

*THE HEALTH CARE FINANCING
ADMINISTRATION
HOSPITAL SERVICE AND PRODUCTIVITY
DATABOOK: 1963-1991*

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October 1992

Prepared under **HCFA Cooperative Agreement No. HPC-99-C-98526/1-07** with Brandeis University, Al Peden, Ph.D., Project Officer. Funding level: \$60,000. Data are expressly for use by HCFA staff as background material. Citation should make reference to HAS/MONITREND II or AHA Hospital Statistics, as found in this databook.

In cooperation with

Boston University

Center for
Health Economics Research

Urban Institute

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THE HEALTH CARE FINANCING ADMINISTRATION
HOSPITAL SERVICE AND PRODUCTIVITY DATANOOK: 1963-1991

1.0 INTRODUCTION

This **databook** is meant for the internal use of HCFA staff. It is a compilation of **AHA** data covering the last 25 years of hospital performance, with a special emphasis upon the **1984-90** period after the implementation of Medicare's prospective payment system. The **databook** summarizes the changing structure of the industry in Chapter 2, including the decline in the number of short-term hospitals and beds and the rapidly expanding scope of services offered. Chapters 3 and 4 show the overall trends in expenses, revenues, and selected measures of utilization over the 1965-90 period. Chapter 5 tracks the growth in hospital employment, decomposed by hospital ownership and by over thirty occupational categories. Related trends in capital inputs are constructed and displayed in Chapter 6. Chapter 7 concludes with numerous tables describing trends in labor and total factor productivity--primarily in the **1980-89** period. Chapter 8 presents data for **1980-91** on productivity and intensity trends for over 40 hospital cost centers.

Although most of the data series are taken directly from **AHA Hospital Statistics**, several new series are constructed in order to better evaluate trends in industry performance. Revenues in community hospitals are deflated to produce a measure of total intermediate output. This series, in turn, is used to measure changes in **patient** intensity of care in the **1980s**. Hospital employees are weighted by relative wages to produce an index of labor growth adjusted for skill mix. This allows one, for example, to track the impact on skill mix of substituting **RNs** for **LPNs**. Two capital input series are produced, one based on changes in real (deflated) plant and equipment assets, and another based on other non-labor services such as pharmaceuticals, central supplies, and contracted services. Finally, several variants of labor and total factor productivity are constructed using the input and output series

just described. Chapter 8 relies on a unique data series provided by the **AHA's** Hospital Administrative Services called MONITREND. This is the only nationally representative database reporting costs, productivity, and intensity on a cost center basis.

The Hospital Productivity **Databook** enables the user to quickly isolate trends in hospital performance and to put more recent trends in a longer historical perspective. Its focus on productivity naturally encompasses trends in outputs and inputs as well. The data may be useful as background for staff research, for writing **RFPs** and grant solicitations, for new research ideas, for background briefings with Congressional staff, etc. To facilitate access to the data, the tables have been attached to the end of the document. The related text provides basic variable definitions and adjustments necessary to interpret the tables. Brief summaries of the trends are also provided.

The American Hospital Association's (**AHA**) Annual Survey of Hospitals, summarized in Hospital Statistics, was the primary source of information for the first seven chapters of the databook. Each year, the **AHA** conducts a survey of all hospitals in the United States. Hospitals are requested to report data on their organizational structure, facilities and services, utilization, costs, and finances for a full fiscal year ending September 30th. Data in this book are for all nonfederal short-term general and other special hospitals after the ABA has imputed missing values. Not included in this group are federal hospitals, long-term hospitals, hospital units of institutions, psychiatric hospitals, hospitals for tuberculosis and other respiratory diseases, chronic disease hospitals, institutions for the mentally retarded, and alcohol and chemical dependency hospitals. A short-term hospital must have average lengths of stay of less than 30 days. Two other data sources were used to fill in missing data or to convert current figures to constant dollars. The 1987 estimate of hospital capital costs was developed using HCRIS data tapes while the Bureau **of** Labor Statistics and HCFA were sources for the hospital and non-labor price deflators, respectively.

HAS **MONITREND** databooks from the American Hospital Association are the sole data sources for Chapter 8. Details on this database are given in Chapter 8.

2.0 TRENDS IN NON-FEDERAL HOSPITALS, BEDS, AND SERVICES

In 1990, the total number of short-term general hospitals was 5,420 (Table 1). Private voluntary hospitals accounted for 59 percent of the total, while public and proprietary hospitals amounted to 27 and 14 percent, respectively. Growth in short-term general hospitals increased steadily from 1965 until 1975, when the totals began to decline. Between 1983 and 1990, after Medicare's prospective payment system (PPS) was implemented, the total fell by 423 through closures and mergers. Public hospitals experienced the largest decline of all short-term hospitals, losing 254 institutions or almost 15 percent in seven years. The number of proprietary hospitals accelerated sharp by beginning in 1982 and peaked at 834 in 1986 before falling back to 1982 levels by 1990.

The number of long-term hospitals declined steadily throughout the 1970s and early 1980s, but have remained constant after 1983. Psychiatric hospitals, unlike the other two groups, have consistently increased in numbers since 1978, reaching 757 by 1990. Between 1983 and 1990, when short-term general hospitals were shrinking 1.0 percent annually, psychiatric hospitals grew by nearly 5 percent annually, adding 193 in total.

The AHA calculates **bedsize** by adding the total number of beds staffed and available for use each day during the hospital's reporting period and dividing this figure by the total number of days in the reporting period. As of 1990, bed totals in short-term general hospitals were 929,000 with private voluntary having the largest proportion (657,000) followed by public hospitals (171,000) and proprietary hospitals (101,000) (Table 2). Again, there is a noticeable difference in trends before and after PPS was implemented. Before 1983, the supply of short-term beds in the United States increased every year since 1965. After 1983, the industry has experienced a consistent decline in the number of beds averaging 1.3 percent annually. Over 92,000 beds have been taken out of service (or converted to long-term use) in the last 7 years. Beds in public hospitals have fallen the most (3 percent annually).

Between 1965 and 1983, the average **bedsize** increased steadily from 129 to 175. After 1983, **bedsize** consistently fell from 175 to 171 in spite of the disproportionate number of closures of small rural hospitals.

Along with the growth in average **bedsize** over the past two decades, there has been dramatic change in the hospitals' scope of services. In putting together a continuous time series of hospital services from the **AHA's Hospital Statistics**, several limitations prevent the development of an ideal database. For example, once the diffusion level on a particular service has reached a high level and become a "standard" service, the **AHA** no longer asks hospitals to report the service in the annual survey. Second, the **AHA** rarely begins reporting a service as soon as it is introduced. The **AHA** did not even begin reporting on ultrasound, for instance, until 1983, when 30 to 60 percent of the smaller-sized hospitals and almost 100 percent of the larger hospitals already had the service. A third limitation is the changing nomenclature for hospital services over time. Such services as cobalt and radium therapy, cobalt therapy, radioactive implants, and radiation therapy-radium are all closely related, if not identical services. In cases such as this, we contacted the **AHA** and consulted with physicians to determine whether these services were equivalent and could be spliced together to create a single continuous time series. A final reporting limitation is that the **AHA** reports only the availability of a service and not its volume, (e.g., number of lab tests). Thus, we are not able to measure the depth to which hospitals have invested in particular services. Of the several **AHA** availability codes, this **databook** relies on whether the hospital actually owns the service.

With these limitations in mind, Table 3 shows the percentage of short-term general hospitals adopting one of 59 services over the 1963-90 period. Services such diagnostic X-ray, the operating room, **EKGs**, and the clinical lab had completely diffused by 1963. These services had become so commonplace among hospitals that the **AHA** no longer reported them after 1969. Conversely, there are 36 new services that the **AHA** currently reports (or did as of 1980) that were not available in 1963, including MRI, open-heart surgery, and organ transplant. Many of these services rely on computers and lasers, technologies that were in their infancy in 1963.

In Table 4, services are categorized by broad service area with a special focus on the last ten years. The growth in both diagnostic and therapeutic ancillary services is obvious. Many services such as cardiac

catheterization, CT **scanners**, open-heart surgery, renal dialysis, and organ transplant were not reported until after 1963. Others, including lithotripsy and MRI, were not even reported by the **AHA** until the 1980s. Today, one-in-four hospitals perform cardiac catheterizations and renal dialysis; one-in-six provide **MRI** and open heart surgery; and one-in-ten perform organ transplants.

Another clear trend is towards outpatient care. Outpatient surgery increased from roughly 40 percent of hospitals in 1963 to 95 percent by 1990, and even this grossly understates the breadth and complexity of ambulatory surgery being performed. Essentially no hospitals in the U.S. today perform surgery exclusively on an inpatient basis. Alcohol/chemical dependency outpatient services have also diffused significantly in the 1980s. Finally, note the rapid growth in key support services such as health promotion, home health, and reproductive services.

Table 5 highlights differences in service mix between two very disparate **bedsize** groups. Lithotripsy, for example, was reported in 1990 by only 2-in-1,000 hospitals in the 25-49 **bedsize** group versus 36.4 percent of hospitals in the over-500 **bedsize** group. Very few smaller hospitals reported having neonatal/pediatric **ICUs**, **MRIs**, X-ray and radiation therapies, or open-heart and organ transplant capabilities. However, many of these same services are reported by 50 percent or **more** of the largest hospitals.

Finally, we show diffusion graphs for 15 diagnostic, therapeutic, and support services that further emphasize **bedsize** differences. Of the eight **bedsize** categories reported by the **AHA**, four are graphed as representative of the other **bedsize** groups. The first set of eight services represent a range of complex diagnostic and therapeutic technologies, including cardiac catheterization, renal dialysis, and therapeutic X-ray. All but the last show net positive diffusion. Therapeutic X-ray is an example of an obsolete technology superceded by modern radiopharmaceuticals that can radiate selective tissues. These figures graphically reflect the earlier adoption of these technologies in larger hospitals. They also better reflect adoption rates in the mid-sized hospitals because the **AHA** was slow in picking up early adopters in large hospitals. Among the eight services, only CAT scanners

exhibit the traditional S-shaped diffusion curve for the industry as a whole, although even in this case, 80 percent of over-500 bed hospitals had scanners when the **AHA** started reporting the service in 1979.

Figures 9 and 10 show the diffusion in mixed **ICUs** and premature nurseries. The former essentially completed its diffusion prior to the 1980s while premature nurseries consistently closed in all but the largest **bedsizes** throughout the 1970s.

Figures 11-15 show the diffusion in five support services--usually provided on an outpatient basis. They indicate that (a) rehab, occupational therapy, and social work were already diffusing in the late 1970s and early 1980s prior to **PPS**, and that (b) outpatient and home health services experienced a strong resurgence in the post-1983 period after languishing in the 1970s.

3.0 TRENDS IN SHORT-TERM GENERAL HOSPITAL UTILIZATION

Tables 6 through 9 describe the trends in utilization of short-term general hospitals between 1965 and 1990. Average daily census measures the average number of inpatients receiving care each day during the reporting period. Adjusted admissions, another measure of utilization, reflects the number of inpatients during the reporting period adjusted upwards for outpatient visits.

In 1990, the average daily census for all short-term general hospitals was 620,000, admissions **equalled** 31.2 million, while adjusted admissions for the entire year exceeded 41 million. Inpatient admissions rose in 1990 for the first time since 1981. The average length of stay was 7.3 days; the number of surgical operations (inpatient and outpatient) was almost 22 million; and outpatient visits exceeded 300 million for the first time. Admissions and average daily census steadily increased in the years prior to 1981, but declined annually by 2.0 and 2.5 percent, respectively, after 1983.

Between 1965 and 1990, outpatient visits tripled while surgical operations increased by almost 50 percent since 1972, the first year **AHA** reported operations. After strong growth from 1965-75, outpatient visits were nearly constant over the 1975-83 period. The post-1983 period again witnessed strong growth in outpatient visits of nearly 6 percent annually. An extra 15 million outpatient visits were added to the total in 1990.

Over the three periods, proprietary hospitals always experienced the strongest growth or, post-1983, the least decline in utilization of any group. Public hospitals experienced the largest declines in admissions and average daily census after 1983: -3.7 percent a year for admissions and -3.3 percent for average daily census. This was partly due to hospital closures, but average occupancy rates also fell 1.0 percent annually.

4.0 TRENDS IN SHORT-TERM HOSPITAL EXPENSES AND REVENUES

Trends in the expenses of short-term general hospitals from 1965 through 1990 are reported in Table 10. Expenses are for both the hospital and any nursing-home-type units and include all labor and non-labor costs incurred by the institution. Nursing-home costs are less than one percent of all facility costs. All professional fees and those salary expenses excluded from payroll are defined as non-payroll expenses. Labor-related expenses are defined as payroll expenses plus employee benefits. Expenses are presented on a per day or per stay basis by the **AHA** using the ratio of inpatient to total revenues before dividing by inpatient days or stays. The latter include utilization in associated nursing-home-type units, which again are a very minor part of short-term hospital costs and volumes.

As of 1990, short-term general acute care hospitals in the United States incurred altogether almost \$204 billion in expenses, of which about \$100 billion was for payroll and fringe benefits. When adjusted for outpatient activity, this amounted to \$682 per inpatient day or \$4,930 per stay.

During the first ten years of Medicare-Medicaid, total expenses rose nearly 33 percent annually. On an adjusted inpatient day or stay basis, the rate averaged 22 percent. From 1975-83, just prior to the introduction of Medicare's prospective payment program, the rate fell to 25 percent annually for total expenses, but remained at 22 percent on a per day basis. Since 1983, total expense growth has fallen to roughly 11 percent annually. Growth per day or per stay has been somewhat higher, but still roughly half that experienced in the previous 18 years. Total expenses grew 10.1 percent in 1990, a rate only slightly lower than during 1983-90 as a whole. Costs per adjusted day or stay grew roughly 8 percent in 1990, which is 3-4 points lower than 1983-90 overall.

Table 11 gives the growth in expenses per adjusted patient day for eight **bedsize** categories. Cost per day is positively correlated with **bedsize**. Hospitals over 500 beds averaged 77 percent higher per diem costs (\$826) than under 25-bed hospitals (\$465) in 1989. This gap has widened since 1972 although not consistently. In fact, the difference narrowed between 1972 and 1986 (narrowing to 22 percent) before rising rapidly to 77 percent by 1990.

In general, there is little difference in growth rates per adjusted day by **bedsize** over the three time periods. Considerable differences are found, however, across **bedsizes** within the time periods. For example, per diem costs rose just 35 percent in over-500 bed hospitals between 1983 and 1986 versus 67 percent in the under-25 bed hospitals. After 1986, per diem expenses have fallen in under-25 bed hospitals while increasing 44 percent in the largest **bedsize** group.

Table 12 provides trends in gross and net facility revenues for all community hospitals, which are a large subset (99 percent) of all short-term general hospitals. Gross revenues are reported by inpatient and outpatient site of care and represent total amounts billed patients. The **AMA** stopped reporting gross revenues in 1990. Net revenues represent what hospitals actually received from patients and other **sources** (e.g., endowments, tax subsidies) and are available only for the entire facility as discounts and disallowances are not reported separately by locus of care.

In 1989, total gross revenues (billings) in community hospitals were almost \$258 billion (col. 5) while net patient revenues (not shown) amounted to \$177 billion. The difference implies a 31 percent discount on billings, an increase of 9 percentage points since 1983. As late as 1980, the discount rate was only 18 percent (or 12 percent on a patient gross billings basis).

Hospitals' net total revenues were \$212 billion in 1990, an increase of 10.7 percent. Between 1983 and 1990, the short-term hospital industry was paid \$1.276 trillion for its patient services plus other income sources. During the same period, it incurred \$1.223 trillion in expenses, producing cumulative profits of \$53.2 billion. Post-PPS profit rates peaked at 6.3 percent in 1985, before falling back to 3.9 percent in 1990.

5.0 TRENDS IN SHORT-TERM HOSPITAL EMPLOYMENT

Table 13 reports trends in full-time-equivalent employment in short-term hospitals over the 1972-90 period. **FTEs** are decomposed by hospital ownership with **RNs** and **LPNs** reported separately. All numbers are in thousands of workers.

As of 1990, slightly over 3.4 million **FTEs** were employed by short-term hospitals, up from 2 million in 1972. Of these, 24 percent were **RNs** and another 5 percent were **LPNs**. The rate of employment growth slowed dramatically after 1983, averaging only 1.5 percent annually versus 3.7 percent between 1975-83. More people worked in short-term hospitals in 1990 than ever before. After declining employment from 1983 through 1986, employment has risen steadily. The 3.5 percent growth in 1990 represents the largest percentage **increase** since 1982.

Although the growth in **RN** employment fell from 7.0 to 2.3 percent annually after 1983, **LPN** employment was actually negative. In 1983, hospitals employed one **LPN** for every three **RNs**. Seven years later, the ratio was 1-for-5, as **LPNs** are phased out in favor of better trained **RNs**.

Table 14 gives a detailed breakdown of hospital employment by occupation for the 1980-89 period (1990 occupational data were unavailable in time for this report). Roughly one-third of hospital employees are considered non-professional by the **AHA** (1.18 million in 1989). Roughly another one-third (1.2 million) are nurses or nurse assistants. The next largest categories shown separately are medical technologists (85,000) and other lab personnel (68,000). In addition, hospitals employed 63,600 medical residents.

The 1980s data reflect three distinct periods. From 1980 through 1983, employment grew 2.5 percent annually (bottom line). Then, from 1983 through 1986, it actually fell .8 percent yearly before resuming the historical trend in 1987-89. (Actually, the downward trend started in 1983 and lasted through 1985.) The majority of occupations follow the same pattern. Notable exceptions include other health professionals, physicians and dentists, medical record personnel, radiation therapy technologists, other radiologic personnel, occupational therapists and assistants, respiratory therapists, and social workers, all of whom continued to show strong employment growth throughout the 1980s.

6.0 TRENDS IN ~~SHORT-TERM~~ HOSPITAL CAPITAL INPUTS

Capital inputs present a special measurement problem because, unlike labor, machines, beds, and buildings are usually purchased and not rented. The annual flow of capital services, therefore, is not observable like labor 'hours and must be imputed. Early studies of industry productivity assumed that changes in net capital stocks proxied changes in the flow of services as well. More recent studies propose a user cost of capital to proxy the flow of services, defined as asset purchase prices multiplied by an adjustment factor that reflects interest rates and annual accounting depreciation, the latter reduced by any asset appreciation in the capital markets.

The depreciation rate alone has also been a popular measure of the flow of capital services. Shorter building or equipment lifetimes and greater annual depreciation would imply a higher effective flow of capital services in any given period. If, at the same time, the nominal interest rate were rising, this, too, would imply greater capital input flows, in the sense of a foregone investment opportunity elsewhere.

Although the user cost of capital is probably a more accurate economic indicator, we have relied on the earlier method using capital stocks to proxy the flow of capital services and changes in real stocks to proxy increases in capital inputs. Because we are interested in real inputs, we first deflate the annual change in hospital net fixed assets by the appropriate capital price deflator, then cumulate the values from the base period. For example, if real (deflated) capital stocks, net of depreciation, disposals, etc., grew 5 percent in a year, we would assume a 5 percent growth in real capital service flows.

A capital price deflator was constructed from Marshall and Swift data. These data reflect the average cost of labor and materials in replacing a fireproof steel frame building as well as the typical cost of hospital equipment (reported separately). These two cost indexes were weighted

75-25 percent to reflect average building and equipment **asset** levels, then normalized to 1976, the first year in our time series.

Table 15 gives trends in hospital capital inputs over the 1976-87 period. (Data later than 1987 were not available from the **AHA**.) The data in column 1 reflect the sum total of net (of depreciation) plant and equipment (at book, or original purchase, value) for all short-term general hospitals. All years except the last are based on **AHA** unpublished net asset data. Lacking **AHA** data beyond 1986, we spliced together an analogous net asset figure for 1987 using HCFA HCRIS data from Medicare cost reports. (Although HCRIS is used only for 1987, the HCRIS estimates for four previous years conform closely to the **AHA** data shown in Table 15. This raises our confidence in splicing together the two series.) Column 2 gives the capital price deflator while column 3 is based on column 1 except that year-to-year changes in net assets are first deflated then cumulated.

The percentage changes in column 4 reflect the real growth in building and equipment stocks over time. They do not reflect how intensively these stocks were used in production, however. To adjust for underutilization, we report average occupancy rates in column 5. Final flows of capital inputs in any year relative to the previous year (column 7) equal the sum of the percent changes in real stocks (col. 4) and occupancy rates (col. 6). Thus, in years in which occupancy rates are rising, capital input flows will exceed the growth in real stocks as capital is being used more intensely, and vice-versa when occupancy rates are falling.

According to Table 15, reported net assets of short-term hospitals grew 166 percent over 11 years, 1976-87. Real stocks, however, only slightly more than doubled (108 percent) because capital prices rose 72 percent. The big spurt in growth occurred in the early **1980s**, just prior to the introduction of Medicare prospective payment. During this period, real capital flows, adjusting for utilization rates, were averaging about 7-10 percent annually.

After 1983, real net investment declined somewhat to about 6 percent annually, but the average occupancy rate also plummeted 6 percent annually in 1984 and 1985, leaving the input flow of capital essentially constant. In 1986, the occupancy rate stabilized while net investment continued, resulting in positive capital input growth once again--on an albeit lower growth curve.

Buildings and equipment constitute the bulk **of** fixed capital inputs to hospital production. Other non-labor inputs, however, also contribute to output. This would include all inventory items such as tongue depressors, heart valves, and pharmaceuticals. It would also include all contracted services such as laundry, legal, and part-time nursing. The **AHA** annually reports hospital expenses divided into labor versus non-labor. Subtracting depreciation and interest expense from the latter gives an estimate of other capital, i.e., inventory and non-labor expenses. Then, using a HCFA price deflator for total expenses less labor-related, we derived an estimate of real inputs other than labor and fixed assets.

Table 16 shows the trend in other non-labor expenses, first, in nominal terms, then (in column 3) as deflated real annual flows. In nominal terms, other hospital expenses, excluding labor, depreciation, or interest expense, increased 174 percent between 1980 and 1989. This is somewhat higher than the 140 percent growth in total expenses over the same period (see Table 10). Over that same period, the unit prices associated with these expenses grew 42 percent. After deflating, the estimated growth in real, non-labor, variable, inputs grew 93 percent between 1980-89.

7.0 TRENDS IN ~~SHORT-TERM~~ HOSPITAL PRODUCTIVITY

Numerous productivity variants can be constructed from the hospital output and input information reported in previous chapters. The simplest productivity measure, and the one most commonly encountered, is **FTEs** per admission or per patient day. The **AHA** also uses adjusted daily census as an output measure, which is equal to annual patient days divided by 365 and then multiplied by the ratio of total to inpatient revenues to account for outpatient visits. This output measure incorporates both the number of admissions and average lengths of stay in putting volume on a daily basis.

Table 17 shows trends in **FTEs** per 100 adjusted daily census over the 1972-90 period. The trends are national as well as by the three major ownership types. Partial labor productivity measures are also shown for **RNs** and **LPNs**. They are partial in the sense that the trends do not account for substitution for other kinds of labor. Moreover, the figures are actually inverse productivity measures with **FTEs** in the numerator.

In 1990, each 100 (adjusted) patients per day required 417 full-time-equivalent employees compared to only 273 **FTEs** in 1972, a 50 percent increase. This implies a 53 percent "decline" in overall labor productivity before any **casemix** or outcome adjustments. The average annual percent increase in **FTEs** per 100 adjusted census was practically unchanged before and after 1983 at 2.5 percent, but this masks a marked slowdown in declining labor productivity in the last few years. From 1983-85, **FTEs** per 100 adjusted daily census grew 3.9 percent annually versus only 1.4 percent between 1987-90. The large productivity declines just after the introduction of Medicare prospective payment reflect the lag in employment reductions in the face of unparalleled declines in inpatient days. Furthermore, productivity declines **appear** greater for **RNs** than **LPNs**, but this again is misleading as the former were being substituted for the latter. A more meaningful measure of nursing productivity would combine the two inputs and compare their weighted aggregate growth rate. On this basis, nursing inputs per 100 census were growing roughly 4 percent annually throughout the 1970s and early 1980s before falling to slightly less than 2 percent growth in the last six years and **zero** percent over 1986-90.

All three ownership groups experienced similar jumps in **FTEs** per 100 census in the first two years of PPS. Then public hospital labor productivity was unchanged through 1989 while continuing to fall in both private voluntary and proprietary hospitals continued to experience declining productivity on this measure of output. The year 1990 showed a sharp decline once again in labor productivity in all three groups ignoring **casemix** change.

Table 18 compares the productivity trends in the previous table with those based strictly on admissions. The latter output **measure ignores** changes in lengths of stay while the daily census is higher where patient days are longer, ceteris paribus. The figures show a **slower** rate of productivity decline on an adjusted admission basis--particularly after 1983 as lengths of stay fell rapidly.

Table 19 gives a final breakdown of labor productivity by **bedsize** on an adjusted census basis. The trends indicate a positive association of FTE growth per patient per day with **bedsize** (except for the 25-49 **bedsize** in pre-PPS years). They also show that over-500 bed hospitals employ 24 percent more **FTEs** than under-50 bed hospitals, even after adjusting for the daily census.

Besides average daily census, several other output measures have been used as a basis for measuring hospital productivity. Table 20 compares changes in several of these measures over the 1980-89 period. Inpatient days, adjusted for outpatient activity, peaked in 1982, then fell over 10 percent by 1986 before rising to 96 percent of the 1980 level by 1989. Adjusted admissions show a similar trend and also peaked in 1982.

Both admissions and days fail to capture the content, or intensity, of care over time. If admitted patients are **more** seriously ill, then the intensity of care will rise as more resources are devoted to diagnosis and treatment. Unfortunately, the content of care is not directly observable, but **it can** be measured indirectly using hospital revenues. Given that hospitals bill for every item of service separately, gross revenues, properly deflated, automatically reflect variations in hospital **casemix** and intensity. Net revenues, that debit gross billings for bad debts and contractual disallowances, arguably are closer to the value society places on hospital care, but gross revenues are preferred for productivity analyses because they reflect all the services produced, even for patients without insurance.

Revenues, of **course**, must be deflated to factor out price inflation from real volume growth. We used the U.S. Bureau of the Census' CPI for Hospital and Related Services, a series available back to 1977. Using 1980 as a base, this deflator had the following values:

1980	1.000	1985	1.678
1981	1.143	1986	1.779
1982	1.305	1987	1.902
1983	1.452	1988	2.080
1984	1.578	1989	2.319

The deflated revenue measures shown in Table 20 were derived by dividing the revenue figures shown in Table 12 above by this deflator. Output on a deflated gross revenue basis was nearly 25 percent higher in 1989 versus 1980. It was over 11 percent higher than in 1983, while adjusted days and admissions both *register* absolute output declines post-1983. Except for the two exceptional years, 1984-5, when output fell even on an intermediate product basis, output growth after PPS has been about as strong as in the years just prior to 1983.

As deflated **gross** revenues capture the growth in intermediate services billed patients, including ICU days, lab tests, **MRI** and CT scans, a rough measure of the growth in intensity per admission can be had by subtracting column 4 from column 6 (see column 9). This calculation shows a 3-4 percent annual growth in "intermediate service" intensity in the three years prior to **PPS**. Intensity growth falls to less than 1 percent for the next two years, but then accelerates to 5.5 percent annually in 1987. By 1988, intensity growth appears to have settled back to roughly 2.4 percent growth, which is about a percentage point less than before PPS. Clearly, a remarkable set of forces underlie such wide swings, including shorter stays, fewer marginally necessary admissions, a sicker **casemix**, and the diffusion of new technologies.

Table 21 **summarizes** the corresponding trends in factor inputs over the same time period. Full-time equivalent workers have been skill-mix adjusted (col. 4) using relative wages **as** weights. Relative wages are assumed to approximate the relative contribution of occupational groups to hospital output; that is, wages are assumed to equal valued marginal product. Wage

data came from two sources. BLS reports detailed occupational hourly wage rates for 1985 in their industry detailed series for 22 MSAs. These data were averaged to produce national wage rates. BLS, however, does not report wage rates for hospital administrators, physicians, dentists, residents, other health and non-health personnel, or trainees. An imputed wage was derived for these groups by regressing 1984 ABA-reported hospital payroll on the number of FTEs in each of 15 occupation groups, plus additional controls for location and bedsize. The resulting coefficients were divided by 2,080 to produce an hourly rate. Where BLS reported a wage rate, we used it instead of the regression coefficient. The regression coefficient was used only for the missing occupations. Finally, relative wages were determined by dividing through all hourly wages by the RN wage. Thirty different occupation wage rates were used, including administrators (\$31.80 per hour); physicians (\$27.00); residents (\$13.28); RNs (\$12.43); pharmacists (\$15.14); radiographers (\$13.20); physical therapists (\$14.85); other health professionals (\$11.96); and other non-professionals (\$9.07).

From 1980 through 1987, real capital stocks grew 59 percent, but capital flows grew "only" 36 percent due to declining bed utilization. FTEs, on net, grew 13 percent between 1980 and 1989, versus 16.5 percent on a skill-adjusted basis, with nearly half of this growth in the last two years. Other non-labor inputs, in real terms, grew 93 percent, or seven times faster than labor and slightly faster than real capital stocks (based on 1987 figures).

Table 21 also presents several aggregate total factor indices of these three inputs. Aggregation is achieved by, first, indexing each input series to 1980, then weighting the indexes by the appropriate cost share. The weights were taken from HCFA's published shares of labor, capital (depreciation, interest, other), and other expenses. Index 1 (column 6) combines real capital stocks, raw FTE counts, and other non-labor expenses in real terms. If we assume that real capital stocks grew at the same rate as other non-labor inputs during 1988 and 1989, then total factor inputs were 40 percent higher than at the beginning of the decade. If we adjust only for declining capital utilization, see column 8, the increase is only slightly less (38 percent). If we adjust both for declining capital utilization and an

increasing skill mix, total input growth is approximately 41 percent (see column 10). Finally, the growth in capital and skill-adjusted labor inputs is shown in the last two columns (ignoring other non-labor inputs). Again assuming capital stocks grew as fast as non-labor inputs after 1987, this factor input variant was 31 percent higher in 1989 versus 1980. This suggests that the more rapid growth in other non-labor inputs added roughly 10 percent to total input growth over the decade (= 140.7 - 131.4).

Table 22 relates output growth to input growth to produce several variants of total factor productivity change over the 1980-89 period. Three input definitions are used along with two output measures. All productivity changes are negative on an adjusted admission basis. The figures show an improvement of 1-2 points (i.e., not as negative) after 1983, but nevertheless they imply a 3-4.5 annual percentage decline in productivity per adjusted admission on a total input basis.

Hospital productivity declines do not appear nearly so serious on a gross revenue basis. This is particularly true after 1983, and in 1987, total factor productivity was actually a positive 1.0 percent. And while negative productivity growth resumed in 1988, it was nearly zero again in 1989. The reason why productivity declines are less on a deflated gross revenues basis is that this output indicator incorporates greater intensity, new technologies, and a more severe **casemix**. What value this added intensity contributes to patient outcomes is uncertain. On an adjusted admissions basis, its implicit value is zero while on a gross revenues basis, it is valued at full (deflated) charges.

HAS-MONITREND HOSPITAL PRODUCTIVITY TRENDS

A basic limitation of any broad hospital productivity index is that it confounds true productivity change in producing intermediate services (e.g., lab tests, CT scans) with the bundle of services delivered per discharge. The **AHA's HAS/MONITREND** reports that are distributed to subscribing hospitals provide an opportunity to separate pure productivity from intensity changes. This chapter presents descriptive trends over the **1980-90** period for departmental direct expenses, wage rates, procedures per discharge, hours per procedure, and outpatient revenue shares. The results are given both for the country as a whole and for over 40 individual cost centers.

8.1 Data Sources and Methods

For over 25 years the **AHA** has generated a variety of MONITREND reports that permit subscribing hospitals to compare their costs and productivity by department within **bedsize** group. Nearly 1,900 hospitals of all **bedsizes** participated in the program on a monthly basis in 1980. Participation fell continuously over time to less than 800 by 1990, which is still roughly a 20 percent sample of all short-term hospitals. We have used the six-month summary databooks for the period ending June 30 for the years **1980-91**. These reports never present individual hospital statistics, only medians disaggregated by eight **bedsize** groups, region, 21 Medicare 223 cost reimbursement categories, and teaching affiliation.

How representative are HAS/MONITREND hospitals of all U.S. hospitals? The HAS sample tends to include larger hospitals than reported in the **AHA's** annual surveys. In 1984, for example, the **AHA** reported that about 21 percent of non-Federal short-term general hospitals were under 50 beds versus only 11 percent in MONITREND. The over-400 bed percentages were about equal, implying HAS has an over-representation of medium-sized hospitals. To better generalize to the actual universe, we used the **AHA bedsize** proportions from corresponding issues of **AHA Hospital Statistics**.

The HAS/MONITREND data include a wealth of information on several bed accommodations and many ancillary services. Unfortunately, the detail is not consistent by department requiring numerous adjustments. For instance, prior to 1990, the databooks break out bed accommodations into nine units:

(1) medical-surgical; (2) pediatrics; (3) psychiatric; (4) medical-surgical ICUs; (5) definitive observation; (6) neonatal ICUs; (7) subacute; (8) obstetrics; and (9) newborn. Each of these units treats a different kind of patient at systematically different intensity levels. How much of the productivity change in nursing is attributable to the changing mix of patients can be determined for some, but not all, accommodations using the following decomposition formula:

$$\begin{aligned}
 \left[\begin{array}{l} \text{Direct expense} \\ \text{of the j-th unit} \\ \text{per Hospital} \\ \text{Discharge} \end{array} \right] &= \left[\begin{array}{l} \text{Direct expense} \\ \text{of the j-th unit} \\ \text{per Unit Discharge} \end{array} \right] * \left[\begin{array}{l} \text{Share of all} \\ \text{discharges} \\ \text{from j-th unit} \end{array} \right] \\
 &= \left[\begin{array}{l} \text{Direct expense} \\ \text{per dollar of} \\ \text{salaries in} \\ \text{unit j} \end{array} \right] * \left[\begin{array}{l} \text{Salary expense} \\ \text{per labor hour} \\ \text{in j-th unit} \end{array} \right] * \left[\begin{array}{l} \text{Labor hours} \\ \text{per patient day} \\ \text{in the j-th unit} \end{array} \right] \\
 &* \left[\begin{array}{l} \text{average length} \\ \text{of stay in the} \\ \text{j-th unit} \end{array} \right] * \left[\begin{array}{l} \text{Share of} \\ \text{discharges} \\ \text{from j-th unit} \end{array} \right]
 \end{aligned}$$

Any accommodation's direct expenses per discharge from the hospital can be decomposed as the direct cost per discharge from a given accommodation weighted by the share of total discharges from the unit. The sum of these weights will exceed 1.0 because of transfers from one unit to another that constitute multiple "discharges" across units. By analyzing costs and inputs per discharge from the unit, accommodation mix is controlled for.

The accommodation-specific costs can be further decomposed into four elements: (1) the ratio of total direct expenses to salary expenses; (2) a salary expense per paid hour; (3) hours per patient day; and (4) patient days in each unit per discharge from the unit. Hours per patient day is the standard productivity measure in nursing while patient days per discharge is the unit-specific length of stay or intensity measure. The product of these three measures is direct expense per discharge from the unit. Except for

routine medical-surgical, unit discharge cost will generally be far larger than a given department's direct expense per final discharge from the hospital because few patients spend any time in special units like the ICV or obstetrics.

Unfortunately, the HAS/MONITREND data do not permit a complete cost breakdown for all nine units. Before 1990, unit-specific discharge numbers were not available for the medical-surgical ICV, definitive observation, or the neonatal ICU.* We can construct estimates of total patient days in these units but cannot split them into unit discharges and average lengths of stay. We still can calculate direct expense per nursing hour and hours per patient day in each unit, but not patient days per unit discharge, only per hospital discharge.

In addition to the nine accommodations, MONITREND permits a similar decomposition for another 35 overhead, support, and ancillary departments (excluding the outpatient ER and clinics). The decomposition formula is generally the same except that the department-specific output unit (e.g., X-ray procedures, surgical visits) is substituted for patient days.

A few departments do not report paid hours, e.g., utilities and other patient expenses. For several other departments, no intensity measure exists, e.g., social services, leaving us only with hours per discharge.

In HAS/MONITREND, the adjusted patient day or discharge is the standard unit of final output for most departments, although most have intermediate outputs as well. One exception is administrative and fiscal. MONITREND uses the occupied bed as the output unit for all five administrative departments. This is essentially identical to the hospital's average daily census which is (roughly) proportional to annual discharges (assuming a constant length of stay). For patient accounting, data processing, and purchasing, we accepted

*While one could use the discharge-based MONITREND data to derive total discharge numbers, the per diem and per discharge reports were not consistent. That is, reported cost per discharge from one report is not equal to cost per day times length of stay from the per day report. Even more limiting is the fact that MONITREND discharge books never report DO and ICV units separate from med-surg.

the occupied bed as the appropriate output unit, but for general accounting and administration, which together account for over 60 percent of Administrative-and-Fiscal costs, we prefer hospital Full Time Equivalent personnel as the "output" unit. Administration involves a mix of management activities that relate to hospital size, scope of **services**, and the number of people being managed. A growing FTE base is a more accurate barometer of rising administrative responsibilities than a hospital's daily census. For the same total Administrative hours, a rising FTE base would imply rising administrative productivity even if daily census were constant. Of course, more **FTEs** per day would likely imply declining productivity elsewhere in the hospital.

HAS/MONITREND does make an adjustment for an ancillary department's contribution to outpatient ER and clinic patients by reporting costs and services on an adjusted day or discharge basis. For each department providing outpatient services, a ratio of inpatient to total department charges is calculated. Total inpatient days or discharges are then divided by a department's ratio, effectively raising final output to account for outpatient services. The effect of this adjustment is to recognize the shifting locus of care and not to overstate the intensity of ancillary care per inpatient. All of the statistics in this chapter are shown on an adjusted admission r patient day basis. While adjustments for outpatient activity are valuable, the resulting trends have a very specific interpretation. Falling laboratory tests per adjusted discharge does not mean that patients are not receiving such tests: only that they are not being done on an inpatient basis. Thus, lab intensity per adjusted discharge may fall, but this may reflect a decline in inpatient, not total patient, intensity. For example, assume 10 inpatients each had one urinalysis as inpatients. Inpatient intensity per discharge would equal 1.0. If this test was performed as part **of** an outpatient visit prior to admission and redirected 10 percent of the lab's revenues from inpatient to outpatient, then the inpatient intensity ratio would fall to .90 = (10 **urinalyses** / (10 **discharges** / .90)), even though all patients were still receiving the test.

MONITREND never produces aggregate statistics on their entire membership; only by **bedsize**, urban-rural location, etc. This is

fortunate because we prefer using nationally representative **bedsize** frequencies as weights. Trends in this chapter are produced by department by weighting **bedsize** group medians by yearly national **bedsize** proportions taken from AHA's Hospital Statistics. We did not use HAS frequencies because of a systematic bias towards medium-sized hospitals. Current annual **AHA bedsize** proportions were used instead of base period, 1980, proportions. Hence, the trends shown below incorporate any productivity effects due to a rising average **bedsize**. To put the weights on a per case basis, we multiplied the **AHA bedsize** frequencies by our estimate of the average number of discharges in each MONITREND **bedsize** group. This also reduces the effects of very large or small values often found in the smaller bedsizes.

The final step in the aggregation process is to generate hospital-wide trends in cost, productivity, and intensity. This is done using current period department expense percents as weights. Weighting the labor productivity trends by base period expense percents-produces a cost-weighted productivity index, holding intensity of intermediate services constant. An identically weighted intensity index will show how much of the cost inflation is due to rising inpatient intensity of intermediate services holding productivity constant. The three trends in labor productivity, intensity, and wages are not strictly additive because of interactions among the three variants.

8.2 Revisions in 1990 MONITREND

In 1989, HAS made major revisions in its MONITREND reporting system, and no data are available for 1989. To better serve its subscribers, many more subdepartments were isolated and numerous additional performance indicators collected. Although this greatly improves the system for providers evaluating their productivity and intensity compared to other similar hospitals, it introduces important discontinuities when comparing hospitals before and after 1989. For example, the very large medical/surgical bed accommodation formerly included rehabilitation, oncology, and other miscellaneous units. These are now reported separately and their statistics had to be recombined with the

new, more limited, medical/surgical department. Other departments with finer breakouts that had to be recombined included medical/surgical ICU (including cardiac intensive care), subacute care (including substance abuse), rehabilitation services (excluding physical therapy which is reported separately), plant operations (including biomedical engineering), and administrative services (including marketing and planning). Subdepartments were recombined by weighting department statistics (e.g., salary per adjusted patient day) by the product of, say, the proportion of days in each department being combined and the frequency of occurrence of each department. For example, oncology salaries per day were weighted by **oncology's** average daily census times the proportion of hospitals in a **bedsize** reporting oncology separately from regular medical/surgical. In addition, the new system combines IV therapy with the pharmacy making trends in the latter slightly incomparable before and after 1989.

The new system also added better measures of department outputs. Whereas previously only total treatments or patient days were available, workload units, treatments, or patient time units are **now** reported for respiratory therapy, nuclear medicine, pharmacy, physical and occupational therapy, and cardiac rehab. Moreover, the number of charts is reported for medical records and the number of patient contacts for social work. Lacking such intermediate output measures prior to 1990, we were forced to convert the statistics back into a less precise volume measure, e.g., patient days. This was not always possible, resulting in missing volume data for 1990.

A final difference that is difficult to evaluate is the reduction in sample size from nearly 1,900 in 1980 to slightly over 700 hospitals in 1990. This would be more of a concern if the data were not reported by **bedsize**. However, we are able to weight each year's **bedsize** data by national **AHA proportions which adjusts** for any nonproportional reduction in reporting by **bedsize**. This still **assumes** that subscribers within each group remain representative of the **bedsize** as a whole. For 1990, the frequencies ranged from 60 in the over-400 bed group to **125** in the 200-299 group.

8.3 Trends in Nine Bed Accommodations

Table 23 displays trends in inpatient expenses, productivity, and intensity (i.e., patient days per discharge or length of stay) for the nine different bed accommodations reported in **HAS/MONITREND** for the 1980-91 period. Expense per discharge for the first six units pertain to discharges from the unit and not the entire hospital. It was impossible to identify unit-specific discharges (or transfers) from Definitive Observation, Medical-surgical ICU or Neonatal ICU. Consequently, their expenses are spread across all hospital discharges, which explains why they appear so small.

Costs per discharge from medical-surgical beds rose slightly **over** 13.4 percent annually on a compound basis from 1980 through 1983. This rate fell to about 5.5 percent in 1984 through 1988, which reflects the accelerated decline in lengths of stay and the more than halving of hourly salary increases. This was also a period of low inflation and wage gains economy-wide. Between 1988 and 1991, medical-surgical expense inflation again averaged nearly 12 percent annually. In 1991, med-surgical costs rose 10.5 percent to \$727 per discharge from the unit. Nursing wage rates grew relatively slowly at 6 percent annually.

The average length of med-surg stays fell almost one full day between 1983 and 1985 compared to a decline of less than a third of a day in the four previous years. Length of stay showed a slight decline in 1986, rose slightly in 1987, fell 1 percent in 1988, then **rose** 2.8 percent annually in the next two years. The 1991 length of stay remained essentially constant.

Medical-surgical "nursing" hours per discharge peaked at 46 hours in 1982, then fell 10 percent **in toto** in the next three years **pari passu** the length of stay.* Since 1985, nursing inputs per discharge have begun to rise again, up 7.6 percent from 1985 to 1988 and another 18 percent between 1988 and 1991. By 1991, nearly 53 nursing hours were devoted to each discharge from the unit, a figure 22 percent higher than in 1980 and 27 percent higher

*Almost all of the hours associated with direct bed care are nursing while the **rest** are related to clerking, transfers, and administration.

than in 1985. Hours per patient day rose consistently throughout the decade, peaking at 0.65 in 1991.

Unit admit rates also show the shifting distribution of **cases** among the six bed types (see last column of Table 23). Med-surg discharges as a percent of all discharges were rising about .7 percent annually through 1983, but then began to decline by 2.6 percent compounded annually post-PPS. By 1991, less than two-thirds of discharged patients were cared for in med-surg beds. Psychiatric, sub-acute care, and obstetrical patients have grown rapidly as hospitals emphasize new services and/or develop new ways of treating patients on less nursing-intensive wards.

The third page of Table 23 gives trends for three other special bed accommodations. Because unit-specific discharges are not reported by **MONITREND** for the **ICUs** or Definitive Observation, the numbers in the table are on a total-hospital-discharge basis. Medical-surgical ICU costs per overall hospital discharge, along with Definitive Observation, rose the fastest of any accommodation due to significant increases in both ICU "nursing" salaries and hours per discharge. Medical-surgical ICU nursing hours per discharge rose rapidly throughout the 1980-88 period, but the sources vary before and after PPS. Prior to 1984, the growth in ICU hours per overall discharge can be equally explained by more hours per patient day in the unit as well as more ICU days per discharge. Then between 1984-88, nearly all of the growth is due to more ICU days per discharge (i.e., .44 vs. .36). This implies significant productivity gains in the ICU, coupled with a shift to a more severe **casemix** requiring more ICU care. Beginning in 1989, it would appear that trends **reversed** themselves and ICU-days started to fall while hours per **ICU** day began rising rapidly again.

ICU hourly salary inflation has also accelerated post-PPS because of the shortage of ICU nurses. Although salary increases averaged a relatively modest 6.4 percent annually from 1983-91, the rate of increase grew every year, peaking at 9.2 percent annually between 1988-90. In 1991, the growth fell back to 7 percent. Hence, in the last **three** years, nursing wages and not ICU inputs per case explain practically all of the ICU cost inflation. Definitive Observation, **or** Progressive Care, also accelerated post-PPS, possibly reflecting the industry's attempt to conserve on very expensive ICU care.

8.4 Trends in Suraerv and Deliveries..

Table 24 reports similar trends for the surgery and labor/delivery suites. Surgical service costs per hospital discharge, including the operating room, rose 15.4 percent per year from 1980-83, with modest growth in OR hours per visit, or operation. Inpatient operations (visits) per hospital discharge actually fell slightly through 1983, then remained constant during the first two years of PPS before rising rapidly from 1985 through 1991. Visits per discharge jumped 6 percent in 1991, a rate well above the historical average. Overall inpatient surgical costs per discharge rose nearly as fast post-PPS in spite of a 6-point reduction in annual wage inflation. Surgical cost inflation remained high through 1991 primarily due to the rising proportion of inpatient operations in total discharges, or surgical intensity of care.

The shift to outpatient surgery has been profound. In 1980, only 6.5 percent of the typical hospital's surgical revenue came from outpatient surgery. By 1983, the percentage had almost doubled to 11.4 percent. Then in the next eight years the percentage tripled to over 35 percent, or a quintupling of the 1980 percentage. The rate of growth in outpatient surgery has definitely slowed of late. In 1991, the outpatient shift was just 3 percent vs. 15 percent over the entire 1983-91 period. Although not shown in the table, the outpatient shift has been inversely correlated with hospital size. In under-50 bed hospitals, the rate rose 8-fold from 6 to 48 percent compared to a 4-fold increase in over-400 bed hospitals (6 to 23 percent).

Obstetrics has also been a strong growth center. The decline in deliveries in the early 1980s turned into strong 2 percent annual growth after 1983.

8.5 Trends in Ancillary Services

Table 25 reports trends for 13 ancillary services. Inpatient expenses per discharge in the two major diagnostic radiology and laboratory departments grew 11 and 15 percent compounded annually from 1980-83. Then, in diagnostic radiology, inpatient intensity actually fell 8 percent in toto between 1982

and 1985. From 1985-88, intensity rose consistently again before falling over the last three years. Well over half of all x-rays are now being performed in the outpatient department. Hours per procedure peaked in 1984 and has fallen since, implying consistent productivity gains. **Hence,** productivity gains along with declining inpatient intensity in the early PPS years contributed substantially to the 8 point fall (10.7 down to 2.6 percent) in diagnostic radiology expense inflation.

Laboratory expense inflation (see second page of Table 25) after 1983 **grew** at about triple the rate in diagnostic radiology because of more rapid growth in hours per discharge (1.2 percent vs. -0.1 percent in diagnostic radiology). Rapid inflation in lab expenses per adjusted discharge from 1980 through 1983 (14.7 percent compounded annually) was fueled by an almost 5 percent annual growth in hours per adjusted discharge, which in turn was seemingly the result of declining productivity per workload unit (3.8 percent compounded annually; see col. 5). After 1983, the picture changes dramatically. Wage inflation fell from 10 to 4.5 percent annually, the rate of productivity decline slowed and actually turned into gains in 1988-90, and inpatient lab intensity (i.e., workload units per discharge) was virtually unchanged between 1983 and 1990. But in 1991, inpatient lab intensity jumped 3 percent. Certainly affecting this abrupt change is the rapid growth in outpatient lab activity. From 1980-83, the lab's outpatient share was rising only 1.7 percent compounded annually. After 1983, the annual growth rate increased over five-fold to 8.3 percent per **annum**. As late as 1983, the typical hospital's lab was receiving only 16.5 percent **of** its revenues from outpatients. By 1991, the percentage had risen to over 31 percent.

Cat scans (page 2 of Table 25) was the fastest rising cost center in the hospital over the 1980-83 period: up 29 percent compounded annually through 1983. Subsequently, 1984-88 saw only modest cost inflation as wage inflation abated **and productivity improved**. The nearly 30 percent annual cost growth from 1980 through 1983 was due to 15 percent annual increases in inpatient procedures per discharge, coupled with a rising expense-to-salary ratio (up 6.7 percent compounded annually). In 1980, there were 9.2 scans per 100 adjusted discharges. By 1983, the rate had increased to 13.9 scans per 100 discharges. By 1991, the CAT scan rate had more than doubled to 22.6 scans

per **100** discharges, **or one** out of every five inpatients. Moreover, adopting newer, more expensive units with high non-labor costs (e.g., depreciation, films) added to inflation. Finally, note the strong secular trend towards performing CAT scans on an outpatient basis, especially after **1983**. This trend continued through **1991**.

The catheterization laboratory is one of the **few** departments whose inpatient volume accelerated after **1983**, although by **1990** the trend was downward -- at least on an inpatient basis. Between 1988 and 1991, the outpatient share more than doubled and inpatient procedures per discharge actually began to fall. Rapid growth in non-labor expenses relative to salaries (3.5 percent compounded annually post-PPS) explain the high inflation (along with rising volumes).

Hospitals experienced an 18 percent increase in inpatient **cath** lab expenses per discharge in 1991 due to a significant decline in productivity (or rise in hours per procedure). This could be due to more complicated angioplasty procedures that are not fully reflected in a simple count of procedures.

ECGs and **EEGs**, respiratory, physical, and IV therapy, and pulmonary function, on the other hand, all show large reductions in cost inflation after 1983. In practically all departments, it was a precipitous decline in inpatient intensity that explains much of the reversal. Respiratory therapy is exceptional in showing continued strong growth in department hours per discharge.

The growth in rehabilitation services was one of the few trends that continued unabated after 1983 at nearly **18** percent annually on an expense-per-discharge basis. Unfortunately, no intermediate output measure is available for this department prior to 1990, but the growth in hours per discharge is probably a good indicator of the increasing inpatient rehab intensity now being afforded patients in acute care hospitals. This department is clearly viewed as a growth center in most hospitals with **few** guidelines on the appropriate level or locus of care.

8.6 Trends in Medical Support Services

Turning to selected medical support services in Table 26, expenses per discharge rose 14-17 percent compounded annually from 1980-83 for social services, medical records, and medical care evaluation (i.e., quality assurance). This was primarily because of wage inflation, although the growth in hours per case was never trivial. From 1983 through 1988, hours per discharge in social services and medical records continued to grow at even higher rates than before PPS. This is true even through 1991.

The growth in Medical Care Evaluation (MCE) was even more dramatic. Post-PPS, MCE expenses per discharge grew almost 18 percent annually, nearly quadrupling in the last eight years. As department wage inflation was halved after 1983, this accelerated cost inflation is attributable to 134 percent increase in MCE hours per discharge; clear evidence of the new emphasis placed on higher quality and earlier discharges.

Considering the three record-oriented departments as a whole, the typical hospital spent 3.9 hours per discharge on placing patients after discharge, maintaining their medical records, and assuring high quality care. By 1983, the effort was 4.4 hours, a 13 percent increase over three years. Eight years later in 1991, the input was 6.3 hours, or 43 percent above the 1983 rate.

Pharmacy and central services were very high inpatient growth centers in the early 1980s, averaging 20 percent compounded annually from 1980-83. Nearly half of the cost increase in the pharmacy was attributable to more hours per discharge (9.0 percent annually), whereas for central services non-labor costs naturally played a larger role, as evidenced by the 6.8 compound growth in its expense-to-salary ratio.

These trends changed abruptly beginning in 1984, as lengths of stay and inpatient (but not total) pharmaceutical needs declined. Nevertheless, inpatient pharmacy hours per discharge continued to grow 4.3 percent per year from 1983-91, and salaries rose 6.5 percent. Drug ingredient cost inflation can be approximated by the difference between trends in pharmacy expenses per discharge and salaries per discharge (= the product of salaries per hour and hours per discharge). According to the figures in the table, the typical hospital spent \$17.16 per discharge on prescription drugs in 1980, \$28.72 in

1983 and \$66.22 in 1991. (Note that these are cost figures not final charges.) This translates into a 10.4 percent growth in drug costs per year post-PPS. Between 1980-83, the rate was 17 percent annually.

8.7 Trends in Administrative Overhead Services

Table 27 gives corresponding trends for eleven other administrative support services. Many of these added significantly to hospital cost inflation prior to PPS: administration, up 18 percent a year compounded through 1983; patient accounting/admitting, up 14 percent compounded annually; data processing, up 17 percent compounded annually; and purchasing, up 15 percent compounded annually from 1980-83.

Because overall administration and general accounting relate more to the number of personnel managed in the hospital than to discharges, productivity and intensity figures are shown on a per FTE basis (as well as per discharge). Administrative hours per discharge rose nearly 4.3 percent annually from 1980-83, with roughly three-quarters of the increase explained by more hospital personnel requiring management, i.e., 3 percent growth in **FTEs** per discharge.

Slight reductions in administrative growth rates were achieved post-PPS, but there is nothing to indicate that severe cuts were made in management. Indeed, the more likely response to heightened competition in many hospitals was to upgrade management. From 1983 through 1986, administrative hours per hospital employee rose 2.7 percent annually from 6.45 to 6.99, indicating strong negative administrative productivity growth. **In** the last five years, hospital **FTEs** have begun to rise again, thereby "justifying" all of the continued growth in administrative hours per discharge. Indeed, between 1988-90, the industry experienced a decline in administrative hours per discharge for the first time, and by 1991, the ratio of **administrative-**to-total-FTEs had returned to pre-PPS levels. Still, administrative hours per discharge were up 16 percent. Administrative costs per discharge more than tripled between 1980-91 to \$234 and doubled since 1983. Wage inflation accounts for **less** than half of the increase. And these figures had been adjusted for increasing outpatient activity and do not include many other related overhead departments such as **accountng** and data processing.

The last three pages of Table 27 report trends for the basic hospital support services. Dietary, laundry, and housekeeping costs grew relatively modestly over the inflationary 1980-83 period (8-10 percent per discharge compounded annually). This was due to almost stable levels of intermediate outputs (pounds and meals) and hours per discharge. After 1983, labor productivity improved in both dietary (+1.4 percent) and housekeeping (+2.8 percent), as indicated by declining hours per meal and per square foot cleaned. Plant operations and security also show sizable labor productivity gains on a square foot basis, particularly after 1983.

TABLES

TABLE 1

TRENDS IN THE NUMBER OF NONFEDERAL SHORT-TERM HOSPITALS BY TYPE, 1965-1990

	GENERAL HOSPITALS					
	Proprietary	Private Voluntary	Public State/ Local	Total	Psychiatric	Long-Term e
1965	857	3,426	1,453	5,736		
1966	852	3,440	1,520	5,812	483	283
1967	821	3,461	1,568	5,850	476	291
1968	769	3,430	1,621	5,820	470	331
1969		3,428			505	280
1970	759 769	3,386	1,666 1,704	5,859 5,853	509 519	280 236
		3,363		5,865	513	218
1972	738	3,326	1,739	5,843	529	216
1973	757	3,320	1,814	5,891	543	229
1974	775	3,364	1,821	5,977	543	221
1975	775	3,368	1,840	5,979	544	215
1976	752		1,836	5,956	528	197
1977			1,851			
1978	732 751	3,371 3,360	1,846	5,935 5,973	526 541	189 189
1979	727	3,350	1,835	5,923	527	165
1980	730	3,339		5,904	534	157
1981	729	3,356	1,794	5,879	549	146
1982	748	3,354	1,761	5,863	558	138
1983	757	3,363	1,723	5,843	564	131
1984	786	3,364	1,662	5,814	579	131
1985	805	3,338	1,616	5,785	610	128
1986	834		1,556	5,728	634	133
1987	828	3,289	1,542	5,659	684	131
1988	790	3,256	1,533	5,579	726	129
1989	769	3,233	1,495	5,497	741	138
1990	749	3,202	1,469	5,420	757	131
% Annual Change						
1965-75	-1.0%	-0.2%	2.7%	0.4%	1.3%	-2.4%
1975-83	-0.3%	0.0%	-0.8%	-0.3%	0.5%	-4.9%
1983-90	-0.2%	-0.7%	-2.1%	-1.0%	4.9%	0.0%

Source: AHA Hospital Statistics, 1966-1991, Table 3.

-TABLE 2

TRENDS IN NONFEDERAL SHORT-TERM HOSPITAL BEDS IN THOUSANDS, 1965-1990

<u>Year</u>	<u>Private Voluntary</u>	<u>Proprietary</u>	<u>Public</u>	<u>Total</u>	<u>Average Bed Size</u>
1965	515	47	179	741	129
1966	533	48	188	769	132
1967	550	47	191	788	135
1968	566	48	192	806	138
1969	579	53	198	825	141
1970	592	54	204	849	145
1971	604		209	867	148
1972	617	63	209	883	151
1973	629	70	211	903	153
1974	650		211	931	156
1975	659	73	215	947	158
1976	671	76	214	961	161
1977	680	80	214	974	163
1978	684	83	215	980	165
1979	690	87	214	987	167
1980	693	88	212	992	168
1981	706	91	213	1,007	171
1982	712		212	1,015	173
1983	718	94	209	1,021	175
1984	717	100	203	1,020	175
1985	708	104	191	1,003	173
1986	673	107	185	962	171
1987	668	106 104	178 182	961	170
1988		102		950	170
1989	661	101	172	935	170
1990	657		171	929	171
% Annual Change					
1965-75	2.8%	5.5%	2.0%	2.8%	2.3%
75-83	1.1%	3.6%	-0.3%	1.0%	1.3%
1983-90	-1.2%	1.1%	-2.6%	-1.3%	-0.3%

Source: AHA Hospital Statistics, 1966-1991, Table 3.

TABLE 3

PERCENTAGE ADOPTION OF SERVICES AND TECHNOLOGIES IN NONFEDERAL SHORT-TERM HOSPITALS:
1963-1990

	1963	1970	1975	1980	1989	1990
Service						
X-Ray Diagnostic	97.7	.	.	.	.	.
Operating Room	97.5	.	.	.	.	.
Clinical Laboratory	96.7	.	.	.	.	.
Electro-Cardiography	94.7	.	.	.	.	.
Emergency Department	92.8	87.2	88.7	81.5	94.2	93.4
Obstetrical Delivery Room	89.9	.	.	.	.	.
Postop Recovery Room	62.6	75.2	83.2	93.3	.	.
Premature Nursery	58.6	41.5	36.6	40.3	.	.
Blood Bank	56.9	60.4	65.4	78.2	69.6	68.9
Pathology Laboratory	52.3	.	.	.	.	.
Physical Therapy	46.4	61.9	76.5	88.2	84.4	84.4
Outpatient Department	39.6	32.8	25.8	49.4	81.7	85.2
X-Ray, Therapeutic	35.8	33.1	31.8	20.4	19.1	19.4
Dental Services	30.0	29.5	33.9	56.4	.	.
Therapeutic Radioisotope	25.9	.	24.3	26.0	24.9	25.2
Electro-Encephalography	18.4	33.0	46.8	65.7	.	.
Intensive Care, Mixed	18.1	48.8	69.1	71.6	77.4	78.3
Social Work	15.3	26.7	53.0	78.2	.	.
Psychiatric Services, Inpatient	11.5	14.6	18.1	.	.	.
Occupational Therapy	9.7	14.6	20.5	33.2	48.1	49.6
Rehabilitation	6.8	9.1	9.4	24.7	48.6	51.4
Home Health Services	4.5	7.1	6.5	11.4	34.6	35.5
Reproductive Health Services	2.7	6.6	7.0	9.8	39.1	42.0
Respiratory Therapy	.	56.9	77.9	93.1	100.0	90.4
Outpatient Surgery Services	.	.	.	.	94.9	94.5
Health Promotion	.	.	.	.	85.5	.
Ultrasound	.	.	.	.	85.1	84.1
Scanners	.	.	.	22.4	66.6	69.9
Birth Room	.	.	.	.	65.0	64.9
Histopathology Laboratory	.	48.2	51.2	65.3	64.8	64.5
Diagnostic Radioisotope	.	36.1	52.5	64.9	61.7	62.6
Geriatric Services	.	.	.	.	57.0	.
Outpatient Rep Services	.	.	14.4	40.1	52.1	53.0
Speech Therapy	.	.	21.8	42.4	44.8	45.8
Renal Dialysis	.	10.3	13.0	23.9	26.6	26.6
Cardiac Catheterization	.	.	.	16.3	24.6	27.4
Intensive Cardiac Care	.	42.1	35.8	34.2	21.7	21.9
Alcohol/Chemical, Outpatient	.	.	.	14.6	20.2	20.5
Psychiatric Services, Outpatient	.	11.1	12.7	17.6	19.3	19.7
Radiotherapy	.	27.5	25.0	20.4	19.1	19.4
Megavoltage Radiation Therapy	.	12.6	14.3	16.2	19.0	19.6
Women's Center	.	.	.	.	18.8	20.7
Hospice	.	.	.	6.3	15.6	16.1
Open Heart Surgery	.	7.1	9.5	10.6	15.6	16.7
ICU	.	.	.	.	15.0	18.1
Intensive Care, Neonatal	.	.	.	7.5	13.7	14.3
Psychiatric Services Partial Hospital	.	6.8	8.6	12.3	12.8	13.5
Trauma Center	.	.	.	.	12.2	12.8
Organ Transplant	.	3.1	2.7	3.7	9.5	10.4
Genetic Counseling	.	.	4.1	7.3	9.4	9.8
Psychotripsy	.	.	.	.	6.2	6.3
Intensive Care, Pediatric	.	.	.	3.9	6.1	6.5
Burn Care Unit	.	.	3.1	.	2.7	2.7
Podiatric Services	.	.	17.1	34.6	.	.
Self-care Unit	.	5.6	2.9	0.6	.	.
Pharmacy with Pharmacist	.	83.1	89.9	96.6	.	.
Portion Services	.	.	20.9	31.6	.	.
Psychiatric Services, Emergency	.	14.1	19.6	27.5	.	33.7
Clinical Psychology Services	.	.	14.8	26.7	.	.

Source: AHA Hospital Statistics, 1964-91, Table 12A.

TABLE 4

PERCENTAGE ADOPTION OF SERVICES AND TECHNOLOGIES IN NONFEDERAL SHORT-TERM HOSPITALS: 1963, 1975, AND 1980-90

Service	1963	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
BED ACCOMODATIONS													
Intensive Care, Mixed	18.1	69.1	71.6	71.6	76.2	77.1	78.3	78.8	77.7	77.9	78.0	77.4	78.3
Intensive Care, Neonatal	.	.	7.5	8.2	9.0	9.8	10.5	10.9	11.1	12.1	13.0	13.7	14.3
Intensive Care, Pediatric	.	.	3.9	4.2	4.4	5.9	5.1	5.1	5.6	5.7	5.9	6.1	6.5
Postop Recovery Room	62.6	83.2	93.3	92.3	90.2	.	.	.	.	.	.	.	.
Premature Nursery	58.6	36.6	40.3	31.1	28.7	28.5	29.6	30.4	.	.	.	.	.
Psychiatric Services, Part. Hosp.	.	8.6	12.3	11.1	10.4	10.3	10.6	10.9	11.8	11.7	12.2	12.8	13.5
ANCILLARY SERVICES - DIAGNOSTIC													
Cardiac Catheterization	.	.	16.3	15.8	16.6	17.0	17.6	18.3	20.3	21.8	23.3	24.6	27.4
CT Scanners	.	.	22.4	24.1	31.1	39.0	47.6	55.1	60.0	60.1	63.5	66.6	69.9
Diagnostic Radioisotope Facility	.	52.5	64.9	64.0	63.9	67.0	68.3	68.2	64.9	63.1	60.8	61.7	62.6
Electro-Encephalography	18.4	46.8	65.7	66.9	.	.	.	.	.	.	.	.	.
Histopathology Lab	.	51.2	65.3	68.0	65.7	66.0	66.0	65.4	64.1	64.6	64.3	64.8	64.5
MRI	.	.	.	.	73.0	78.2	81.9	84.6	85.8	84.9	83.5	85.1	84.1
Ultrasound	.	.	.	.	73.0	78.2	81.9	84.6	85.8	84.9	83.5	85.1	84.1
ANCILLARY SERVICES - THERAPEUTIC													
Dental Services	30.0	33.9	56.4	47.7	46.6	47.8	49.5	51.3	.	.	.	.	.
Lithotripsy	.	.	.	.	.	.	.	.	3.2	3.7	4.8	6.2	6.3
Megavoltage Radiation Therapy	.	14.3	16.2	16.2	16.6	16.4	16.7	17.1	17.4	17.6	18.3	.	19.6
Occupational Therapy	9.7	20.5	33.2	36.2	35.6	37.6	40.0	43.0	46.0	45.3	46.2	48.1	49.6
Open-Heart Surgery	.	9.5	10.6	10.3	11.1	11.4	11.8	12.2	13.2	14.1	15.0	15.6	16.7
Organ Transplant	.	2.7	3.7	3.5	4.0	4.3	4.5	4.8	5.4	5.8	7.4	9.5	10.4
Physical Therapy	46.4	76.5	88.2	88.0	87.6	89.0	90.4	91.0	90.4	87.4	85.4	84.4	84.4
Rehabilitation	6.8	9.4	24.7	33.5	32.7	34.0	36.3	39.2	38.3	40.8	45.8	48.6	51.4
Renal Dialysis	.	13.0	23.9	24.3	23.2	24.7	26.1	27.5	28.0	26.9	26.7	26.6	26.6
Respiratory Therapy	.	77.9	93.1	92.0	90.9	92.2	93.3	93.3	92.2	91.8	89.8	100.0	90.4
Speech Therapy	.	21.8	42.4	43.2	36.8	40.3	43.9	47.3	50.3	46.6	44.1	44.8	45.8
Therapeutic Radioisotope Fac.	25.9	24.3	26.0	24.6	24.3	24.3	24.7	25.1	24.3	24.3	24.4	24.9	25.2
Therapeutic X-Ray	35.8	31.8	20.4	20.2	19.9	17.8	18.0	18.1	18.1	17.8	18.7	19.1	19.4
SUPPORT SERVICES													
Food Bank	56.9	65.4	78.2	76.1	71.9	72.4	73.2	73.2	73.0	70.7	69.7	69.6	68.9
Genetic Counseling	.	4.1	7.3	7.2	7.2	7.5	7.9	8.4	8.1	8.2	9.0	9.4	9.8
Health Promotion	.	.	.	.	36.3	39.7	46.8	52.0	72.0	75.6	82.5	85.5	.
Hospice	.	.	6.3	7.9	8.5	9.3	10.8	12.9	14.6	14.5	14.6	15.6	16.1
Home Health Services	4.5	6.5	11.4	11.3	12.5	14.8	21.8	29.6	34.7	35.0	34.3	34.6	35.5
Reproductive Health Services	2.7	7.0	9.8	9.0	10.7	10.8	11.2	11.7	28.9	31.7	36.7	39.1	42.0
Social Work	15.3	53.0	78.2	77.9	77.1	78.3	80.3	81.8	.	.	.	.	.
OUTPATIENT CARE													
Alcohol/Chemical, Outpatient	.	.	14.6	12.3	12.2	13.2	14.4	16.1	17.9	18.8	18.9	20.2	20.5
Emergency Department	92.8	88.7	81.5	93.7	93.7	94.3	94.9	95.0	94.4	94.6	93.8	94.2	93.4
Outpatient Department	39.6	25.8	49.4	43.0	42.4	88.0	90.5	93.1	93.0	94.3	94.8	94.9	85.2
Outpatient Surgery Services	.	.	.	.	.	.	49.6	54.3	64.8	70.0	77.5	81.7	94.5
Psychiatric Services, Emergency	.	19.6	27.5	30.0	29.6	30.3	31.7	33.0	33.2	32.0	32.3	.	33.7

Source: AHA Hospital Statistics, 1964-91, Table 12A.

TABLE 5

HOSPITAL SERVICES BY BED SIZE: 99 D 963, 1980,

	25-49			OVER 500		
	1963	1980	1990	1963	1980	1990
Abortion Services	.	17.6	.	.	57.2	.
Alcohol/Chemical Outpatient	.	7.1	6.5	.	46.7	55.4
Birthing Room	.	.	51.0	.	.	86.1
Blood Bank	33.4	62.7	50.0	93.9	91.5	89.3
Burn Care Unit	.	.	0.3	.	.	20.7
Cardiac Catheterization	.	0.3	0.5	.	86.6	92.1
Clinical Lab	95.1	.	.	99.3	.	.
Clinical Psychology Services	.	8.8	.	.	73.5	.
Coronary Care Unit	.	.	.	.	.	.
CT Scanners	.	1.8	31.6	.	91.8	97.1
Day Hospital	.	.	.	.	.	.
Dental Services	14.3	34.5	.	86.5	85.9	.
Electro-Cardiography	92.5	.	.	98.6	.	.
Electro-Encephalography	2.9	23.5	.	93.9	99.3	.
Emergency Department	91.0	64.0	91.2	98.7	97.4	97.9
Lithotripsy	.	.	0.2	.	.	36.4
Genetic Counseling	.	1.3	1.0	.	38.6	53.9
Geriatric Services	.	.	.	.	.	.
Health Promotion	.	.	.	.	.	.
Histopathology Lab	.	22.5	15.8	.	99.0	97.5
Hospice	.	2.2	7.5	.	16.0	31.8
Home Health Services	1.9	4.6	25.4	27.0	26.5	53.2
Intensive Cardiac Care	.	12.9	3.7	.	87.3	79.6
Intensive Care Mixed	4.9	29.2	47.0	70.9	99.0	98.2
Intensive Care Neonatal	.	.	0.1	.	47.4	73.2
Intensive Care Pediatric	.	0.1	0.1	.	28.1	46.1
Megavoltage Radiation Therapy	.	0.2	0.2	.	83.3	83.2
MRI	.	.	1.3	.	.	60.9
Obstetrical Delivery Room	89.9	.	51.0	94.6	.	86.1
Occupational Therapy	2.1	7.2	16.7	74.3	91.5	97.5
Open-Heart Surgery	.	0.2	0.1	.	72.2	82.9
Operating Room	96.6	.	.	99.3	.	.
Organ Transplant	.	0.3	2.1	.	22.5	57.1
Outpatient Surgery Services	.	.	89.9	.	.	98.9
Outpatient Department	32.9	26.8	78.0	93.9	85.0	96.8
Pathology Lab	15.7	.	.	99.3	.	.
Patient Rep Services	.	16.3	25.1	.	75.8	89.6
Pharmacy with Pharmacist	.	89.2	.	.	100.0	.
Physical Therapy	19.1	67.2	65.8	97.3	99.7	99.6
Postop Recovery Room	30.8	78.9	.	99.3	100.0	.
Podiatric Services	.	19.4	.	.	55.6	.
Premature Nursery	41.1	14.8	.	91.2	88.2	.
Psychiatric Services Emergency	.	10.5	8.2	.	72.5	78.6
Psychiatric Services Inpatient	2.0	.	.	77.0	.	.
Psychiatric Services Outpatient	.	4.4	4.0	.	61.8	68.6
Psychiatric Services Partial Hospitalization	.	2.5	1.8	.	35.9	44.6
Radium Therapy	.	.	.	.	.	.
Diagnostic Radioisotope Facility	.	23.9	21.8	.	98.4	95.7
Therapeutic Radioisotope Facility	2.8	1.1	0.8	96.6	.	88.9
Rehabilitation	0.9	6.6	24.2	56.1	89.9	91.1
Reproductive Health Services	1.2	3.1	29.5	20.9	41.8 74.2	77.5
Renal Dialysis	.	0.7	1.4	.	89.5	88.2
Respiratory Therapy	.	80.6	79.3	.	100.0	99.3
Self-Care Unit	.	.	.	.	4.6	.
Social Work	2.8	42.5	.	84.5	99.0	.
Speech Therapy	.	12.5	18.8	.	90.2	95.0
Trauma Center	.	.	2.5	.	.	53.9
Ultrasound	.	.	64.2	.	.	97.5
Women's Center	.	.	5.0	.	.	57.9
X-Ray Diagnostic	97.0	.	.	99.3	.	.
X-Ray Therapeutic	5.8	1.6	0.6	98.6	84.3	81.8

Source: AHA Hospital Statistics, 1964-1991, Table 12A.

TABLE 6
TRENDS IN UTILIZATION OF NONFEDERAL SHORT-TERM HOSPITALS, 1965-1990

Year	Admissions (000s)	Average Daily Census (000s)	Average Stay	Operations (000s)	Births (000s)	Outpatient Visits (000s)	Occupancy Rate	Adjusted Admissions ^a (000s)
1965	26,463	563	7.8	N/A	3,413	92,631	76.0%	28,913
1966	26,897	588	7.9	N/A	3,261	106,524	76.5	29,793
1967	26,988	612	8.3	N/A	3,159	109,987	77.6	29,429
1968	27,276	630	8.4	N/A	3,145	114,097	78.2	30,214
1969	28,254	651	8.3	N/A	3,190	120,831	78.8	31,148
1970	29,252	662	8.2	N/A	3,403	133,545	78.0	32,353
1971	30,142	665	8.0	N/A	3,338	148,423	76.7	33,561
1972	30,777	664	7.9	14,782	3,119	166,983	75.2	34,183
1973	31,761	681	7.8	15,433	2,987	178,939	75.4	35,894
1974	32,943	701	7.8	16,217	2,947	194,838	75.3	37,089
1975	33,519	708	7.7	16,688	2,999	196,311	74.8	38,167
1976	34,068	715	7.7	16,854	2,962	207,725	74.4	38,731
1977	34,353	717	7.6	17,182	3,118	204,238	73.6	39,365
1978	34,575	720	7.6	17,170	3,157	204,461	73.5	39,689
1979	35,160	729	7.6	18,282	3,287	203,873	73.8	40,575
1980	36,198	748	7.6	18,779	3,409	206,752	75.4	41,736
1981	36,494	764	7.6	19,244	3,466	206,729	75.9	41,860
1982	36,429	763	7.6	19,607	3,515	210,374 ^b	75.2	42,154
1983	36,201	750	7.6	19,868	3,491	213,995	73.4	42,021
1985	35,202	703	5.0	19,928	3,456	216,474	68.9	41,404
1986	33,501 32,410	650	5.0	20,200	3,521	222,773	64.8	40,353
1987	31,633	631	5.0	20,489	3,585	234,270	64.2	39,922
1988	31,480	624	7.2	20,835	3,602	247,704	64.9	39,729
1988	31,480	622	7.2	21,419	3,707	271,436	65.5	40,278
1989	31,141	619	7.3	21,349	3,831	287,909	66.2	40,506
1990	31,203	620	7.3	21,921	3,959	302,691	66.8	41,243
Annual Change								
1-1965-75	2.7%	2.6%	-0.1%	N/A	-1.2%	11.2%	-0.2%	3.2%
1975-83	1.0%	0.7%	-0.2%	2.4%	2.1%	1.1%	-0.2%	1.3%
1983-90	-2.0%	-2.5%	-0.6%	1.5%	1.9%	5.9%	-1.3%	-1.9%

^aAdmissions in col. 1 multiplied by the adjusted average daily census times 365, divided by average length of stay. Adjusted daily census = raw census multiplied by the ratio of total-to-inpatient revenues.

^bInputed to replace erroneous reported figure of 250,888.

N/A = Not Available.

Source: AHA Hospital Statistics, 1966-1991, Table 3.

TABLE 7
TRENDS IN UTILIZATION OF NONFEDERAL PROPRIETARY SHORT-TERM HOSPITALS, 1965-1990

<u>Year</u>	<u>Admissions (000s)</u>	<u>Average Daily Census (000s)</u>	<u>Average Stay</u>	<u>Operations (000s)</u>	<u>Births (000s)</u>	<u>Outpatient Visits (000s)</u>	<u>Occupancy</u>
1966	1,855	33	6.3	N/A			68.6%
1967	1,843	35	6.4	N/A	138	3,339	69.0
1968	1,837	36	6.8		125	4,020	72.7
1969	1,893	38	7.0	N/A	117	4,055	73.9
1970			6.8	N/A	124	3,859	74.6
1971	2,031	38	6.6	N/A	145	4,898	72.2
1972	2,161	39	6.6	1,039	127	7,842	71.0
1973	2,334	47	6.7	1,143	129	7,593	68.7
1974	2,553	48	6.6	1,233	127	8,667	68.3
1975	2,646			1,320	141	7,713	67.5
1976	2,839	50	6.6	1,320			65.9
1977	2,880	52	6.6	1,420	166	8,045	64.8
1978	2,880	52	6.5	1,533	166	8,911	64.6
1979	2,963	57	6.5	1,637	200	9,289	63.8
1980	3,165	58	6.5	1,734	207	9,696	63.9
1981	3,239		6.6	1,734		9,961	65.2
1982	3,316	60	6.5	1,767	220	10,175 ^a	66.4
1983	3,299	59		1,778	229	10,389	65.5
1984	3,314	57	6.3	1,891	242	11,090	63.1
1985	3,242	54	6.1	2,003	267	12,378	57.0
1986	3,231	54	6.1	2,161	291	14,896	52.1
1987	3,157	54	6.2	2,215	306	16,566	50.7
1988	3,090	53	6.2	2,288	309	17,926	51.1
1989	3,071	53	6.3	2,287		19,341	50.9
1990	3,066	54	6.4	2,330	386	20,110	51.7
Annual Change							
1965-75	4.3%	5.0%	0.5%	N/A	-0.3%	12.4%	-0.4%
1975-83	3.1%	2.9%	-0.2%	4.3%	7.7%	4.3%	-0.5%
1983-90	-1.0%	-1.2%	-0.2%	4.4%	7.0%	13.4%	-2.3%

^a Imputed to replace erroneous reported figure of 13,193.

/A = Not Available.

Source: AHA Hospital Statistics, 1966-1991, Table 3.

TABLE 8

TRENDS IN UTILIZATION OF NONFEDERAL PRIVATE VOLUNTARY SHORT-TERM HOSPITALS, 1965-1990

Year	Admissions (000s)	Average Daily Census (000s)	Average Stay	Operations (000s)	Births (000s)	Outpatient Visits (000s)	Occupancy
1966	19,001	401	7.7	N/A	2,509	59,233	77.8
1967	19,498	418	7.9	N/A	2,365	69,336	78.5
			8.2		2,333	73,173	79.7
1968	19,958	468	8.2	N/A	2,339	76,428	80.0
			8.2	N/A	2,364	82,756	80.8
1970	20,948	474	8.1	N/A	2,492	90,992	80.1
1971	21,515	477			2,446	103,016	79.0
			8.0	11,229	2,243	112,039	77.4
1972	21,888	488	7.9	11,656	2,134	120,273	77.8
1974	23,374	506	7.9	12,272	2,113	131,394	77.8
1976	23,735	510	7.9	12,719	2,131	132,368	77.4
1977	24,098	517	7.8	12,977	2,101	141,781	77.1
				11,111	2,198	139,045	76.3
1978	24,443	521	7.8	12,872	2,220	142,617	76.1
1979	24,885	528	7.7	13,737	2,309	140,525	76.5
1980	25,576	542	7.7	14,128	2,390	142,864	78.2
1982	25,955	555	7.8	14,469	2,484	143,953	78.5
1983	25,908	554	7.7	14,701	2,466	147,699 ^a	77.8
				14,941	,	151,444	75.8,
			7.4				
1984	25,246	512	7.2	14,983	2,447	153,928	71.4
1985							
1986	24,188	476	7.2	15,388	2,547	168,982	67.2
1987	22,946	455	7.3	15,608	2,557	178,089	67.6
1988	22,946	456	7.3	16,118	2,654	195,864	63.2
1989	22,798	455		16,124	2,752	209,641	68.8
1990	22,883	455	7.3	16,554	2,834	221,175	69.3
Annual Change							
1965-75	2.5%	2.7%	0.1%	N/A	-1.5%	12.3%	-0.1%
1975-83	1.1%	0.8%	-0.2%	2.3%	2.0%	1.8%	-0.3%
1983-90	-1.6%	-2.3%	-0.7%	1.5%	2.1%	6.6%	-1.2%

^aImputed to replace erroneous reported figure of 176,838.

N/A = Not Available.

Source: AHA Hospital Statistics, 1966-1991, Table 3.

TABLE 9

TRENDS IN UTILIZATION OF NONFEDERAL PUBLIC SHORT-TERM HOSPITALS, 1965-1990

n

Year	Admissions (000s)	- Average Daily Census (000s)	Average Stay	Operations (000s)	Births (000s)	Outpatient Visits (000s)	Occupancy
1965	5,617	131	8.5	N/A	759	29,962	72.8
1966	5,778	137	8.6	N/A	762	32,850	72.8
1967	5,646	134	9.0	N/A	700	32,794	72.8
1968	5,781	142	8.9	N/A	688	33,614	73.9
1969	6,023	146	8.9	N/A	701	34,216	73.9
1970	6,273	149	8.7	N/A	766	37,854	73.2
1971	6,540	150	8.3	N/A	766	40,550	71.6
1972	6,741	147	8.0	2,513	750	47,103	70.2
1973	6,939	149	7.8	2,635	724	51,072	70.6
1974	7,016	148	7.7	2,711	707	54,777	70.2
1975	7,138	150	7.6	2,785	726	56,230	69.7
1976	7,237	148	7.5	2,816	717	57,896	69.2
1977	7,220	146	7.4	2,786	760	56,838	68.3
1978	7,253	148	7.4	2,850	770	54,933	68.7
1979	7,312	148	7.4	3,012	804	54,060	69.1
1980	7,458	150	7.4	3,015	819	54,192	70.7
1981	7,299	151	7.6	3,041	803	52,816	71.2
1982	7,205	150	7.6	3,139	812	52,490 ^a	70.7
1983	7,064	146	7.6	3,149	796	52,163	70.0
1984	6,642	134	7.4	3,053	768	51,457	65.9
1985	6,071	120	7.2	3,013	747	50,394	62.8
1986	5,687	116	7.4	2,951	746	51,091	62.6
1987	5,530	115	7.6	3,012	739	53,049	63.1
1988	5,444	113	7.6	3,014	744	57,646	63.8
1989	5,271	112	7.7	2,938		58,926	64.8
1990	5,254	112	7.8	3,037	753	61,407	65.3
Annual Change							
'965-75	2.7%	1.5%	-1.1%	N/A	-0.4%	8.8%	-0.4%
'975-83	-0.1%	-0.3%	0.0%	1.6%	1.2%	-0.9%	0.1%
'983-90	-3.7%	-3.3%	0.4%	-0.5%	-0.2%	2.5%	-1.0%

^a Imputed to replace erroneous reported figure of 60,857.

N/A = Not Available.

Source: AHA Hospital Statistics, 1966-1991, Table 3.

TRENDS IN TOTAL EXPENSES OF NONFEDERAL SHORT-TERM HOSPITALS, 1965-1990

Year	TOTAL			LABOR		
	Amount ^a (millions)	Adjusted/ Inpatient Day	Adjusted/ Inpatient Stay	Payroll millions)	Employee Benefits (millions)	Adjusted/ Inpatient Day
1965	\$9,147	\$40.56	\$316	\$5,644	N/A	N/A
1966	10,276	43.66	345	6,277	N/A	N/A
1967	12,081	49.46	411	7,246	N/A	N/A
1968	14,162	55.80	469	8,445	N/A	N/A
1969	16,613	64.26	533	9,813	N/A	N/A
1970	19,560	73.73	605	11,421	N/A	N / A
1971	22,400	83.43	667	13,053	\$1,176	\$53.10
1972	25,549	94.61	747	14,519	1,476	59.24
1973	28,496	101.78	794	15,867	1,731	62.86
1974	32,751	113.21	883	17,861	2,030	68.76
1975	39,110	133.08	1,025	20,749	2,469	79.00
1976	45,402	152.24	1,172	23,437	3,053	88.08
1977	51,832	173.25	1,317	26,062	3,743	99.63
1978	58,348	193.81	1,470	29,034	4,329	110.82
1979	66,184	215.75	1,631	32,699	5,018	122.95
1980	76,970	244.44	1,844	37,460	5,914	137.74
1981	90,739	283.94	2,168	44,142	7,271	160.08
1982	105,094	326.68	2,493	50,767	8,832	185.26
1983	116,632	368.01	2,776	55,648	10,222	207.84
1984	123,550	409.85	2,984	58,319	11,042	230.09
1985	130,700	499.19	3,239	60,487	11,663	253.70
1986	140,907	536.96	3,530	63,919	12,040	269.10
1988	152,909	.....	3,849	75,340	12,743	285.18
1989	185,204 188,941	630.59 531.08	4,572 4,194	82,110	16,093 14,093	334.37 307.61
1990	203,927	681.52	4,930	91,001	18,208	364.97
Annual Change						
1965-75	32.7%	22.8%	22.3%	26.7%	---	---
1975-83	24.7%	22.0%	21.3%	21.0%	39.2%	20.3%
1983-90	10.7%	12.2%	11.1%	9.1%	11.2%	10.8%

^a Expenses for total facility, including hospital, subproviders, and nursing-home-type units.

N/A = Not Available.

Source: AHA Hospital Statistics, 1966-1991, Table 1.

TABLE 11

TRENDS IN EXPENSES PER ADJUSTED PATIENT DAY OF NONFEDERAL SHORT-TERM HOSPITALS BY BEDSIZE, 1972-1990

Year	Total	6-24	25-49	50-99	100-199	200-299	300-399	400-499	500 and Over
1972	\$ 94.62	\$ 75.29	\$ 68.36	\$ 72.52	\$ 84.07	\$ 92.26	\$ 99.35	\$100.22	\$115.34
1973	101.78	74.75	72.85	77.81	90.38	100.20	104.77	109.94	123.95
1974	113.21	84.10	82.83	85.94	100.59	111.12	116.80	122.11	136.73
1975	133.08	99.95	98.04	100.31	118.45	128.92	137.82	140.68	161.97
1976	151.28	116.08	112.47	117.06	134.71	148.21	155.99	159.28	179.80
1977	173.25	128.94	130.43	132.80	154.12	169.55	177.72	182.42	206.40
1978	193.81	151.22	151.90	148.77	171.54	186.94	200.70	207.89	228.53
1979	215.75	171.27	165.53	166.24	191.34	206.90	221.32	234.15	254.17
1980	244.44	200.79	190.35	190.31	214.71	238.40	247.60	263.01	288.03
1981	283.94	239.91	230.43	223.24	249.55	274.99	288.14	303.62	332.22
1982	326.68	274.44	259.19	255.77	288.95	316.89	328.74	351.30	381.47
1983	368.01	282.53	287.09	286.24	324.29	356.81	380.36	394.92	424.57
1984	409.85	353.51	329.49	322.10	360.46	396.98	430.53	434.28	468.23
1985	459.57	409.22	378.78	362.85	400.67	448.03	482.52	488.97	526.59
1986	499.19	470.39	412.11	379.56	437.05	487.02	527.40	534.14	574.38
1987	536.96	456.57	419.86	402.93	468.03	521.58	569.11	574.91	628.45
1988	581.08	461.77	431.97	427.07	505.40	563.48	621.57	624.13	686.58
1989	630.59	460.75	455.35	456.57	548.70	610.53	670.35	684.64	753.44
1990	681.52	464.98	474.87	482.15	583.25	658.86	722.42	755.80	825.49
% Annual Change									
1972-75	13.6%	10.9%	14.5%	12.8%	13.6%	13.2%	12.9%	13.5%	13.5%
1975-83	22.1%	22.8%	24.1%	23.2%	21.7%	22.1%	22.0%	22.6%	20.3%
1983-90	12.2%	9.2%	9.3%	9.8%	11.4%	12.1%	12.8%	13.1%	13.5%

Source: AHA Hospital Statistics, 1966-91, Table 3.

TABLE 12

TRENDS IN TOTAL AND NET REVENUES IN COMMUNITY HOSPITALS, 1969-1990

Year	INPATIENT		OUTPATIENT		TOTAL FACILITY		
	Gross Revenue (millions)	Per Inpatient Day	Gross Revenue (millions)	Per Outpatient Visit	Total Gross (millions)	Net Patient Revenue (millions)	Net Total Revenue (millions)
1969	\$ 16,308	\$ 68.82	\$ 1,467	\$ 12.16	\$ 17,775	\$ 15,951	\$ 17,011
1970	18,768	77.76	1,777	13.31	20,545	18,409	19,930
1971	21,508	88.82	2,178	14.67	23,686	20,997	22,908
1972	26,597	99.97	2,704	16.62	26,926	23,728	25,827
1973	30,251	107.30	3,242	18.73	29,833	26,247	28,593
1974	33,559	118.54	3,941	20.86	34,192	30,213	32,903
1975	36,579	142.00	4,935	25.88	49,883	36,115	39,248
1976	43,720	167.67	6,164	30.63	57,824	42,531	46,180
1977	50,587	193.94	7,237	36.42	60,524	49,238	52,831
1978	57,621	219.87	8,451	41.85	66,072	55,526	59,761
1979	66,821	251.96	9,901	49.81	76,723	63,751	68,613
1980				57.69			
1981	77,818 92,459	284.96 332.10	11,671 13,944	68.77	106,403 89,488	87,153 73,819	79,739 93,967
1982	109,302						109,458
1983	125,925	460.93 393.11	19,216 16,600	67.14 91.48	125,961 145,141	113,453 101,775	121,498
1984	133,539	520.41	22,281	105.12	155,820	121,265	129,952
1985	136,893	578.54	26,359	120.52	163,252	129,722	138,882
1986	146,704	639.38	31,698	136.68	178,402	137,939	148,549
							159,309
1988	160,060	789.35	35,969	150.06	208,694	161,088	174,558
1989	203,038	900.64	54,878	192.07	257,916	176,902	191,363
1990	N/A	N/A	N/A	N/A	N/A	195,540	211,843
% Annual Change							
1969-75	20.7%	17.7%	39.4%	18.8%	22.3%	21.1%	21.8%
1975-83	30.5%	28.1%	36.2%	31.7%	31.2%	26.8%	26.2%
1983-90*	10.2%	15.9%	30.9%	18.3%	13.0%	10.3%	10.6%

Source: AHA Hospital Statistics, 1970-91, Table 11.

*Inpatient and outpatient gross revenue percent changes cover only 1983-89.

TABLE 13

TRENDS IN TOTAL EMPLOYMENT (IN THOUSANDS) IN NONFEDERAL SHORT-TERM HOSPITALS, 1972-1990

Year	PROPRIETARY			PRIVATE VOLUNTARY			PUBLIC			TOTAL		
	FTEs	RNs	LPNs	FTEs	RNs	LPNs	FTEs	RNs	LPNs	FTEs	RNs	LPNs
1972	105	21	11	1,474	291	126	477	78	47	2,056	370	184
1973	117	24		1,535	311	130	497	83	48	2,149	389	191
1974	133		15	1,634		137	522		50	2,289	418	201
1975	139			1,714	333	143	546	88		2,399	447	208
1976		26	15	1,793					51			
1977	147 150	28	15	1,863	355	146 149	559 543	91 98	51	2,483 2,581	474 504	211 218
1978		32 16			374				53			220
1979	165 174	37 17	18	2,000 1,927	419 396	150 152	571 588	101 104	52	2,662 2,762	531 560	221
1980	189	43	19	2,087	467	157	602	114	53	2,879	623	228
1981	203	44		2,213	477	163	622	109	53	3,039	630	235
1982	223	49	20		506	164	665		54			238
1983	213	52	20	2,272 2,424	524	158	618	124 118	52	3,102 3,312	699 673	230
1984	214	58	19	2,223	522	139	565	122	42	3,023	699	205
1985	221	62	19	2,217	531	126	560	122	39	3,003	711	187
1986	229		18	2,242	552	118	578	124		3,032	737	174
1987	242	65	19	2,374	576	114	587	128	37	3,120	760	171
1988	249	68	20	2,455		114		130	37	3,209	771	171
1989							592					
1990	261 273	69	20	2,534 594	609	116 111	617	130 133	38	3,307 3,423	811 792	173 169
% Annual Change												
1972-75	11.1%	13.2%	10.7%	5.4%	6.9%	4.5%	4.8%	5.8%	2.3%	5.6%	7.0%	4.3%
1975-83	6.6%	12.7%	4.5%	4.1%	7.1%	1.4%	1.7%	5.0%	0.3%	3.7x	7.0%	1.3%
1983-90	4.0%	4.7%	0.0%	1.6%	2.3%	-4.2%	0.0%	1.0%	-3.8%	1.5%	2.3%	-3.8%

Source: AHA Hospital Statistics, 1973-91, Table 3.

TABLE 14

TRENDS IN FTE EMPLOYMENT (in thousands) BY OCCUPATIONAL GROUP: ALL U. S. SHORT TERM GENERAL HOSPITALS, 1980-89

OCCUPATIONAL GROUPS	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	ANNUAL PERCENT CHANGE		
											1980-83	1983-86	1986-89
Administrators & Asst. Administrators	20.0	27.0	28.1	29.1	30.7	30.5	33.1	33.0	35.8	37.3	15.2	4.6	4.2
Physicians and Dentists	32.5	32.3	28.7	27.1	28.4	28.7	30.5	33.1	33.7	34.5	-5.5	4.2	4.4
Medical Residents	54.8	57.1	57.7	59.1	61.1	58.5	62.3	60.6	63.2	63.6	2.6	1.8	0.7
Dental Residents	0.8	0.8	0.8	1.0	0.9	0.8	0.9	0.9	0.9	0.9	8.3	-3.3	0.0
Registered Nurses (RN)	624.8	631.8	671.6	697.5	697.1	707.9	732.6	755.4	767.1	781.3	3.9	1.7	2.2
licensed Practical Nurses (LPN)	230.1	236.0	239.8	231.7	206.4	188.5	174.5	170.9	171.2	172.7	0.2	-8.2	-0.3
Ancillary Nursing Personnel	262.2	282.3	287.3	296.2	261.1	237.7	227.3	234.6	244.8	252.3	4.3	-7.8	3.7
Medical Record Administrators	6.2	6.4	6.4	6.5	6.6	6.6	7.0	7.3	7.1	7.2	1.6	2.6	1.0
Medical Record Technicians	31.6	32.8	33.0	33.7	34.9	35.6	37.3	37.9	39.9	40.8	2.2	3.6	3.1
Licensed Pharmacists	24.6	26.5	27.8	29.1	29.3	29.9	29.7	31.0	31.4	32.4	6.1	0.7	3.0
Pharmacy Technicians	19.9	22.1	23.6	24.7	24.4	24.7	25.1	26.5	27.5	28.7	8.0	0.5	4.8
Medical Technologists	78.5	80.5	85.8	85.2	84.4	83.8	81.7	83.3	84.3	84.7	2.8	-1.4	1.2
Other Laboratory Personnel	67.5	69.0	69.2	67.1	64.4	63.2	64.2	63.1	64.4	67.5	-0.2	-1.4	1.7
Dieticians	12.3	12.7	12.3	12.4	11.9	11.7	11.1	11.3	11.3	11.3	0.3	-3.5	0.6
Dietetic Technicians	32.2	28.7	27.1	25.4	24.0	22.8	23.2	23.3	23.9	23.2	-7.0	-2.9	0.0
Radiographers-Radiologic Technologists	48.1	51.1	53.1	54.7	53.3	54.0	54.6	56.6	57.7	58.7	4.6	-0.1	2.5
Radiation Therapy Technologists	4.2	3.8	4.2	3.8	3.8	3.7	4.5	4.5	4.7	4.8	-3.2	6.1	2.2
Nuclear Medicine Technologists	6.5	6.9	7.0	7.2	7.3	7.2	7.2	7.2	7.3	7.5	3.6	0.0	1.4
Other Radiologic Personnel	32.5	30.8	31.4	28.9	28.5	28.6	28.5	29.7	31.5	33.7	-3.7	-0.5	6.1
Occupational Therapists	4.7	5.2	5.6	5.9	6.2	6.6	7.3	8.0	8.6	8.7	8.5	7.9	6.4
Occupational Therapy Assistants & Aides	1.7	1.8	1.8	1.6	1.7	1.8	1.7	2.0	2.1	2.3	-2.0	2.1	11.8
Physical Therapists	14.1	15.2	15.5	16.0	16.2	16.9	17.3	18.1	18.7	19.0	4.5	2.7	3.3
Physical Therapy Assistants & Aides	13.3	13.6	14.0	14.0	13.5	13.4	13.0	13.7	14.1	14.2	1.8	-2.4	
Recreational Therapists	1.8	1.9	2.0	2.0	2.1	2.1	2.2	2.4	2.5	2.6	3.7	3.3	5.0
Respiratory Therapists	21.7	23.2	25.3	27.1	27.8	29.2	30.9	32.9	34.2	35.7	8.3	4.7	5.2
Respiratory Therapy Technicians	24.6	25.3	25.6	25.7	24.6	23.2	21.9	21.2	21.5	21.7	1.5	-4.9	-0.3
Medical Social Workers	13.8	14.4	14.7	15.0	15.5	15.7	16.1	17.8	18.7	19.8	2.9	2.4	7.7
All Other Health Professionals	338.4	326.6	319.2	202.8	204.1	214.7	236.9	254.9	342.7	352.5	-13.4	5.6	16.3
All Other Non-Professional Personnel	939.0	1027.1	1043.0	1125.0	1104.6	1101.0	1078.1	1106.8	1151.1	1179.5	6.6	-1.4	3.1
Total Hospital Personnel	2918.0	3078.1	3145.3	3139.4	3059.0	3033.1	3060.5	3147.6	3235.9	3303.3	2.5	-0.8	2.6

Note: Total hospital personnel does not equal sum of individual occupations because of non-reporting.

Source: AHA Annual Survey tapes, 1981-90.

TABLE 15

TRENDS IN REAL FIXED CAPITAL INPUTS IN SHORT-TERM HOSPITALS, 1976-1987

Year	FIXED CAPITAL INPUTS				OCCUPANCY RATE		OCCUPANCY-ADJUSTED CAPITAL INPUTS
	Reported Net Plant and Equipment (\$mil.) (1)	Capital Price Deflator (2)	Deflated Net Plant and Equipment ^c (\$mil.) (3)	Percent Chang (4)	Rate (5)	Percent Change (6)	Percent Chang (7=4+)
1976	\$35,358	1.000	\$35,358		74.4%	—	
1977	39,986	1.054	39,750	12.4%	73.6	-1.1%	11.3%
1978	41,847 ^a	1.140	41,382 ^a	4.1	73.5	-0.1	4.0
1979	43,708	1.263	42,855	3.6	73.8	0.4	4.0
1980	48,466	1.382	46,297	8.0	75.4	2.2	10.2
1981	53,980	1.488	50,004	8.0	75.9	0.7	8.7
1982	59,844	1.550	53,787	7.6	75.2	-0.9	6.7
1983	67,175	1.597	58,787	9.3	73.4	-2.4	6.9
1984	73,872	1.651	62,434	6.2	68.9	-6.1	0.1
1985	80,181	1.682	66,184	6.0	64.8	-6.0	0.0
1986	87,577	1.704	70,525	6.6	64.3	-0.8	5.8
1987	93,068 ^b	1.722	73,713	4.5	64.9	0.9	5.4

^aInterpolated from the 1977 and 1979 values because of bad 1978 AHA data.

^b1987 estimate of net total fixed assets based on Medicare cost reports, adjusted to coincide with AHA count of all short-term general hospitals (5,659).

^cEqual to previous year's value plus the deflated change in reported assets in column 1.

Sources: AHA Annual Surveys (unpublished tabulations) and AHA Hospital Statistics (occupancy rate). Capital price deflator based on weighted average of building (75%) and equipment (25%) cost indexes published by Marshall and Swift (Section 98, p.8, January, 1991).

TABLE 16

OTHER NON-LABOR RELATED EXPENSES IN SHORT-TERM HOSPITALS, 1980-89

<u>Year</u>	<u>Other Non-Labor Expenses, Net of Depreciation and Interest (1)</u>	<u>Non-Labor Price Deflator (2)</u>	<u>Deflated Other Non-Labor Inputs (3)</u>	<u>Percent Change (4)</u>
1980	\$23,574,496	1.00	\$23,574,496	
1981	27,995,481	1.10	25,499,325	8.2%
1982	32,856,944	1.14	28,891,921	13.3
1983	37,822,615	1.16	32,599,687	12.8
1984	41,838,693	1.20	34,805,323	6.8
1985	44,049,229	1.23	35,920,020	3.2
1986	47,091,414	1.23	38,312,272	6.7
1987	52,447,252	1.33	39,381,924	2.8
1988	58,236,550	1.35	43,218,294	9.7
1989	64,731,640	1.42	45,468,145	5.2

Source: Col. (1): total nonlabor expenses minus depreciation and interest taken from AHA data tapes for corresponding years; col. (2): derived from unpublished quarterly data as part of HCFA's PPS Input Price Index (total cost less labor-related).

TABLE 17

TRENDS IN FTEs PER 100 ADJUSTED CENSUS IN NONFEDERAL SHORT-TERM HOSPITALS, 1972-1990

Year	PRIVATE VOLUNTARY			PROPRIETARY			PUBLIC			TOTAL		
	Per 100 Adjusted Census			Per 100 Adjusted Census			Per 100 Adjusted Census			Per 100 Adjusted Census		
	FTEs	RNs	LPNs	FTEs	RNs	LPNs	FTEs	RNs	LPNs	FTEs	RNs	LPNs
1972	282	52	24	249	45	27	282	44	27	280	51	25
1973	288	55	24	257	47	28	288	47	29	289	53	25
1974	298	58	25		49	28	307	50	29		56	26
1975	306	60	25	263	53	27	310	52	29	304	58	26
1976	316	64	25	279	56	28	321	56	30	315	61	27
1977	324	67	25	290	60	29	327	58	30	323	64	27
1978		69	25		63	29	329	58		328	67	26
1979	331	75	25	297	69	29	339	64	30	334	72	27
1980	336	75		304	70	30	352	62	30	347	72	
1981		79	26		70	30		66		376	76	27
1982	380	83	26	338	74	31	373	71	30	357	80	27
1983	381	83	26	333	74	31	354	71	30	357	80	27
1984	371	87					362		29	367	85	25
1985		93	23	334	86	30		75	29		91	24
1986	389	98	22	354	92	30	385	83	27	392	95	23
1987	406	100	20	367	99	27	391	86	26	400	97	22
1988	411	100	20	379	99	30	385	86	25	404	97	22
1989	426	102	20	390	100	30	399	86	24	417	98	21
1990	426	102	20	390	100	30	399	86	24	417	98	21
% Annual Change												
1972-75	2.1%	3.8%	1.4%	1.9%	3.8%	1.2%	3.0%	4.5%	1.2%	3.1%	4.0%	1.3%
1975-83	2.6%	5.4%	0.0%	2.9%	7.7%	1.3%	1.9%	5.3%	0.4%	2.5%	5.4%	0.5%
1983-90	2.5%	3.3%	-3.4%	3.3%	3.8%	-0.9%	1.8%	3.0%	-2.9%	2.4%	3.4%	-3.2%

Source: AHA Hospital Statistics, 1966-1991, Table 3.

TABLE 18

TRENDS IN FTEs PER 100 CENSUS AND PER ADMISSION FOR NONFEDERAL SHORT-TERM HOSPITALS,
1972-1990

Year	PRIVATE VOLUNTARY		PROPRIETARY		PUBLIC		TOTAL	
	FTEs Per 100 Adjusted		FTEs Per 100 Adjusted		FTEs Per 100 Adjusted		FTEs Per 100 Adjusted	
	Census	Admission	Census	Admission	Census	Admission	Census	Admission
1972	280	6.14	249	4.50	282	6.18	273	5.91
1973	282	6.10	249	4.57	283	6.05	280	5.98
1974	288	6.23	257	4.72	300	6.33	289	6.18
1975	298	6.37	263	4.76	307	6.37	298	6.29
1976	306	6.32	272	4.92	310	6.51	304	6.41
1978	324	6.93	290	5.37	327	6.63	323	6.73
1979	331	6.98	297	5.41	329	6.67	328	6.83
1980	336	7.09	322	5.73	339	7.33	334	6.95
1981	348	7.44	338	5.73	352	7.77	347	7.23
1982	380	8.12	373	6.11	373	7.77	376	7.83
1983	361	7.62	323	5.75	354	7.37	357	7.43
1984					362			7.34
1985	371 389	7.52 7.67	334 350	5.76 5.85	385	7.34 7.59	367 385	7.49
1986	398	8.05	364	6.92	385	8.21	399	7.63
1988	411	8.22	379	6.44	385	8.02	404	7.89
1989	420	8.40	390	6.73	385	8.12	411	7.97
1990	425	8.45	397	6.92	399	8.49	417	8.22
Annual Change								
1972-75	2.1%	1.3%	1.9%	1.9%	3.0%	1.1%	3.1%	2.1%
1975-83	2.6%	2.4%	2.9%	2.6%	1.9%	1.9%	2.5%	2.3%
1983-90	2.5%		3.3%		1.8%		2.4%	

Source: AHA Hospital Statistics, 1973-91, Table 3.

TRENDS IN FTES PER 100 ADJUSTED CENSUS IN NONFEDERAL SHORT-TERM HOSPITALS BY BEDSIZE, 1972-1990

Year	Total	BED SIZE GROUP							
		6-24	25-49	50-99	100-199	200-299	300-399	400-499	Over 500
1972	273	285	244 242	245 246	265 262	274	282	286	310 314
1973	280	284	257	253	270	283	283	299	323
1975	298	295	267	260	276	289	309	307	337
1976	304	316	278	271	293	297	320	313	338
1977	315	331	289	279	298	306		324	349
1978	323		303	284		310	329	338	357
	328				302		333		363
1980	334	329	303	308	319	332	332	365	372
1981	347	368	343	334	346	362	374	395	384
1982	376	395	362				356		415
1983	357	353	337	313	325	341		378	399
1984	367	395	357	341	333	350	370	381	409
1985	385	449	392		343	369	395	407	427
1986	392	476	395	336	351	375	407	415	435
1987	400	421	382	338	357	382	415	427	450
1988	404	412	378	339	362	388	421	437	451
1989	411	390	377	340	367	396	429	435	467
1990	417	387	387	342	372	401	435	446	478
% Annual Change									
1972-75	3.1%	1.2%	3.1%	2.0%	1.4%	1.82	2.2%	2.4%	2.9%
1975-83	2.5%	2.5%	3.3%	2.5%	2.2%	2.2%	2.3%	2.9%	2.3%
1983-90	2.4%	1.4%	2.1%	1.3%	2.1%	2.5%	3.2%	2.6%	2.8%

Source: AHA Hospital Statistics, 1973-91, Table 3.

TABLE 20

TRENDS IN ALTERNATIVE OUTPUT MEASURES IN NONFEDERAL SHORT-TERM HOSPITALS, 1980-89

Year	ADJUSTED PATIENT DAYS		ADJUSTED ADMISSIONS		DEFLATED REVENUES				INTENSITY ^a Percent Change (9=6-4)
					GROSS		NET		
	(1)	Percent Change (2)	(3)	Percent Change (4)	(5)	Percent Change (6)	(7)	Percent Change (8)	
1980	100.0	—	100.0	—	100.0	—	100.0	—	—
1981	102.6	2.6%	100.3	0.3%	104.1	4.1%	103.4	3.4%	3.8%
1982	104.1	1.5	101.0	0.7	107.9	3.7	105.7	2.2	3.0
1983	103.3	-0.8	100.7	-0.3	111.7	3.5	105.8	0.1	3.8
1984	98.2	-4.9	99.0	-1.7	110.4	-1.2	104.1	-1.6	0.5
1985	92.6	-5.7	96.7	-2.3	108.7	-1.5	104.7	0.6	0.8
1986	91.9	-0.8	95.6	-1.1	112.1	3.1	105.1	0.4	4.2
1987	92.7	0.9	95.2	-1.6	116.5	3.9	105.0	-0.1	5.5
1988	94.7	2.2	96.5	1.4	120.9	3.8	105.0	0.0	2.4
1989	95.6	1.0	97.0	0.5	124.4	2.9	103.4	-1.5	2.4

^a Defined as the percent change in deflated gross revenues (col. 6) minus the percent change in adjusted admissions (col. 4).

Calculated from AHA Hospital Statistics; Deflator for revenues taken from U.S. Bureau of Labor Statistics, Monthly Labor Review and CPI Detailed Report.

TABLE 21

TRENDS IN SHORT-TERM HOSPITAL FACTOR INPUTS, 1980-89

Year	CAPITAL		LABOR		TOTAL FACTOR INDICES								
	Real Stocks Raw (1)	Real Flows Occupancy Adjusted (2)	FTEs Raw (3)	FTEs Skill Adjusted (4)	DEFLATED OTHER NON LABOR INPUTS (5)	11" (6)	Percent Change (7)	I2 ^b (8)	Percent Change (9)	I3 ^c (10)	Percent Change (11)	I4 ^d (12)	Percent Change (13)
1980	100.0	100.0	100.0	100.0	100.0	100.0	—	100.0	—	99.9	—	100.0	—
1981	108.2	108.7	105.5	104.3	108.2	106.5	6.5%	106.5	6.5%	105.9	5.8%	106.0	5.9%
1982	116.2	116.1	107.8	106.6	122.6	112.8	5.9	112.8	5.8	111.9	5.9	110.0	3.9
1983	127.0	124.0	107.6	105.6	138.3	117.9	4.7	117.8	4.5	116.4	4.0	112.4	2.1
1984	134.7	124.2	104.8	103.7	147.6	119.4	1.3	118.8	0.8	117.9	1.3	111.2	-1.0
1985	143.0	124.2	103.9	103.3	152.4	120.9	1.2	119.4	0.7	119.1	1.0	111.0	-0.2
1986	152.4	131.4	104.9	104.5	162.5	125.1	3.5	123.6	3.4	123.3	3.6	114.0	3.1
1987	159.3	136.2	107.9	107.6	167.1	129.0	3.0	127.2	2.9	126.9	3.0	118.0	3.3
1988	—	—	110.9	113.8	183.3	135.8 ^s	5.3 ^s	133.9 ^s	5.3 ^s	136.0 ⁱ	7.2 ⁱ	126.9 ^s	7.5 ^s
1989	—	—	113.2	116.5	192.9	140.15	3.2 ⁱ	138.2 ^s	3.2 ⁱ	140.75	3.4 ^s	131.45	3.5 ^s

$$^a I_1 = .077 * col.1 + .634 * col.3 + .289 * col.5.$$

$$^b I_2 = .077 * col.2 + .634 * col.3 + .289 * col.5.$$

$$^c I_3 = .077 * col.2 + .634 * col.5 + .289 * col.5.$$

$$^d I_4 = .367 * col.2 + .634 * col.4.$$

*Percent changes derived assuming same growth in real capital as in other non-labor inputs.

AHA Arce Hospital Statistics. Weights for inputs taken from June 3, 1986 Federal Register (Table 2: Hospital Market Basket, p. 200034).

TABLE 22

TRENDS IN SHORT-TERM HOSPITAL TOTAL FACTOR PRODUCTIVITY, 1980-89

Year	PERCENT CHANGE IN ADJUSTED ADMISSIONS MINUS INPUT INDEX			PERCENT CHANGE IN DEFLATED GROSS REVENUES MINUS INPUT INDEX		
	11	12	13	11	17	13
1980				---	---	
1981	-6.2%	-6.2%	-5.5%	-2.4%	-2.4%	-1.7%
1982	-5.2	-5.1	-5.2	-2.2	-2.1	-2.2
1983	-5.0	-4.8	-4.3	-1.2	-1.0	-0.5
1984	-3.0	-2.5	-3.0	-2.5	-2.0	-2.5
1985	-3.5	-3.0	-3.3	-2.7	-2.2	-2.5
1986	4.6	4.5	4.7	-0.4	-0.3	-0.5
1987	4.6	4.5	4.6	0.9	1.0	0.9
1988	-3.9	-3.9	-5.6	-1.7	-1.7	-3.4
1989	-2.7	-2.7	-2.9	-0.3	-0.3	-0.5

11: Weighted growth in real capital stocks, FTEs, and other nonlabor inputs (taken from col. 7, Table 21).

12: Weighted growth in occupancy-adjusted real capital stocks, FTEs, and other nonlabor inputs (taken from col. 9, Table 21).

13: Weighted growth in occupancy-adjusted real capital stocks, skill-adjusted FTEs, and other nonlabor inputs (taken from col. 11, Table 21).

e: Productivity trends in 1988 and 1989 assume that real capital inputs grew at same rate as nonlabor inputs.

Source: Calculated based on differences in output and input growth shown in Tables 20 and 21.

TABLE 23: TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY BY BED ACCOMMODATION, 1980-90

MEDICAL - SURGICAL BEDS								
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HRS PER PATIENT DAY	PATIENT DAYS PER DISCHARGE	AVERAGE UNIT LENGTH OF STAY	UNIT ADMIT RATE
1980	249.32	1.06	5.84	43.49	6.09	5.43	7.05	0.777
1981	312.42	1.06	6.54	44.94	6.39	5.50	6.95	0.794
1982	363.51	1.05	7.46	46.15	6.63	5.47	6.87	0.801
1983	392.87	1.05	8.10	45.91	6.74	5.30	6.72	0.792
1984	389.78	1.05	8.55	43.46	6.96	4.93	6.14	0.804
1985	407.11	1.06	9.21	41.61	7.07	4.50	5.80	0.780
1986	429.50	1.06	9.52	42.31	7.26	4.47	5.74	0.782
1987	464.69	1.07	9.94	43.73	7.46	4.34	5.77	0.755
1988	514.34	1.07	10.67	44.78	7.71	4.26	5.71	0.750
1989	NA	NA	NA	NA	NA	NA	NA	NA
1990	657.26	1.07	12.29	49.90	8.19	4.09	6.03	0.685
80-83 PCT CHANGE	13.41	-0.13	11.53	1.82	3.44	-0.81	-1.56	0.649
83-90 PCT CHANGE	7.63	0.21	6.14	1.20	2.83	-3.63	-1.54	-2.064

PEDIATRIC BEDS								
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PATIENT DAY	PATIENT DAYS PER DISCHARGE	AVERAGE UNIT LENGTH OF STAY	UNIT ADMIT RATE
1980	200.36	1.05	6.25	30.10	7.95	0.39	3.79	0.103
1981	229.94	1.05	8.04	30.73	8.31	0.39	3.72	0.105
1982	270.67	1.06	8.81	31.71 31.57	8.83 8.56	0.38	3.65	0.104
1983	297.11	1.04				0.35	3.58	0.099
1984	321.67	1.06	9.44	32.08	9.19	0.32	3.44	0.094
1985	341.53	1.05	11.45	33.66	8.40	0.30	3.30	0.092
1986	363.81	1.05	10.13	34.93	10.04	0.31	3.29	0.094
1987	403.03	1.06	10.82		10.14	0.30	3.36	0.088
1988	449.88	1.07	11.78	35.80	10.39	0.30	3.33	0.091
1989		NA	NA		NA	NA	NA	NA
	523.00	1.05	13.63	36.00	10.78	0.27	3.26	0.082
				1.75				
80-83 PCT CHANGE	14.03	-0.34	12.15	2.05	3.56	-3.00	-1.94	-1.227
83-90 PCT CHANGE	8.42	0.12	6.43		2.89	-3.90	-1.32	-2.583

PSYCHIATRIC BEDS								
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HRS PER PATIENT DAY	PATIENT DAYS PER DISCHARGE	AVERAGE UNIT LENGTH OF STAY	UNIT ADMIT RATE
1980	612.63	1.04	6.20	94.76	7.37	0.54	12.98	0.042
1981	785.01	1.05	7.22	101.71	7.84	0.51	13.04	0.040
1982	905.89	1.07	7.91	107.30	7.82	0.56	13.85	0.041
1983	993.98	1.07	8.53	109.14	7.84	0.57	13.98	0.042
1984	1021.40	1.07	8.99	106.63	7.99	0.58	13.45	0.044
1985	1119.93	1.10	9.73	104.83	8.13	0.59	12.98	0.045
1986	1226.67	1.14	9.97	107.46	8.18	0.63	13.18	0.048
1987	1277.42	1.17	10.62	103.64	8.28	0.63	12.57	0.051
1988	1543.07	1.20	10.90	118.68	8.69	0.67	13.47	0.051
1989	NA	NA	NA	NA	NA	NA	NA	NA
1990	1612.26	1.17	12.62	110.05	9.09	0.66	12.28	0.000
80-83 PCT CHANGE	17.51	0.93	11.21	4.82	2.08	2.17	2.50	-0.546
83-90 PCT CHANGE	7.15	1.28	5.75	0.12	2.13	1.89	-1.83	3.617

TABLE 23 (CONTINUED): TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY BY BED ACCOMMODATION, 1980-90

SUB-ACUTE CARE BEDS								
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HWR	HRS PER DISCHARGE	HOURS PER PATIENT DAY	PATIENT DAYS PER DISCHARGE	AVERAGE UNIT LENGTH OF STAY	UNIT ADMIT RATE
1980	1048.92	1.28	6.40	126.71	5.98	0.49	21.02	0.023
1981	1180.89	1.19	7.39			0.53	21.10	0.026
1982	1599.55	1.32	8.12	132.91	151.59	6.34	22.87	0.023
1983	1666.24	1.26		148.43	7.12	0.47	20.56	0.024
1984	1758.11	1.40	9.23			0.48	20.40	0.025
1985	1900.52	1.36	9.37	135.95	148.40	6.81	20.24	0.024
1986	1900.27	1.30	9.71	147.49	7.54	0.50	19.84	0.028
1987	2111.93	1.29	10.36	155.95	7.71	0.55	20.76	0.027
1988	2164.71	1.26	10.62	159.20	8.04	0.61	20.21	0.035
1989	NA	NA	NA	NA	NA	NA	NA	NA
1990	1955.80	1.20	11.64	136.08	8.23	0.46	16.44	0.033
80-83 PCT CHANGE	16.68	-0.41	12.98	5.41	6.01	-1.00	-0.74	0.196
80-90 PCT CHANGE	2.32	-0.71	3.36	-1.23	2.50	-0.32	-3.15	4.869

OBSTETRICAL BEDS								
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PATIENT DAY	PATIENT DAYS PER DISCHARGE	AVERAGE UNIT LENGTH OF STAY	UNIT ADMIT RATE
1980	169.32	1.08	6.35	24.67	6.17	0.468	3.61	0.124
1981	197.24	1.09	7.17	25.27	6.33	0.484	3.57	0.125
1982	231.08	1.08	8.12	26.38	6.62	0.487	3.55	0.128
1983	250.94	1.08		26.32	6.80	0.463	3.46	0.124
1984	258.72	1.08	8.86	25.74	6.87	0.451	3.34	0.127
1985	264.43	1.07	9.97	24.95	6.74	0.478	3.21	0.141
1986	282.94	1.08	10.42	25.17	7.00	0.477	3.15	0.142
1987	297.79	1.07	11.00	25.39	7.27	0.466	3.06	0.146
1988	327.32	1.09	11.62	25.71	7.76	0.446	2.88	0.147
1989		NA	NA	NA	NA	NA	NA	NA
1990	362.21	1.07	13.69	24.77	7.86	0.412	2.70	0.149
80-83 PCT CHANGE	14.01	-0.17	11.70	2.18	3.30	-0.349	-1.41	-0.021
80-90 PCT CHANGE	5.39	-0.07	6.43	-0.86	2.09	-1.658	-3.46	2.676

NEWBORN NURSERY BEDS								
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HWR	HOURS PER DISCHARGE	HOURS PER PATIENT DAY	PATIENT DAYS PER DISCHARGE	AVERAGE UNIT LENGTH OF STAY	UNIT ADMIT RATE
1980	156.21	1.11	6.01	23.26	6.30	0.342	3.68	0.093
1981	185.05	1.10	7.99	24.18	6.68	0.340	3.62	0.094
1982	216.78	1.09	8.75	24.45	24.65	6.92	3.56	0.096
1983	236.02	1.10				7.11	3.44	0.096
1984	250.75	1.09	9.29	24.64	7.35	0.323	3.35	0.096
1985	248.33	1.08	9.79			0.351	3.20	0.110
1986	261.98	1.09	10.45	23.44	23.02	7.43	3.10	0.110
1987	267.86	1.09	10.72	22.86	7.73	0.322	2.96	0.109
1988	282.81	1.08	11.76	22.24	7.89	0.311	2.82	0.110
1989	NA	NA	NA	NA	NA	NA	NA	NA
1990	306.12	1.08	13.49	21.06	8.19	0.287	2.57	0.110
80-83 PCT CHANGE	14.75	-0.29		1.68	4.09	-1.184	-2.26	1.077
80-90 PCT CHANGE	3.79	-0.25	16.37	-2.11	2.06	-1.975	-4.08	2.210

TABLE 23 (CONTINUED): TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY BY BED ACCOMMODATION, 1980-90

DEFINITIVE OBSERVATION BEDS						
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PATIENT DAY	PATIENT DAYS PER DISCHARGE
1980	27.15	1.08	7.06	3.55	8.98	0.396
1981	33.57	1.07	7.67	4.09	9.07	0.454
1982	40.43	1.06	8.86	4.31	9.61	0.448
1983	46.09	1.07	9.43	4.58	9.80	0.466
1984	47.87	1.04		4.58	9.80	0.469
1985	54.58	1.06	10.02 10.32	4.85	9.65	0.504
1986	60.13			5.22	9.87	0.529
1987	70.28	1.06		5.88	9.97	0.588
1988	85.02	1.07	10.11 11.23	4.28	10.08	0.623
1989		1 NA	NA	NA	NA	NA
1990	97.00	1.05	13.52	6.79	10.19	0.668
80-83 PCT CHANGE	19.29	-0.54	10.13	8.91	2.97	5.655
83-90 PCT CHANGE	11.24	-0.18	5.29	5.78	0.55	5.234

MEDICAL AND SURGICAL ICU						
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PATIENT DAY	PATIENT DAYS PER DISCHARGE
1980	46.69	1.11	6.90	6.04	18.22	0.330
1981	57.05	1.09	8.03	6.47	18.73	0.344
1982	67.97	1.09	9.09	6.82	19.68	0.346
1983	79.11	1.09	9.96	7.26	20.07	0.361
1984	83.89	1.08	10.33	7.50	20.72	0.361
1985	92.15	1.08	10.93	7.77	20.53	0.379
1986	101.35	1.08	11.37	8.20	20.23	0.406
1987	114.11	1.09	11.85	8.79	20.51	0.429
1988	130.00	1.09	12.88	9.20	20.87	0.441
1989	NA	NA	NA	NA	NA	NA
1990	153.67	1.07	15.25	9.37	21.71	0.433
80-83 PCT CHANGE	19.22	-0.78	13.03	6.32	3.29	3.006
83-90 PCT CHANGE	9.95	-0.20	6.27	3.72	1.13	2.640

NEONATAL ICU						
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PATIENT DAY	PATIENT DAYS PER DISCHARGE
1980	24.81	1.18	7.64	2.80	14.34	0.197
1981	28.87	1.12	8.21	3.21	15.41	0.209
1982	34.37	1.11	9.20	3.34	15.62	0.214
1983	36.87	1.12	10.12	3.22	16.00	0.204
1984	37.65	1.05	11.64	3.05	15.88	0.194
1985	48.25	1.08	11.76	3.75	15.79	0.238
1986	50.16	1.12	12.14	3.60	16.38	0.222
1987	50.46	1.11	12.79	3.62	16.56	0.219
1988	60.18	1.13	14.16	3.85	17.47	0.228
1989	NA		NA	NA	NA	NA
1990	68.03	1.00	16.82	3.68	16.45	0.230
80-83 PCT CHANGE	14.12	-1.81	9.80	4.75	3.72	1.190
83-90 PCT CHANGE	9.14	-0.03	7.53	1.95	0.39	1.696

Source: Derived from AHA-HAS NONITREND data books and tapes, June 30, 1980-90.

TABLE 24: TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY IN SURGERY AND LABOR ROOMS, 1980-90

SURGICAL SERVICE							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER VISIT	VISITS PER DISCHARGE	OUTPATIENT REVENUE PERCENT
1980	78.12	1.94		6.08	10.57	0.569	6.51
1981	89.89	1.96	6.39	6.19	10.95	0.560	7.58
1982	109.24	2.04	8.15	6.47	11.49	0.558	9.20
1983	120.18	2.04	9.01	6.43	11.56	0.551	11.40
1984	130.56	2.08	9.53	6.44	11.52	0.555	14.66
1985	139.30	2.15	9.88	6.40	11.51	0.551	22.64
1986	157.71	2.16	10.30	6.96	12.18	0.566	26.19
1987	181.38	2.25	10.70	7.32	12.58	0.574	29.55
1988	206.38	2.26	11.50	7.72	12.73	0.598	31.73
1989	NA	NA	NA	NA	NA	NA	NA
1990	291.92	2.37	12.88	9.03	14.12	0.626	34.28
80-83 PCT CHANGE	15.44	1.84	11.21	1.87	3.02	-1.072	20.55
83-90 PCT CHANGE	13.52	2.17	5.23	4.97	2.90	1.839	17.03

RECOVERY ROOM							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER VISIT	VISITS PER DISCHARGE	
1980	9.26	1.07	7.13	1.20	2.70	0.43	
1981	10.99	1.06	8.43	1.22	2.75	0.43	
1982	13.34	1.07	9.47	1.29	2.93	0.43	
1983	14.48	1.06	10.20	1.32	3.07	0.42	
1984	15.46	1.07	10.66	1.34	3.10	0.42	
1985	15.81	1.07	11.05	1.32	3.15	0.41	
1986	17.46	1.05	11.63	1.41	3.23	0.43	
1987	18.98	1.08	12.04	1.44	3.24	0.43	
1988	20.48	1.06	13.05	1.47	3.25	0.44	
1989	NA	NA	NA	NA	NA	NA	
1990	27.25	1.06	15.39	1.65	3.32	0.48	
80-83 PCT CHANGE	16.06	-0.13	12.72	3.14	4.39	-0.98	
83-90 PCT CHANGE	9.45	0.03	6.04	3.27	1.15	1.95	

LABOR AND DELIVERY SUITE							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PROCEDURE	PROCEDURES PER DISCHARGE	
1980	14.28	1.27	6.84	1.62	16.27	0.098	
1981	16.99	1.25	7.80	1.72	17.27	0.097	
1982	20.29	1.24	8.86	1.82	17.38	0.101	
1983	22.81	1.23	9.70	1.87	18.47	0.099	
1984	24.61	1.19	10.42	1.95	18.82	0.101	
1985	28.56	1.21	10.75	2.14	18.59	0.112	
1986	31.85	1.23	11.25	2.26	19.40	0.114	
1987	35.20	1.21	11.79	2.41	20.18	0.116	
1988	41.78	1.22	12.80	2.60	21.12	0.120	
1989	NA	NA	NA	NA	NA	NA	
1990	48.80	1.18	14.53	2.80	21.71	0.128	
80-83 PCT CHANGE	16.88		12.39	4.82	4.33	0.478	
83-90 PCT CHANGE	11.48	-0.10	5.93	5.95	2.34	3.759	

ANESTHESIOLOGY							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER VISIT	VISITS PER DISCHARGE	
1980	13.33	1.18	11.69	1.010	1.947	0.569	
1981	14.82	1.18	12.95	0.998	1.934	0.560	
1982	16.79	1.29	15.08	0.942	1.840	0.558	
1983	16.83	1.39	15.20	0.902	1.791	0.551	
1984	18.44	1.42	15.27	0.990	1.937	0.555	
1985	20.59	1.52	15.78	0.985	1.937	0.551	
1986	22.08	1.55	16.90	0.973	1.861	0.566	
1987	21.57	1.67	16.51	0.896	1.683	0.574	
1988	24.33	1.75	16.78	0.983	1.747	0.598	
1989	NA	NA	NA	NA	NA	NA	
1990	33.30	2.35	20.53	1.038	1.867	0.626	
80-83 PCT CHANGE	8.08	5.66		-3.709	-2.753	-1.072	
83-90 PCT CHANGE	10.24	7.82	0.15 4.38	2.025	0.599	1.839	

TABLE 24 (CONTINUED): TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY IN SURGERY AND LABOR ROOMS, 1980-90

YEAR	HEMODIALYSIS DEPARTMENT						
	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER TREATMENT	TREATMENTS PER DISCHARGE	OUTPATIENT REVENUE PERCENT
1980	3.00	2.36	7.55	0.17	6.29	0.027	84.67
1981	3.34	2.29	8.44	0.17	6.48	0.027	81.26
1982	3.63	2.29	9.35	0.17	6.20	0.027	79.40
1983	4.13	2.44	9.85	0.18	5.93	0.029	75.06
1984	4.15	2.62	10.44	0.16	5.43	0.029	75.19
1985	3.54	2.35	11.44	0.13	5.22	0.026	77.31
1986	4.18	2.11	11.94	0.17	5.35	0.032	73.13
1987	3.93	2.33	11.43	0.15	4.89	0.031	73.91
1988	7.45	2.30	12.68	0.27	4.96	0.052	64.81
1989	NA	NA	NA	NA	NA	NA	NA
1990	10.77	2.35	13.96	0.35	4.62	0.073	44.34
80-83 PCT CHANGE	11.23	1.19	9.25	1.40	-1.91	2.636	-3.94
83-90 PCT CHANGE	14.66	-0.54	5.11	10.30	-3.50	14.142	-7.24

Source: Derived from AHA-HAS MONITREND data books and tapes, June 30, 1980-90.

TABLE 25: TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY IN SELECTED ANCILLARY SERVICES, 1980-90

DIAGNOSTIC RADIOLOGY DEPARTMENT

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PROCEDURE	PROCEDURES PER DISCHARGE	OUTPATIENT REVENUE PERCENT
1980	36.54	2.01	6.08	3.09	1.278	2.33	39.64
1981	41.80	1.95	6.94	3.25	1.299	2.36	39.94
1982	45.80	1.87	7.59	3.27	1.356	2.37	40.28
1983	49.50	1.87	8.14	3.20	1.388	2.34	40.17
1984	49.80	1.77	8.59	3.09	1.427	2.23	43.10
1985	49.70	1.77	9.2 9.13	3.09	1.397	2.19	46.83
1986	51.13			3.10	1.368	2.24	50.10
1987	53.24	1.75	9.76	3.14	1.375	2.26	52.58
1988	56.84	1.78	10.17	3.15	1.354	2.31	54.60
1989	NA	NA	NA	NA	NA	NA	NA
1990	56.21	1.71	11.18	2.98	1.300	2.21	56.10
80-83 PCT CHANGE	10.65	-2.36	10.22	2.84	2.799	0.08	0.44
83-90 PCT CHANGE	1.83	-1.21	4.63	-1.34	-0.392	-0.80	4.89

THERAPEUTIC RADIOLOGY DEPARTMENT

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PROCEDURE	PROCEDURES PER DISCHARGE	OUTPATIENT REVENUE PERCENT
1980	1.18	1.44	6.94	0.118	1.074	0.108	77.68
1981	1.16	1.48	7.52	0.106	1.070	0.096	81.24
1982	1.34	1.47	8.43	0.107	1.124	0.096	79.56
1983	1.66	1.45	9.16	0.124	1.229	0.097	82.69
1984	1.67	1.46	9.63	0.117	1.157	0.101	84.22
1985	1.53	1.50	10.14	0.099	1.153	0.085	87.17
1986	1.76	1.43	10.52	0.114	1.239	0.092	87.63
1987	1.87	1.56	10.82	0.112	1.230	0.091	88.25
1988	1.78	1.49	11.64	0.104	1.203	0.086	89.15
1989	NA	NA	NA	NA	NA	NA	NA
1990	2.79	1.53	14.39	0.127	1.434	0.088	89.16
80-83 PCT CHANGE	12.16	0.28	9.68	1.607	4.601	-3.697	2.10
83-90 PCT CHANGE	7.69	0.74	6.66	0.311	2.233	-1.315	1.08

NUCLEAR MEDICINE

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER DAY	LENGTH OF STAY FOR ALL UNITS	OUTPATIENT REVENUE PERCENT
1980	6.86	2.64	7.54	0.368	0.052	7.06	26.42
1981	7.43	2.48	8.45	0.373	0.053	7.03	28.07
1982	8.24	2.43	9.21	0.393	0.056	7.00	29.44
1983	8.53	2.28	10.24	0.385	0.055	6.89	31.02
1984	8.47	2.39	10.51	0.365	0.056	6.48	36.71
1985	8.19	2.30	11.39	0.331	0.053	6.23	42.97
1986	8.02	2.29	11.90	0.306	0.048	6.28	47.98
1987	8.28	2.40	11.64	0.309	0.048	6.34	51.71
1988	8.49	2.43	12.19	0.309	0.048	6.37	54.85
1989	NA	NA	NA	NA	NA	NA	NA
1990	9.37	2.51	15.47	0.254	0.041	6.19	58.28
30-83 PCT CHANGE	7.52	-4.89	10.71	1.506	2.245	-0.83	5.50
33-90 PCT CHANGE	1.34	1.42	6.08	-5.788	-4.350	-1.52	9.43

CAT SCAN

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PROCEDURE	PROCEDURES PER DISCHARGE	OUTPATIENT REVENUE PERCENT
1980	4.14	2.60	8.14	0.198	2.15	0.092	39.15
1981	5.14	2.56	9.22	0.228	2.17	0.106	40.42
1982	7.16	3.08	9.72	0.256	2.17	0.119	41.63
1983	8.92	3.16	10.23	0.295	2.15	0.139	40.29
1984	10.83	3.50	10.36	0.321	2.10	0.156	41.54
1985	11.26	3.26	10.91	0.335	2.00	0.168	45.83
1986	11.40	3.07	11.35	0.344	1.86	0.186	48.96
1987	11.93	2.84	11.98	0.358	1.78	0.202	52.08
1988	11.94	2.76	12.18	0.366	1.76	0.207	53.20
1989	NA	NA	NA	NA	NA	NA	NA
1990	15.35	3.28	13.69	0.344	1.66	0.208	55.92
80-83 PCT CHANGE	29.19	6.65	7.91	14.170	0.09	14.646	0.96
83-90 PCT CHANGE	8.07	0.54	4.25	2.223	-3.66	5.884	4.79

TABLE 25 (CONTINUED): TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY IN SELECTED ANCILLARY SERVICES, 1980-90

CATHETERIZATION LABORATORY

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PROCEDURE	PROCEDURES PER DISCHARGE	OUTPATIENT REVENUE PERCENT
1980	18.60	3.18	7.75	0.75	9.79	0.083	5.57
1981	19.72	3.17	10.41	0.81	10.24	0.073	8.73
1982	24.41	2.95	8.43		10.06	0.082	6.07
1983	25.35	3.10		0.83	9.65	0.085	8.75
1984	25.51	2.82	10.88	0.83	9.35	0.093	7.50
1985	28.98	2.85	12.97	0.78	8.97	0.086	10.17
1986	37.34	3.02	13.80	0.90	9.77	0.093	10.24
1987	46.83	3.58	12.74	1.02	10.23	0.101	10.52
1988	61.77	3.82	14.19	1.14	10.69	0.109	9.87
1989	NA	NA	NA	NA	NA	NA	NA
1990	57.95	3.91	16.32	0.92	10.05	0.092	21.19
80-83 PCT CHANGE	10.87	-0.78	11.79	3.43	-0.49	0.972	16.21
83-90 PCT CHANGE	12.54	3.34	6.04	1.45	0.59	1.089	13.47

LAB AND BLOW BANK

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER WORKLOAD UNIT
1980	84.57		6.78	6.42	0.023
1981	97.51	1.96	7.58	6.67	0.023
1982	114.25	1.95	8.38	7.05	0.024
1983	127.48	1.95	9.02	7.32	0.025
1984	131.77	1.91	9.55	7.26	0.026
1985	139.27	1.91	10.08	7.28	0.027
1986	146.00	1.93	10.26	7.41	0.026
1987	154.07	1.95	10.55	7.52	0.026
1988	163.60	1.92	11.17	7.65	0.026
1989	NA	NA	NA	NA	NA
1990	180.95	1.96	12.26	7.55	0.026
80-83 PCT CHANGE	14.66	-0.25	9.96	4.50	3.749
83-90 PCT CHANGE	5.13	0.07	4.49	0.43	0.344

YEAR	WORKLOAD UNITS PER DISCHARGE	WORKLOAD UNITS PER DAY	LENGTH OF STAY FOR ALL UNITS	OUTPATIENT REVENUE PERCENT
1980	281.26	39.78	7.06	15.68
1981	288.53	41.04	7.03	15.92
1982	291.99	41.76	7.00	16.21
1983	287.46	41.79	6.89	16.50
1984	272.72	42.25	6.48	18.09
1985	269.23	43.53	6.23	20.61
1986	278.98	44.60	6.28	22.68
1987	285.48	45.10	6.34	25.48
1988	292.82	45.96	6.37	26.94
1989	NA	NA	NA	NA
1990	293.;;	47.28	6.19	30.46
80-83 PCT CHANGE	0.73	1.66	-0.83	1.71
83-90 PCT CHANGE	0.28	1.78	-1.52	9.16

ECG AND EEG

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER WORK LOAD UNIT	WORK LOAD UNITS PER DISCHARGE	OUTPATIENT REVENUE PERCENT
1980	6.41	1.51	5.34	0.82	0.042	19.17	18.73
1981	7.66	1.53	6.04	0.85	0.040	20.84	19.58
1982	9.01	1.57	6.66	0.89	0.038	22.97	20.32
1983	10.10	1.54	7.24	0.93	0.038	23.85	21.19
1984	10.36	1.56	7.50	0.92	0.039	23.07	23.24
1985	10.64	1.53	7.71	0.93	0.041	22.31	26.78
1986	11.26	1.56	8.21	0.90	0.036	24.44	29.75
1987	12.24	1.55	8.57	0.95	0.037	25.12	32.19
1988	13.33	1.54	9.11	0.97	0.037	25.85	34.56
1989	NA	NA	NA	NA	NA	NA	NA
1990	15.22	1.50	10.27	1.02	NA	NA	37.92
80-83 PCT CHANGE	16.38	0.76	10.73	4.18	-3.213	7.54	4.21
83-90 PCT CHANGE	6.03	-0.43	5.12	1.25	-0.532	1.62	8.67

TABLE 25 (CONTINUED): TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY IN SELECTED ANCILLARY SERVICES, 1980-90

RESPIRATORY THERAPY							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER TREATMENT	TREATMENTS PER DISCHARGE	OUTPATIENT REVENUE PERCENT
1980	25.13	1.52	6.02	2.75	0.62	4.42	1.98
1981	30.64	1.52	6.82	2.96	0.61	4.89	1.99
1982	35.25	1.48	7.66	3.13	0.60	5.24	2.16
1983	39.79	1.50	8.18	3.26	0.55	6.00	2.16
1984	41.35	1.42	8.69	3.35	0.55	6.19	2.51
1985	45.37	1.42	9.14	3.51	0.54	6.60	3.01
1986	49.70	1.41	9.69	3.63	0.52	7.04	3.46
1987	53.99	1.44	9.97	3.75	0.50	7.56	4.07
1988	60.10	1.45	10.59	3.90	0.46	8.51	4.22
1989	NA	NA	NA	NA	NA	NA	NA
1990	68.01	1.30	12.98	4.04	NA	NA	4.89
80-83 PCT CHANGE	16.56	-0.63	10.79	5.82	-4.43	10.71	2.89
83-90 PCT CHANGE	7.96	-1.95	6.82	3.11	-3.51	7.24	12.39

PULMONARY FUNCTION							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER DAY	LENGTH OF STAY FOR ALL UNITS	OUTPATIENT REVENUE PERCENT
1980	1.94	1.29	7.03	0.22	0.030	7.06	18.40
1981	1.96	1.28	7.44	0.22	0.031	7.03	19.04
1982	2.79	1.45	9.24	0.21	0.030	7.00	20.12
1983	2.67	1.60	8.86	0.22	0.032	6.89	20.47
1984	2.80	1.51	9.88	0.21	0.033	6.48	24.12
1985	2.88	1.51	10.18	0.23	0.037	6.23	29.28
1986	2.59	1.45	11.50	0.18	0.028	6.28	34.00
1987	2.28	1.54	11.38	0.17	0.026	6.34	40.37
1988	2.74	1.30	11.38	0.19	0.028	6.37	38.18
1989	NA	NA	NA	NA	NA	NA	NA
1990	3.84	1.20	14.00	0.22	0.035	6.19	38.67
80-83 PCT CHANGE	11.30	7.44	8.05	0.09	1.559	-0.83	3.60
83-90 PCT CHANGE	5.31	-3.90	6.91	0.16	1.293	-1.52	9.52

IV THERAPY							
YEAR	EXPENSE PER DISCHARGE	EXPENSE PER HOUR	NWRS PER DISCHARGE	HOURS PER DAY	LENGTH OF STAY FOR ALL UNITS	OUTPATIENT REVENUE PERCENT	
1980	18.17	21.96	0.84	0.12	7.06	1.59	
1981	23.15	26.19	0.89	0.13	7.03	1.61	
1982	25.49	26.16	0.99		7.00	1.86	
1983	29.91	26.93	1.13	0.14 0.17	6.89	1.99	
1984	28.99	27.24	1.07	0.17	6.48	2.40	
1985	29.79	27.61	1.09	0.18	6.23	3.45	
1986	29.44	27.34	1.09	0.18	6.28	4.18	
1987	28.23	25.19	1.10	0.17	6.34	5.22	
1988	31.35	26.06	1.21	0.19	6.37	6.28	
1989	NA	NA	NA	NA	NA	NA	
1990	NA	NA	NA	NA	6.19	NA	
80-83 PCT CHANGE	18.08	7.05	10.43	12.11	-0.83	7.71	
83-90 PCT CHANGE	0.94	-0.65	1.38	2.25	-1.56	25.84	

PHYSICAL THERAPY							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	NWRS PER DISCHARGE	HOURS PER TREATMENT	TREATMENTS PER DISCHARGE	OUTPATIENT REVENUE PERCENT
1980	8.50	1.19	6.40	1.12	0.717	1.57	29.81
1981	10.10	1.19	7.07	1.21	0.745	1.63	29.22
1982	11.89	1.18		1.28	0.732	1.75	29.10
1983	13.28	1.19	8.47	1.33	0.750	1.77	30.55
1984	13.69	1.20	9.12	1.26	0.743	1.69	33.84
1985	13.76	1.19		1.23	0.750	1.62	39.89
1986	15.27	1.26	9.86	1.23	0.730	1.68	42.94
1987	16.90	1.25	10.53	1.29	0.708	1.82	44.97
1988	18.72	1.26	11.20	1.35	0.716	1.86	45.87
1989	NA	NA	NA	NA	NA	NA	NA
1990	22.49	1.23	12.84	1.47	NA	NA	45.00
80-83 PCT CHANGE	16.02	0.09	9.79	5.74	1.518	4.14	0.82
83-90 PCT CHANGE	7.82	0.39	6.13	1.50	-0.924	1.00	5.79

TABLE 25 <CONTINUED>: TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY IN SELECTED ANCILLARY SERVICES, 1980-90

REHABILITATIVE SERVICES							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PATIENT DAY	LENGTH OF STAY FOR ALL UNITS	OUTPATIENT REVENUE PERCENT
1980	3.40	1.03	7.79	0.42	0.056	7.06	31.22
1981	3.58	0.97	8.25	0.44	0.060	7.03	30.73
1982	4.64	1.06	9.01	0.49	0.065	7.00	31.52
1983	5.57	1.11	9.48	0.53	0.072	6.89	33.48
1984	5.73	1.10	10.69	0.48	0.070	6.48	36.76
1985	6.23	1.09	10.70	0.54	0.081	6.23	38.02
1986	7.02	1.10	10.90	0.59	0.087	6.28	40.14
1987	10.17	1.21	11.70	0.72	0.105	6.34	41.22
1988	11.33	1.21	11.68	0.82	0.119	6.37	44.34
1989	NA	NA	NA	NA	NA	NA	NA
1990	13.97	1.54	15.46	0.69	0.104	6.19	47.50
80-83 PCT CHANGE	17.94	2.50	6.77	8.13	8.868	-0.83	2.36
83-90 PCT CHANGE	14.03	4.80	7.24	3.95	5.334	-1.52	5.12

OTHER PATIENT SERVICES			
YEAR	EXPENSE PER DISCHARGE	EXPENSE PER DAY	LENGTH OF STAY FOR ALL UNITS
1980	3.87	0.55	7.06
1981	4.76	0.68	7.03
1982	5.35	0.76	7.00
1983	6.46	0.94	6.89
1984	7.51	1.15	6.48
1985	7.94	1.26	6.23
1986	10.99	1.75	6.28
1987	13.45	2.10	6.34
1988	16.38	2.54	6.37
1989	NA	NA	NA
1990	19.51	3.10	6.19
80-83 PCT CHANGE	18.62	19.34	-0.83
83-90 PCT CHANGE	17.11	18.66	-1.52

Source: Derived from AHA-HAS MONITREND data books and tapes, June 30, 1980-90.

TABLE 26: TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY FOR SELECTED MEDICAL SUPPORT SERVICES, 1980-90

SOCIAL SERVICES

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HRS PER DISCHARGE
1980	4.09	1.03	7.04	0.36
1981	4.98	1.03	8.03	0.60
1982	5.76	1.03	8.77	0.64
1983	6.53	1.04	9.54	0.65
1984	7.02	1.03	9.81	0.69
1985	8.08	1.05	10.40	0.73
1986	9.01	1.04	10.85	0.80
1987	9.50	1.04	11.15	0.81
1988	10.60	1.04	11.64	0.88
1989	NA	NA	NA	NA
1990	11.71	1.03	13.34	0.87
80-83 PCT CHANGE	16.89	0.49	10.67	5.16
83-90 PCT CHANGE	8.71	-0.22	4.91	4.11

MEDICAL RECORDS

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE
1980	18.39	1.21	5.18	2.93
1981	21.73	1.21	5.82	3.08
1982	24.36	1.21	6.39	3.15
1983	27.26	1.22	6.86	3.25
1984	30.54	1.22	7.20	3.48
1985	33.56	1.21	7.53	3.67
1986	37.19	1.22	7.80	3.91
1987	39.66	1.24	8.11	3.96
1988	42.40	1.22	8.46	4.11
1989	NA	NA	NA	NA
1990	47.26	1.24	9.30	4.10
80-83 PCT CHANGE	14.01	0.25	9.81	3.54
83-90 PCT CHANGE	8.18	0.26	4.44	3.37

MEDICAL CARE EVALUATION

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE
1980	2.97	1.04	6.74	0.424
1981	3.43	1.05	7.58	0.435
1982	3.97	1.06	8.52	0.441
1983	4.52	1.06	9.23	0.463
1984	5.46	1.08	9.73	0.518
1985	6.99	1.08	10.40	0.625
1986	8.31	1.07	11.31	0.684
1987	9.36	1.08	11.88	0.729
1988	10.59	1.09	12.15	0.802
1989	NA	NA	NA	NA
1990	15.16	1.09	13.75	1.0:
80-83 PCT CHANGE	15.03	0.57	11.05	2.975
83-90 PCT CHANGE	18.87	0.41	5.86	11.863

MEDICAL STAFF, SERVICE, AND EDUCATION

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HRS PER DAY	LENGTH OF STAY FOR ALL UNITS
1980	4.55	1.44	6.76	0.430	0.060	7.06
1981	5.20	1.51	7.85	0.404	0.057	7.03
1982	6.30	1.60	8.18	0.446	0.063	7.00
1983	4.78	1.51	9.22	0.459	0.066	6.89
1984	7.31	1.57	9.15	0.475	0.073	6.48
1985	8.76	1.58	9.76	0.523	0.083	6.23
1986	9.03		9.99	0.507	0.079	6.28
1987	10.38	1.67	9.85	0.568	0.088	6.34
1988	10.75	1.68	10.86	0.543	0.084	6.37
1989	NA	NA	NA	NA	NA	NA
1990	13.70	1.64	13.43	0.581	0.094	6.19
80-83 PCT CHANGE	14.22		10.87	2.220	3.426	-0.83
83-90 PCT CHANGE	10.59	1.22	5.52	3.426	5.171	-1.52

TABLE 26 (CONTINUED): TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY FOR SELECTED MEDICAL SUPPORT SERVICES, 1980-90

CENTRAL SERVICES

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER PATIENT DAY	LENGTH OF STAY FOR ALL UNITS	OUTPATIENT REVENUE PERCENT
1980	42.92	3.99	4.85	2.24	0.32	7.06	6.09
1981	52.01	4.21	5.38	2.31	0.33	7.03	6.26
1982	62.46	4.44	5.97	2.38	0.34	7.00	6.20
1983	74.83	4.86	6.43	2.42	0.35	6.89	6.57
1984	76.46	4.70	6.72	2.46	0.38	6.48	7.50
1985	83.59	4.96	6.91	2.47	0.39	6.23	9.16
1986	90.37	4.98	7.17	2.59	0.41	6.28	10.43
1987	92.07	4.89	7.27	2.65	0.42	6.34	11.84
1988	101.77	5.16	7.47	2.71	0.42	6.37	12.30
1989	NA	NA	NA	NA	NA	NA	NA
1990	121.82	5.80	8.02	2.74	0.44	6.19	13.93
80-83 PCT CHANGE	20.36	6.84	9.81	2.61	3.34	-0.83	2.55
83-90 PCT CHANGE	7.21	2.54	3.21	1.79	3.43	-1.52	11.34

PHARMACY

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HWRS PER DISCHARGE	HCURS PER PATIENT DAY	LENGTH OF STAY FOR ALL UNITS	OUTPATIENT REVENUE PERCENT
1980	63.98	3.77	7.56	2.27	0.32	7.06	4.35
1981	76.87	3.64	8.36	2.54	0.36	7.03	4.27
1982	92.60	3.69	9.15	2.76	0.39	7.00	4.27
1983	110.09	3.83	9.77	2.94	0.42	6.89	4.38
1984	117.29	3.69	10.33	3.07	0.47	6.48	5.04
1985	128.35	3.70	10.88	3.18	0.51	6.23	6.63
1986	147.02	3.80	11.51	3.35		6.28	7.58
1987	164.09	3.90	11.92	3.50	0.55	6.34	8.55
1988	189.54	4.01	12.67	3.70	0.58	6.37	9.36
1990	236.02	4.12	14.90	3.96	0.64	6.19	11.15
80-83 PCT CHANGE	19.83	0.53	8.92	9.01	10.03	-0.83	0.22
83-90 PCT CHANGE	11.51	1.04	6.21	4.35	6.02	-1.52	14.29

Source: Derived from AHA-HAS HONITREND data books and tapes, June 30, 1980-90.

TABLE 27: TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY FOR ADMINISTRATIVE OVERHEAD SERVICES, 1980-90

ADMINISTRATION							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	EXPENSE PER FTE	FTE PER DISCHARGE	HOURS PER FTE
1980	70.05	2.01	7.90	4.43	98.58	0.710	6.23
1981	82.50	2.00	8.98	4.61	112.17	0.736	6.26
1982	99.67	2.08	9.93	4.06	130.90	0.763	6.36
1983	115.65	2.14	10.76	5.02	148.50	0.776	6.45
1984	126.66	2.13	11.41	5.24	162.59	0.779	6.70
1985	149.70	2.32	11.73	5.48	189.09	0.789	6.95
1986	166.85	2.40	12.46	5.59	208.28	0.799	6.99
1987	188.88	2.44	13.40	5.75	224.67	0.836	6.87
1988	204.56	2.48	13.98	5.89	238.07	0.854	6.88
1989	NA	NA	NA	NA	NA	NA	
1990	219.55	2.50	15.84	5.52	253.58	0.860	6.00
80-83 PCT CHANGE	18.19	2.18	10.85	4.26	14.63	3.008	1.18
83-90 PCT CHANGE	9.59	2.25	5.68	1.35	7.94	1.468	-0.08

GENERAL ACCOUNTING							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HWR	HOURS PER DISCHARGE	EXPENSE PER FTE	FTE PER DISCHARGE	HOURS PER FTE
1980	12.88	1.27	7.01	1.45	18.79	0.710	2.12
1981	14.34	1.26	7.77	1.46	20.23	0.736	2.05
1982	16.54	1.29	8.64	1.49	22.39	0.763	2.02
1983	18.85	1.30	9.29	1.57	25.06	0.776	2.08
1984	19.83	1.30	9.69	1.58	26.21	0.779	2.08
1985	21.23	1.32	9.96	1.62	27.76	0.789	2.12
1986	22.30	1.31	10.53	1.63	28.50	0.799	2.08
1987	24.63	1.35	10.81	1.70	30.17	0.836	2.10
1988	24.46	1.33	11.03	1.67	29.45	0.854	2.02
1989	NA	NA	NA	NA	NA	NA	NA
1990	26.49	1.29	12.37	1.67	31.66	0.860	2.00
80-83 PCT CHANGE	13.54	0.81	9.84	2.53	10.08	3.008	-0.61
83-90 PCT CHANGE	4.98	-0.19	4.17	0.92	3.39	1.468	-0.62

PATIENT ACCOUNTS AND ADMITTING							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	EXPENSE PER OCCBED	OCCBED PER DISCHARGE	HWRS PER TOTBED
1980	36.85	1.28	4.85	5.95	157.01	0.235	25.63
1981	42.28	1.28	5.50	6.04	181.61	0.234	26.18
1982	48.28	1.29	5.97	6.28	208.24	0.233	27.33
1983	54.06	1.33	6.39	6.37	237.08	0.230	28.23
1984	58.50	1.31	6.86	6.52	273.43	0.216	30.81
1985	63.87	1.34	7.05	6.80	311.06	0.208	33.54
1986	70.93	1.40	7.26	7.04	342.85	0.209	34.42
1987	74.35	1.39	7.52	7.16	355.72	0.211	34.67
1988	79.95	1.41	7.76	7.37	380.59	0.212	35.50
1989	NA	NA	NA	NA	NA	NA	NA
I WD	88.80	1.47	8.29	7.30	436.35	0.206	36.20
80-83 PCT CHANGE	13.62	1.35	9.66	2.33	14.72	-0.834	3.27
83-90 PCT CHANGE	7.35	1.48	3.78	1.95	9.11	-1.524	3.62

DATA PROCESSING							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HWR	HOURS PER DISCHARGE	EXPENSE PER OCCBED	OCCBED PER DISCHARGE	HOURS PER TOTBED
1980	18.69	2.63	5.82	1.22	78.47	0.235	5.21
1981	21.76	2.69	6.55	1.24	91.90	0.234	5.37
1982	25.62	2.81	7.15	1.27	108.22	0.233	5.56
1983	29.88	2.79	7.96	1.33	128.03	0.230	5.90
1984	32.47	2.71	8.35	1.42	147.88	0.216	6.64
1985	35.41	2.78	8.75	1.44	168.13	0.208	7.05
1986	39.27	2.76	9.56	1.47	184.24	0.209	7.12
1987	40.59	2.59	10.01	1.55	188.85	0.211	7.44
1988	39.95	2.38	10.49	1.57	185.44	0.212	7.48
1989	NA	NA	NA	NA	NA	NA	NA
1990	45.31	2.28	12.21	1.62	217.01	0.206	7.96
80-83 PCT CHANGE	16.92	2.05	11.03	3.16	17.13	-0.834	4.20
83-90 PCT CHANGE	6.13	-2.87	6.30	2.84	7.83	-1.524	4.36

TABLE 27 (CONTINUED): TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY FOR ADMINISTRATIVE OVERHEAD SERVICES, 1980-90

PURCHASING AND STORES

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	EXPENSE PER OCCBED	OCCBED PER DISCHARGE	HOURS PER TOTBED
1980	8.68	1.19	5.76	1.27	37.27		5.50
1981	10.17	1.20	6.48	1.32	43.82	0.234	5.70
1982	12.03	1.22	6.98	1.42	52.11	0.233	6.18
1983	13.07	1.23	7.33	1.45	57.58	0.230	
1984	13.87	1.21	7.81	1.47	65.03	0.216	6.46 6.97
1985	15.43	1.25	8.26	1.50	75.20	0.208	7.37
1986	16.13	1.28	8.43	1.51	77.97		
1987	17.32	1.31	8.61	1.54	82.99	0.209	7.37
1988	18.18	1.31	8.76	1.58	86.61	0.212 0.211	7.46 7.60
1989	NA	NA	NA	NA	NA	NA	NA
1990	NA	NA	NA	NA	NA	0.206	NA
80-83 PCT CHANGE	14.62	1.29	8.33	4.53	15.60	-0.834	5.50
83-90 PCT CHANGE	6.82	1.27	3.63	1.73	8.51	-1.620	3.30

DIETARY SERVICES

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER MEAL	HEALS PER DAY	LENGTH OF STAY FOR ALL UNITS
1980	83.36	2.03	4.59	8.89	0.298	4.27	7.06
1981	95.89	2.05	5.08	9.16	0.302	4.36	7.03
1982	105.37	2.01	5.64	9.27	0.302	4.44	7.00
1983	108.89	1.95	6.04	9.22	0.304	4.45	6.89
1984	109.97	1.93	6.30	9.03	0.310	4.56	6.48
1985	108.74	1.92	6.49	8.69	0.305	4.64	6.23
1986	113.70	1.92	6.78	8.71	0.301	4.67	6.28
1987	117.97	1.92	6.96	8.82	0.295	4.77	6.34
1988	123.02	1.96	7.14	8.76	0.284	4.91	6.37
1989	NA	NA	NA	NA	NA	NA	NA
1990	125.77	1.98	7.81	8.12	0.270	4.93	6.19
80-83 PCT CHANGE	9.31	-1.30	9.59	1.23	0.631	1.42	-0.83
83-90 PCT CHANGE	2.08	0.18	3.74	-1.79	-1.660	1.48	-1.52

LAUNDRY

YEAR	EXPENSE PER DISCHARGE	EXPENSE PER POUND	POUNDS PER DISCHARGE	TOTAL PWNDS PER DAY	LENGTH OF STAY FOR ALL UNITS	HOURS PER DISCHARGE
1980	24.30	0.25	96.11	13.50	7.06	32.40
1981	27.46	0.28	97.29	13.71	7.03	32.67
1982	30.01	0.31	97.54	13.83	7.00	32.80
1983	30.49	0.32	95.35	13.74	6.89	31.57
1984	29.78	0.33	91.55	14.02	6.48	30.96
1985	30.22	0.33	91.82	14.65	6.23	31.71
1986	32.57	0.35	93.76	14.84	6.28	31.48
1987	32.35	0.34	95.69	14.99	6.34	31.24
1988	33.65	0.35	95.34	14.82	6.37	30.48
1989	NA	NA	NA	NA	NA	NA
1990	37.65	0.37	100.60	16.07	6.19	23.94
80-83 PCT CHANGE	7.85	8.12	-0.26	0.60	-0.83	-0.87
83-90 PCT CHANGE	3.06	2.27	0.77	2.26	-1.52	-3.87

HOUSEKEEPING

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER SQUARE FOOT	SQUARE FEET PER BED	BEDS PER DISCHARGE
1980	40.74	1.25	4.30	7.550	0.0378	746.19	0.2676
1981	45.81	1.24	4.77	7.713	0.0379	766.85	0.2651
1982	51.16	1.24	5.27	7.886	0.0372	782.40	0.2686
1983	54.17	1.24	5.58	7.928	0.0357	811.02	0.2704
1984	56.79	1.24	5.74	7.928	0.0340	838.89	0.2777
1985	57.63	1.24	5.97	7.720	0.0314	882.49	0.2787
1986	59.47	1.24	6.12	7.793	0.0305	915.12	0.2793
1987	60.89	1.23	6.40	7.698	0.0294	957.65	0.2732
1988	65.22	1.27	6.53	7.840	0.0292	1008.30	0.2658
1989	NA	NA	NA	NA	NA	NA	NA
1990	64.85	1.25	6.96	7.427	0.0288	1090.77	0.2384
80-83 PCT CHANGE	9.97	-0.40	3.21	-0.763 1.249	-1.8845	2.82	0.3505
83-90 PCT CHANGE	2.60	0.19			-3.1588	4.32	-1.7875

TABLE 27 (CONTINUED): TRENDS IN INPATIENT EXPENSES, PRODUCTIVITY, AND INTENSITY FOR ADMINISTRATIVE OVERHEAD SERVICES, 1980-90

PLANT OPERATION AND MAINTENANCE							
YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER SQUARE FOOT	SQUARE FEET PER BED	BEDS PER DISCHARGE
1980	45.06	1.83	6.68 7.47	3.830 3.687	0.0149	926.18	0.2676
1981	53.30	1.85			0.0152	949.54	0.2651
1982	59.35	1.82	8.33	3.885	0.0151	958.61	0.2686
1983	65.60	1.86	8.69	4.030	0.0149	998.43	0.2704
1984	70.26		9.26	4.113	0.0143	1034.82	0.2777
1985	74.43	1.83		4.089	0.0135	1083.42	0.2787
1986	82.38	2.01 1.92	9.47 9.74	4.191	0.0132	1134.17	0.2793
1987	86.67	1.99			0.0132	1178.23	0.2732
1988	92.80	2.04	10.18 10.46	4.245 4.323	0.0131	1240.15	0.2658
1989	NA	NA	NA	NA	NA	NA	NA
1990	83.50	1.90	11.71	3.723	0.013	1331.14	0.2384
80-83 PCT CHANGE	13.34	0.68	9.18	3.011	-0.0142	2.54	0.3505
83-90 PCT CHANGE	3.51	0.27	4.35	-1.127	-3.3174	4.19	-1.7875

SECURITY

YEAR	EXPENSE PER DISCHARGE	EXPENSE TO SALARY RATIO	SALARY PER HOUR	HOURS PER DISCHARGE	HOURS PER SQUARE FOOT	SQUARE FEET PER DISCHARGE
1980	6.48	1.04	5.15	1.201	0.0048	247.76
1981	7.87	1.06	5.71	1.278	0.0051	252.01
1982	9.06	1.06	6.37	1.325	0.0051	257.79
1983	10.04	1.05	6.85	1.369	0.0050	270.24
1984	10.66	1.09	6: W	1.401	0.0048	287.49
1985	10.87	1.10	7.34	1.335	0.0044	301.71
1986	11.56	1.10	7.47	1.391	0.0044	316.36
1987	11.93	1.08	7.81	1.390	0.0043	321.52
1988	13.09	1.09	7.95	1.487	0.0045	329.70
1989	NA	NA	NA	NA	NA	NA
1990	12.83	1.08	8.58	1.363	0.0043	317.59
80-83 PCT CHANGE	15.69	0.61	9.99	4.464	1.4206	2.94
83-90 PCT CHANGE	3.57	0.34	3.28	-0.058	-2.3330	2.33

UTILITIES

YEAR	EXPENSE PER DISCHARGE	EXPENSE PER SQUARE FOOT	SQUARE FEET PER DISCHARGE
1980	36.60	0.15	247.76
1981	43.74	0.17	252.01
1982		0.20	257.79
1983	50.78	0.21	270.24
1984	62.25	0.22	287.49
1985	64.31	0.21	301.71
1986	64.79		316.36
1987	62.59	0.20 0.19	321.52
1988	62.75	0.19	329.70
1989	NA	NA	NA
1990	62.31	0.20	317.59
80-83 PCT CHANGE	15.09	11.85	2.94
83-90 PCT CHANGE	1.59	-0.67	2.33

Source: Derived from AHA-HAS MONITRENO data books and tapes, June 30, 1980-90.

FIGURES

Cardiac Catheterization

(F-1)

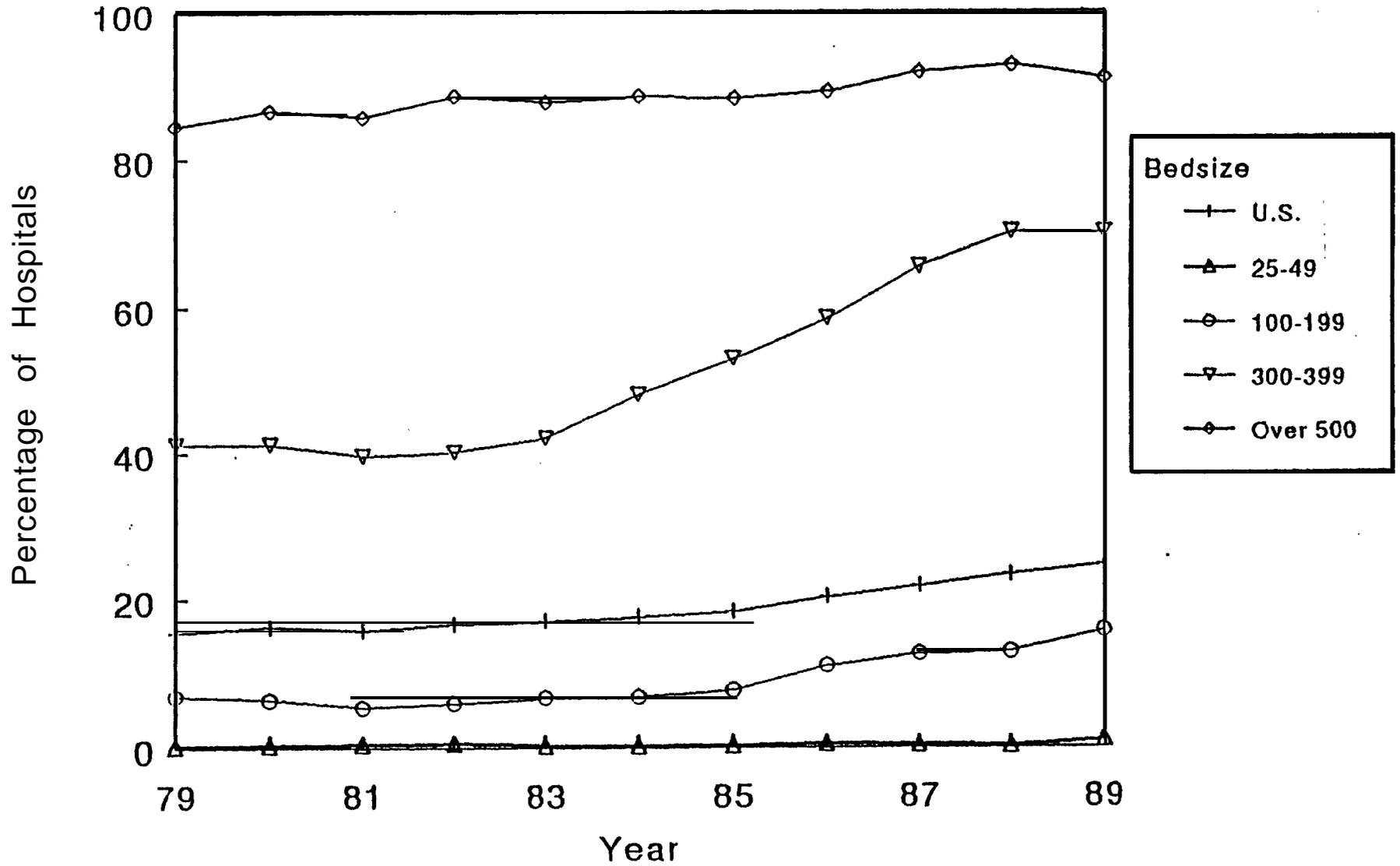
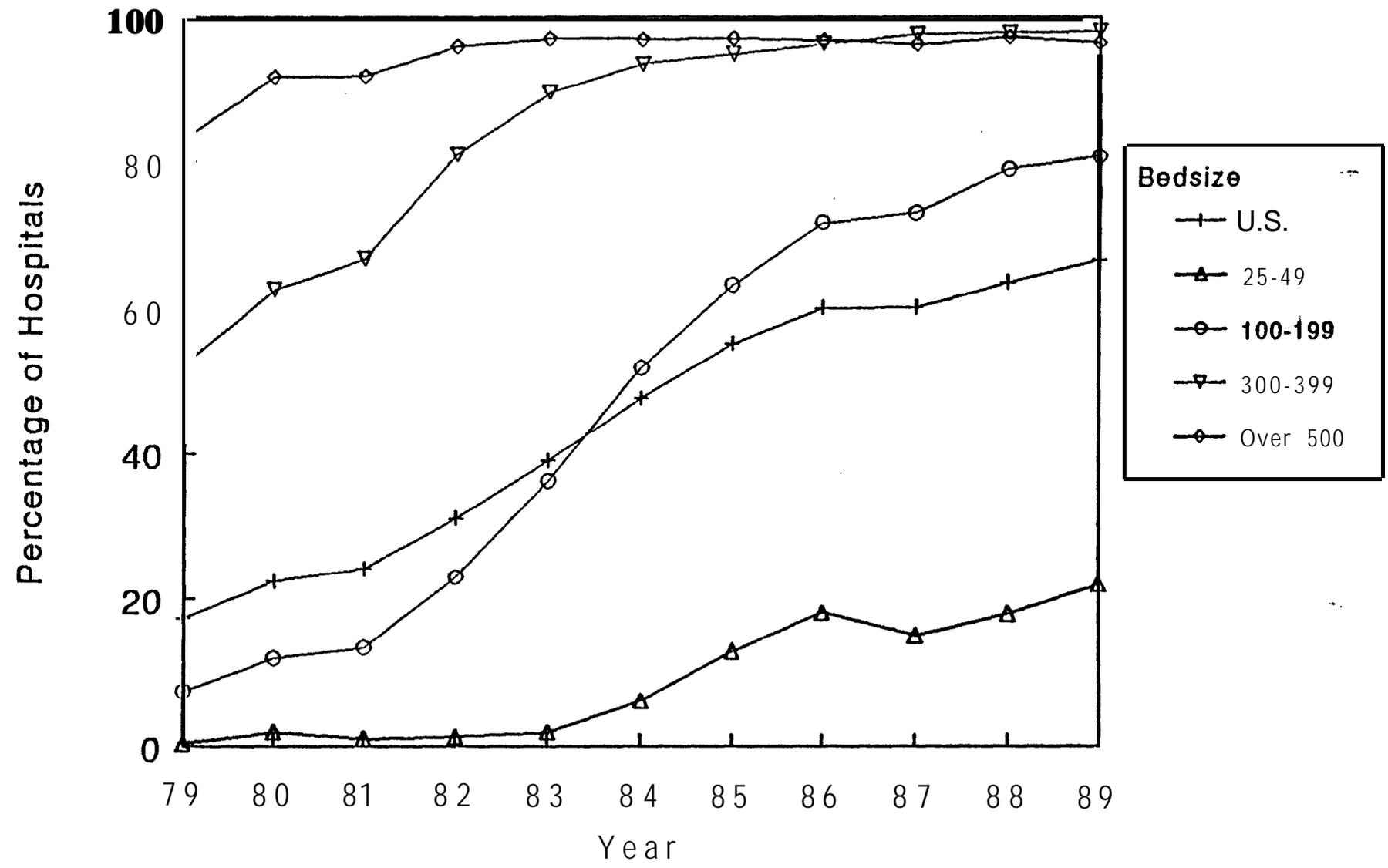


Figure 2

Cat Scanners



F-2

Figure 3

Open Heart Surgical Services

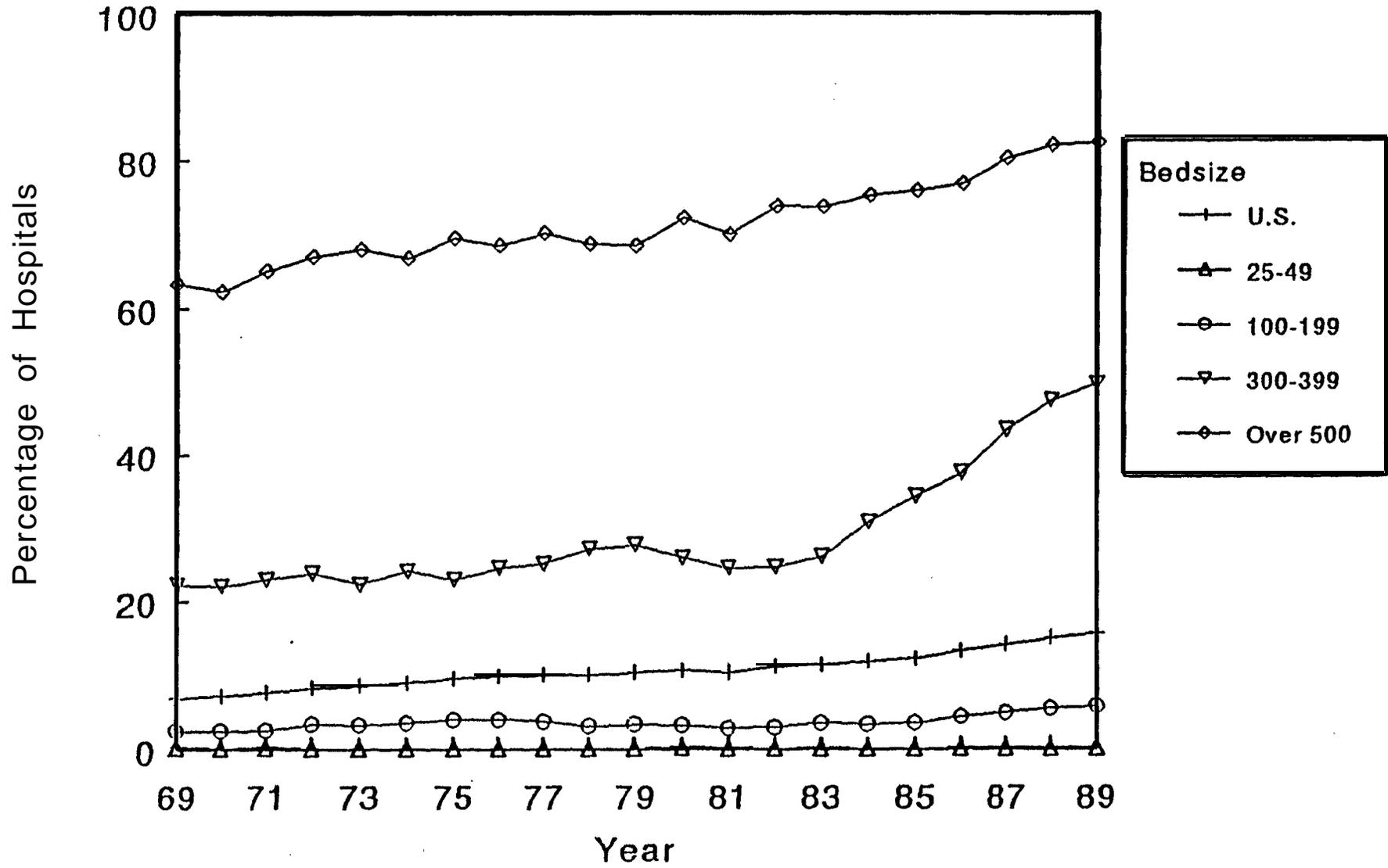
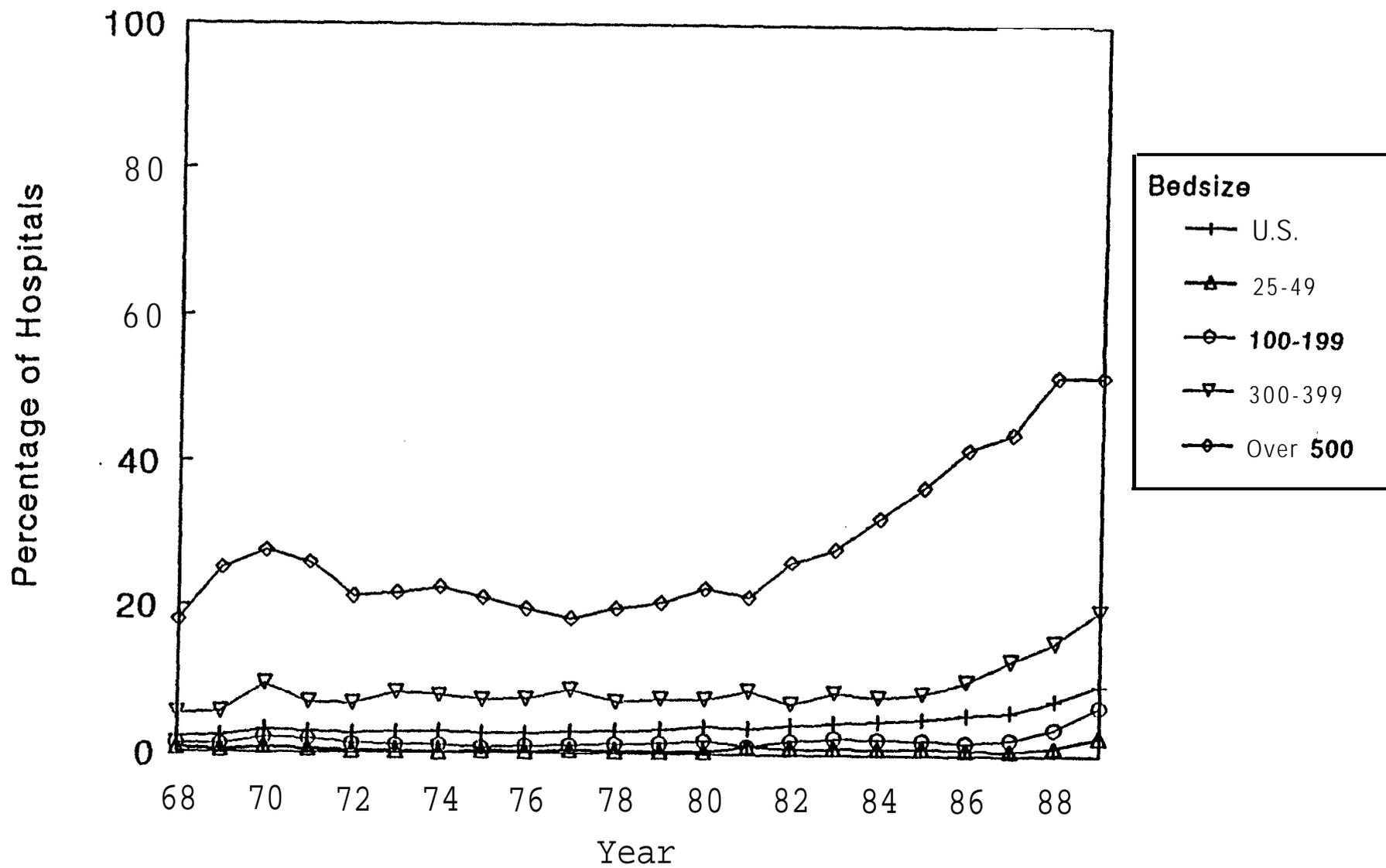


Figure 4

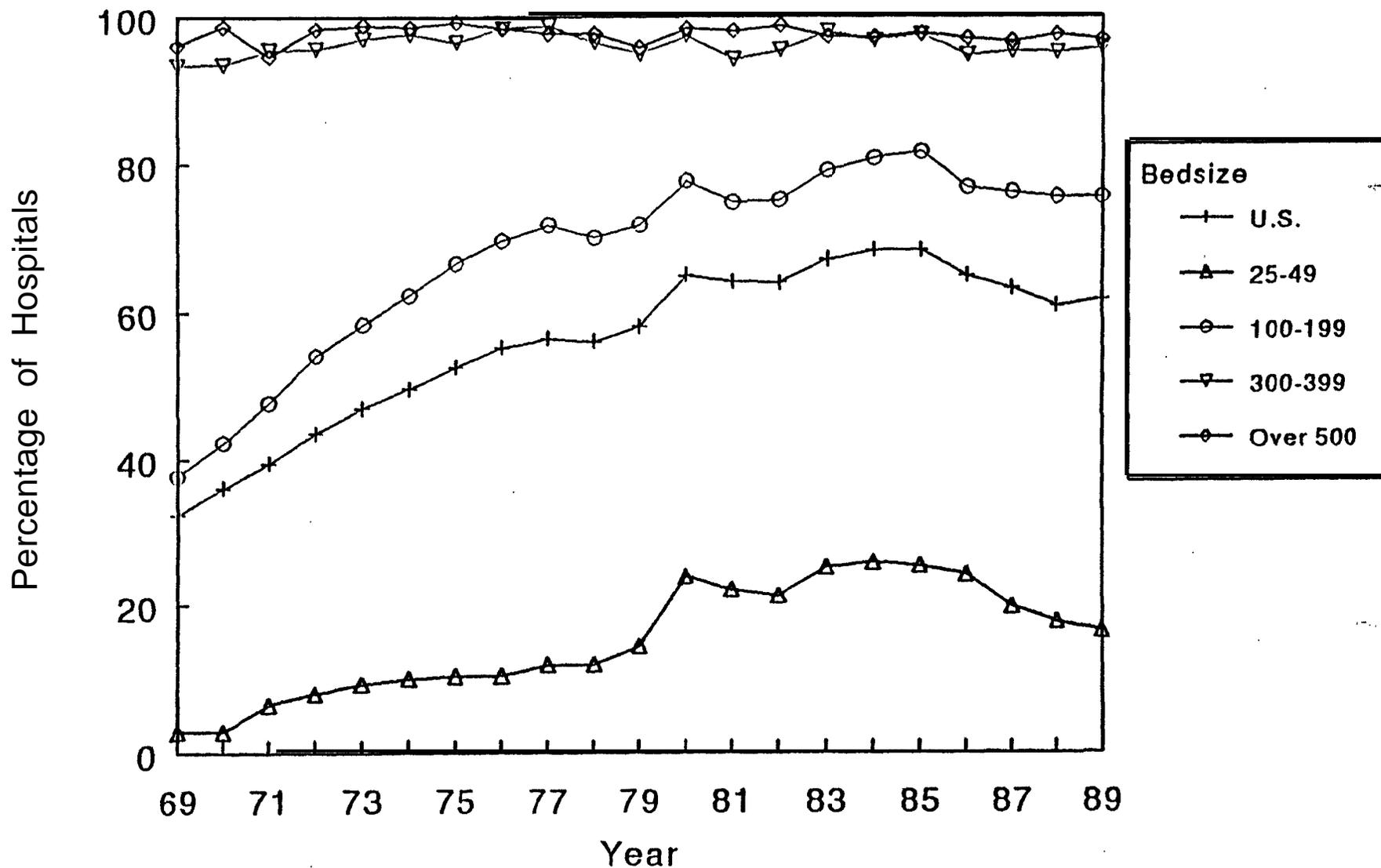
Organ Transplant



F-4

Figure 5

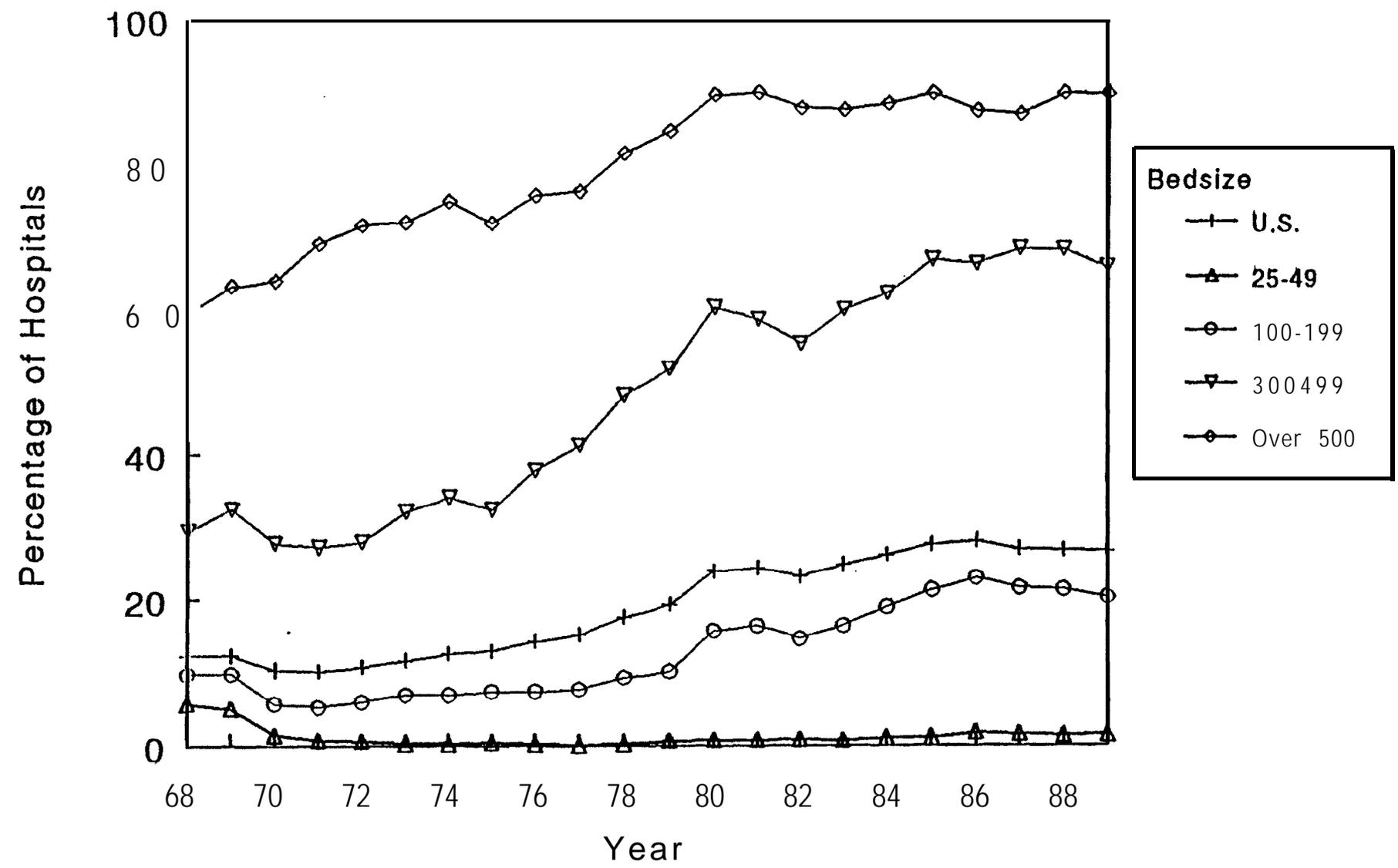
Diagnostic Radioisotope Facility



F-5

Figure 6

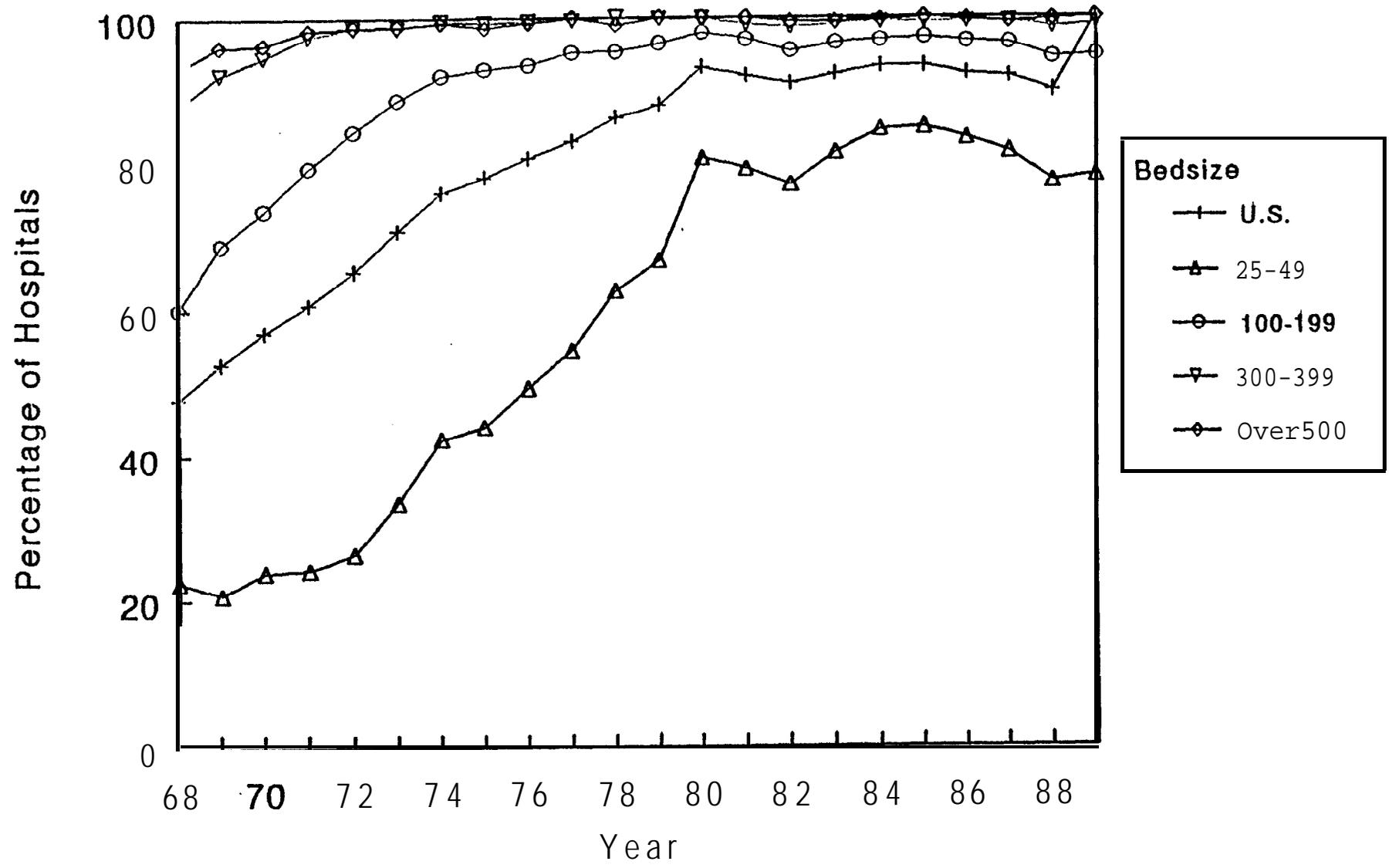
Renal Dialysis



9-3

Figure 7

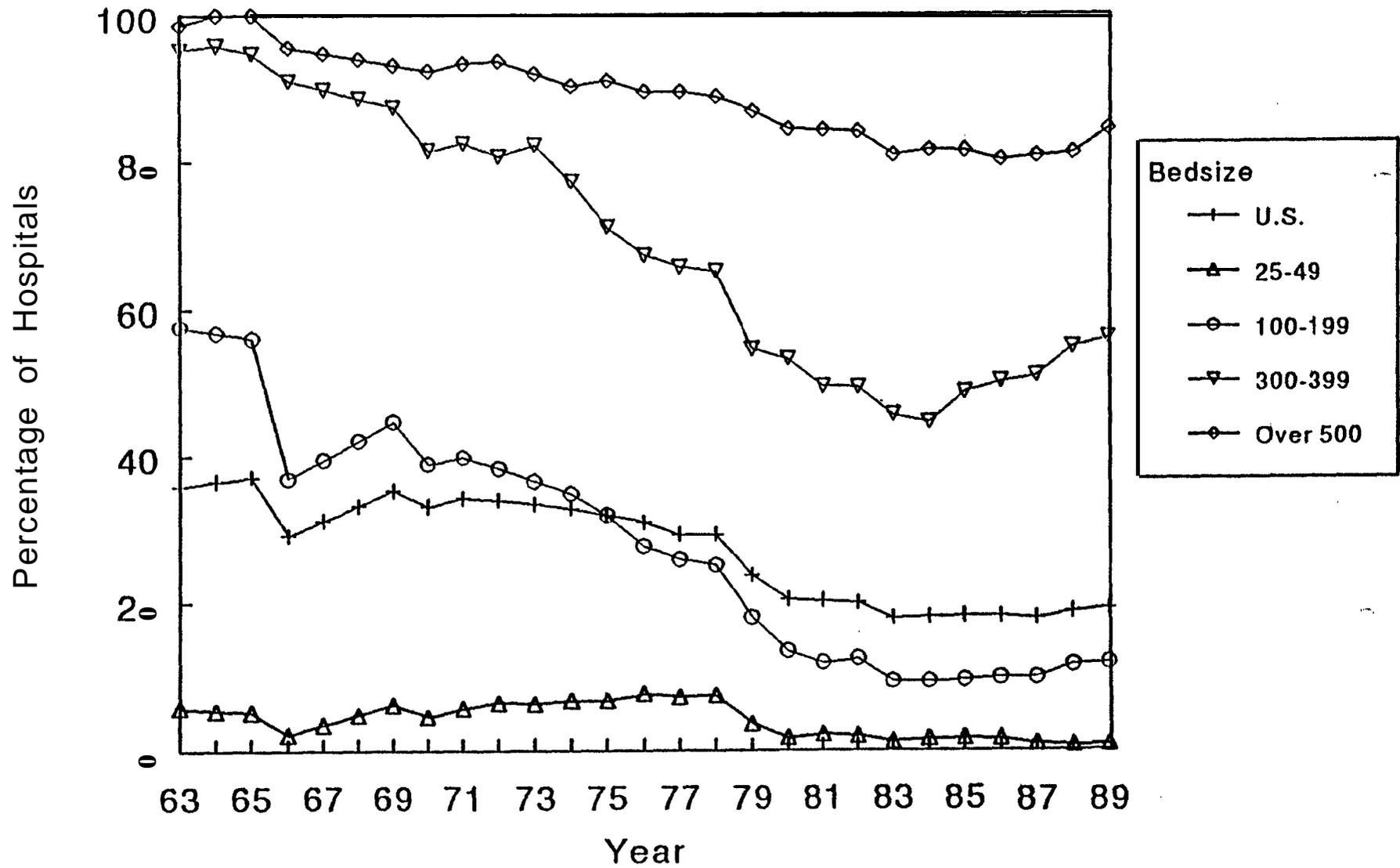
Respiratory Therapy



(E-7)

Figure 8

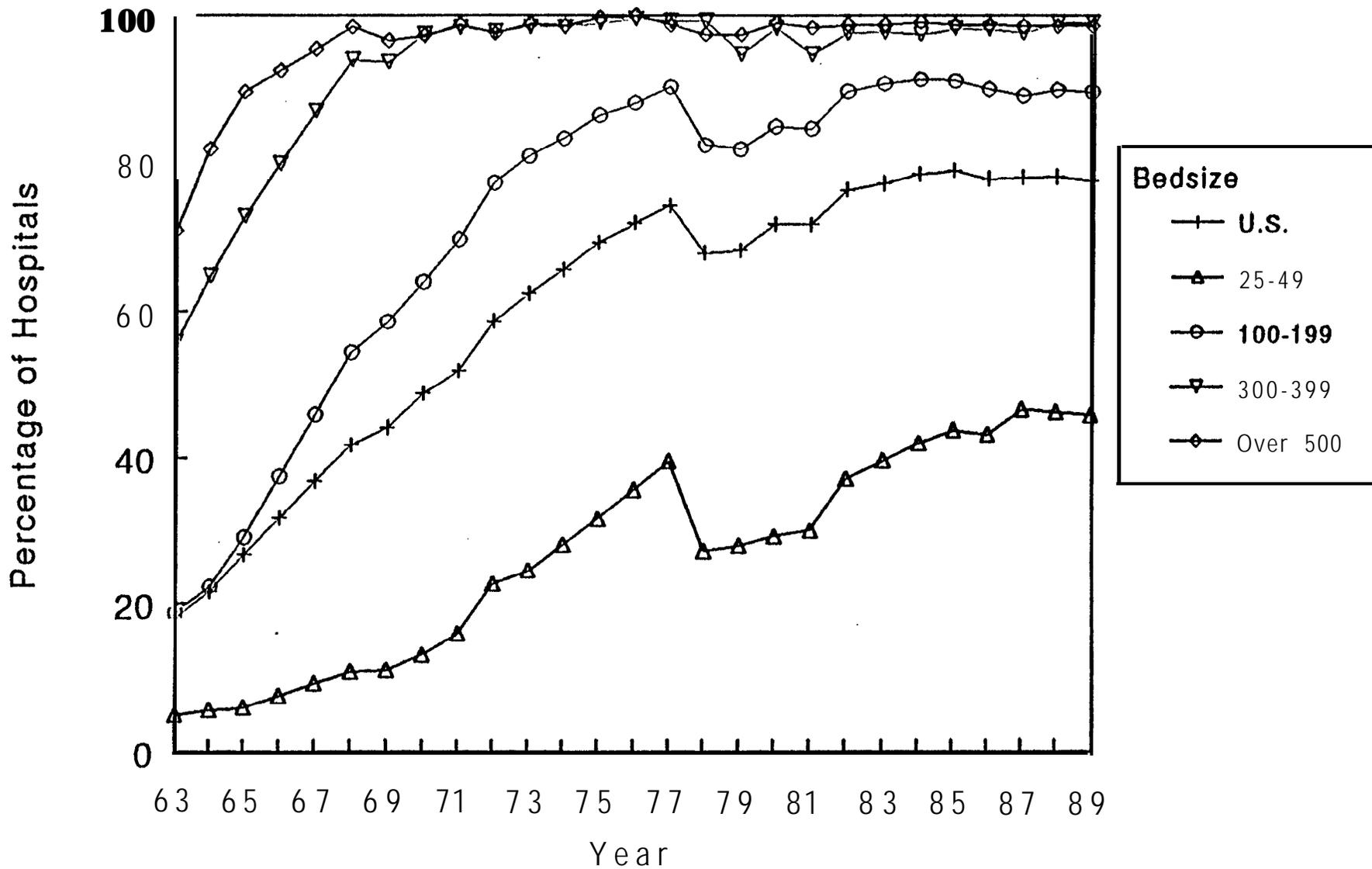
Therapeutic X-Ray



8-3

Figure 9

Intensive Care Units, Mixed



6-11

Premature Nursery

F-10

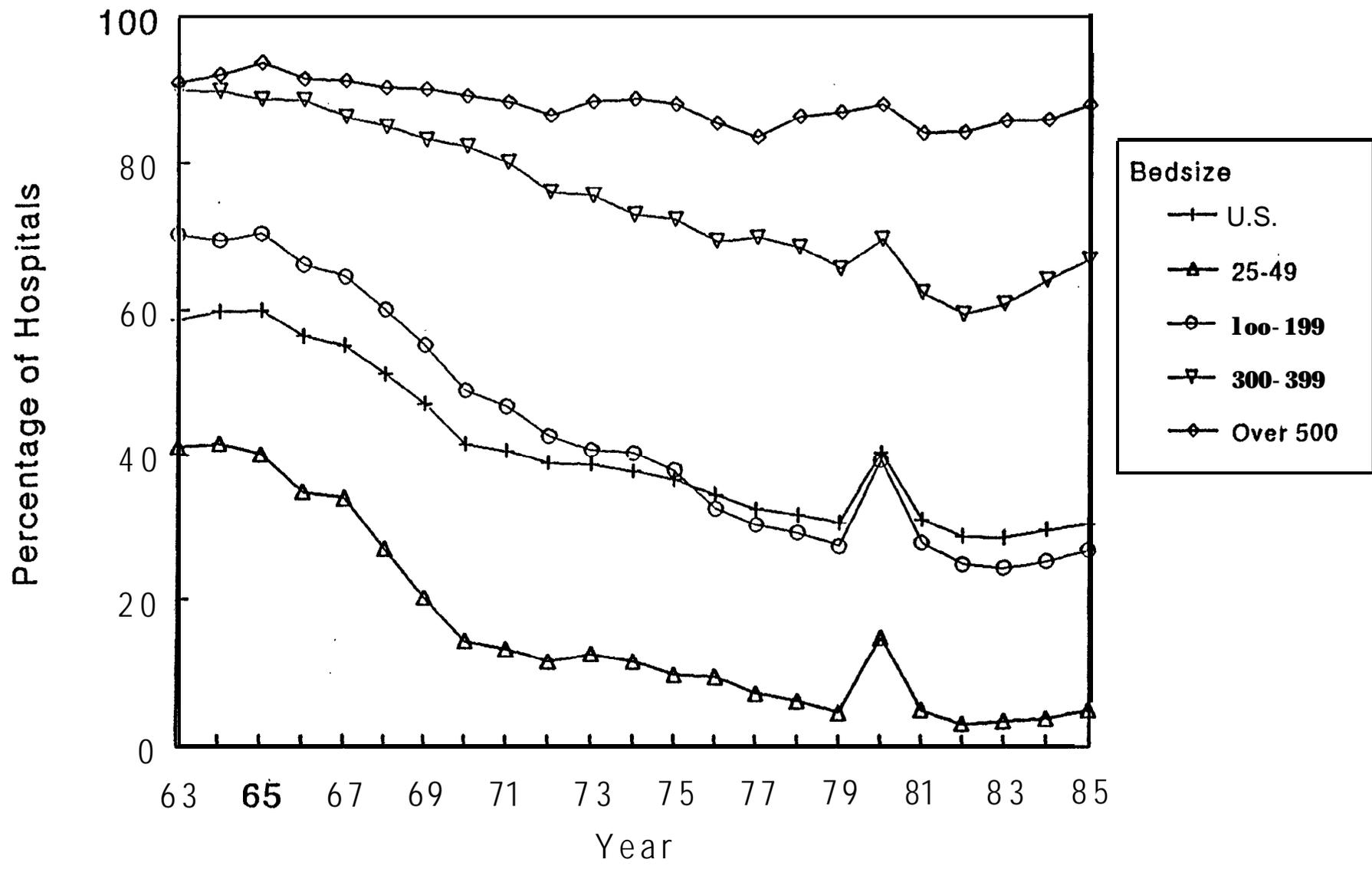


Figure 11

Rehabilitation Services

F-11

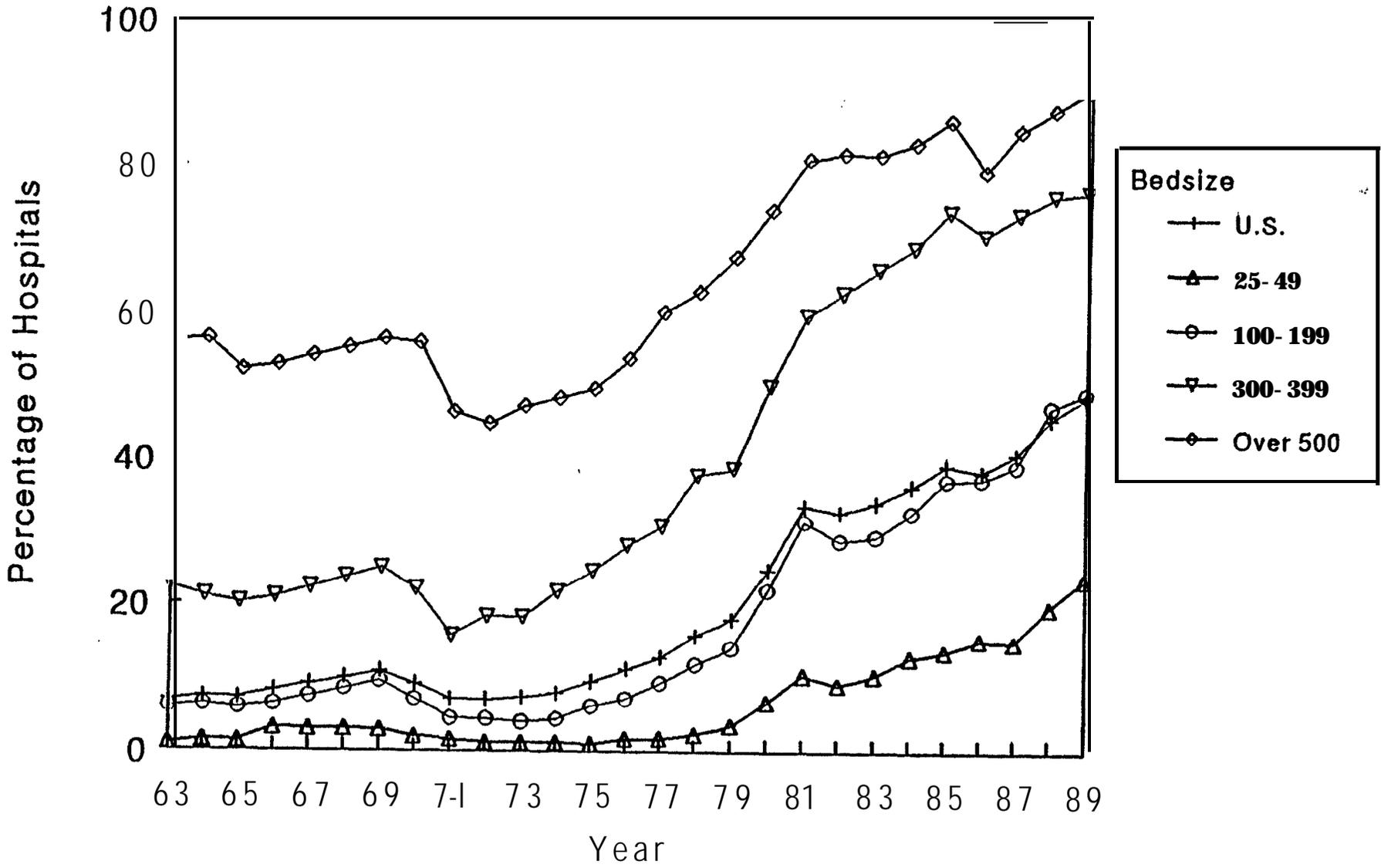
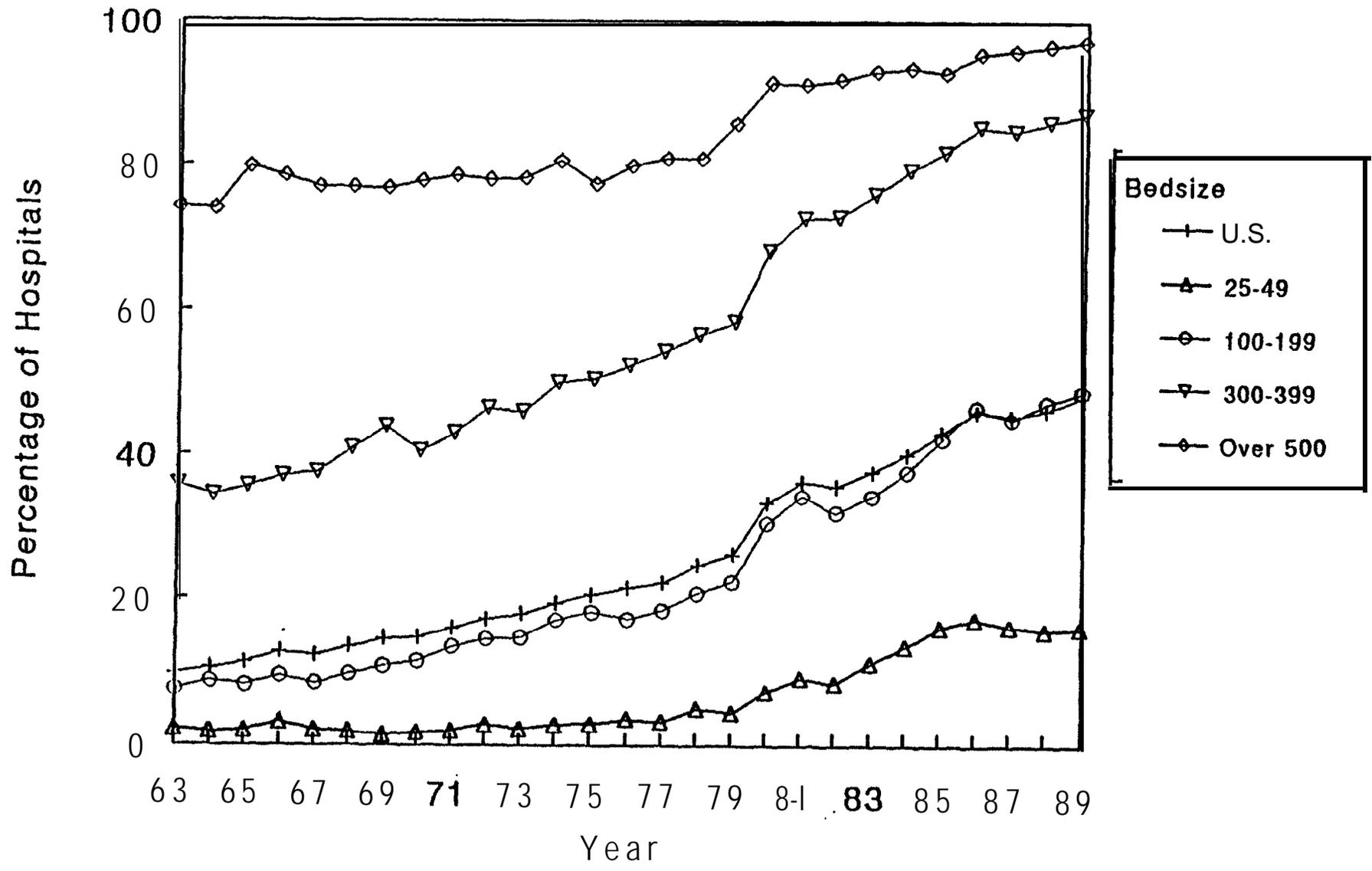


Figure 12

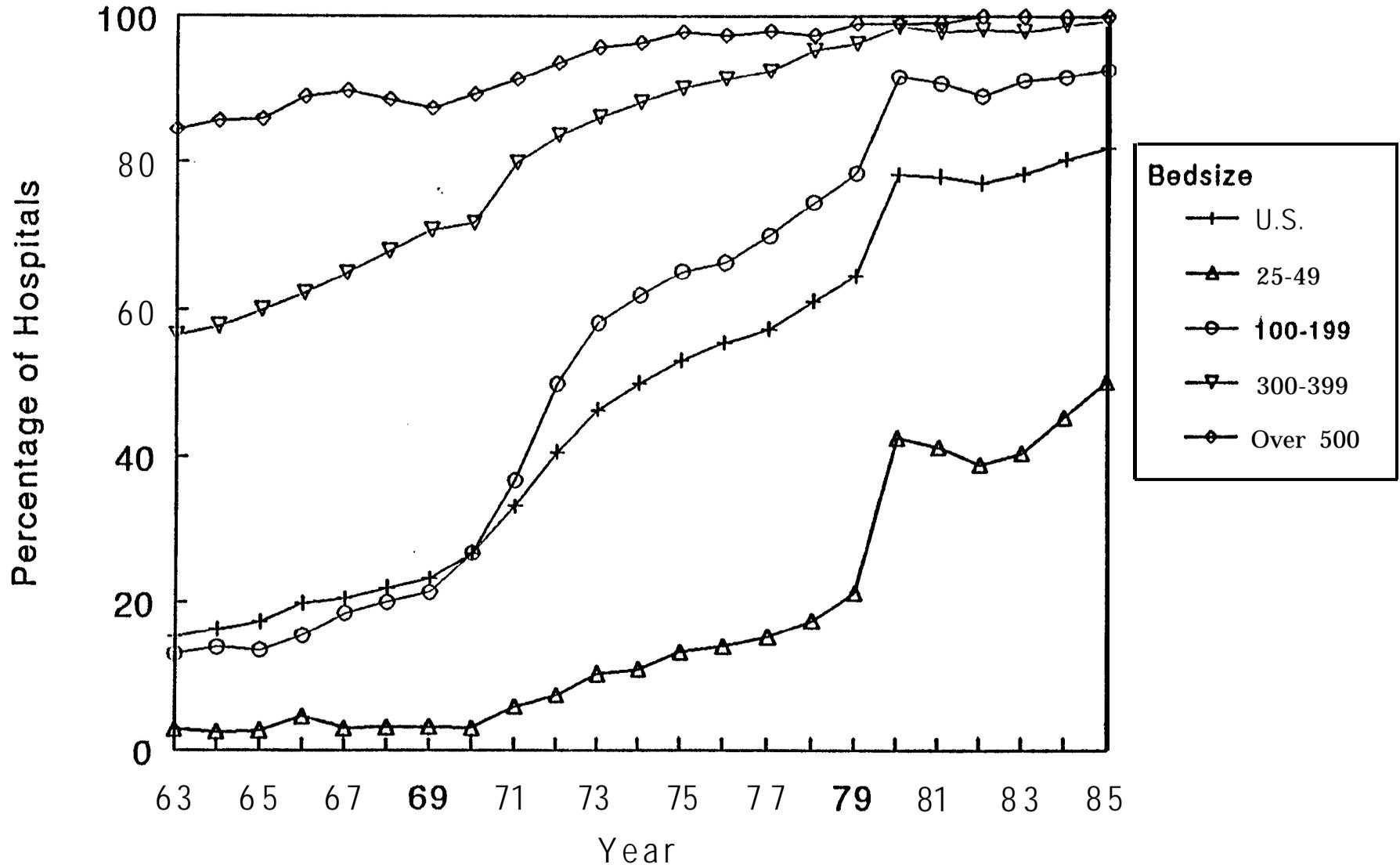
Occupational Therapy



F-12

Figure 13

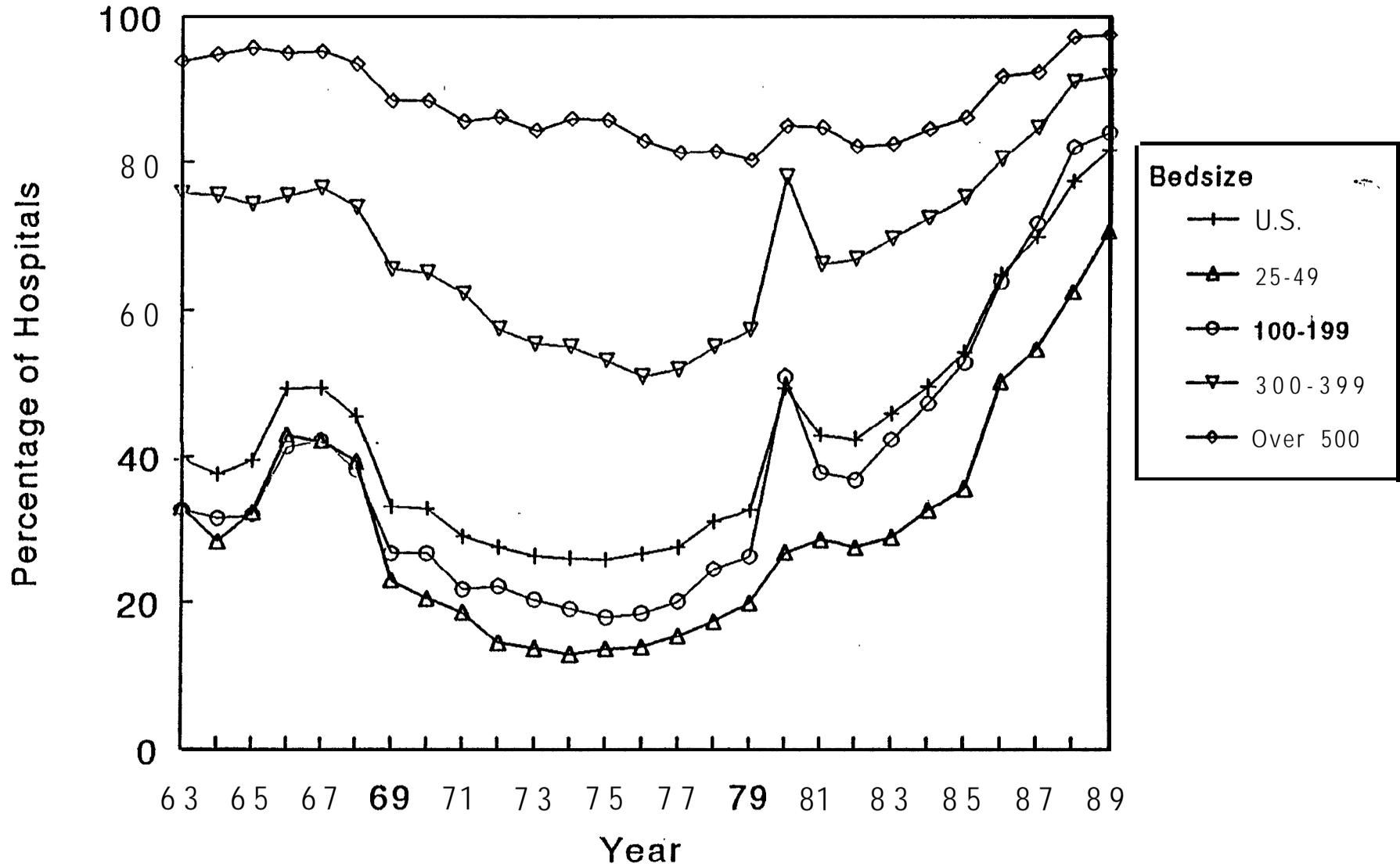
Social Work Services



F-13

Figure 14

Outpatient Department



F-14

Figure 15

Home Health Services

F-15

