

**The Total Cost of Health Care in Delaware  
2000**

**prepared for  
the Delaware Health Care Commission**

**by**

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## **Introduction**

The Delaware Health Care Commission has, since its inception, been concerned about access to health care for all Delawareans. While that is not its only focus, since the Commission's mandate is broad, improving access to health care is a primary goal. Access to health care has several dimensions. The aspect covered in this report is the cost of health care in Delaware. Through its Cost Containment Committee, the Commission is pursuing a number of projects to better understand the underlying factors that determine what Delawareans pay for health care. This report is the result of one of those projects. It is intended to provide current estimates of health care expenditures in the state and to describe some of the dynamics that are influencing those expenditures.

The report is divided into three sections. The first section is largely background material and provides information that will give the reader a broad perspective on health care expenditures and the demographic trends that are influencing those expenditures. Some comparative information is provided to show how Delaware compares with the US and with neighboring states.

The second section describes each of the nine health accounts. Estimates are provided for each account annually from 1990 through 2000. Where possible, two series of estimates are provided; one by the US Health Care and Finance Administration (HCFA) and the other by the Center for Applied Demography and Survey Research, University of Delaware (CADSR).

The third section presents an overview of the estimates of total personal health care expenditures through 2000. Indicators of the impact of this sector on the Delaware economy are also provided.

This information is offered as a starting point from which both measurement and methodology can evolve to provide increasingly better estimates and better understanding of the issues addressed in this paper.

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# **Background**

## **Introduction**

In this section of the report, several topics are addressed. First, the reader will be introduced to some of the economic and demographic factors that are currently influencing the cost of health care. Second, a selection of national and state indicators of health care costs will be presented. Those data will address expenditures by sector of health care and source of payment.

Changes in total expenditures for health care are influenced by several key factors. Among these are the current cost of health care services and commodities, the size and structure of the population using health care, and the availability of and demand for new health care products and services.

The first factor is simply the increase/decrease in prices for a fixed set of health care products/services. For example, how much has the cost of a typical visit to a primary care physician changed over time?

The second factor has two components. First, as the number of people in the State of Delaware increases, the total cost of health care will increase. Since 1990, more than 70,000 people have been added to Delaware's population. Together, they will increase total health expenditures by more than 200 million dollars annually. Even if the total population had remained the same and price levels were constant, total expenditures would have increased through a greater demand for health care services by the aging population.

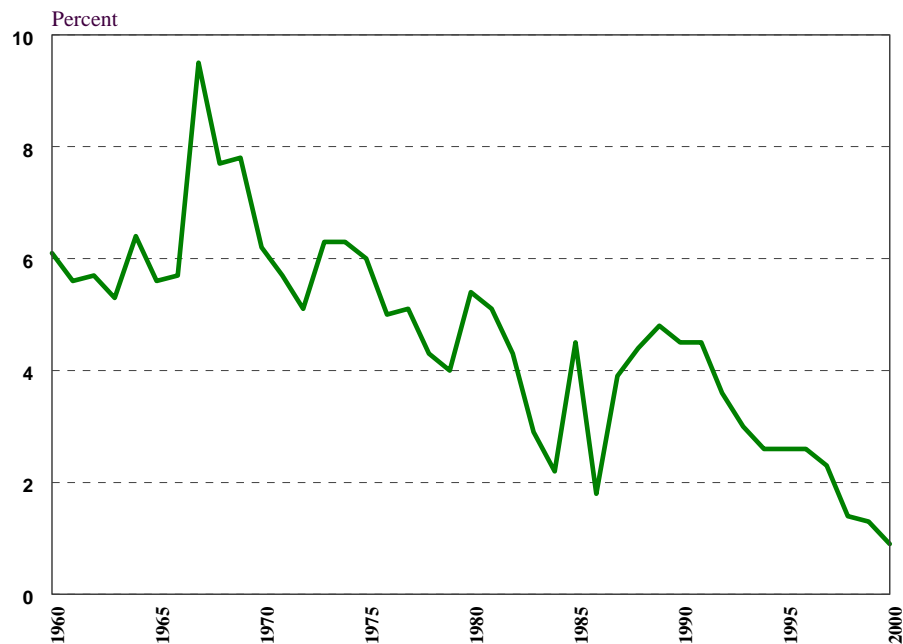
## **The Health Care Industry**

The health care industry is undergoing significant structural change. The swing toward managed care practices impacts both healthcare providers and users. Indeed, the emergence of managed care such as that offered by Health Maintenance Organizations

(HMOs) as a means to cost-containment has tempered medical price inflation during this decade, while simultaneously altering the manner with which healthcare services are obtained.

The emergence of managed care in the U.S. has brought greater budgetary discipline to the industry. The growth of employment in the health services industry has slowed to its lowest rate on record. At just short of 1% growth in 2000, medical services employment growth is half its 1990 counterpart, as is illustrated in Figure 1.1 below. Hospital employment, by far the largest segment of medical services employment, has seen its growth wane significantly during the decade as rounds of consolidation resulted in layoffs at hospitals across the country. Driving this attrition is the effort of managed care providers to contain costs.

**Figure 1.1**  
**US Health Care Industry**  
**Employment, % Change Year Ago**



Source: Center for Applied Demography and Survey Research, University of Delaware  
US Bureau of Labor Statistics

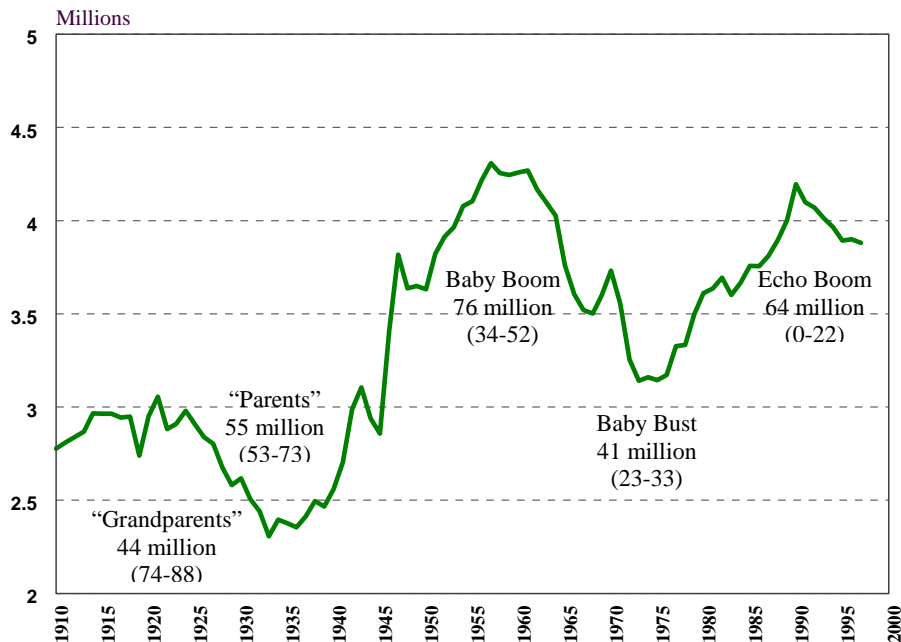
Despite this attrition in the health care industry employment, the size of the industry, as measured by the proportion of the economy dedicated to it, continues to grow. In 1980, health care expenditures composed 9% of the economy. By 1998, that share had risen to 13.5% of gross domestic product (GDP). The typical consumer saw personal expenditures rise from 4.4% of their income to 5.4% during the same period. The difference between those two sets of numbers is that the 13.5% estimate encompasses both public and private spending. In contrast, the 5.4% figure only considers private expenditures. (Of course, those public expenditures for health care are paid through payroll and income taxes that indirectly and differentially affect consumers of health care.) In both instances, the increased shares include both price rises and increases in the quantities of health care products and services obtained by consumers.

Demand for medical services is at an all-time high. Expenditures on health services continue to be high, accounting for an ever-increasing share of the nation's resources. More is spent on medical services than ever before, despite the taming of medical price inflation. Fueling this demand are the strong economy and the aging baby boomers.

The baby boomers are typically defined as that segment of the population born between 1946 and 1964. During this period 76 million live births occurred, (see Figure 1.2 below), amounting to a significant spike in the birth rate. It is this segment that will be the primary driver of health care expenditures.



**Figure 1.2**  
**The Baby Boomers**  
**Live Births**

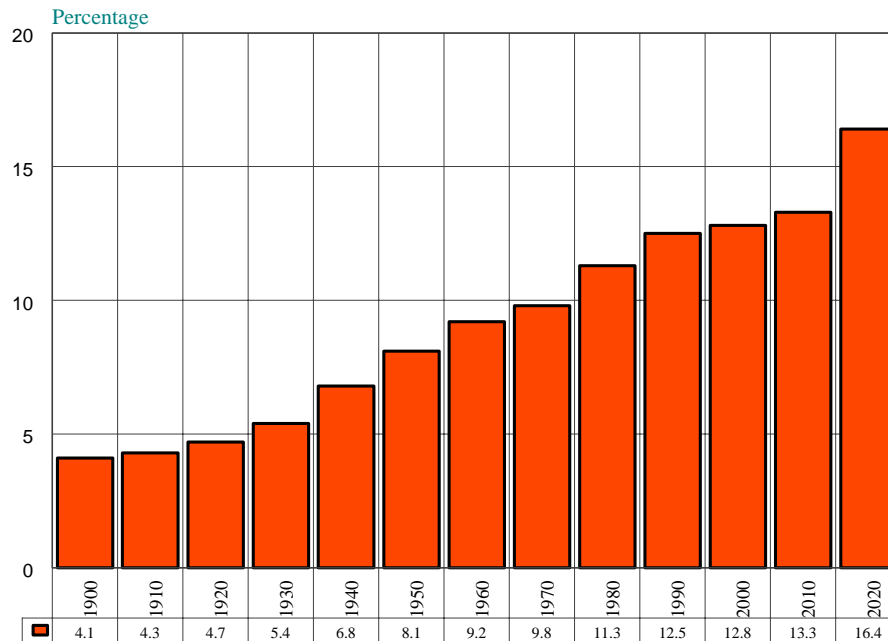


Source: Center for Applied Demography and Survey Research, University of Delaware  
 Bureau of the Census

Note: Figures in parenthesis are the youngest and oldest ages of group members during 1998.

The proportion of the US population that is aged 65 and over is growing. As Figure 1.3 below illustrates, by the year 2000, close to 13% of the population will be over 65 years old. This is treble its share at the start of the century. In level terms, the elderly population has increased eleven-fold over the past 100 years. This is naturally fostering an ever-growing demand for health care services as the over-65 age cohorts are the heaviest users of medical care. Of the total health care expenditures paid for out-of-pocket, over 40% are paid for by the over-sixty-fives, the next closest cohort being those forty-five to sixty-four, which account for 29%.

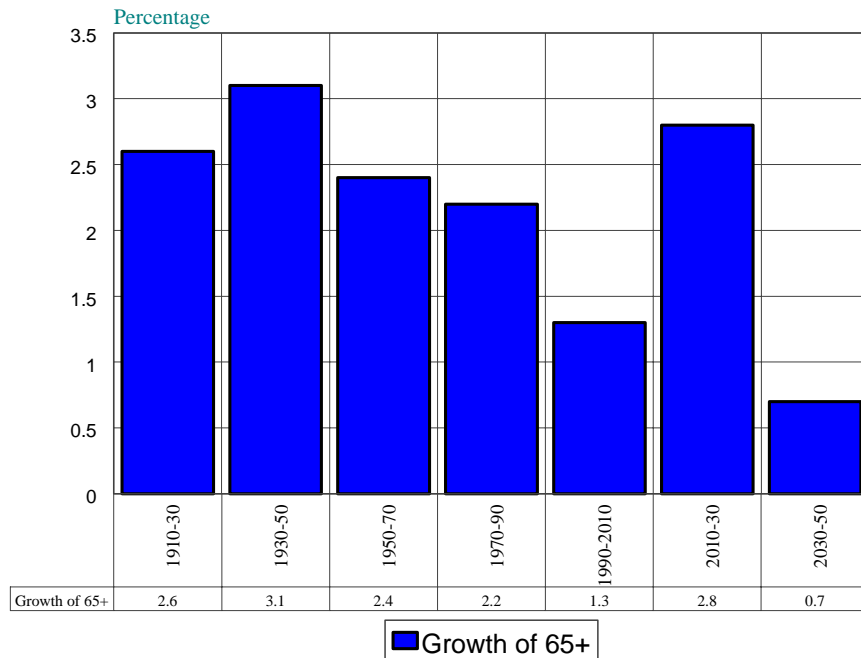
**Figure 1.3**  
**US Population**  
**Age 65 Plus as a Percentage of Population**



**Source: Center for Applied Demography and Survey Research, University of Delaware  
 Census Bureau**

Further, the demand for health care is poised to accelerate rapidly over the approaching decades as the baby boomers move into retirement. The baby boomers will be aged 36-54 in the year 2000, and aged 46-64 in the year 2010. Accordingly, the average annual growth of the elderly population is expected to double in the period 2010-30 versus the previous interval. While this high annual growth rate is not unprecedented, in absolute numbers the increase in elderly population growth is unparalleled.

**Figure 1.4**  
**US Population**  
**Average Annual Growth of the Elderly**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 Census Bureau

The table below shows the estimated effects population size, aged population, and managed care have on the growth of real consumption expenditures dedicated to medical services. The results can be interpreted as follows: for a 1% change in population, the growth rate of personal medical care expenditures will rise over 4%. A one-percentage point rise in the share of population that is over 65 will cause a 0.6% increase in the growth of the medical expenditures as a percentage of total consumption.

The effect of managed care is estimated to have reduced the expenditures during the nineties. This is consistent with the belief that managed care has reduced the cost to consumers of many medical services such as prescriptions and doctors visits.

**Dependent variable:****Growth of personal medical care expenditures**

	Coefficient	Standard Error	T-Statistic
Population growth (exc. over 65)	3.9	0.95	4.1
Share of population aged over 65	0.6	0.43	1.3
Effect of managed care	-0.2	0.03	-5.9

R-Squared: 0.98

Adjusted R-Squared: 0.99

Sample size: 40 annual data points

The message to be taken from the above information is that the largest growth engine for the health care services industry is demographics. The changing make-up of the American population will naturally bolster demand for health care. Further, the huge blip in the population that is the baby boomers will present a significant challenge for the industry.

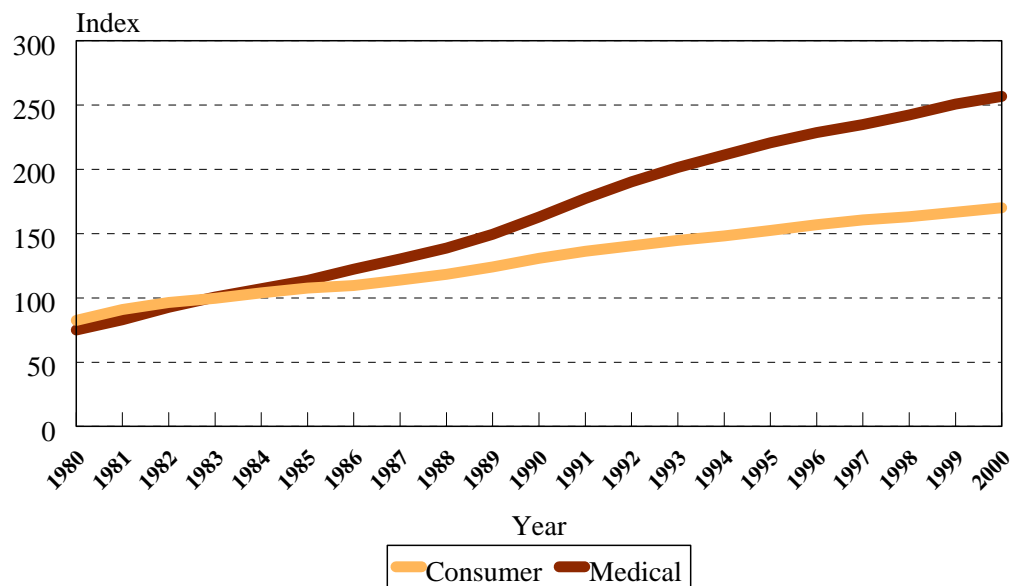
The other factor driving the industry is the robust state of the economy. While consumers are shielded from the full cost of many medical procedures through third party coverage, there often remains a significant deductible to be met with personal funds. A strong economy places the population in the position to afford this cost, driving demand higher.

The outlook for the medical industry is for continuing reform throughout the next decade. Demand for health care services will escalate as the baby boomers move into retirement later next decade, placing further strains on the health care providers. Indeed, insurers and providers are already struggling to maintain costs in the face of robust demand. Medical cost inflation will reaccelerate in light of growing numbers of consumers demanding health services, further squeezing future profits. Moreover, if federal support for the Medicare program diminishes, insurers will increasingly look for higher premiums and co-payments to compensate for the shortfall in federal funds.

## Pricing of Health Care

Rapidly accelerating health care costs were one of the primary factors that drove the shift of patients from fee for service to managed care. These costs first began to diverge from the overall consumer price index in 1985. (Note: the indexes are based on comparable baskets of goods and services.) This divergence is shown clearly in Figure 1.5, below.

**Figure 1.5**  
**Consumer and Medical Price Indexes**  
**All US Urban Consumers (1983=100)**

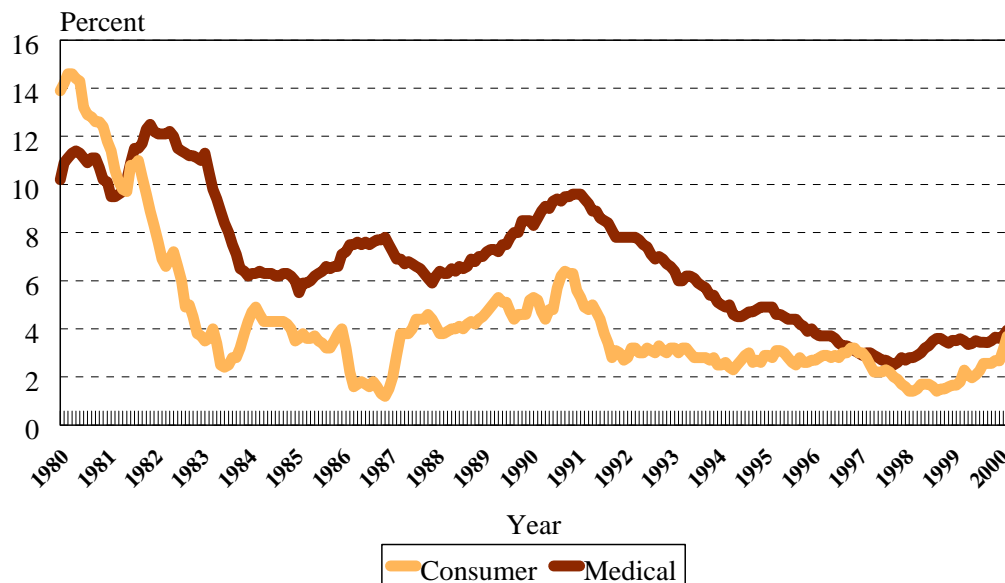


Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Bureau of Labor Statistics

In 1984, the Consumer Price Index (CPI) and the Medical Price Index (MPI) were almost identical. In fact, for the first part of the 1980's, the MPI was actually lower than the CPI. The two indexes continued to diverge, although the rate began to slow in the early 1990's. The annual growth rates are more easily seen in Figure 1.6 below. The MPI growth rates exceeded those of the CPI from 1982 forward. In general, the MPI was usually between 2% and 3% higher over the period. It was not until 1991 that the two rates began to converge and, in 1997, the two measures were equal. However, 18 years of higher growth rates place the MPI nearly 50% higher than the CPI.

The success of HMOs in containing medical costs is well documented. The once double-digit medical price inflation experienced in the early eighties-- wherein the cost of medical services was rising twice as fast as the general level of prices-- has now been replaced with price growth approximating general inflation.

**Figure 1.6**  
**Annual Growth Rates for the Consumer and Medical Price Indexes**  
**All US Urban Consumers**



Source: Center for Applied Demography and Survey Research, University of Delaware  
US Bureau of Labor Statistics

Employers have embraced the savings that HMOs afforded them, switching their employee health plans from traditional service providers to the managed-care practitioners. Enrollment in HMOs exceeds over 20% of total health care users in many markets across the U.S., a figure that has risen steadily throughout the decade. Moreover, HMOs now cover almost 50% of Medicaid patients, up from less than 10% in 1991. HMOs bargain with healthcare providers to lock in prices for services in return for a guaranteed patient base. The HMO then negotiates with employers over insurance premiums. As managed care increases its prominence, this process has led to diminished negotiating power for hospitals and doctors alike.

Part of the HMO's success in controlling costs is borne from limiting the provision of medical services to enrollees. Indicative of this is the length of hospitalization, which has been declining throughout the decade since HMO's coverage cuts off after a relatively shorter time than previously enjoyed under a traditional fee-for-service system. Indeed, the Journal of the American Medical Association reports that HMOs had reduced hospital stays by fully 30% by 1994. While this type of activity generates criticism of managed health care organizations, it has led to greater cost management in the industry. For hospitals, however, the cost-management tactics of HMOs have constrained the services provided by hospitals, limiting their income stream.

Medical price inflation is at a turning point, however. Until 1998, the growth in medical prices had declined precipitously over the decade; plummeting seven percentage points in total. However, there is mounting evidence that these savings are all but exhausted and indeed may have been false economy. In their rush to secure enrollees via employer-related plans, HMO's have promised savings that they themselves cannot sustain. In 1996, only 35% of HMOs turned in a profit. This weak financial performance augurs poorly for further slowing of medical price inflation as HMOs will inevitably begin to raise premiums in an effort to restore profitability. Already there are nascent signs that medical price inflation is trending upwards: medical price inflation has accelerated over the past eighteen months, and now stands at 3.9%, 0.5% greater than the CPI.

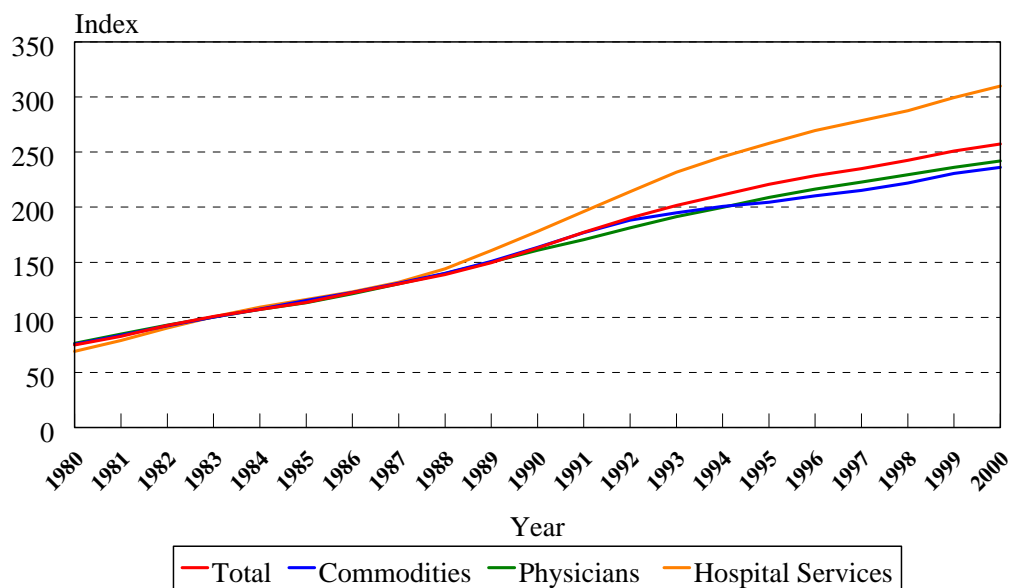
Not all parts of the Medical Price Index grew at the same rate. This fact is shown in Figure 1.7 below. The top (brown) line represents the index for *hospital room charges*. The second line marked (red) represents the index for all *medical services*. The next line (green) represents prices for *physician services*. The final line (blue) represents *medical commodities*.

The typical hospital room rate has clearly out-paced the other indicators. The reason for this difference could arise from several sources. The most likely candidates are probably excess capacity, qualitative changes in the product represented by a hospital

room, and new technology reflected in higher overhead rates. Increases in uncompensated care probably find their way into these charges as well.

The increases in the indexes for medical commodities and physician services are quite similar. Prices for dental services (not shown) were comparable.

**Figure 1.7**  
**Medical Price Indexes**  
**All US Urban Consumers (1983=100)**



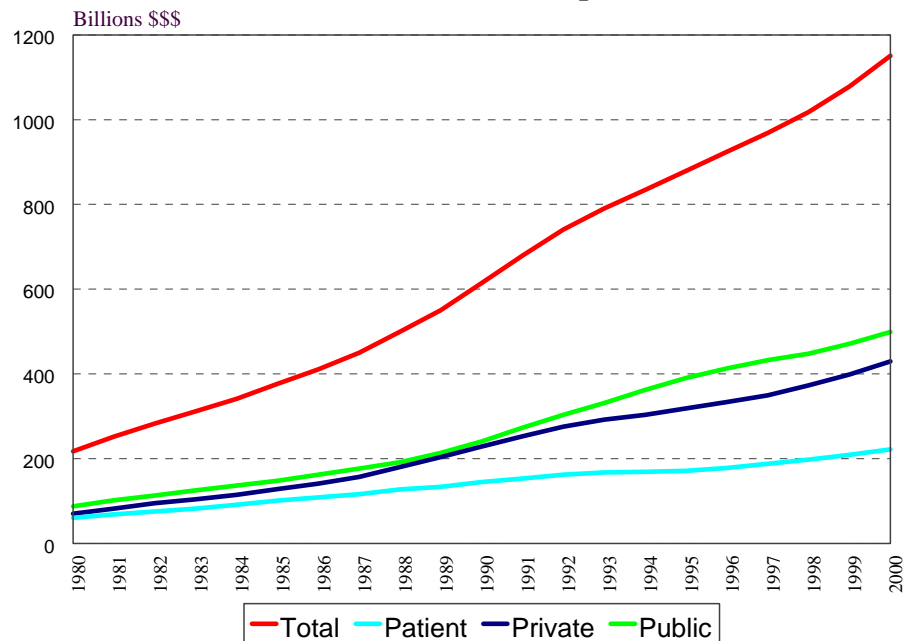
Source: Center for Applied Demography and Survey Research, University of Delaware  
US Bureau of Labor Statistics

### Sources of Payment

There are three potential sources of funds for personal health care expenditures. First, an individual can pay the bill out-of-pocket. In this case, it does not include payments for insurance premiums; it means literally out-of-pocket. Second, the bill may be paid by private insurance. Third, the funds may come from the government, i.e., Medicare, Medicaid, and several other programs.



**Figure 1.8**  
**Sources of Payment for**  
**US Personal Health Care Expenditures**

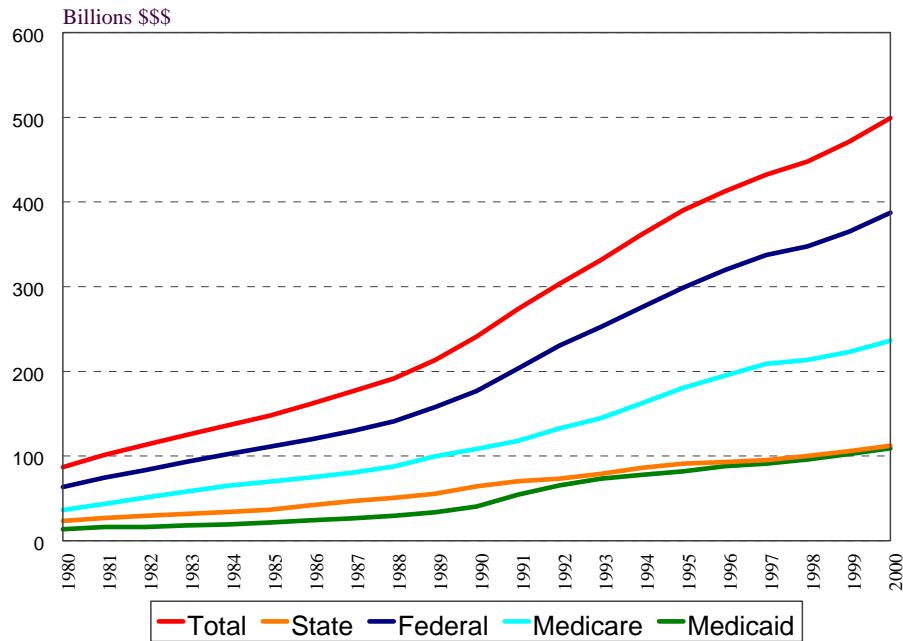


Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Health Care Finance Administration

In Figure 1.8 above, the rapid rise in nationwide expenditures for personal health care is evident, particularly in the late 1980's and into the 1990's. There were, however, significantly different patterns among the sources. First, public sector expenditures continue to rise rapidly and will continue to do so as Medicaid eligibility grows and Medicare expenditures rise with the aging population. Second, the rate of growth has slowed significantly for expenditures paid for by private insurance. Certainly, managed care and less generous health plans from employers had an impact by 1991. Finally, out-of-pocket expenses continue to rise at a steady rate.

In Figure 1.9 below, the government sector is broken down further. The federal share of the bill for personal health care is accelerating. The state share, which is almost entirely Medicaid, shows a significant increase after 1990 as new parts of the population gained eligibility, most notably young children and pregnant women. Understandably, Medicare continues to increase over the entire period and will continue to do so for the foreseeable future, i.e. until the "baby boomers" have past.

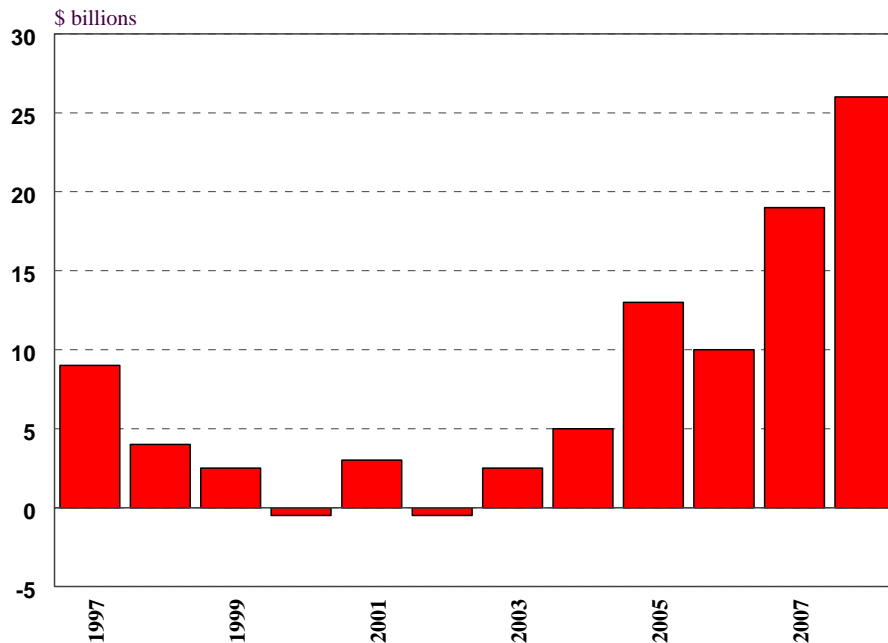
**Figure 1.9**  
**Sources of Payment for**  
**Public US Personal Health Care Expenditures**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Health Care Finance Administration

Medicare's outlook has eased only slightly in light of the Balanced Budget Act of 1997 (BBA). The BBA will slow the growth of Medicare spending until 2002. By 2008, however, the Medicare deficit will swell to \$25 billion as the baby boomers move into retirement, see Figure 2.0. The challenge for Congress is to weigh the options of increasing funding to Medicare or encouraging the population to adopt private health insurance. In an effort to meet the balanced budget requirement, Congress may look to consumers to pay an increasing part of the health care services they receive.

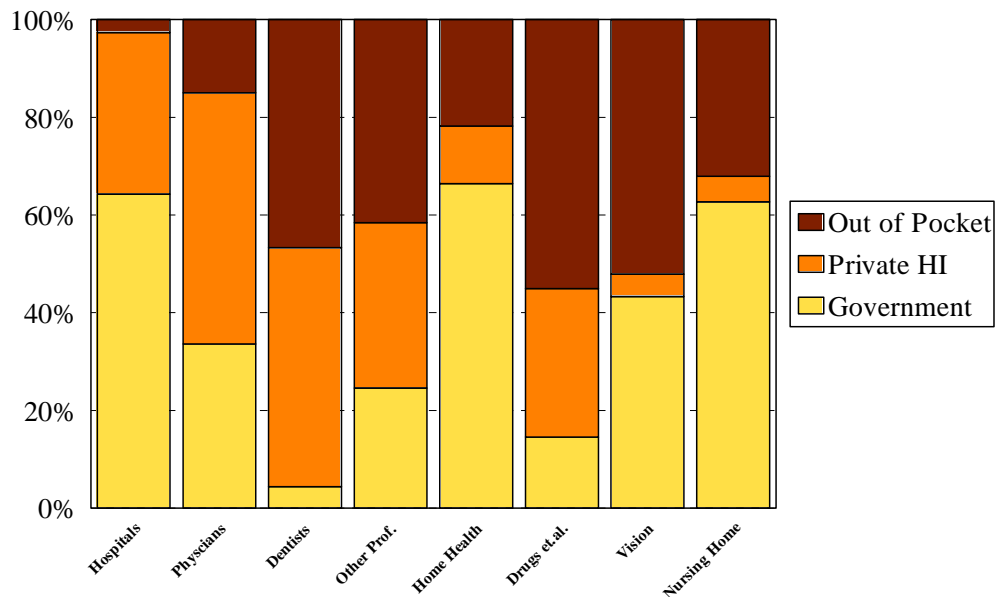
**Figure 2.0**  
**US Health Care Industry**  
**Medicare Deficit**



Source: Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration

The source of payment also differs depending on the type of health care sought. This can be seen clearly in Figure 2.1 below. Expenditures for hospital services are rarely paid for out-of-pocket and are more likely to be paid by the government than by private health insurance. Since older people are more likely to need these services, Medicare is the most likely source of payment. In contrast, dental expenditures are about as likely to be paid out-of-pocket as by private health insurance. The government has little stake in this category. These data suggest that those using Medicaid for health services will probably struggle to afford adequate dental care.

**Figure 2.1**  
**Share of US Personal Health Care Expenditures**  
**By Source of Payment and Sector in 1996**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Health Care Finance Administration

Services of physicians are purchased in a much more balanced way than either hospitals or dentists, with the dominant source being private health insurance. This distribution is in stark contrast to home health services, drugs (which include over the counter and prescription drugs), and vision-related services and products. In those three areas, private insurance plays only a small role.

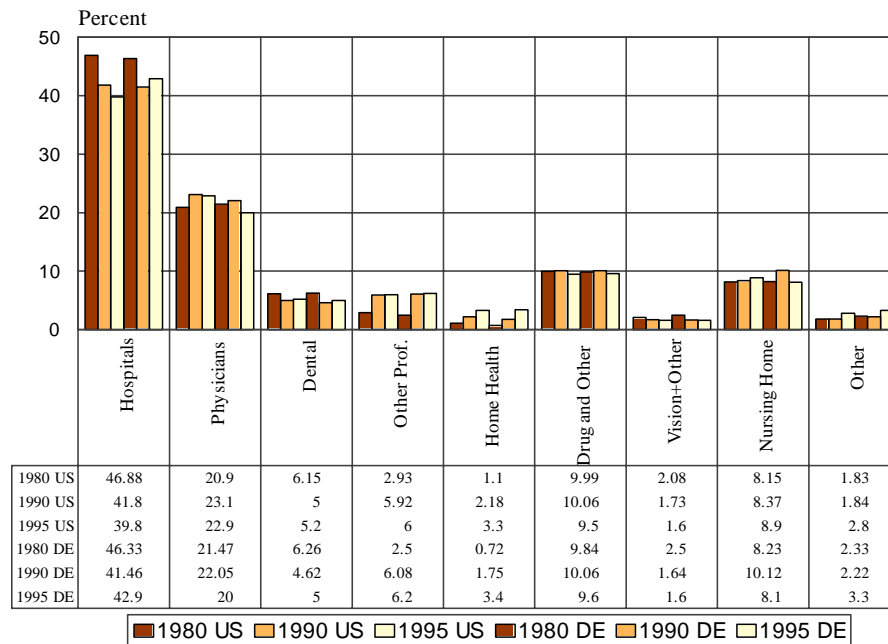
These data illustrate the complexities inherent in the health care system. Government involvement changes radically from one service to another. Thus, while Medicare is often seen to substantially protect the oldest segment of the population, that protection does not extend to all potential health problems. Similarly, Medicaid solves only part of the health care problem for the poorest segment of the population. If the trends identified in Figure 2.1 continue, out-of-pocket costs will continue to rise as the health care delivery/payment system transforms itself.

## Expenditures by Sector

Personal health care expenditures are usually classified into several distinct categories- primarily because the services and products are quite different. Each captures a differential share of the personal health care dollar and that share changes through time. This is shown in Figure 2.2, below.

For each of the personal health care categories, a time series (1980, 1990, 1995) is provided for the US followed by three values for the State of Delaware.

**Figure 2.2**  
**Share of US Personal Health Care Expenditures**  
**By Sector**



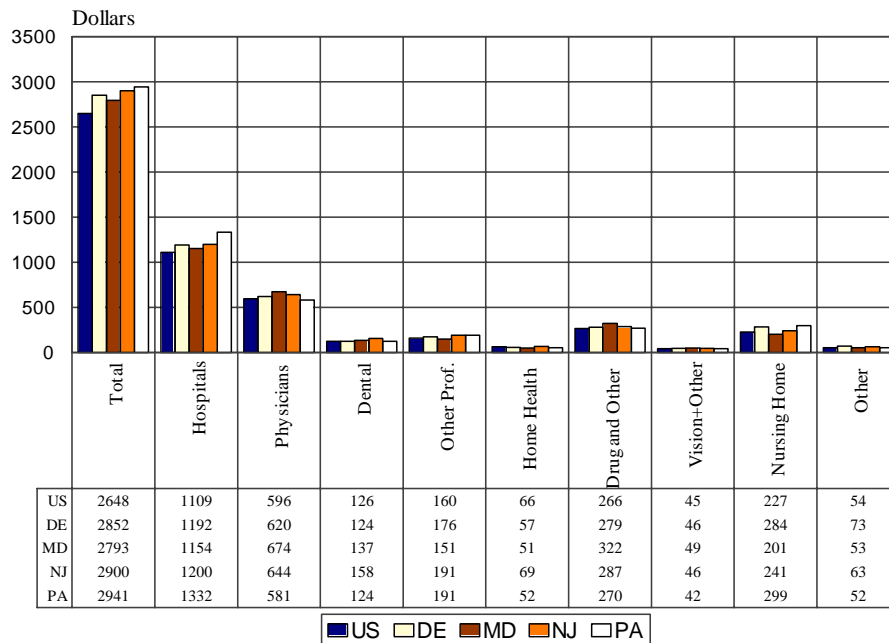
Source: Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration

The share of total health care dollars allocated to *hospitals* has fallen from almost 47% in 1980 to less than 40% in 1995 in the US. That pattern has been echoed in Delaware, although the latest estimates are somewhat higher. The other categories are more stable, although *dentists* appear to be getting a smaller share. In contrast, *other professionals* and *home health* have increased their shares significantly. Both of these increases are consistent with changes taking place in the health care delivery system. The

movement to decrease the length of hospital stays coupled with government funding for *home health* care in many cases would promote increased growth in this area. The growth in the *other professionals* category probably reflects outsourcing by hospitals and the growing diagnostic industry over time. It is interesting to note that the structure of these shifts appears to be national in scope and Delaware is simply reflecting those larger trends.

### Interstate Comparisons

**Figure 2.3**  
**Per Capita Personal Health Care Expenditures**  
**By Sector and Area in 1994**



Source: Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration

One method used to measure relative costs in the local health care system is interstate comparison. While useful, this can also be misleading. For example, the health care systems in two states could be identical with respect to cost structure, but the populations served are not precisely the same. Per capita measures for a state where the population is on the average four years older, will almost certainly have higher health

care costs. Similarly, one state may explicitly pay for charity care through a state grant while another pays for it through cost shifting.

In Figure 2.3, above, the per capita costs for personal health care are shown for the US, Delaware, and the surrounding states in 1994. (That is the last year for which HCFA released state-level estimates.) For the most part, Delaware tends to be fractionally higher (8%) than the US as a whole. Hospital costs per capita, for example, are about 10% higher. However, this difference is a regional result. All four states are above the US per capita figure. Delaware, in fact, has neither the highest, nor the lowest cost per capita in any of the health care sectors displayed. Maryland has the lowest cost per capita overall, but has the highest cost for *physician services* and *drugs*. The low cost of nursing home care could reflect an underlying difference in the age structure of the Maryland population or it could be an indicator of greater efficiency among many other possibilities. In general, the differences between the four states are probably not significant given the methodology and data used to develop the estimates. The differences between the region and the US could be simply a matter of regional price differences that are compensated for by higher wages.

Having examined the national trends of health care restructuring and the demands placed on the system, it is important to consider the Delaware experience. Consistent with the national trend, Delaware's health care industry is also growing leaner. See Figure 2.4 below. The number of beds, admits, and inpatient days all declined over the period 1993 to 1998, a testament to the consolidation and downsizing that the industry has undergone. This consolidation is even more pronounced when framed against the backdrop of rising population. Delaware's population grew 7% over the period (compared to 4.8% national population growth).

**Figure 2.4**  
**Delaware Health Care Industry**  
**Utilization, % Change**

	'93	'98	Percentage Change
Population	695,000	744,000	7
Beds	2,153	1,977	-8.2
Admissions	79,345	84,319	6.3
Inpatient Days	561,190	508,870	-9.3
Average Length of Stay	7.1	6	-15.5

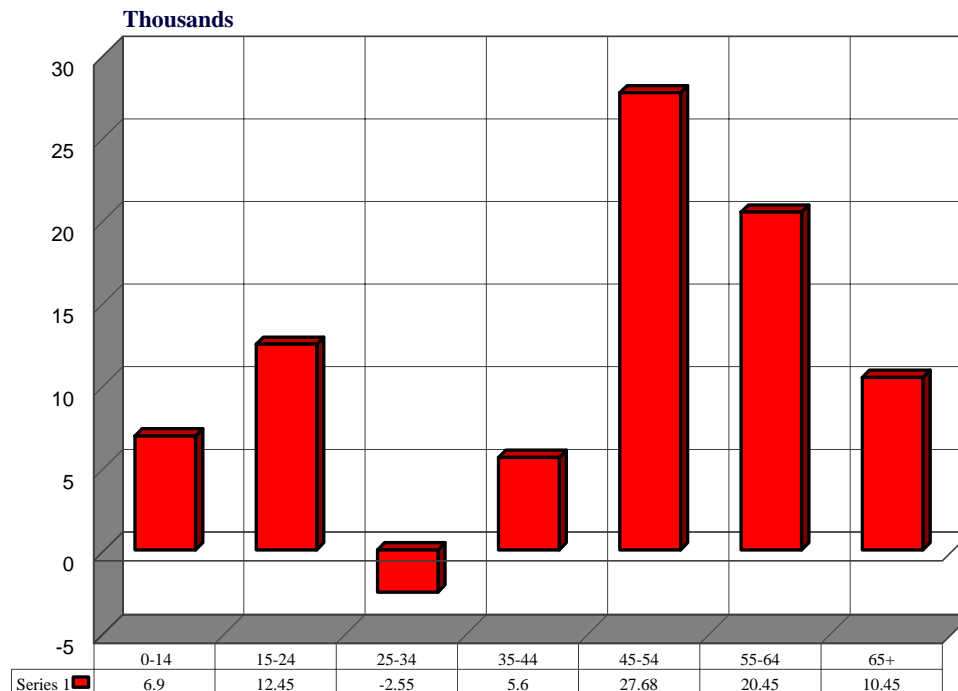
Source: Center for Applied Demography and Survey Research, University of Delaware  
American Hospital Association

In absolute terms, the number of beds available has fallen by nearly 200 since 1993 (or from 3.1 to 2.7 beds per 1,000 population). Further, the average length of stay has fallen from 7.1 to 6.5, as health care providers have increased the turnover of beds.

Aiding the reduction in the length of hospital stays are technological improvements. The limitation of hospital stays does not necessarily imply a reduction in the level or quality of medical services. The rapid diffusion of technology in the health care industry has brought patients in contact with cutting edge treatment. As the efficacy of medical care improves, the speed of treatment increases, which reduces the length of time between ailing and able-bodied.



**Figure 2.5**  
**Delaware Population**  
**Net Change by Age Group, 1990-2010**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Health Care Finance Administration

Turning to demographics, Delaware's age make-up is expected to track the national changes. Delaware's aged population is projected to swell over the next twenty years as the baby boomers move into retirement. In 1998, the proportion of the Delawareans aged over 65 was 12.5%. By 2020 this figure will rise to almost 15%, as the aged population rises to more than 127,000. The trend of the Delaware's population growth is evident in Figure 2.5 above. Between 1990 and 2010 the age groups of 25-34 will actually decline, and the groups 35-44 will rise only moderately. In stark contrast is the rapid increase in the 45-54 and 55-64 age groups.

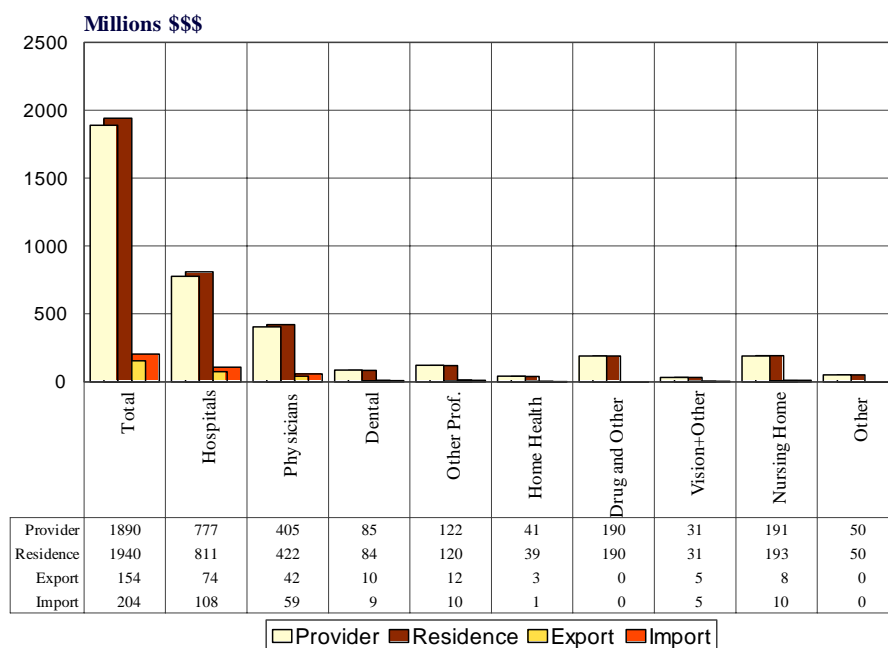
This aging of the Delaware population will foster greater demand for health care services in the future, and is consistent with rising health care expenditures forecast over the next twenty years.

## Estimates by Sector

### Basis of Measurement

Personal health care expenditures are usually reported in one of two ways. The first method measures the size of the health care industry serving the geographic area of interest. For example, this approach focuses on the revenues received by health care providers (hospitals, physicians, dentists, etc.) providing services in Delaware. These revenues are considered to be indicative of personal health care expenditures. In this instance the source of payment is of no interest: the revenues could be provided from the individual, a third party payer, or the government.

**Figure 2.6**  
**Delaware Personal Health Care Expenditures in 1991**  
**By Sector and Basis**



Source: Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration

The second method attempts to measure direct expenditures of individuals within the geographic area of interest. Here, measurements are made of out-of-pocket expenditures, insurance premiums, and payments by government and business. The first approach tends to be used more often, although some states have attempted to measure expenditures in both ways, and it will be used here.

The difference between the two methods is illustrated in Figure 2.6, above. The graph shows Delaware personal health care expenditures in 1991 (the only year for which data is currently available) by provider and by residence. The residence method produces an estimate 50 million dollars higher than the provider method. The difference arises because more Delaware residents leave the state to use hospital and physician services than come into Delaware from outside. The most likely sources of this “importing” of services comes from hospitals in Elkton, Salisbury, Philadelphia, and Baltimore. Still, about 10% of Delaware hospital services are provided to non-residents. In that case hospitals are said to export services.

Fortunately, the two estimates are within a reasonable proximity of each other, at least for the single year for which this data was available. If third party payers were to become more aggressive insisting that the lowest cost provider be used independent of location, then the relationship between “imports” and “exports” could change. In any event, the provider basis of measurement is used in the balance of this report.

### **Hospital Services**

Estimating expenditures for hospitals is somewhat less hazardous than for the other categories that will follow. Fortunately, the American Hospital Association (AHA) conducts an annual survey of both registered and non-registered hospitals. HCFA depends heavily on this information to produce its estimates of personal health care expenditures for states, but those estimates are currently available only through 1993. The AHA survey covers all hospitals but reports revenues only for “community hospitals”. That category excludes federal and state government hospitals, long-term care facilities and specialty hospitals such as Rockford and Meadowood. However, there is a

reasonably stable relationship between those who directly report revenues and those who do not. In addition, expense revenue ratios are available to estimate revenues where only expenses are reported.

The HCFA methodology relies heavily on the AHA survey and does make several technical adjustments. These adjustments, while technically correct, do not substantially alter either the trend or the basic structure of the data. The methodology used by this report for producing more current estimates relies on wages paid by hospitals that are reported to the Department of Labor. That data is current through 1998.

In Figure 2.7 below, estimates are included for three sources and overlap is provided where data was available. The HCFA and CADSR estimates attempt to measure the total revenue received by hospitals. The AHA estimate comprises total net revenue. For the most recent complete AHA data, that revenue is reported to have risen over the course of the decade.

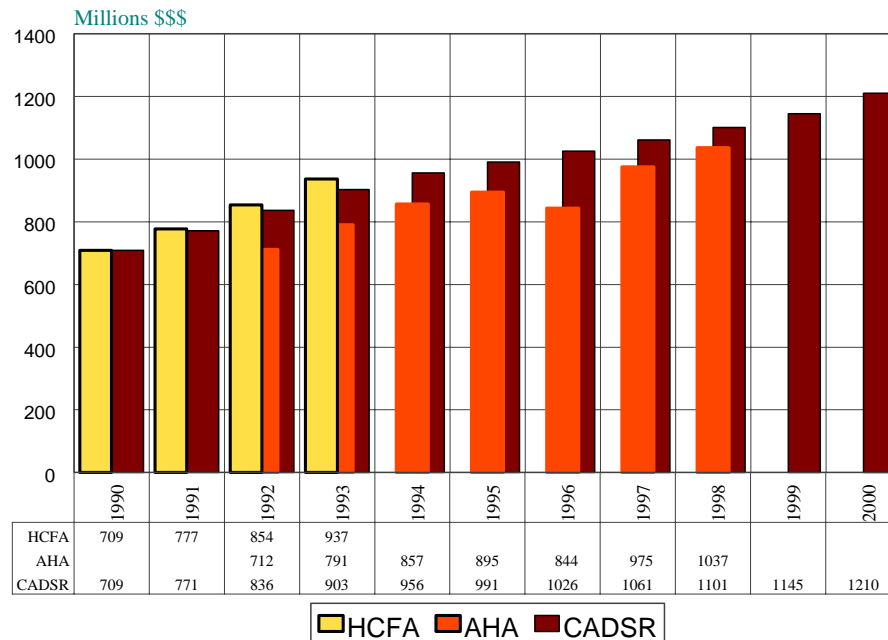
Overall, the three estimates appear to track fairly well. The CADSR estimate tends to approximate the HCFA estimate during the period that they overlap. On the average, this difference is about 4%. This difference is clearly within the accuracy of the data and the methods used to produce the estimates.

The AHA expenditure estimate will always track below the other two simply because of the way it measures revenue. The AHA estimates omit returns above the level of expenses, and will therefore always understate revenue. Despite this shortcoming, the AHA data has value as it serves to confirm the trend of hospital revenues.

While the early part of the decade produced steady increases in personal health care expenditures for hospitals, both the AHA data and the estimates produced by CADSR show some slowing. This diminished growth was coupled with a decrease in hospital-based employment during the decade. Part of this is certainly linked to restructuring, e.g. the acquisition of Riverside by Christiana Care. It also probably

reflects the shift to managed care and the accompanying reduction in relative hospital days.

**Figure 2.7**  
**Delaware Personal Health Care Expenditures:**  
**Hospital Services by Source of Estimate**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 American Hospital Association  
 US Health Care Finance Administration

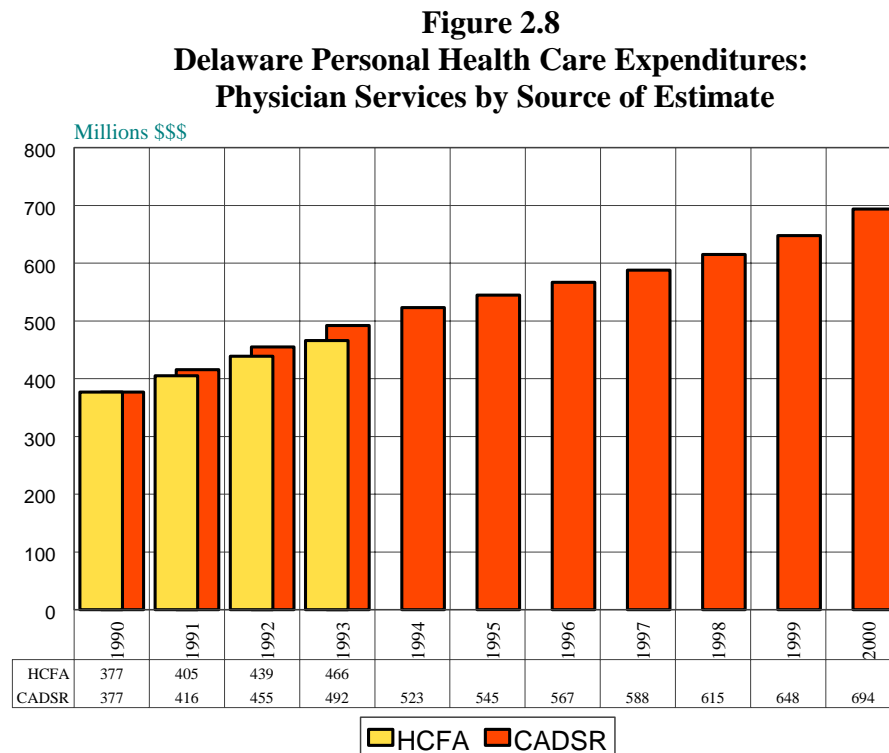
The AHA data reports an absolute decline in total net revenue in 1996. This may be statistical artifice, but may also reflect some restructuring. Regardless, the 1997 data resumes the upward trend in hospital revenue, and reestablishes the closer relationship between the AHA and CADSR estimates of personal care expenditures on health care.

## Physician Services

Estimating personal health care expenditures for physicians is more difficult in the absence of a survey of the type used for hospitals. There is no equivalent survey that covers the 2,300 physicians licensed to practice in the state. To make the task even more difficult, the organization of physicians is changing. There are far more physicians working at salaried positions for managed care organizations. Hospitals are more likely

now to acquire physician services through outsourcing as opposed to having them on staff. As a result, some of the indicators may represent this structural shift than any real change in expenditures.

HCFA relies on a combination of sources to produce their estimate, including the Census of Service Industries (1997), the IRS Business Master file, and Bureau of Labor Statistics estimates of wages and salaries paid in physician offices and clinics. Two of these, the CSI and the BLS data were available for this work, as well as information from the Delaware Department of Labor.

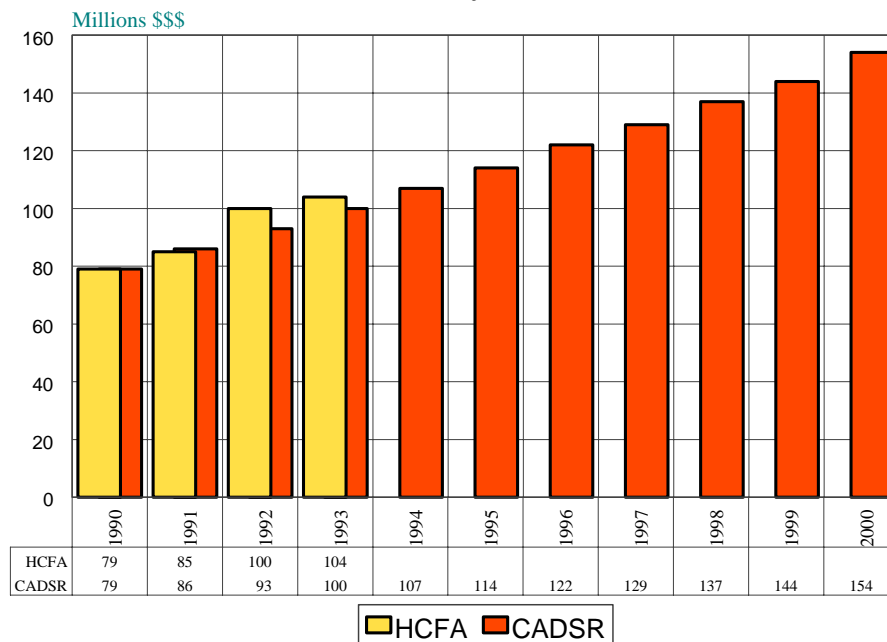


**Source:** Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration

The estimates of personal health care expenditures for physician services are found in Figure 2.8, above. The data through 1993 is consistent with national data for physician services. There is no published data after that point to benchmark the estimates. From 1995 onwards, there was a significant increase in both employment and wages reported to the Delaware Department of Labor. An analysis of the underlying data

suggests that new physician organizations are being formed. It is also important to note that there was a significant drop in the hospital sector over the past two years. This is likely a reflection of the restructuring in the industry as well as the changes in the method of reporting and the categories under which employment is categorized.

**Figure 2.9**  
**Delaware Personal Health Care Expenditures:**  
**Dental Services by Source of Estimate**



Source: Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration

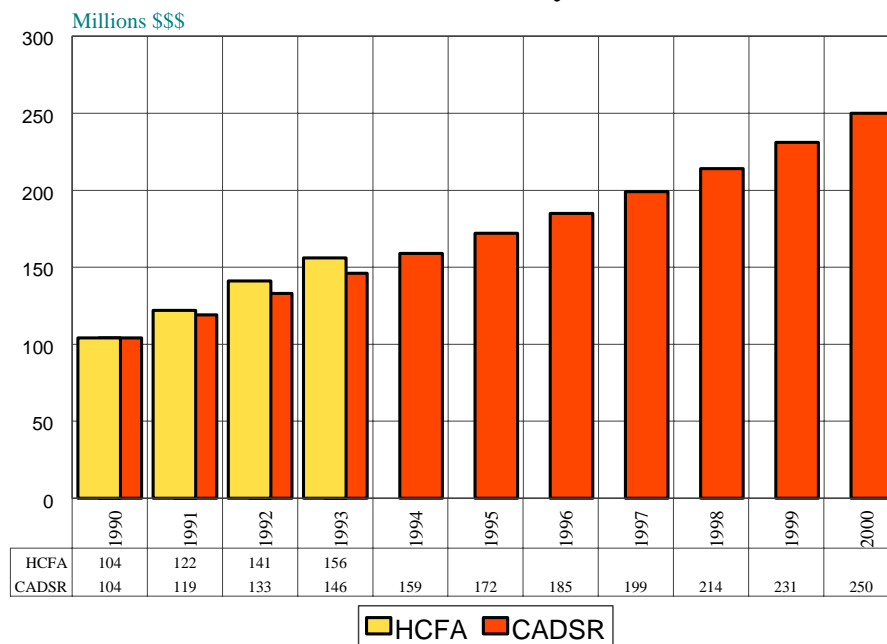
## Dental Services

The HCFA methodology for estimating revenues for dental organizations is the same as that for physicians. They fall into SIC code 802 for estimates produced from the data provided by the Delaware Department of Labor.

The pattern of expenditures shown in Figure 2.9, above, is similar to what was observed with physicians. Solid growth is occurring during the decade, although the rate may be diminishing. While total physician expenditures grew at an average annual rate

of 6.3%, dental services grew by 7% annually. Since dentists have not been as strongly impacted as physicians by the move to managed care, these data suggest that the rapid increase observed for dentists may not be an artifact. It also is consistent with the fact that people buy more health services as their incomes rise. Incomes began to rise after the 1994 pause.

**Figure 3.0**  
**Delaware Personal Health Care Expenditures:**  
**Other Professional Services by Source of Estimate**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Health Care Finance Administration

### Other Professional Services

Expenditures for *other professional services* include those organizations in SIC codes 804 and 809. It includes services rendered by chiropractors, optometrists, podiatrists, and nurses in private practice, among others. HCFA estimates these expenditures in the same manner as for physicians and dentists, i.e. using the CSI, IRS records, and information from the Bureau of Labor Statistics. The estimates produced by this study are shown in Figure 3.0, above.



The growth profile is similar but not as pronounced as that observed for physicians. There is a slowdown in the middle of the 1990's followed by a resumption of growth, although at rates below those identified within physician and dental services.

### **Home Health Care Services**

Home health care services are represented by SIC code 808. These can be provided by private and governmental agencies. HCFA uses the Census of Service Industries (CSI) in 1992 as its benchmark for private firms, and then adjusts this estimate with Medicare and Medicaid payments for home health care supplied by governmental agencies. In Delaware, the difference between the HCFA final estimate and the CSI estimate for 1992 is less than 10%, this suggests that government expenditures for direct provision of services (i.e. not by contract to a private firm) in this area are small. The estimates are provided in Figure 3.1 below.

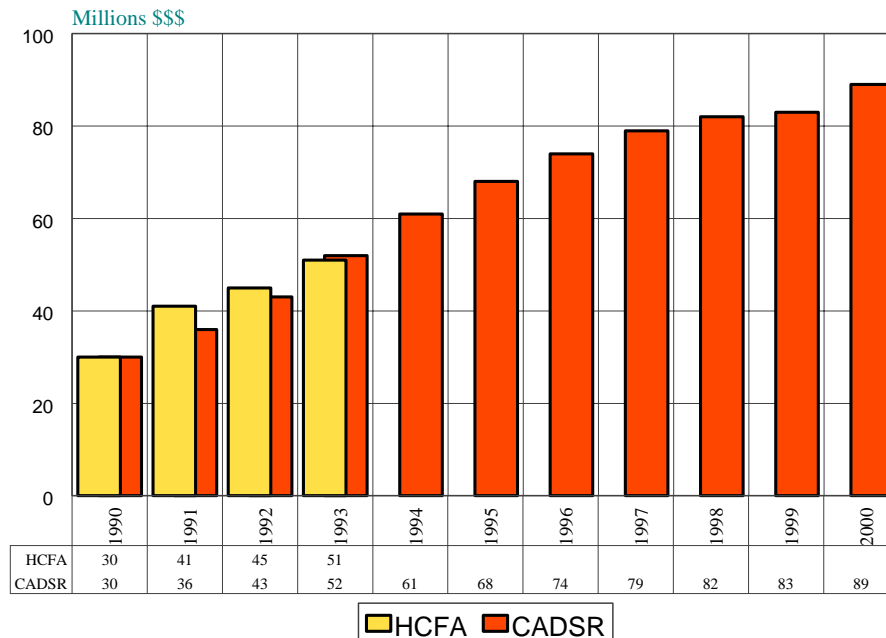
This category of personal health expenditures exhibits a different pattern of growth than what was shown in the earlier figures. It is estimated that annual expenditures have tripled between the period 1990 to 2000, exhibiting the highest growth rate by any of the sectors; one well above the rate for all sectors combined. To the extent that these services continue to be used to reduce costs, it would be reasonable to forecast a continuation in the growth of these expenditures.

Mitigating the growth of home health services will be the effect of the Balanced Budget Act. The home health industry is under siege from declining Medicare reimbursements. The Balance Budget Act of 1997 has set down a schedule of reimbursement reductions, visit limitations, and freezes and reductions of payment updates for inflation, all of which directly impact the income stream of Home Health Care providers.

Home health providers are responding by paring their payrolls. Nationally, home health employment peaked in 1997, following a decade of unbroken expansion. Since 1997, employment has fallen sharply. Total employment in the industry fell 5.5% in

1998, and has continued to fall during 1999. Delaware is mirroring the national response to the Balanced Budget Act, with the state's home health care employment falling marginally (75 positions - 3.6% of the industry- have been eliminated since 1997).

**Figure 3.1**  
**Delaware Personal Health Care Expenditures:**  
**Home Health Services by Source of Estimate**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Health Care Finance Administration

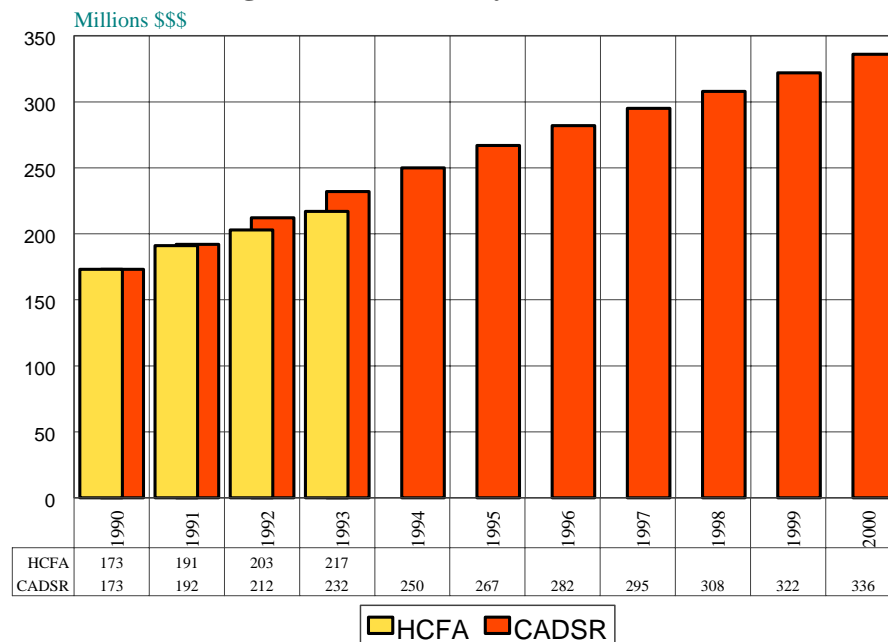
### Nursing Home Services

The final area of personal health care expenditure services concerns nursing homes, which is covered by SIC code 805 and state facilities found in SIC code 806. Since there is a private and public component, HCFA uses two different methodologies similar to that employed for home health care. The estimates produced in this study are found in Figure 3.2 below.

This category exhibits the most stable growth pattern of any yet provided. These expenditures grew by more than 9% annually through 1994 and then at 5% for the next five years. The population served is growing steadily but not rapidly. In addition, the

costs are probably more related to housing and nursing care as opposed to new technology, medical procedures, and drugs.

**Figure 3.2**  
**Delaware Personal Health Care Expenditures:**  
**Nursing Home Services by Source of Estimate**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Health Care Finance Administration

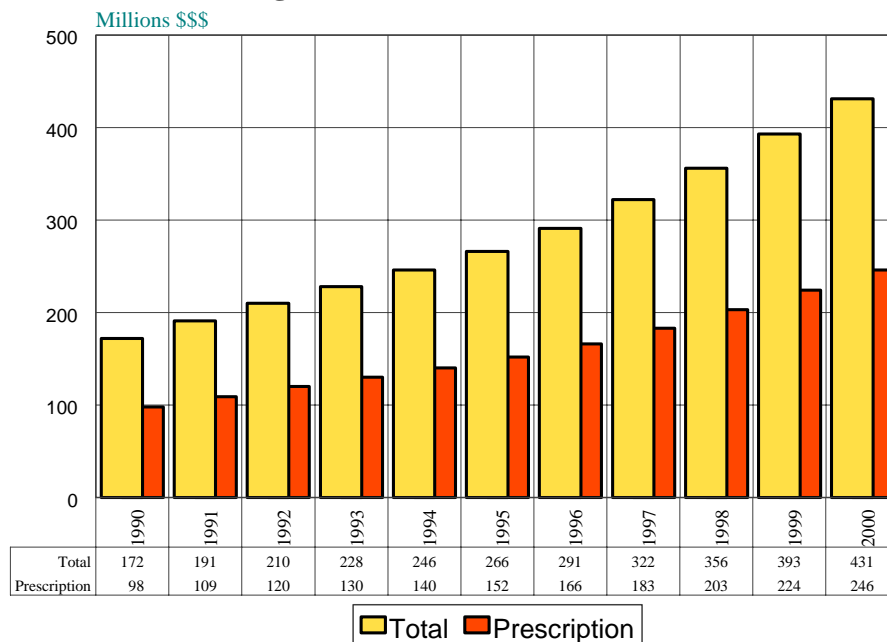
### Other Expenditures

There are three other areas of the health care accounts that have not, as yet, been addressed. The first area is *drugs and other medical non-durables*. The second is *vision products and other medical durables*. The final segment is *other personal health care*, which includes place-of-work health services. For the first two, HCFA utilizes the Census of Service Industries (CSI). The estimates for the third are an amalgamation of indicators from sources that have no Delaware equivalents.

The drug sector has accounted for approximately 10% of the market since 1980. Figure 3.3, below, shows the estimates for the entire sector along with an estimate for prescription drugs. The estimates from 1990 to 1993 approximate those produced by

HCFA. All estimates after that time are provided by CADSR. Prescription drugs are expected to account for 57% while the entire sector increases by its share from 10% to 11%. That increase allows for the expanding number of drug products and the aging population.

**Figure 3.3**  
**Delaware Personal Health Care Expenditures:**  
**Drugs and Other Medical Non-Durables**



**Source:** Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration

Drugs are expected to continue to be the fastest growing component of health care expenditures. The growth of prescription drugs has been a staggering 10.9% nationally for the period 1993-1996. This torrid rate of growth is a reflection of the slew of new drug introductions that occurred during the period. The spate of new drug offerings can be credited in part to the Food and Drug Administration's (FDA's) move to speed the approval process for new drug candidates.

Further bolstering drug expenditures is the fall in out-of-pocket costs to consumers, as brought about by managed care providers. With average co-pays falling

between \$10-\$20, consumers have found drugs very affordable. Indeed, consumption of prescription drugs, as a percentage of total consumer expenditures is on the rise after stalling in the early nineties. Currently, over 1% of consumption expenditures are dedicated to physician-prescribed drugs.

Drug expenditures are expected to remain in double-digit growth in the near term. The introduction of million-selling drugs, such as Viagra, will fuel consumer prescription expenditures going forward. There are a number of potential top-sellers that are due within the next few years. These include medication for cholesterol, arthritis, obesity, migraine, and hepatitis, each with a substantial potential market in the U.S.

Indeed, the demand cost of prescription drugs is so great that some HMOs are refusing to cover “lifestyle” drugs such as Viagra. Kaiser Permanente’s decision to exclude the drug from coverage sets a precedent for other health care providers to follow. While Kaiser’s move may not deter consumption of the drug, consumers may find more drugs excluded from coverage, placing them far beyond consumer’s means. Presently, private out-of-pocket expenses account for 20% of expenditures for personal health care, with private insurance picking up 35% of the bill, and the government the remainder. Private expenditure will likely rise if the trend of drug exclusions by HMOs persists.

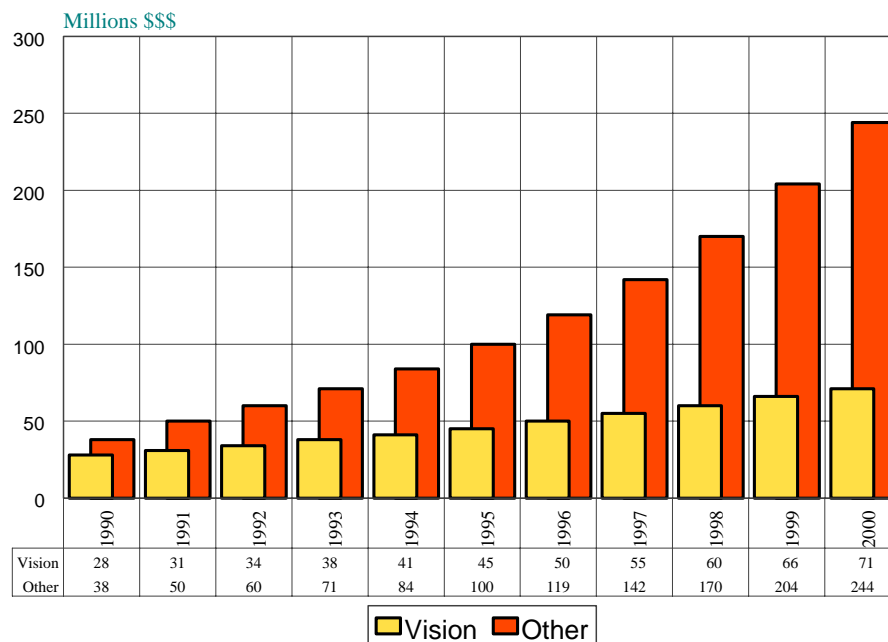
Prescriptions-by-mail is emerging as a popular means of acquiring drugs. The incentive is to lower the out-of-pocket expenditures of the consumer by offering drugs at a significant discount versus pharmacy prices. Typically, consumers will save by purchasing several months’ supply of a drug rather than on a one-month basis.

Demand for prescription drugs will only be enhanced further by this trend. Therefore, the trend of rising drug expenditures – the fastest growing component of health care expenditures – is expected to continue unabated. The prescription by mail program does present a data collection issue. Should the mail-drugs be supplied by an out of state company, these expenditures will not be reported in Delaware. The estimates presented here are consistent with the national trend of drug prescriptions, and are therefore taken to capture prescription drug expenditures of the state.

Finally, estimates for the last two sectors are reported in Figure 3.4, below. Vision products are allowed to grow sufficiently to keep the share around 1.6%. The annual average growth rate is about 10%. This includes a slight increase after 1994. This would be consistent with the pattern found in many of the other charts.

The HCFA estimates provided from 1990 to 1993 show rapid growth in this sector. There is no apparent explanation other than the fact that there may be more facilities to serve drug and alcohol dependent populations, school and child health programs, and other like programs that use non-physician services outside of a traditional medical setting. That growth rate was attenuated and the share was permitted to increase slightly from 1993 to 1997.

**Figure 3.4**  
**Delaware Personal Health Care Expenditures:**  
**Vision Products and Other Medical Durables, and**  
**Other Personal Health Care**



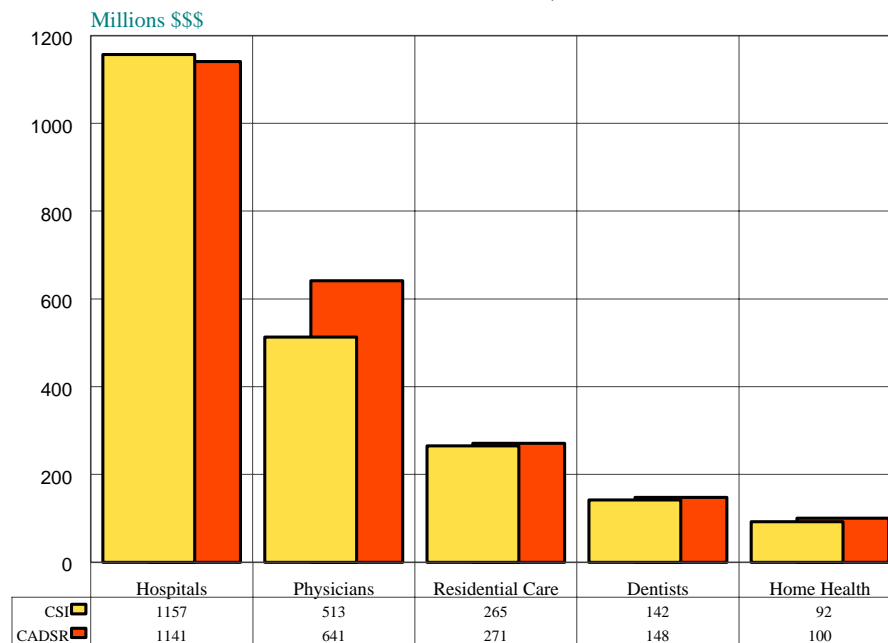
Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Health Care Finance Administration

The timeliness of the BLS wage and employment data makes it a valuable resource for estimating the more recent trends in the industry. The infrequent release of

the Economic Census, discounts the reports usefulness for yearly comparisons. Nevertheless, the two reports used in conjunction serve to verify the industry trends.

Using the CSI estimates for 1997 as a benchmark tool, the accuracy of the CADSR estimates for 1997 can be assessed. In most cases where CSI has a comparable data to the sectors considered, the CADSR estimates fall within a reasonable range of the CSI data, see Figure 3.5. The physician services expenditures category has a somewhat large difference between the CSI and CADSR estimates. The CADSR estimate utilizes HCFA's reported Federal Expenditure on physician services to derive a growth trend for Delaware's estimate. The Federal expenditure growth pattern falls between the physician wage and salary growth and physician employment growth for the nineties.

**Figure 3.5**  
**Delaware Personal Health Care Expenditures:**  
**CSI versus CADSR, 1997**

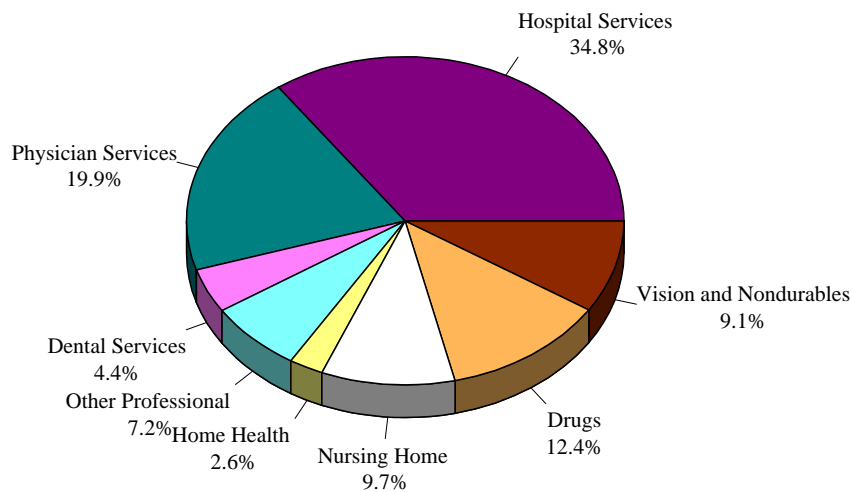


Source: Center for Applied Demography and Survey Research, University of Delaware  
Census of Service Industries, 1997

The composition of total personal health care expenditures in Delaware is changing. In 1990, hospital services commanded an impressive 42% of total personal

health care expenditures in the state. CADSR estimates that in the year 2000, although hospital expenditures remain the single largest destination for expenditures, they will account for a smaller 35% of total expenditures (see Figure 3.6). All other categories are gaining share in the health care expenditures. Drugs (prescription and nonprescription), vision and other nondurables, home health and nursing home services have all made substantial gains during the nineties; reflective of the trend of health care provision away from the tradition of hospital care towards alternative providers; the effect of managed care on limiting the provision of costly hospital care; and the greater efficacy of health care that requires either shorter hospitalization or even full treatment on an outpatient basis.

**Figure 3.6**  
**Delaware Personal Health Care Expenditures:**  
**Share of Total Expenditures in 2000 by Category**



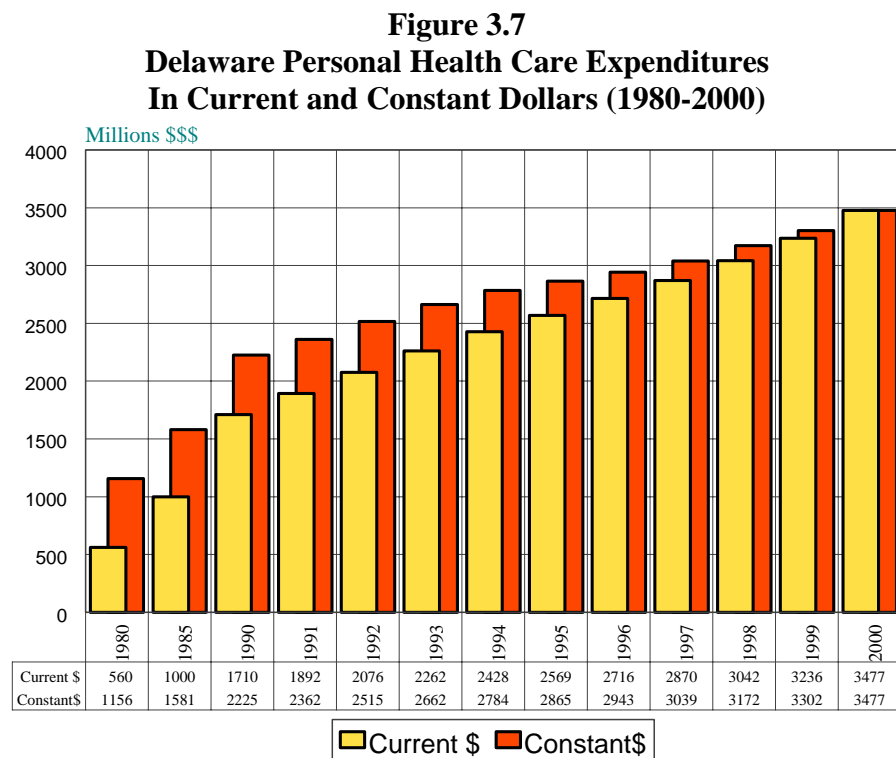
**Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Health Care Finance Administration**



## Total Cost of Health Care

### Total Costs

After compiling all of the estimates for the various services and products, an estimate can be offered for the total cost of personal health care in Delaware. That estimate is found in Figure 3.7, below.



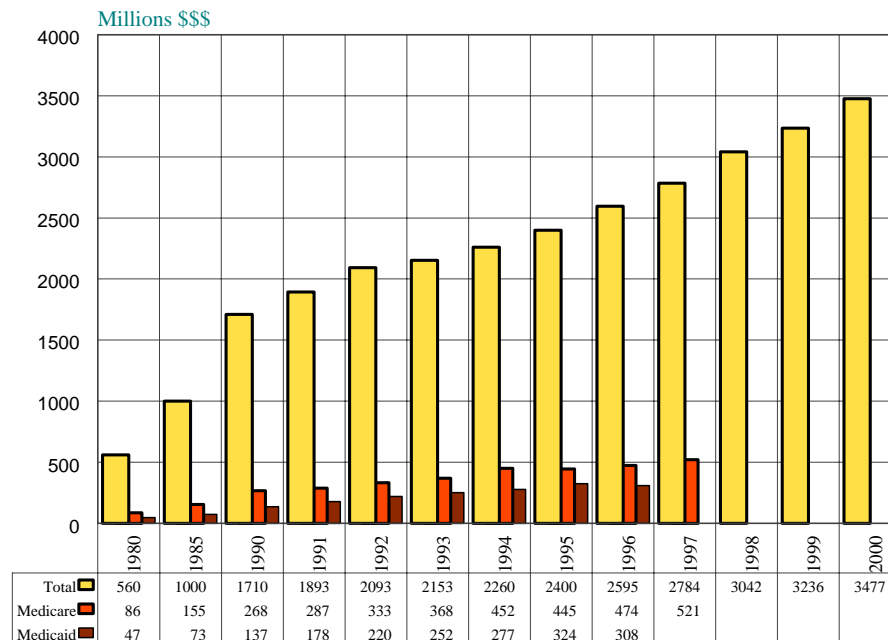
**Source: Center for Applied Demography and Survey Research, University of Delaware**  
**US Health Care Finance Administration**

The total cost of personal health care in Delaware is estimated to be approximately three and a half billion dollars in 2000. The figure shows estimates both in *Current* dollars and in *Constant* 2000 dollars. From 1980 to 1990, the personal health care sector grew at 12% per year in current dollar terms (6% in constant dollars using revised inflation data). During that same period, the population increased by about 1% per year. Since 1990, the real growth rate has slowed to 5%. It was even lower in the first

half of the decade, but appears to be increasing again in the last few years. Rising wages of health care providers augurs increased expenditures on health care services and therefore an expanding industry. The recent Census of Service Industries (1997) reports that revenue/receipts of health care providers are indeed on the rise. Moreover, the CSI estimate of total revenue/receipts falls within an acceptable range of the CADSR estimate.

In current dollars the annual increase has been 7.4% per year since 1990. Approximately 70% of that annual increase is directly attributable to changes in prices, i.e. not quality or quantity of services. An additional 15% of the increase can be assigned to population growth. The remaining 14% result from demographic change (aging of the population, increases in income, etc...), availability of new services and products, and changes in the preferences for personal health care over other goods and services.

**Figure 3.8**  
**Delaware Personal Health Care Expenditures:**  
**Medicare and Medicaid**



Source: Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration

These annual increases may seem high. However, Medicare has increased at an annual rate of 10% this decade. The population that is age 65 or over comprised 12.6% of the total in 1990 and will rise gradually to 15.3% in 2020. By that time only about half of the “baby boomers” will have retired. Since that age group uses health care services intensively, annual increases well above inflation and population growth are already built in. Today, Medicare represents 18.7% of personal health care expenditures compared to 15.4% in 1980.

Medicaid is increasing at 14.5% per year this decade and has increased from 8.4% of total personal health care expenditures to 11.9% since 1980. This increase, however, is predominantly due to policy change. There have been significant efforts to increase access to health care for the poor, and in particular, young children. Unless there is a dramatic increase in the poverty rate, which has been declining, these annual increases should decline as the proportion of the needy population covered increases.

If the 7.4% average annual increase is disaggregated into three components, Medicare causes 1.5% of the increase, Medicaid is responsible for 1.2%, and everything else is 4.7% annually. Given that the medical care price index has risen 5.1% annually over the same time period, in constant dollars the real cost has either declined or there have been significant shifts in quantity and quality of services used by the non-old and the non-poor.

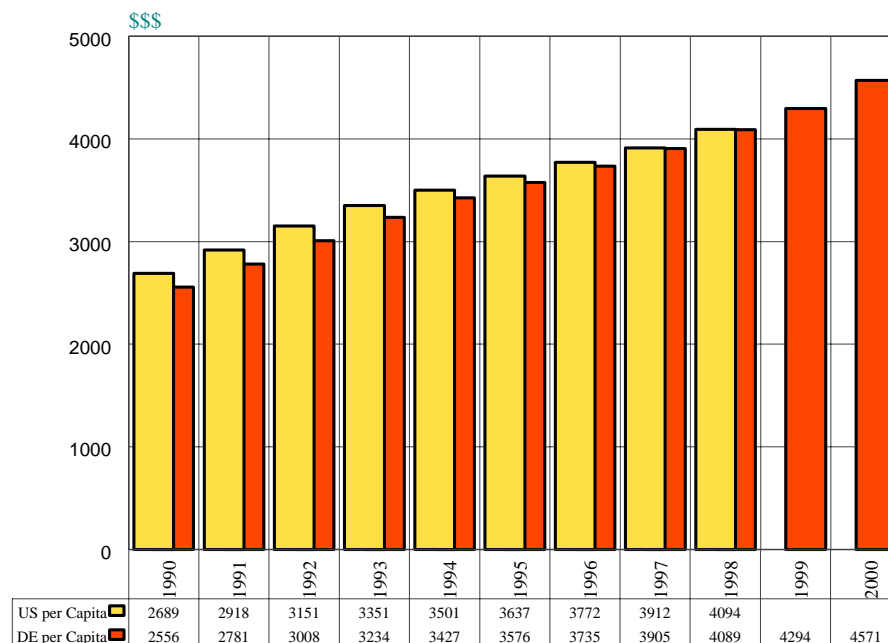
### **Per Capita Costs**

Another useful way of looking at the total cost of personal health care expenditures is using the per capita measure. That calculation removes the effect of increases in the population from the analysis. Those results are shown in Figure 3.8, below.

For much of the decade, Delaware expenditures per capita were tracking those of the US. They are very close through 1995, when a significant increase took place. In earlier figures, it was pointed out that the estimates for total expenditures flattened out in

1994 and 1995, but then accelerated rapidly in 1996. If the pattern that is shown in the early part of the decade had continued without pause, the graph would have approached the estimate given for 1996. During that period the per capita estimates increased approximately \$200 per year. The interesting question that remains unanswered is whether the slowdown was followed by a period of “catch-up” or whether the pause is the result of the changing structure of the marketplace. The 1998 estimate suggests both factors may be operating.

**Figure 3.9**  
**Personal Health Care Expenditures Per Capita:**  
**US and Delaware**



**Source: Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration**

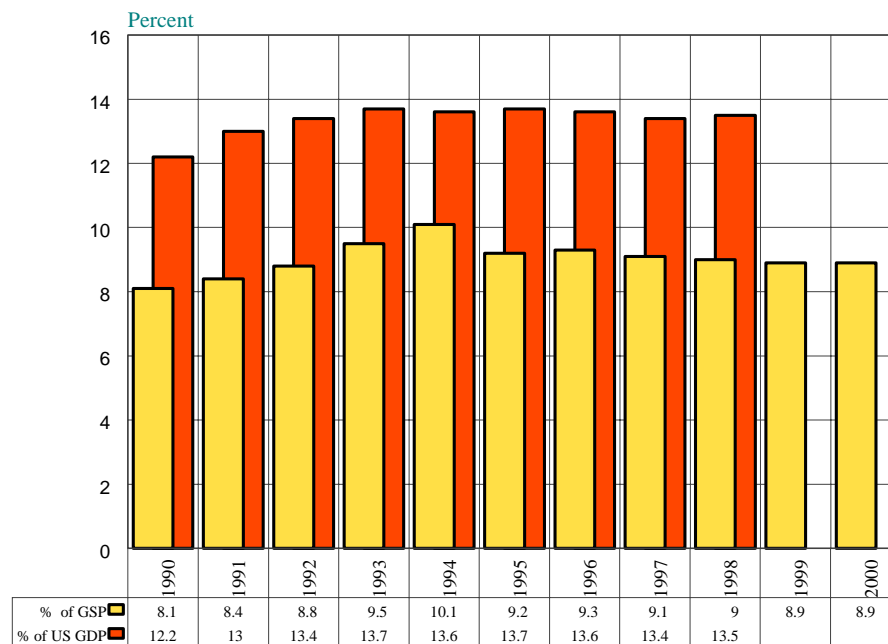
## Economic Importance

Two measures of economic impact are provided to show the importance of personal health care expenditures in the Delaware economy. First, in Figure 3.9 below, the ratio of these expenditures to gross state product (the total value of goods and services produced in Delaware) is displayed. Also shown, for comparison, is the ratio of personal

health care expenditures in the US to gross domestic product (the total value of goods and services produced in US).

There are a number of points illustrated by this chart. First, the health care sector has been growing as a proportion of total output in both the US and Delaware. Second, Delawareans spend significantly less than the US as a whole on health care; 9% compared to 13%. Perhaps 0.3% of this difference can be allocated to the fact that Delawareans purchase more health care services outside of the state than non-Delawareans purchase inside the state. The balance must be attributed to differences in income, preferences, and needs. Delaware is well above average in income and well below average in poverty. However, Delaware is somewhat above average in age, which should tend to increase the share of GSP devoted to health care.

**Figure 4.0**  
**Personal Health Care Expenditures:**  
**Share of US GDP and Delaware GSP**

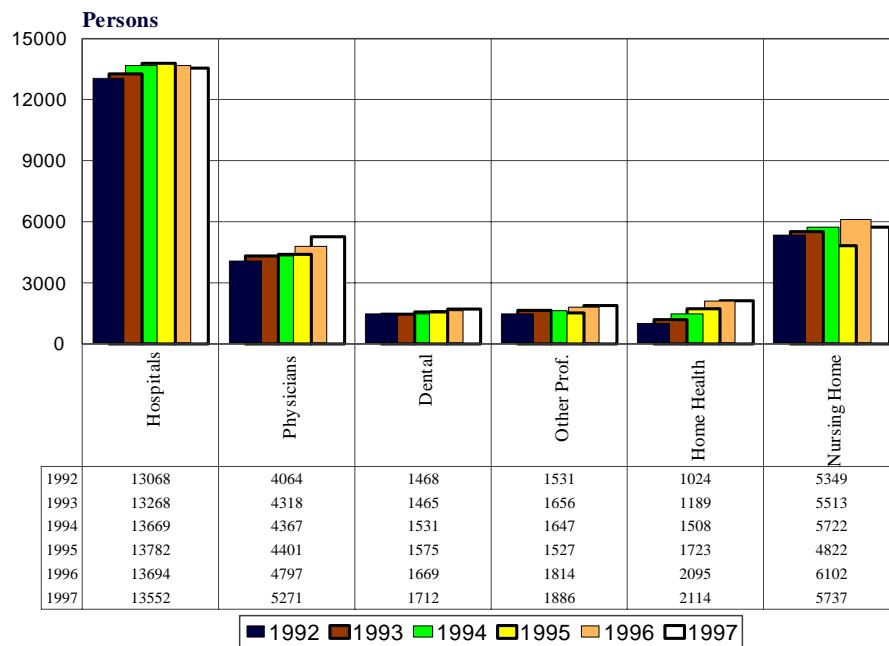


**Source: Center for Applied Demography and Survey Research, University of Delaware  
US Health Care Finance Administration**

Finally, the health care sector is an important part of the employment in the state. Information reported to the Delaware Department of Labor shows that the health care

sector provides employment for 8% of the current labor force of 380,000. Those workers earn 10% of the reportable wages. In Figure 4.0 below, employment by sector over time is shown.

**Figure 4.1**  
**Delaware Employment in**  
**Selected Personal Health Care Sectors**



Source: Center for Applied Demography and Survey Research, University of Delaware  
Delaware Department of Labor

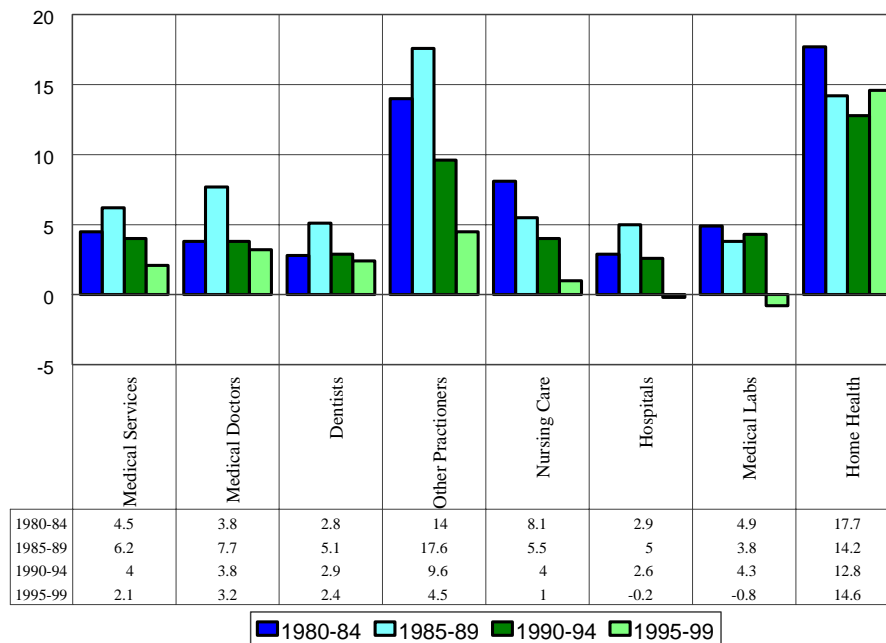
Emblematic of the changing structure of the health care industry is the shift in employment in the State of Delaware.

Hospitals command a declining share of DE's health care industry. In 1980, hospital employment accounted for 16% of the state's health care industry. By 1998, the latest year of complete data, this number had fallen to 11%.

An examination of the employment growth rates in Delaware confirms the disparate pattern across the health care sectors. All sectors, save home health, exhibit

falling employment growth. However, hospitals witnessed their employment growth dip into negative territory, while the other sectors continued to expand, see Figure 4.1.

**Figure 4.2**  
**Average Annual Employment Growth for**  
**Selected Personal Health Care Sectors in Delaware**



Source: Center for Applied Demography and Survey Research, University of Delaware  
Delaware Department of Labor

Home health care employment has been growing steadily over the same period. In 1980, home health care employment comprised less than 0.5% of health care employment. By 1998, its share had risen to 2.5%. Moreover, home health care employment is not unique in its expansion over the past twenty years. Practitioners other than medical doctors, and miscellaneous health care employment have also experienced solid growth over the same period. While dental services and other professional services continue to grow, their rates of increase are less. Given these shifts in employment the pattern of expenditures is reflective of the changes.

## Observations

Many states across the nation are attempting to better measure personal health care expenditures. They are doing this for a number of reasons, but two are predominant. First, policy-makers need to understand the structure and size of those costs to better comprehend the problems of access that can be related to cost. Second, they need to understand the future path of these costs so that appropriate plans and policies can be developed to support their citizens.

This project is a step towards measuring the size and structure of personal health care costs in Delaware. It is pursued with a number of constraints; use Delaware data wherever possible, keep comparability with HCFA where possible to allow interstate comparisons, use secondary data sources where Delaware data was not available, and use the provider as the basis of measurement.

Even though this effort is only the beginning, there are a number of findings that are worth reiterating.

- The rate of increase in the price of medical services has decreased during this decade to the point it was no longer significantly above the general rate of inflation. However, there is mounting evidence that the rate of increase is accelerating again. Indeed, medical price inflation is at its highest point since late 1995.
- In recent years, payments for health care by private insurers and those by individuals have shown some restraint. The payments by the government for Medicare and Medicaid have continued to rise at a faster rate. Demographics are the major factor.
- Despite the Balanced Budget Act, Medicare is still in trouble. The government will have to wrestle with the health care demands of an aging population. Hospitals are the most threatened by Medicare cuts, which augurs further trimming of hospital services and payrolls.



- The health care industry is growing leaner and more efficient. Delaware's health care providers are more productive: treating a growing population with fewer resources. The average length of stay is declining, as is total number of beds available. Consumers are increasingly being handled on an outpatient basis, which is allowing hospitals to pare payrolls.
- Individuals pay out-of-pocket for the majority of costs for drugs, vision products, and dental services. The government pays for the majority of hospital charges, and private insurers are the primary payers for physicians.
- Hospitals' share of total health care expenditures has decreased both across the US and in the State of Delaware. While the share earned by hospitals has traditionally been higher in Delaware than in the US, that is no longer the case. Overall the pattern of health care expenditures is very similar to that seen throughout the US.
- Restructuring in the health care industry is changing the manner by which health care services are provided. The emergence of managed care has brought about consolidation in hospital services, and a decline in hospital employment. Meanwhile, home health care, and nursing services industries are enjoying strong growth as many treatments now occur outside of the hospital environment.
- The drug sector is expanding rapidly, and shows no sign of abating. Several factors are fostering this growth. The FDA has accelerated its approbation process of new drugs. Managed care has greatly reduced the out-of-pocket expense of prescription drugs. The outlook for drug expenditures is sustained growth in the near term.
- While Delaware is higher than the US in per capita expenditures for health care, it compares favorably with Pennsylvania and New Jersey and is only slightly higher than Maryland.
- Overall, about three billion dollars is spent on personal health care in Delaware. The real rate of increase is now 2.8% annually and that represents a significant reduction on historic rates. However, in the last two years, the rate has begun to increase again.
- About half of the annual increase in health care expenditures is attributable to Medicare and Medicaid. The balance is divided between price increases, population growth and demographic change.

- Delawareans spend significantly less of Gross State Product (9%) when compared to the US in general (12%).
- The health care sector of the Delaware economy is an important source of employment with 8% of the total workforce and 10% of the reportable wages.

When taken together, these data suggest that Delaware is essentially in the mainstream with respect to personal health care expenditures. While, the costs per capita slightly higher, as a high-income state Delaware and can afford to consume more of these services. The managed care revolution has and will undoubtedly continue to change the landscape of health care expenditures. Some of these changes may affect the quantity of services, and some will affect the distribution of the expenditures across the sectors. There will also be alterations in the way these payments are allocated between public, private, and individual payers.

Improvements can be made in the estimates presented here. With the release of a new Census of Service Industries, the HCFA should soon be ready to release new benchmark data. Currently, we assess the accuracy of the estimates as +/- 7%. As more data is collected and the methodologies are refined, the accuracy will also improve.

Additional geographic detail and refinement of the sectors will require much more data collection. Maryland, for example, collects claims data from insurance and HMOs operating in the state. It also receives Medicare and Medicaid data files from the federal government and participating state agencies.