44.11-44.13,44.19, 45.11-45.13,45.19, 45.21-45.24,45.28-45.29, 48.21-48.23,48.29, 49.21,49.29,50.19, 51.10-51.11,51.19,52.19, 54.21,54.29
Operations on the urinary system 55-59	55.21-55.22,56.31, 57.31-57.32,58.21-58.22	55.21-55.22,55.29,56.31, 56.35,56.39,57.31-57.32, 57.39,57.94-57.95, 58.21-58.22,58.29,59.29
Operations on the male genital organs 60-64	60.19	60.18-60.19,61.19,62.19, 63.09,64.19,64.94
Operations on the female genital organs 65-71	68.11-68.12,70.22	65.19,66.19,67.19,68.11, 68.19,69.92,70.21-70.22, 70.29,71.19
Obstetrical procedures 72-75		73.4,73.51-73.59, 73.91-73.92,75.31-75.32, 75.34-75.35,75.94
Operations on the musculoskeletal system 76-84	80.20-80.29	76.19,78.80-78.89, 80.20-80.29,81.98,83.29, 84.41-84.43,84.45-84.47
Operations on the integumentary system 85-86		85.19,86.19,86.92
Miscellaneous diagnostic and therapeutic procedures 87-99	87.01-99.99	87.01-99.99

Table XV. Standard million age distribution used to adjust rates to the U.S. civilian population on July 1, 1980

[Based on population estimates consistent with Series P-25, *Current Population Reports*, U.S. Bureau of the Census]

<i>Age</i>	<i>Standard million</i>
All ages	1,000,000
Under 15 years	227,328
15-44 years	461,653
45-64 years	197,078
65 years and over	113,941

Appendix III

Recent publications from the National Hospital Discharge Survey

Data from the National Hospital Discharge Survey are presented each year in a variety of publications of the National Center for Health Statistics (NCHS). The following table shows recent NCHS publications. For a list of NCHS

publications that contain 1965–86 data from the National Hospital Discharge Survey, see Trends in hospital utilization, United States, 1965–86.

Year(s) of data	Title	Series
1965–86	Trends in hospital utilization, United States, 1965–86	Vital and Health Statistics Series 13, No. 101
1987	1987 summary: National Hospital Discharge Survey	Advance Data From Vital and Health Statistics, No. 159(rev)
	National Hospital Discharge Survey: annual summary, 1987	Vital and Health Statistics Series 13, No. 99
	Detailed diagnoses and procedures, National Hospital Discharge Survey, 1987	Vital and Health Statistics Series 13, No. 100
1983–87	Hospital inpatient surgery: United States, 1983–87	Advance Data From Vital and Health Statistics, No. 169
1988	1988 summary: National Hospital Discharge Survey	Advance Data From Vital and Health Statistics, No. 185
	National Hospital Discharge Survey: annual summary, 1988	Vital and Health Statistics Series 13, No. 106
	Detailed diagnoses and procedures, National Hospital Discharge Survey, 1988	Vital and Health Statistics Series 13, No. 107
	Estimates from two survey designs: National Hospital Discharge Survey	Vital and Health Statistics Series 13, No. 111
1989	1989 summary: National Hospital Discharge Survey	Advance Data From Vital and Health Statistics, No. 199
	Detailed diagnoses and procedures, National Hospital Discharge Survey, 1989	Vital and Health Statistics Series 13, No. 108
	National Hospital Discharge Survey: annual summary, 1989	Vital and Health Statistics Series 13, No. 109
1990	1990 summary: National Hospital Discharge Survey	Advance Data From Vital and Health Statistics, No. 210
	National Hospital Discharge Survey: annual summary, 1990	Vital and Health Statistics Series 13, No. 112
	Detailed diagnoses and procedures, National Hospital Discharge Survey, 1990	Vital and Health Statistics Series 13, No. 113
	Expected principal source of payment for hospital discharges: United States, 1990	Advance Data From Vital and Health Statistics, No. 220

Year(s) of data	Title	Series
1980–90	Long-stay patients in short-stay hospitals	Advance Data From Vital and Health Statistics, No. 229
1991	1991 summary: National Hospital Discharge Survey	Advance Data From Vital and Health Statistics, No. 227
	National Hospital Discharge Survey: annual summary, 1991	Vital and Health Statistics Series 13, No. 114
	Detailed diagnoses and procedures, National Hospital Discharge Survey, 1991	Vital and Health Statistics Series 13, No. 115
	Hospitalizations for injury and poisoning in the United States, 1991	Advance Data From Vital and Health Statistics, No. 252
1992	1992 summary: National Hospital Discharge Survey	Advance Data From Vital and Health Statistics, No. 249
	Detailed diagnoses and procedures, National Hospital Discharge Survey, 1992	Vital and Health Statistics Series 13, No. 118
	National Hospital Discharge Survey: annual summary, 1992	Vital and Health Statistics Series 13, No. 119
1990–92	Underreporting of race in the National Hospital Discharge Survey	Advance Data From Vital and Health Statistics, No. 265

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