

**The Total Cost of Health Care in Delaware  
2007**

**prepared for  
the Delaware Health Care Commission**

**by**

**Simon Condliffe  
and  
Edward C. Ratledge**

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**Center for Applied Demography and Survey Research  
College of Human Services, Education and Public Policy  
University of Delaware  
[www.cadsr.udel.edu](http://www.cadsr.udel.edu)**

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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 improving access to health care is not its only focus, since the Commission's mandate is broad, it is a primary goal. Access to health care has several dimensions. The aspect this report will cover is the cost of health care in Delaware. This report intends to provide current estimates of health care expenditures in the state and to describe some of the dynamics that influence those expenditures.

The report is divided into seven sections. The first section provides information that will give the reader a broad perspective on health care expenditures and the demographic trends that influence 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 health accounts. Estimates are provided for each account annually from 1990 through 2007. Where possible, two series of estimates are provided; one by the US Centers for Medicare and Medicaid Services (CMS -- formerly the Health Care and Finance Administration (HCFA)) and the other by the Center for Applied Demography and Survey Research (CADSR) at University of Delaware. The third section presents an overview of the estimates of total personal health care expenditures through 2007. Indicators of this sector's impact upon the Delaware economy are also provided. The fourth section discusses the issue of prescription drugs. The fifth reports the cost shift evidence for Delaware, and the sixth presents some community health statistics. Observations from the report comprise the final section.

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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## Executive Summary

Many states across the nation are attempting to better measure personal health care expenditures. They are doing this for two predominant reasons. First, policymakers need to understand the structure and size of those costs to more fully comprehend the problems of access that can be related to cost. Second, policymakers need to understand the future course of these costs so that appropriate plans and policies can be developed to support their residents. The study's findings are presented below.

- Medical price is stable at 4% per year. This is higher than the nadir of 2% in 1997, but significantly lower than the double-digit rates of the eighties and early nineties.
- The relaxation of Managed Care restrictions brings increased demand for health care services. Hospitals, physicians, and other specialists, are experiencing rising demand after a decade of demand constrained by managed care. This resurgent growth in hospital and physician demand is a major driver in rising health care expenditures.
- Among the drivers of rising expenditures are rising prices, increased utilization, and the substitution of newer, more expensive technologies for older, less expensive technologies.
- Overall, about \$6.2 billion annually is spent on personal health care in Delaware. The total health cost of personal health care is increasing at 5% per year. There is evidence that the rate of increase of health care expenditures is slowing. Provider wages continue to grow but at less aggressive rates than recent experience. This mirrors the national trend of continued growth of health care expenditures, albeit at diminished rates.
- Delawareans spend less of Gross State Product (11%) on health care when compared to the US (16%).
- The health care sector of the Delaware economy is an important source of employment with 11% of the total workforce and 11% of the reportable wages.

- 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 decreased both in the US and in the State of Delaware. Overall the pattern of health care expenditures is very similar to that seen throughout the country. The greatest pressure on expenditures is from the hospital account.
- The drug sector is rapidly expanding, and this growth shows no sign of abating. Several factors drive this growth. The FDA accelerated its approval process of new drugs. Also, managed care greatly reduced the out-of-pocket expense of prescription drugs (though copays are rising and formularies are used to encourage the use of generic equivalents). Direct to consumer marketing by pharmaceutical companies is also contributing to the growth of drug expenditures. The outlook for drug expenditures is for continued strong growth.
- Between 1992 and 2001, the number of prescriptions purchased increased 68% (from 1.9 billion to 3.2 billion), compared to a U.S. population growth of 11%. The average number of prescriptions per person increased from 7.3 to 11.1. In 2002, the average consumer spent \$884 on prescription drugs, compared with \$415 for alcohol, \$2,167 for entertainment, and \$2,395 on dining out.
- 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.
- Nationally, hospital markup of charges over costs is growing rapidly. Private payer payment-to-cost ratios are also increasing. Hospital margins in Delaware are on par with neighboring states and the nation.

When taken together, these data suggest that Delaware is essentially in the mainstream regarding personal health care expenditures. While the costs per capita are slightly higher, Delaware is a relatively high-income state. 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 how these payments are allocated between public, private, and individual payers.

## Summary At A Glance

- Total Cost in Delaware

Total Cost of Health Care in Delaware in 2006 is estimated to be \$6.2bn. Spending has risen an average of 5% a year since 2001.

- Medical Prices

Medical price inflation is 4% annually. This is higher than the low in 1997. However, overall medical price inflation is not accelerating.

Two primary drivers of medical price inflation are hospital services and prescription drugs.

Hospital services prices have been growing aggressively since 2000, averaging 6% per year. Prescription drug prices are growing at 5% annually on average.

- Utilization

Delaware hospital admissions have grown 33% between 1993 and 2006 and now stand at 105,164. Inpatient days have grown 19% over the same period, to 669,392.

- Cost Shift

National markup of charges over costs continues to grow and now stands at more than two and a half times costs. Private payer payment-to-cost ratio is also on the rise. In 2005, private payer payment-to-cost ratio was 1.24—the highest it has been in 10 years.

Hospital margins in the nation and neighboring states are 5-10%. The national hospital margin figure is the highest. Delaware's hospital margin measure exhibits some volatility. If averaged, the measure is comparable to the state's peers.

Uncompensated care is one driver of cost shift. Nationally uncompensated care as a percentage of total expenses is 5-6%, and has been since 2000. In dollar terms, however, uncompensated care costs continue to rise and now stand at over \$28bn.

## **Background**

### **Introduction**

This section addresses several topics. First, some of the economic and demographic factors that are currently influencing the cost of health care will be introduced, followed by the presentation of national and state indicators of health care costs. These data address expenditures by sector of health care and source of payment.

Several key factors influence changes in total expenditures for health care. 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 or decrease in prices for a fixed set of health care products and 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 177,000 people have joined Delaware's population (a growth rate of 28%).<sup>1</sup> Collectively, they will increase total health expenditures by almost one billion dollars annually. Even if the total population remained the same and price levels were constant, total expenditures would increase 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 in the nineties impacted both healthcare providers and users. Indeed, the emergence of managed care, such as that offered by Health Maintenance Organizations (HMOs) as a means of cost-containment, tempered medical price inflation during this decade while simultaneously altering the manner in which health care services are obtained.

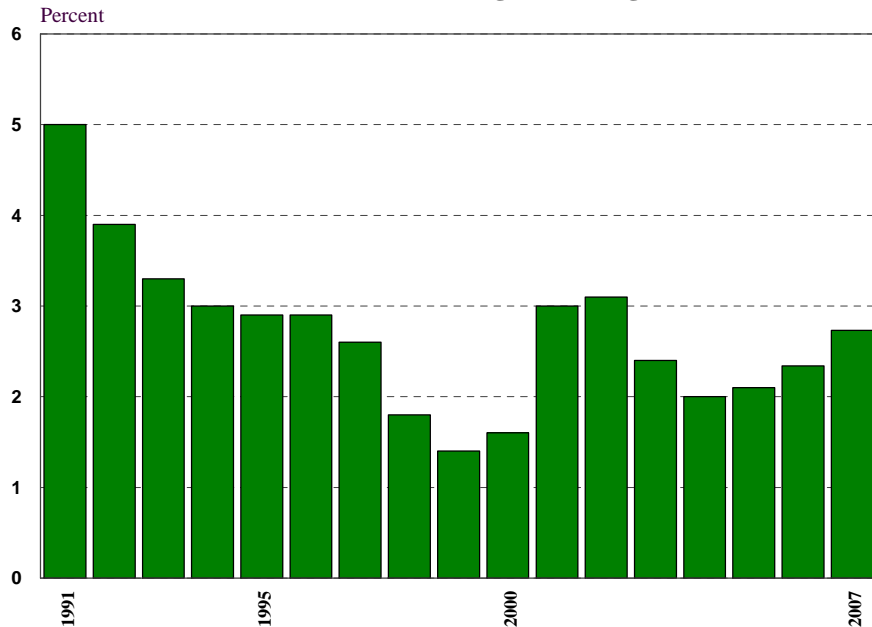
Responding to consumer backlash, health plans have loosened restrictions on care and broadened the choice of doctors and hospitals available. Fewer restrictions on care are leading to higher utilization and taxing the capacity of many hospitals and physicians to meet demand. With broad provider networks and tighter capacity than the norm, health plans lost leverage over providers to negotiate price discounts—a key element in lower health cost trends throughout much of the nineties. The result is increasing prices and increasing utilization are contributing to rising health care expenditures.

The growth of employment in the health services industry is accelerating. In 2007, medical services employment growth rate is 2.7%. Hospital employment, by far the largest segment of medical services employment, has exceeded 2% annual growth since 2000.

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<sup>1</sup> Based on Census estimates. 843,476 statewide population in 2006. 666,168 statewide population in 1990.

**Figure 1.1**  
**US Health Care Industry Employment**  
**1991-2007, % Change Year Ago**



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

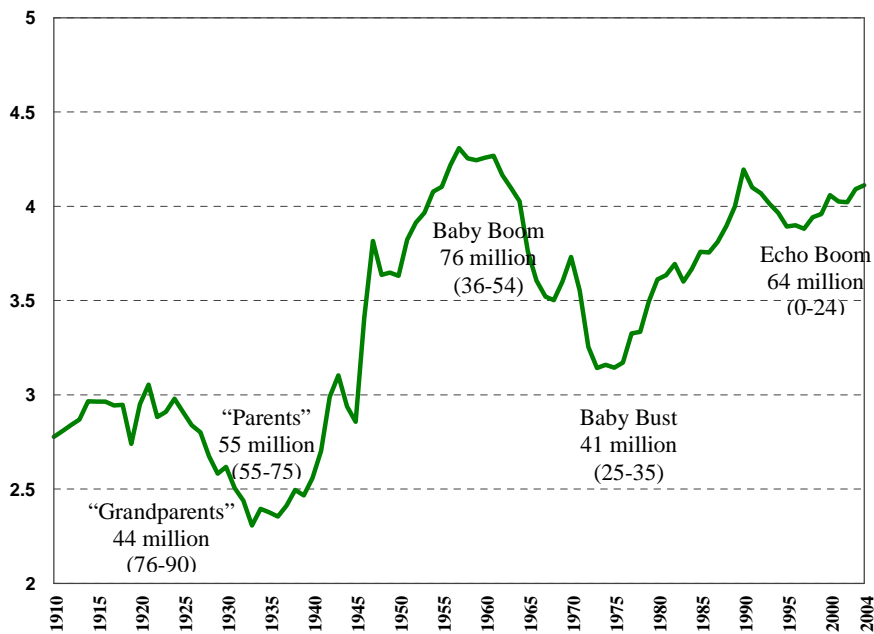
Despite this attrition in national health care industry employment, the size of the industry --as measured by the proportion of the economy dedicated to it-- continues to grow. In 1980, health care expenditures composed 9% of the economy. By 2007, that share had risen to over 16% of gross domestic product (GDP).

Demand for medical services is at an all-time high. Expenditures on health care services continue to be high, accounting for an ever-increasing share of the nation’s resources. Fueling this demand are the aging baby boomers, a growing population, rising incomes, and new products and services<sup>2</sup>.

<sup>2</sup> Health care is a ‘normal’ good: as income rises, more health care is ‘consumed’.

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 of the population that will be among the primary drivers 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

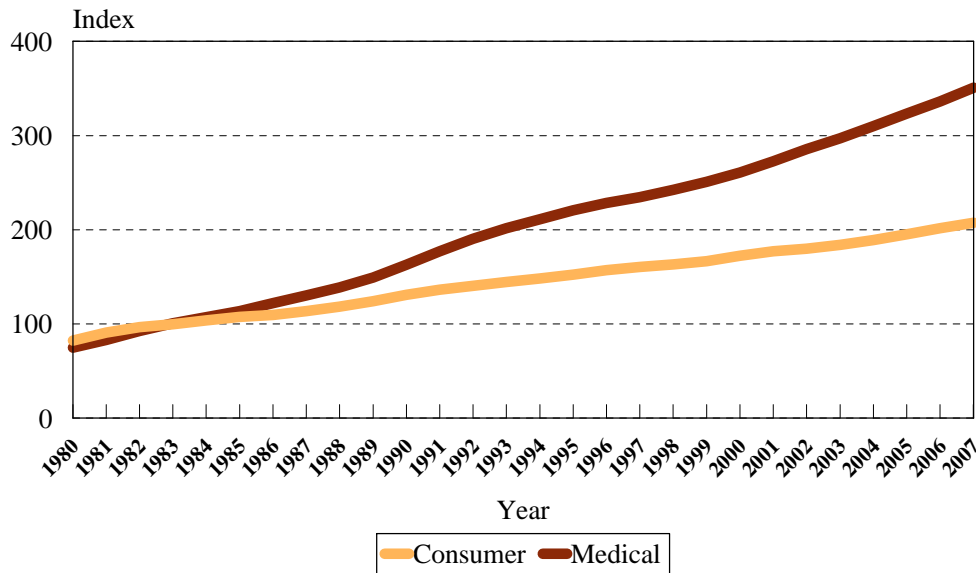
Note: Figures in parenthesis are the youngest and oldest ages of group members during 2000.

The proportion of the US population aged 65 and over is growing. In 2000, nearly 13% of the population is over 65 years old. This is triple its share at the start of the century. In level terms, the elderly population 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. The probability of requiring health care services rises significantly with age.

**Pricing of Health Care**

Rapidly accelerating health care costs was one of the primary factors that drove the shift of patients from fee for service to managed care. These costs began to accelerate rapidly during the eighties.

**Figure 1.3  
Consumer and Medical Price Indexes  
All US Urban Consumers (1983=100)**



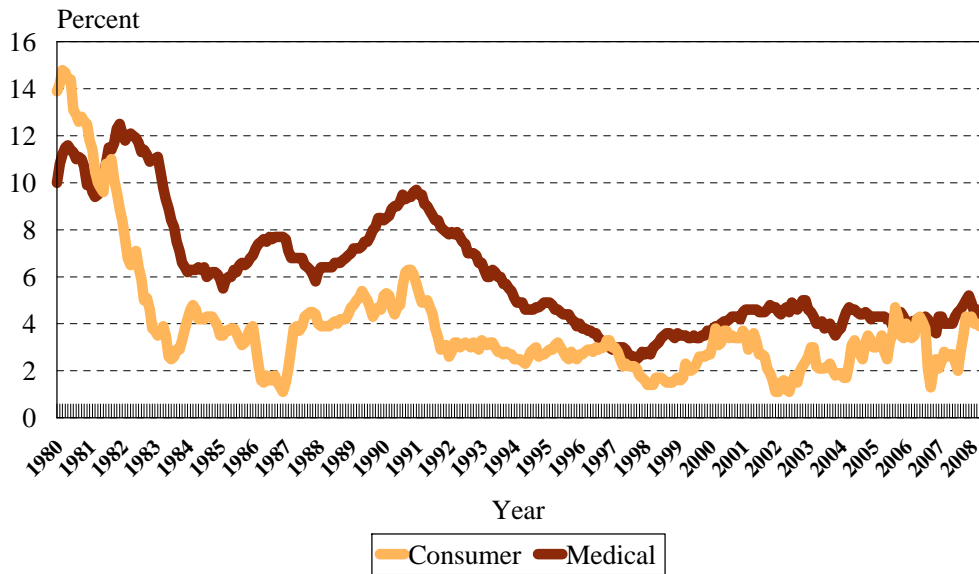
Source: Center for Applied Demography and Survey Research, University of Delaware  
US Bureau of Labor Statistics.

Indexing consumer prices (CPI) and medical prices (MPI)<sup>3</sup> highlights the disparate growth of these two comparable baskets of goods. In the second half of the eighties, medical price inflation outpaced consumer price inflation significantly. The cost of measured medical goods and services increased by more than 200% since 1980. Simultaneously, consumer prices rose by approximately 100%, or half as much. The

<sup>3</sup> Medical items include prescription drugs and medical supplies, physicians' services, eyeglasses and eye care, and hospital services.

annual growth rates are more easily seen in Figure 1.4 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, eighteen years of higher growth rates place the MPI nearly 50% higher than the CPI.

**Figure 1.4**  
**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.

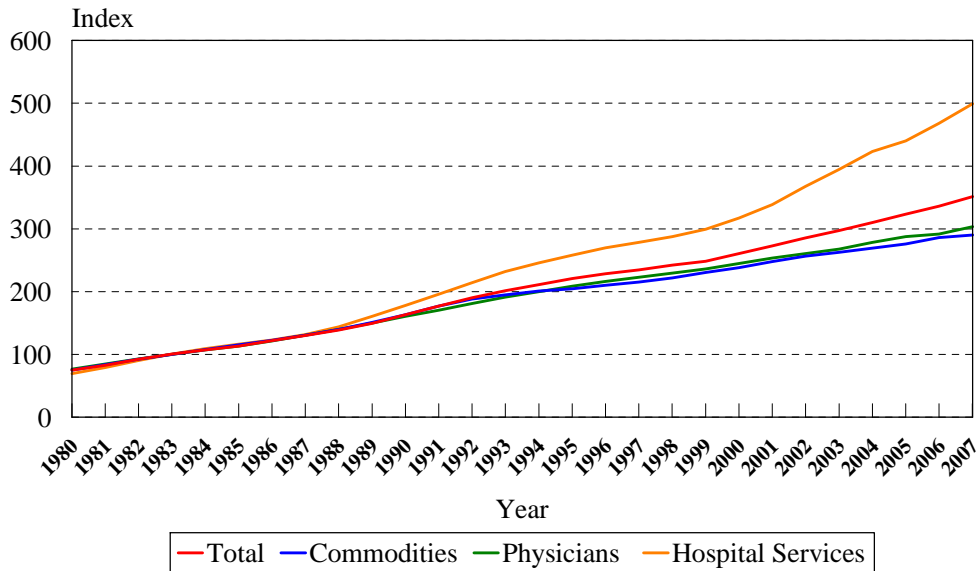
Medical price inflation is stable at 4% year-over-year. Nineteen-ninety eight marked a turning point: the growth in medical prices declined precipitously over the decade, plummeting seven percentage points in total. However, after 1998 medical price growth accelerated from 2% to 4% per year.

Not all parts of the Medical Price Index grew at the same rate. Figure 1.5 below illustrates this fact. The top (brown) line represents the index for *hospital services*. 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*.

Hospital prices clearly out-paced the other indicators. The reason for this difference arises from several sources. The most likely candidates include capacity, qualitative changes in the product represented by a hospital room, and new technology reflected in higher overhead rates. Increases in uncompensated care may influence 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 1.5**  
**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

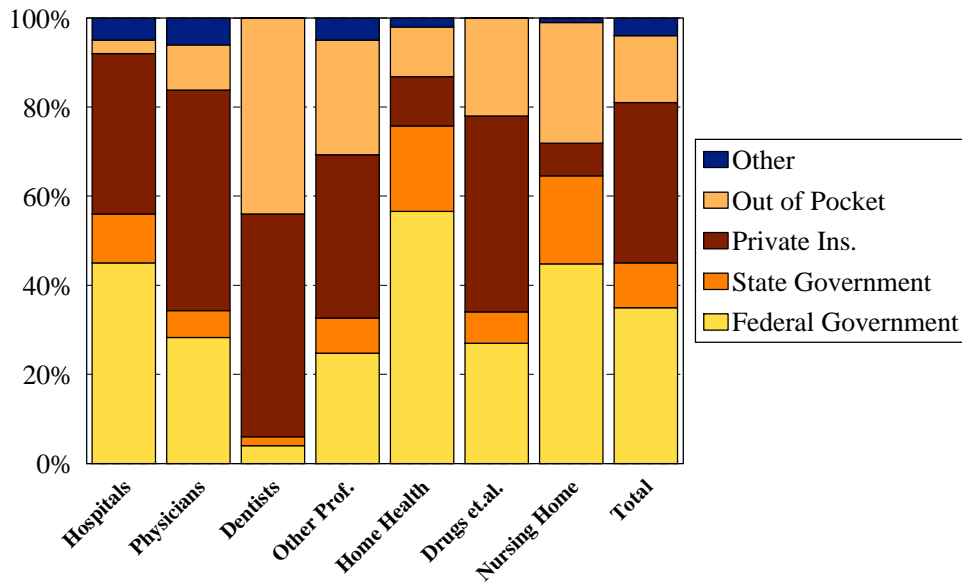
**Sources of Payment**

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, the payment does not include payments for insurance premiums; it literally means 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.

The source of payment differs depending on the type of health care sought. Figure 1.6 below clearly shows this point. 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 have a higher likelihood to need these services, Medicare is the most likely source of payment. In contrast, dental expenditures are nearly as likely to

be paid out-of-pocket as by private health insurance. The government has little stake in this category.

**Figure 1.6**  
**Share of US Personal Health Care Expenditures**  
**By Source of Payment and Sector in 2007**



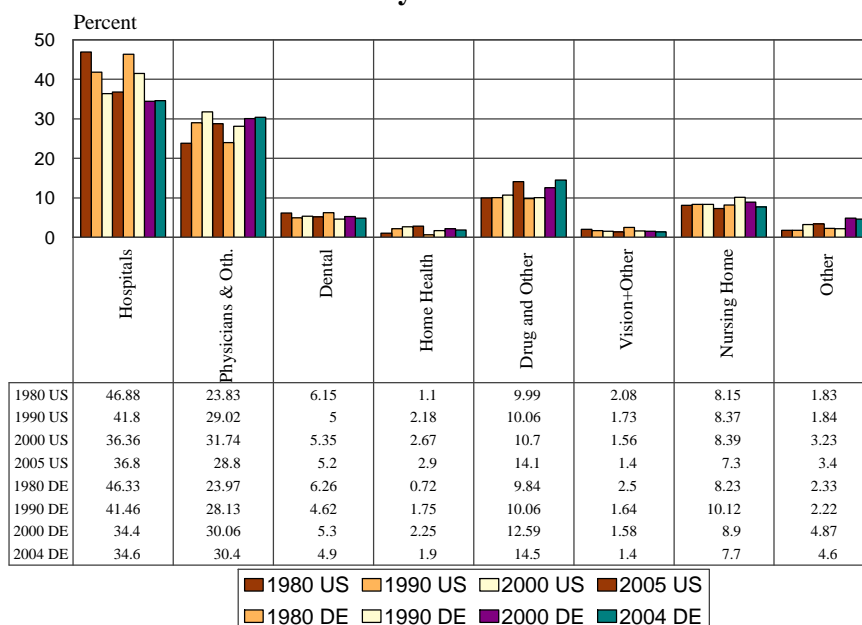
Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Centers for Medicare and Medicaid Services

### Expenditures by Sector

Personal health care expenditures are usually classified into several distinct categories. Each captures a differential share of the personal health care dollar and that share changes through time. This is shown in Figure 1.7, below.

For each of the personal health care categories, a time series (1980, 1990, 2004<sup>4</sup>) is provided for the US followed by values for the State of Delaware.

**Figure 1.7**  
**Share of US Personal Health Care Expenditures**  
**By Sector**



Source: Center for Applied Demography and Survey Research, University of Delaware US Centers for Medicare and Medicaid Services. 2004 is latest available data for DE.

In the US, the share of total health care dollars allocated to *hospitals* declined from 47% in 1980 to under 35% in 2004. Delaware echoed this pattern. *Dentists and drugs and other nondurables* appear to receive a smaller share of expenditures now versus 1980. In contrast, *home health* increased its share significantly. This increase is consistent with changes taking place in the health care delivery system. It is interesting to

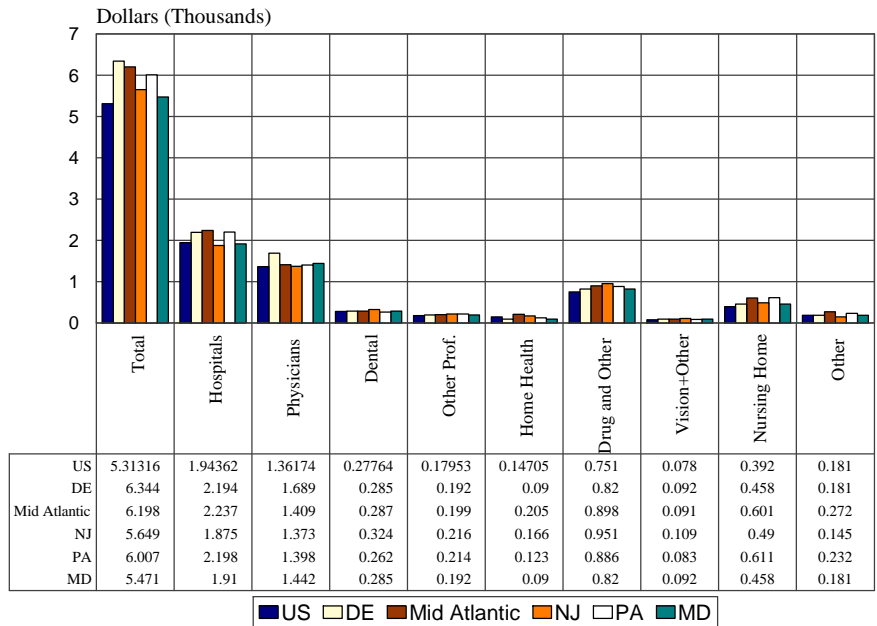
<sup>4</sup> Latest CMS data for states and U.S. Estimates for Delaware in 2007 are provided later in the document.

note that the structure of these shifts appears to be national in scope and Delaware reflects those larger trends.

Physicians and other professionals account for a growing share of Delaware personal health care expenditures rising from 23% in 1980 to over 30% in 2004. Drugs and other medical nondurables have also grown to command a larger share from 10% in 1980 to 14% in 2004. Simultaneously vision and medical durables and dental’s share of total expenditures fell 1%.

**Interstate Comparisons**

**Figure 1.8  
Per Capita Personal Health Care Expenditures  
By Sector and Area in 2004**



Source: Center for Applied Demography and Survey Research, University of Delaware, US Centers for Medicare and Medicaid Services

One method used to measure relative costs in the local health care system is interstate comparison. However, interstate comparisons are not without their shortcomings. 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.<sup>5</sup> 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 1.8, above, the per capita costs for personal health care are shown for the US, Delaware, and the surrounding states in 2004. For the most part, Delaware tends to be higher than the US as a whole, but only fractionally higher than the region. Hospital costs per capita, for example, are approximately 13% higher. However, this result holds for the region. All four states are above the US per capita figure. Delaware, has the highest cost per capita for physician services, Maryland has the lowest cost per capita overall, but has the second highest cost for physician services. In general, the differences among 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 simply be a matter of regional price differences, which are compensated through higher wages.

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<sup>5</sup> For example, Pennsylvania's and New Jersey's populations are proportionately older than Delaware's population; Maryland's population is proportionately younger.

**Figure 1.9**  
**Delaware Hospital**  
**Utilization, % Change**

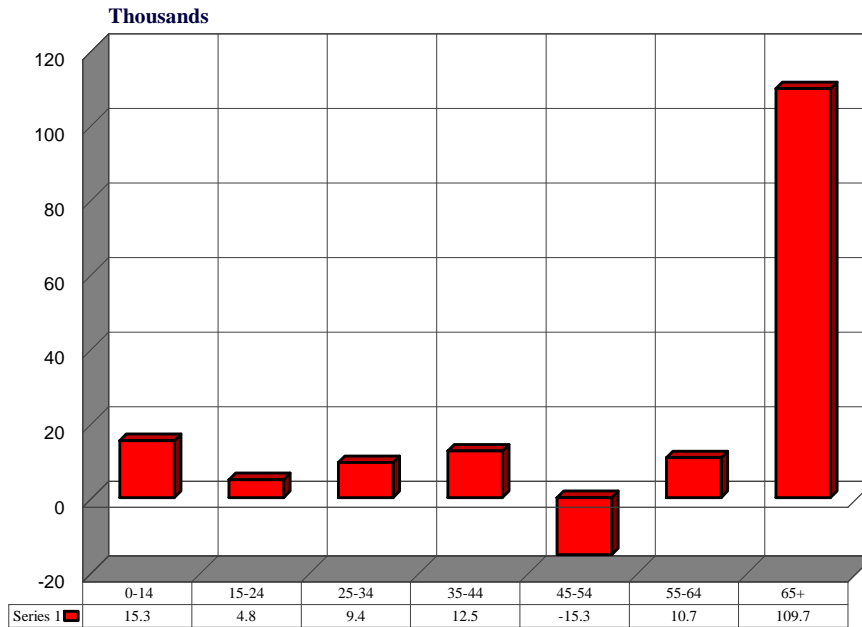
	1993	2006	Percent Change
Population	695,000	853,000	22.7
Beds	2,153	2,138	-0.7
Admissions	79,345	105,164	32.5
Inpatient Days	561,190	669,392	19.3
Average Length of Stay (days)	7.1	6.4	-9.9

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

According to the AHA, the number of licensed beds in community hospitals has declined over the period from 1993 to 2006. In absolute terms, the number of beds available decreased to 2,138 since 1993 (or from 3.1 to 2.5 beds per 1,000 population). Further, the average length of stay fell from 7.1 days to 6.4, 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 brought patients in contact with cutting edge treatment. As the efficacy of medical care improves, the speed of treatment increases, reducing the length of time between illness and health.

**Figure 1.10  
Delaware Population  
Net Change by Age Group, 2010-2030**



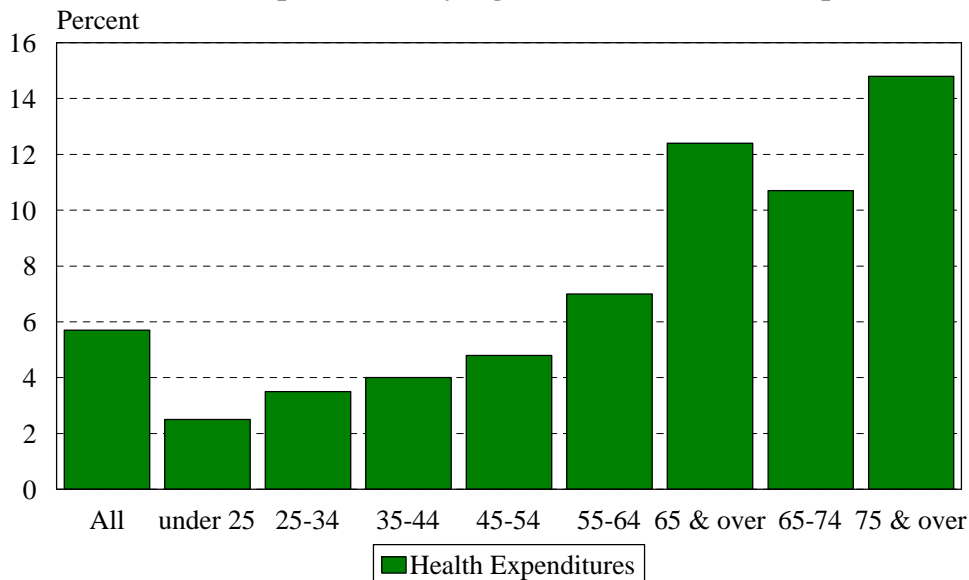
**Source: Center for Applied Demography and Survey Research, University of Delaware. Population Consortium, 2005.**

Turning to demographics, Delaware’s age profile is expected to mirror the aging of the nation. Projections for Delaware’s aged population show a rapid increase over the next twenty years as the baby boomers move into retirement. In 2005, the proportion of the Delawareans aged over 65 is 14%. By 2020 this figure will rise to 19%, as the aged population rises to more than 180,000. This figure will continue to rise to 24% in 2030, as the aged population breaks 240,000. The trend of Delaware’s population growth is evident in Figure 1.10 above. There is muted growth in the age cohorts less than 65 years of age, save the 45-54 cohort. Between 2010 and 2030 the 45-54 age group will actually decline by approximately 15,000 persons. The 65+ age group will add over 100,000 persons through aging of current residents and net migration. This aging of the Delaware population fosters greater demand for health care services in the future, and is consistent with rising health care expenditures forecast over the next twenty years.

### Evidence from the Consumer Expenditure Survey

The Consumer Expenditure Survey (Bureau of Labor Statistics) provides data on health care related spending at the national and regional level by age and income class. These data help to understand the variation in health care costs across age groups and income.

**Figure 1.11**  
**U.S. Consumer Health Expenditures by Age as a Share of Total Expenditures, 2006**

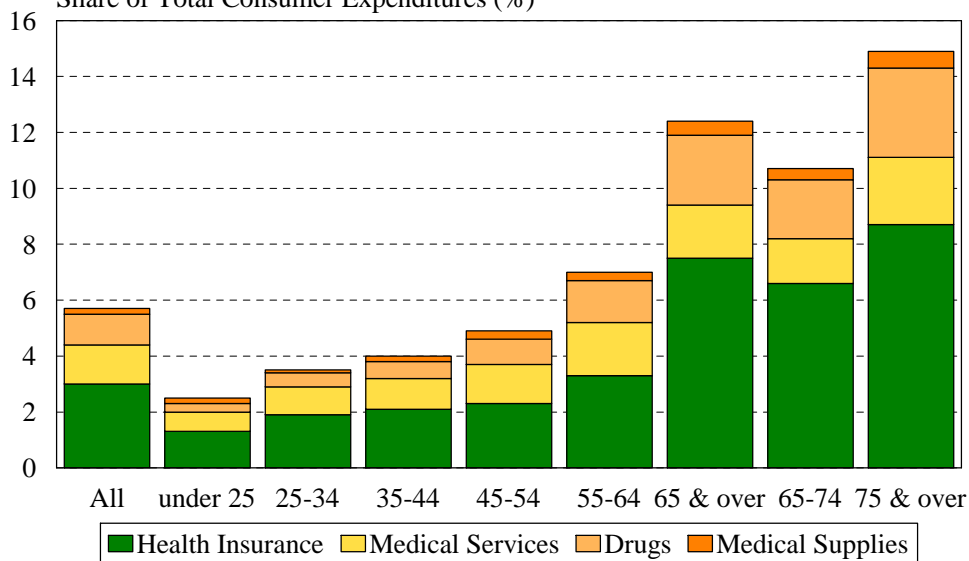


Source: Center for Applied Demography and Survey Research, Consumer Expenditure Survey, Bureau of Labor Statistics

For the average consumer, health expenditures comprise 6% of total spending. The breakout by age cohort reveals that older age groups spend a far greater proportion of total expenditures on health care than younger age groups. Health expenditures' share of total expenditures is lowest among the under 25 cohort, where the share is less than 3%. The share rises steadily through the age cohorts until the 65 cohort, where the share doubles to over 6% compared to the 55-64 cohort. Thereafter, the share exceeds 10%.

Figure 1.12 below breaks out these data into health insurance, medical services, drugs, and medical supplies. For all age cohorts, medical insurance is the single largest component of health care expenditures. Drug and health insurance expenditures are the primary drivers of the rise in health expenditures between the 55-64 and 65 and over age cohorts.

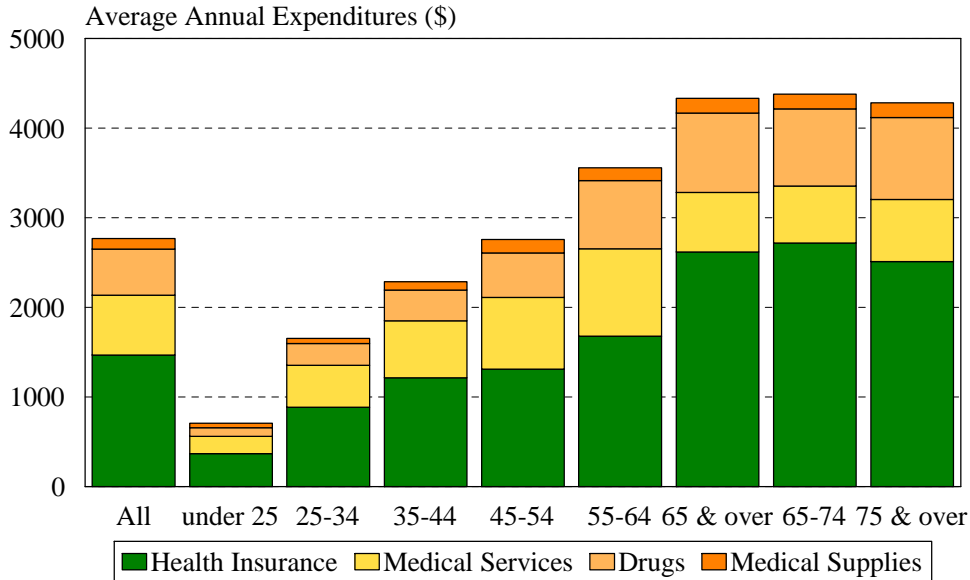
**Figure 1.12**  
**U.S. Share of Average Annual Consumer Expenditures by Age, 2006**  
 Share of Total Consumer Expenditures (%)



Source: Center for Applied Demography and Survey Research, Consumer Expenditure Survey, Bureau of Labor Statistics

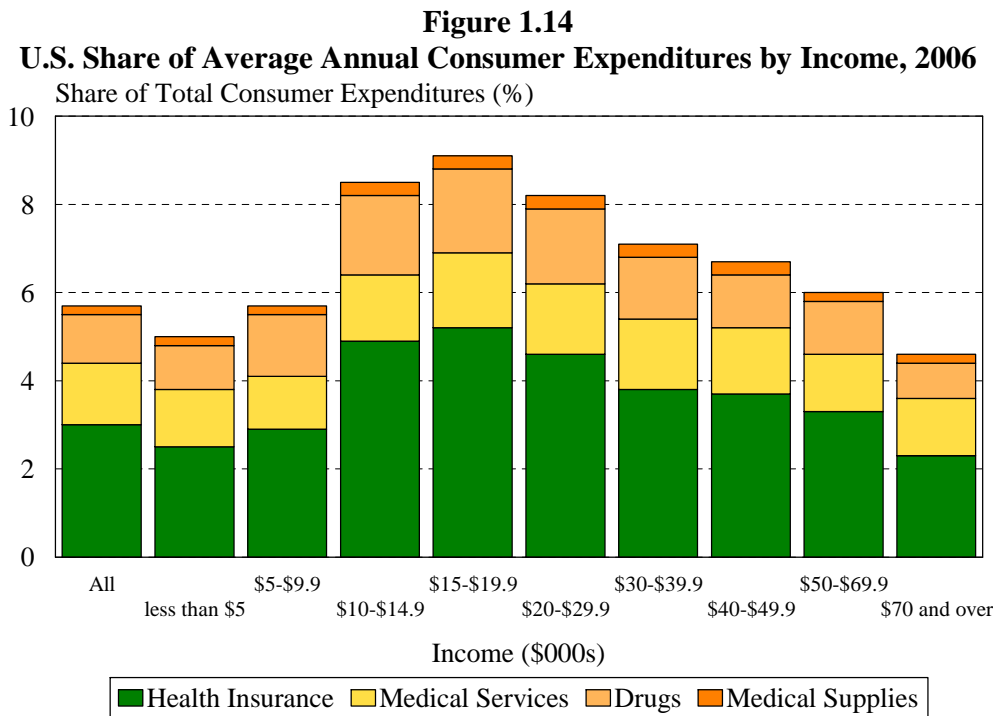
The following chart illustrates the average dollar expenditures by age group, rather than the share of total consumer expenditures. The average consumer spends \$1,465 on health insurance. For the under 25 cohort, average health insurance is \$377. Health insurance expenditures rise steadily with age.

**Figure 1.13**  
**U.S. Average Annual Consumer Expenditures by Age, 2006**



Source: Center for Applied Demography and Survey Research, Consumer Expenditure Survey, Bureau of Labor Statistics

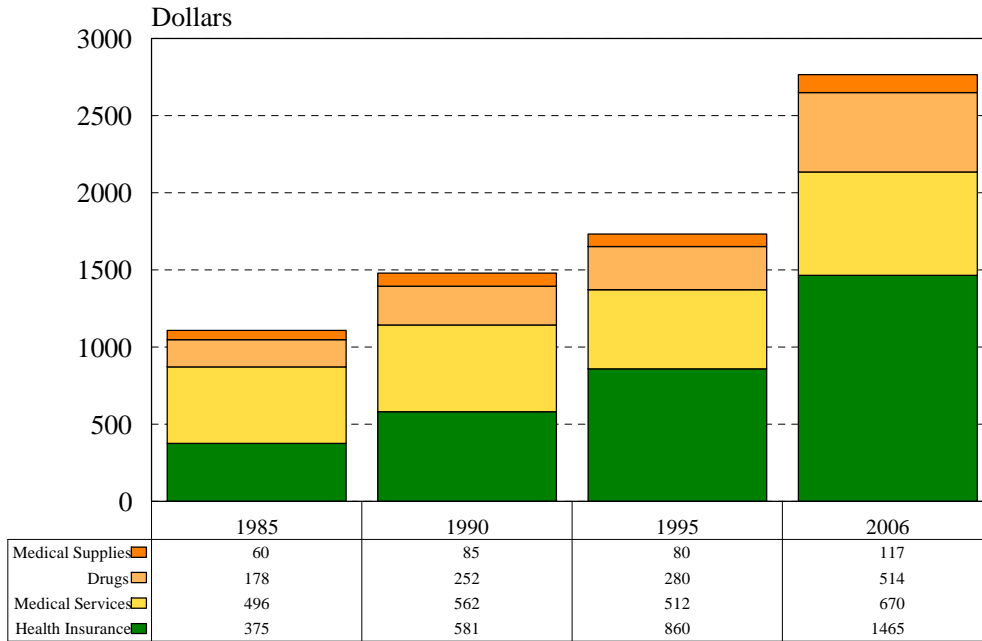
The burden of health costs varies by income in addition to age. Health costs as a share of total expenditures are highest among the \$15,000-\$19,999 earners. The share tapers off as income rises (see Figure 1.14 below).



Source: Center for Applied Demography and Survey Research, Consumer Expenditure Survey, Bureau of Labor Statistics

Figure 1.15 below provides a time series of consumer expenditures for all ages. In 1985, the average consumer spent \$1,109 per year on health care. By 2006, expenditures had risen to \$2,766. Drugs and health insurance exhibit the fastest growth over this period (189% and 291% respectively).

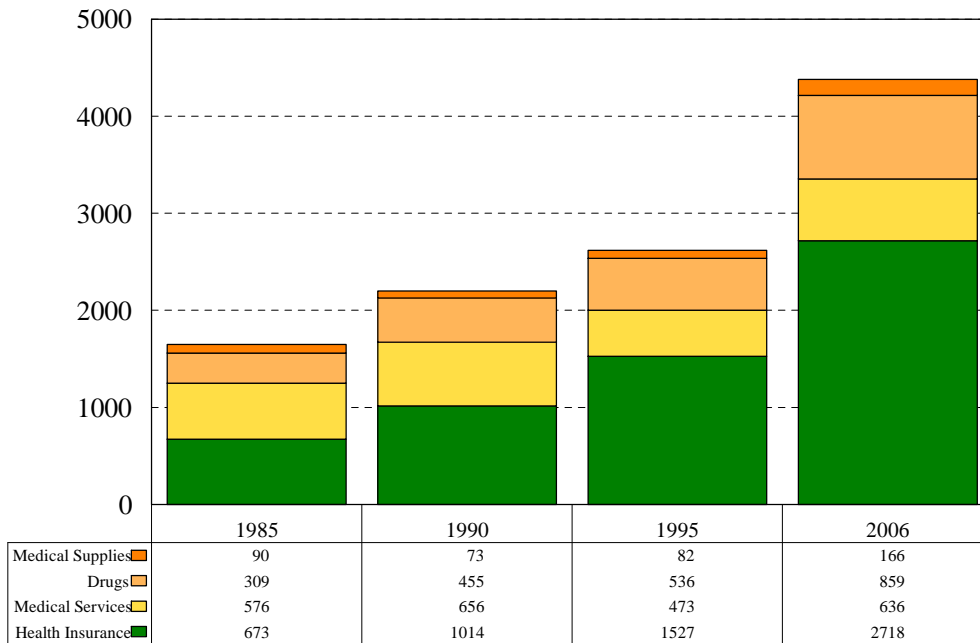
**Figure 1.15**  
**U.S. Average Annual Consumer Expenditures on Health Care, All Ages**



Source: Center for Applied Demography and Survey Research, Consumer Expenditure Survey, Bureau of Labor Statistics

Figure 1.16 shows expenditures of the 65-74 cohort for select years. The gap between expenditures of all ages and the 65-74 cohort has widened from \$539 in 1985 to \$1,613 in 2006.

**Figure 1.16**  
**U.S. Average Annual Consumer Expenditures on Health Care, Aged 65-74**

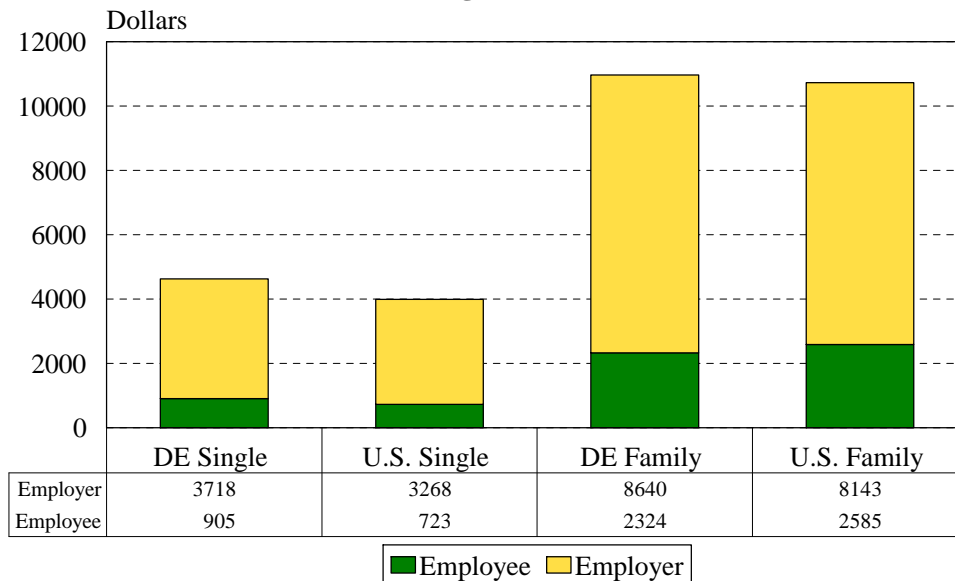


Source: Center for Applied Demography and Survey Research, Consumer Expenditure Survey, Bureau of Labor Statistics

Figure 1.17 shows average single and family insurance premiums for Delaware and the US. Small sample size for Delaware creates large standard errors on the components of insurance premiums, and their trends over time. However, the following figure is presented as an indicator of the state versus the nation.

Single insurance premium averages \$905 for Delaware compared to \$723 nationally. Family premiums appear smaller in Delaware than the nation for the employee contribution but larger for the employer contribution.

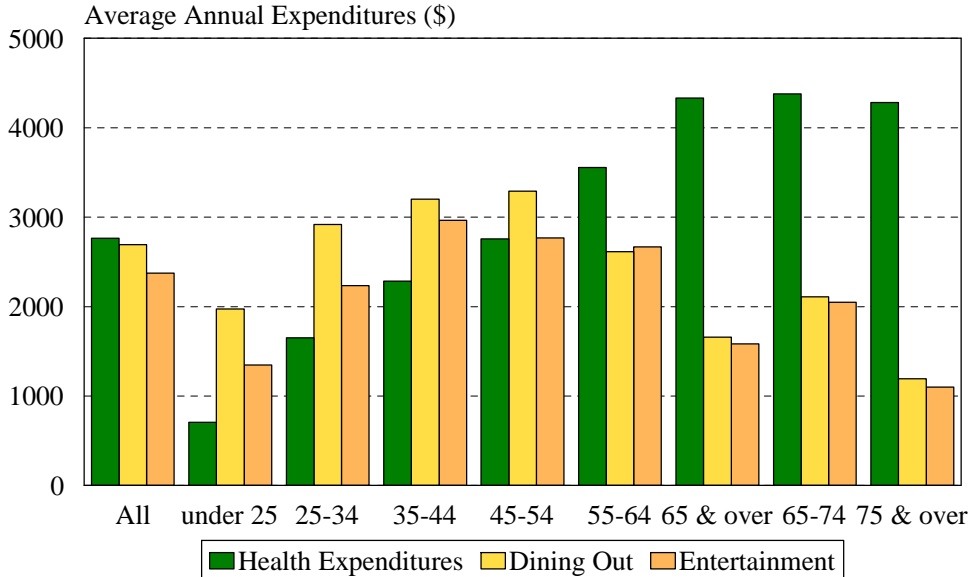
**Figure 1.17**  
**Delaware and U.S. Average Insurance Premiums, 2005**



Source: Center for Applied Demography and Survey Research, University of Delaware, Census Bureau estimates from the Medical Expenditure Panel Survey Insurance Component. Kaiser Family Foundation. Latest available data.

The following charts serve to underscore that for the general consumer, the health care expenditures are a manageable budget item. The chart below expresses consumer expenditures on certain items as a share of total expenditures. The average consumer spends almost as much on dining out and entertainment as health expenditures. Consumers under the age of fifty-five spend more on dining out and entertainment than on health care. At the age of fifty-five, health expenditures as a share of total consumer expenditures rise rapidly. At fifty-five the probability of requiring health care rises sharply, and correspondingly so too do health insurance costs.

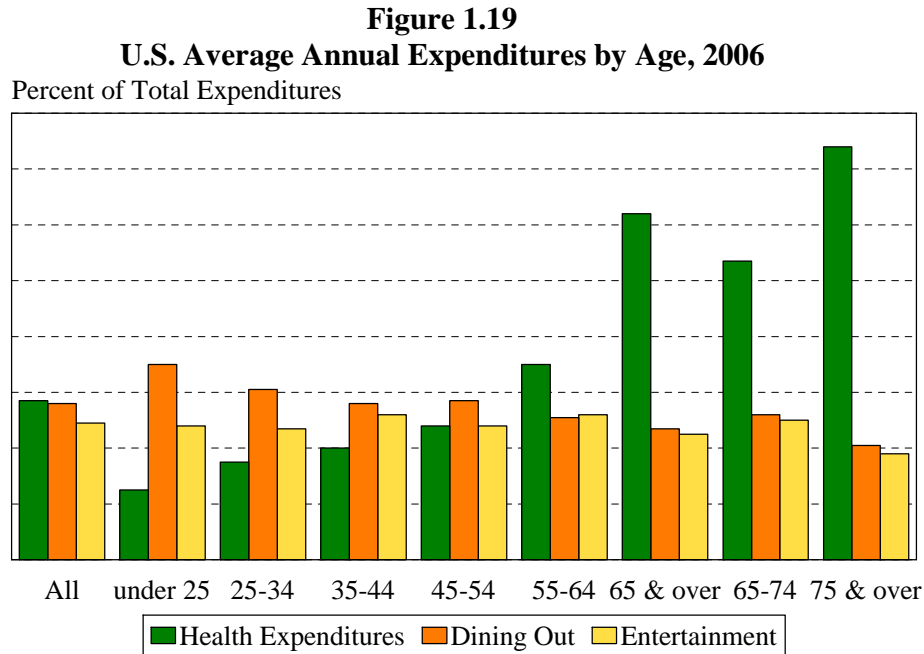
**Figure 1.18**  
**Select U.S. Consumer Expenditures by Age, 2006**



Source: Center for Applied Demography and Survey Research, Consumer Expenditure Survey, Bureau of Labor Statistics

Figure 1.19 expresses consumer expenditures in dollar terms. The average consumer spends \$2,766 on health expenditures per year, and almost as much on entertainment and dining out. Up to the age cohort of 45-54, expenditures on dining out and entertainment outstrip those on health expenditures. In the 45-54 age cohort, expenditures on health, dining out and entertainment are approximately equal. Over the older age cohorts, health expenditures greatly exceed the other categories.

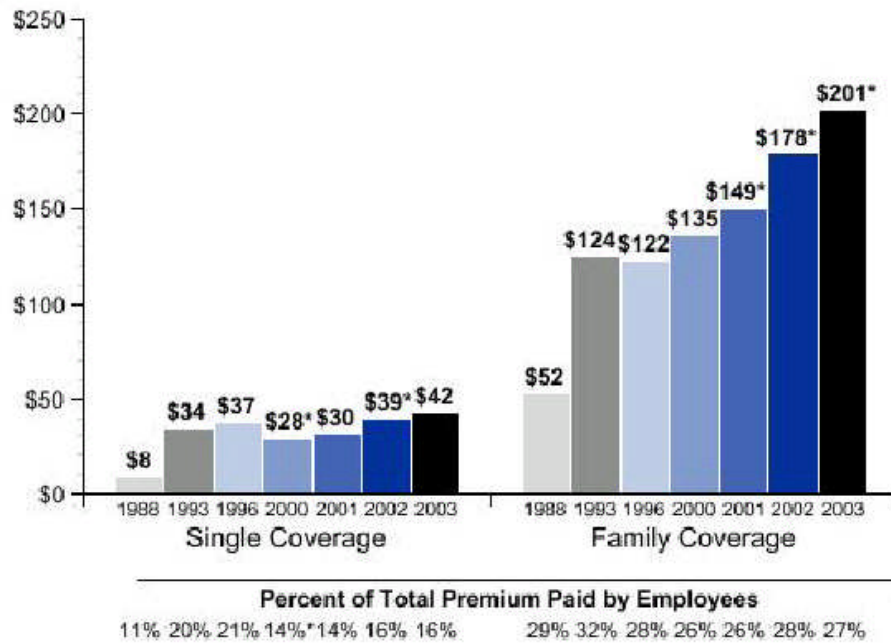
These data highlight the variation in health expenditures versus other select consumer items over various ages.



Source: Center for Applied Demography and Survey Research, Consumer Expenditure Survey, Bureau of Labor Statistics

The following chart presents the national employee premium for single and family coverage over the period 1988 to 2003. The percentage of the total single premium that is met by the employee has begun to rise. In 2005 (not shown) 18% of the single person premium (\$60) is employee-paid. For family coverage, the employee premium is approximately one-quarter of the total premium. In 2005 (not shown) the average family monthly premium is \$215.

**Figure 1.20**  
**Average Monthly Employee Premium Contributions and Percent of Total Premium Paid by Employees, by Coverage Type, 1988-2003**



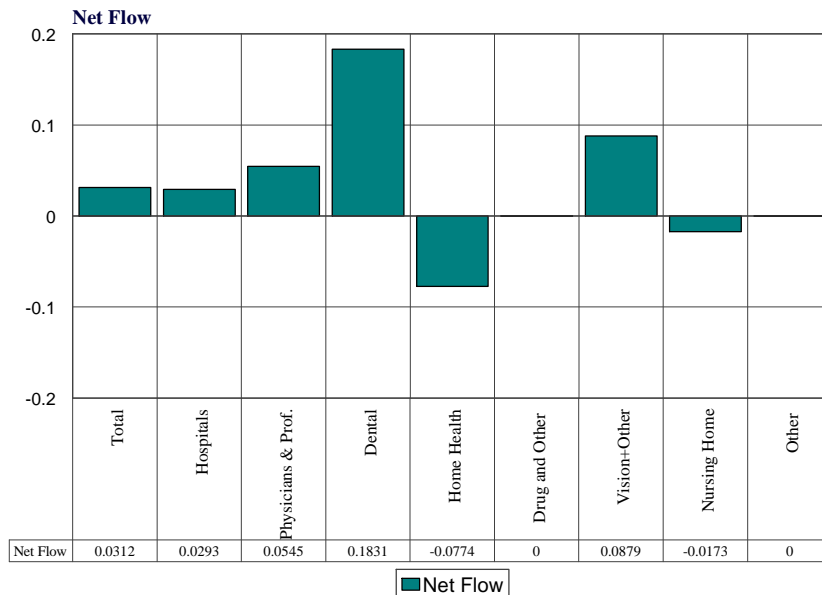
Source: Kaiser Family Foundation

## Estimates by Sector

### Basis of Measurement

Personal health care expenditures are usually reported in 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.) who provide services in Delaware. These revenues are considered 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 2.1**  
**Delaware Personal Health Care Expenditures in 1998**  
**By Sector and Basis**



Source: Center for Applied Demography and Survey Research, University of Delaware, US Centers for Medicare and Medicaid Services. For Drugs and Other Non-Durables and Other Personal Health Care, no adjustments were made between state-of-provider and state-of-residence (net flow ratios are 0 for all states). Net flow equals expenditures by State of residence divided by expenditures by State of provider, minus 1. Ratios greater than 0 mean that residents consume more health care than the state produces (imports); ratios less than 0 mean that the state produces more health care than it's residents consume (exports). Home health and Nursing home include services provided by freestanding facilities only. Additional hospital-based service expenditures of this type are included with hospital services. Based on currently available data.

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 is used more often, which will be the adopted approach here.

The difference between the two methods is illustrated in Figure 2.1, above. The graph shows Delaware's net flow personal health care expenditures in 1998. Net flow equals expenditures by state of residence divided by expenditures by state of provider. Ratios greater than 0 mean that residents consume more health care than the state produces; ratios less than 0 mean that the state produces more health care than its residents consume. The difference arises because more Delaware residents travel outside the state to use hospital and physician services than non-Delaware residents enter the state. The most likely sources of this "importing" of services come from hospitals in Elkton, Salisbury, Philadelphia, and Baltimore.

Fortunately, for many categories, the measures are within a reasonable proximity to 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. The balance of this report uses the provider basis of measurement.

This update of the report incorporates revised data from the Census of Service Industries (CSI) and Centers for Medicare and Medicaid Services (CMS). The Census of Service Industries occurs every five years; The CMS recently updated the state health accounts estimates to 2004. These two updated products combine with Delaware Department of Labor information to produce the estimates presented here.

## Hospital Services

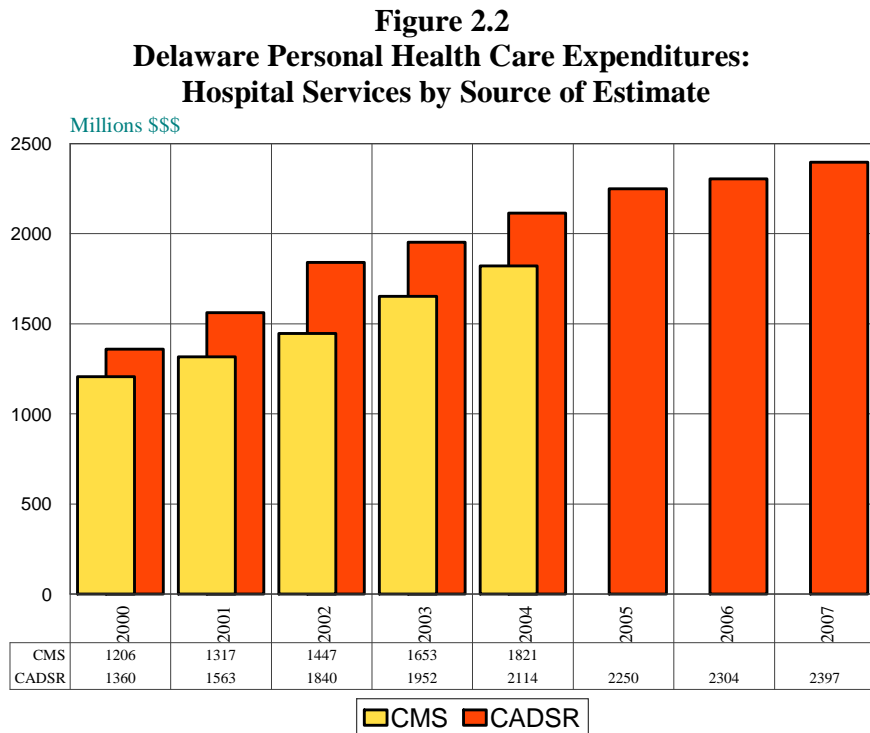
Estimating expenditures for hospitals is the least hazardous of the categories that this paper examines. The American Hospital Association (AHA) conducts an annual survey of both registered and non-registered hospitals. CMS depends heavily on this information to produce its estimates of personal health care expenditures for states. The AHA survey covers all hospitals but reports revenues only for “community hospitals<sup>6</sup>.” That category excludes federal and state government hospitals, long-term care facilities and specialty. 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 CMS methodology relies heavily on the AHA but makes several technical adjustments. These adjustments, while quite 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 2006.

Figure 2.2 below includes estimates that are included for three sources and provides overlap where data was available. The CMS and CADSR estimates attempt to measure the total revenue received by hospitals. The AHA estimate comprises total gross revenue. For the most recent complete AHA data, that revenue is reported to have risen over the past four years.

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<sup>6</sup> In Delaware these include Bayhealth, Beebe, Nanticoke, AI DuPont, Christiana Care, and St. Francis.



Source: Center for Applied Demography and Survey Research, University of Delaware  
American Hospital Association  
US Centers for Medicare and Medicaid Services

The CADSR estimates track the upward trend in hospital expenditures, albeit at a slightly less robust rate in 2003 and 2004, but a higher rate in 2007. As more data become available, the trend may become more apparent.

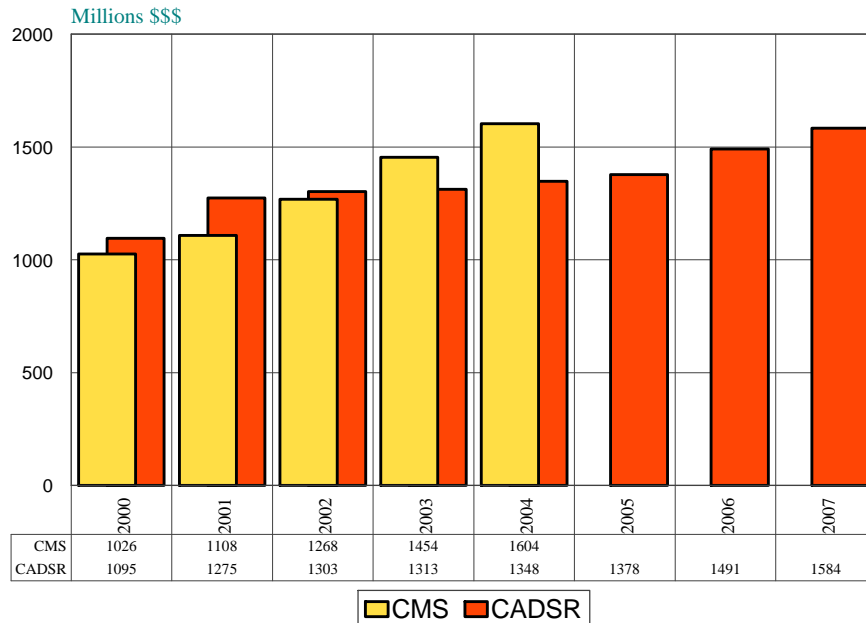
### Physician and Other Professional Services

Estimating personal health care expenditures for physicians and other professionals is made difficult due to the absence of a survey of the type used for hospitals. There is no equivalent survey that covers the approximately 2,700 physicians licensed to practice in the state. To further complicate the task, the organization of physicians is changing. There are far more physicians working at salaried positions for managed care organizations. Now hospitals are more likely to acquire physician services

through outsourcing rather than having these doctors on staff. As a result, some of the indicators may represent this structural shift rather than a real change in expenditures.

CMS relies on a combination of sources to produce their estimate, including the Census of Service Industries, the IRS Business Master file, and the 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.

**Figure 2.3**  
**Delaware Personal Health Care Expenditures:**  
**Physician and Other Professional Services by Source of Estimate**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Centers for Medicare and Medicaid Services

The estimates of personal health care expenditures for physician and other professional services are found in Figure 2.3, above. The data are consistent with national figures for physician services. CMS combines estimates for physicians and other professional services. From 1995 onward, there was a significant increase in both employment and wages reported to the Delaware Department of Labor.

Expenditures for *other professional services* include those organizations in NAICS<sup>7</sup> 6213. These include services rendered by chiropractors, optometrists, podiatrists, and nurses in private practice, among others.

The CMS estimates indicate rapid growth in the *other professional services* account. One explanation may be that there are more facilities to serve drug and alcohol dependent populations, school and child health programs, and other similar programs that use non-physician services outside of the traditional medical setting.

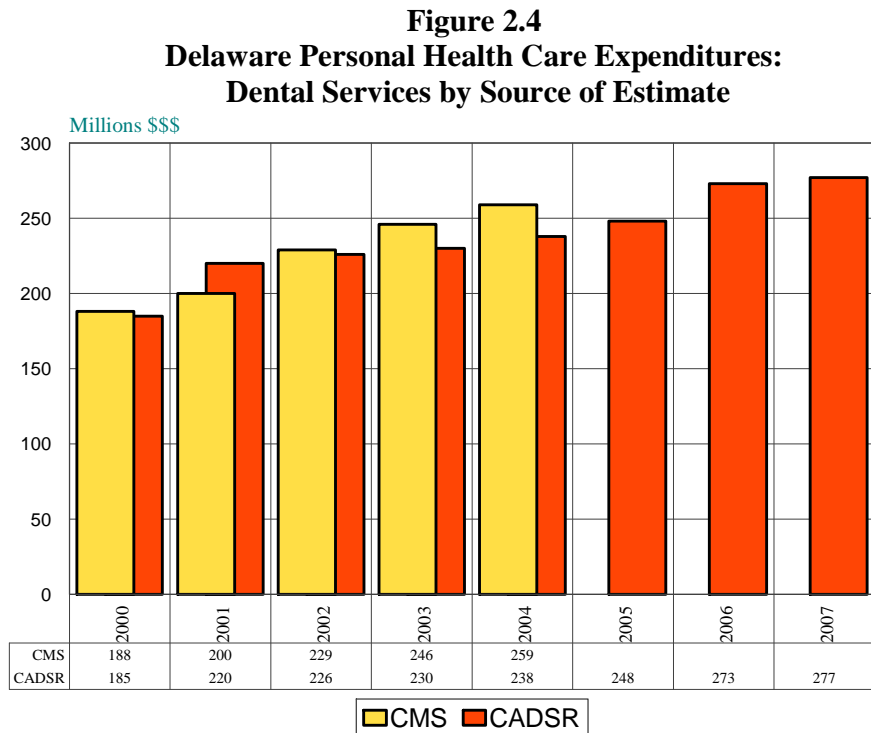
### **Dental Services**

The CMS methodology for estimating revenues for dental organizations is the same as that for physicians. Dental organizations fall into NAICS 6212 for estimates produced from the data provided by the Delaware Department of Labor.

The pattern of expenditures shown in Figure 2.4, below, is similar to that observed with physicians. Solid growth is occurring during the decade. Dental service expenditures growth is averaging 4% per year (2001 to 2007). Since dentists have not been as strongly impacted as physicians by the move to managed care, these data suggest that the increase observed for dentists may not be an artifact. The solid growth rate complies with the income effect of the strong economy, which raised consumer spending on all items, including health services. Technology is also a likely cause of the increase.

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<sup>7</sup> North American Industrial Classification System. <http://www.census.gov/epcd/naics02/>



**Source: Center for Applied Demography and Survey Research, University of Delaware  
US Centers for Medicare and Medicaid Services**

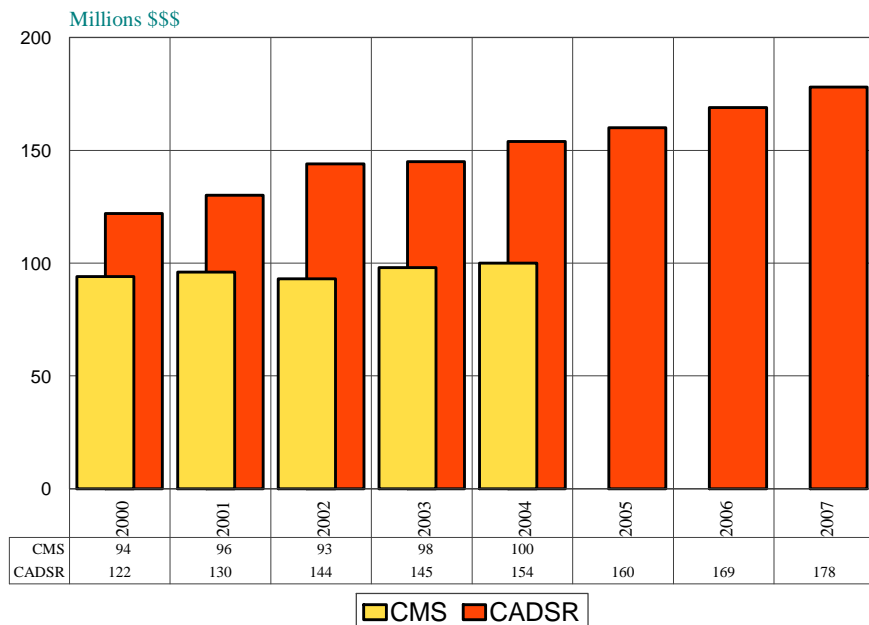
### Home Health Care Services

North American Industrial Classification System (NAICS) 6216 represents home health care services. Private and government agencies provide these services. CMS uses the Census of Service Industries (CSI) as its benchmark for private firms, and then adjusts this estimate with Medicare and Medicaid payments for home health care supplied by governmental agencies. The estimates are provided in Figure 2.5 below.

During the nineties, home health services had been among the fastest growing health care sectors. The Balanced Budget Act stymied the growth of these providers. The Balanced Budget Act of 1997 delineated a schedule of reimbursement reductions and visit limitations, both of which directly impact the income stream of home health care providers. Home health providers responded by paring their payrolls. Nationally, home

health employment peaked in 1997 following a decade of unbroken expansion. Since 1997, employment declined sharply. Total employment in the industry fell 5.5% in 1998 and 1999. Home health expenditures are now recovering, with average growth in excess of 5% over the past four years.

**Figure 2.5**  
**Delaware Personal Health Care Expenditures:**  
**Home Health Services by Source of Estimate**

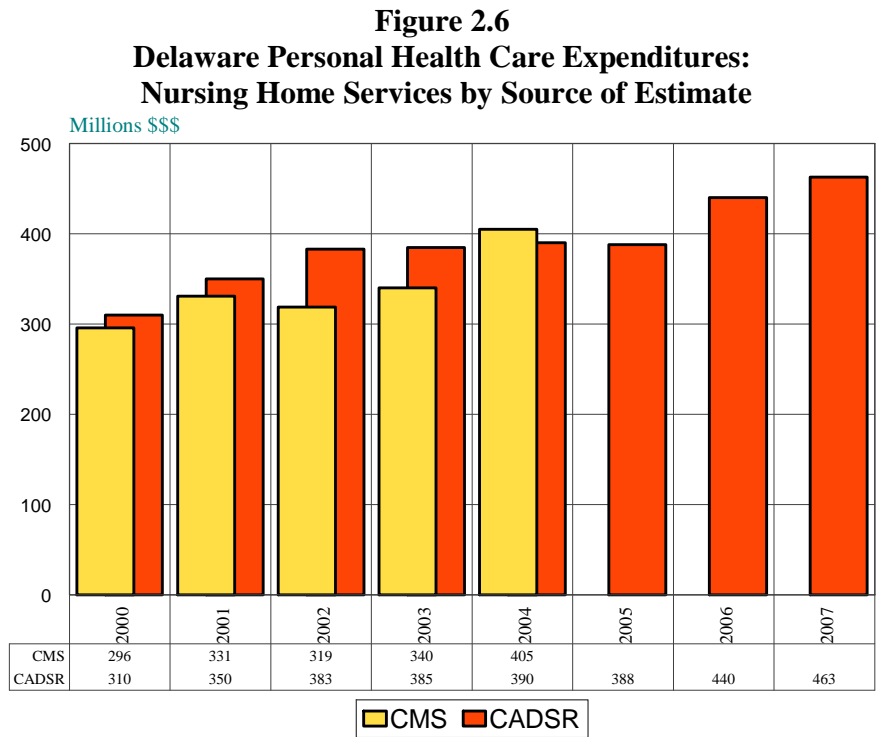


Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Centers for Medicare and Medicaid Services

### Nursing Home Services

Personal health care expenditures on nursing home services are covered by NAICS 623. Since there includes a private and public component to this account, CMS uses two different methodologies similar to those employed for home health care. The estimates produced in this study are found in Figure 2.6 below.

This account exhibits stable to strong growth over the period, with more muted growth emerging in 2003 and 2005, but accelerated growth in 2006 and 2007.



Source: Center for Applied Demography and Survey Research, University of Delaware  
US Centers for Medicare and Medicaid Services

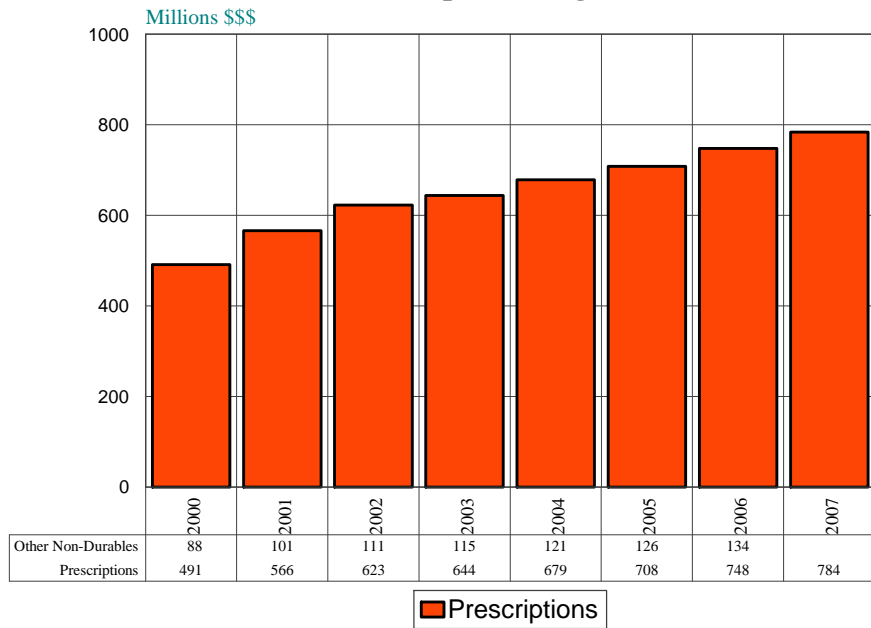
### Other Expenditures

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*. And the final segment is *other personal health care*, which includes place-of-work health services. For the first two, CMS utilizes the Census of Service Industries (CSI). For the third area, the estimates are an amalgamation of indicators from sources that have no Delaware equivalents. The pages that follow present the CADSR estimates for prescription drugs. A separate section dedicated to the subject of prescription drugs appears later in the report, and presents a sample of the current issues related to that health care account.

Figure 2.7, below, shows the estimates for drugs and other nondurables along with an estimate for prescription drugs. Prescription drugs are expected to account for

80% of the prescription drugs and other medical non-durables account, while its share of personal health care expenditures increases from 10% to 15%.

**Figure 2.7**  
**Delaware Personal Health Care Expenditures:**  
**Prescription Drugs**



**Source: Center for Applied Demography and Survey Research, University of Delaware  
 US Centers for Medicare and Medicaid Services**

Drugs are expected to continue to be the fastest growing component of health care expenditures. The growth of prescription drugs expenditures has ranged between 17-22% annually for the nation for the period 1996-2000. This torrid rate of growth reflects a number of factors, not least of which is the slew of new drugs introduced 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 expedite the approval process for new drug candidates. New drugs tend to be more costly than old drugs, so the substitution of new for old drives expenditures higher. Direct to consumer marketing is also a catalyst for increased drug expenditures. Recent data suggest continued strong growth (12%).<sup>8</sup>

<sup>8</sup> Health Affairs Feb 23, 2005. “U.S. Health Care Spending Projections For 2004-2014”.

The passage of the Medicare Prescription Drug Improvement and Modernization Act of 2003 is designed to provide assistance with prescription drug costs. Medicare recipients will pay the first \$250 for prescriptions. After the first \$250, they pay 25% of the cost up to \$2,250. There is a 'gap' over the next \$2,850, where seniors are expected to pay the total cost. After \$5,100 of drug costs in one year, Medicare will cover 95% of the additional costs.

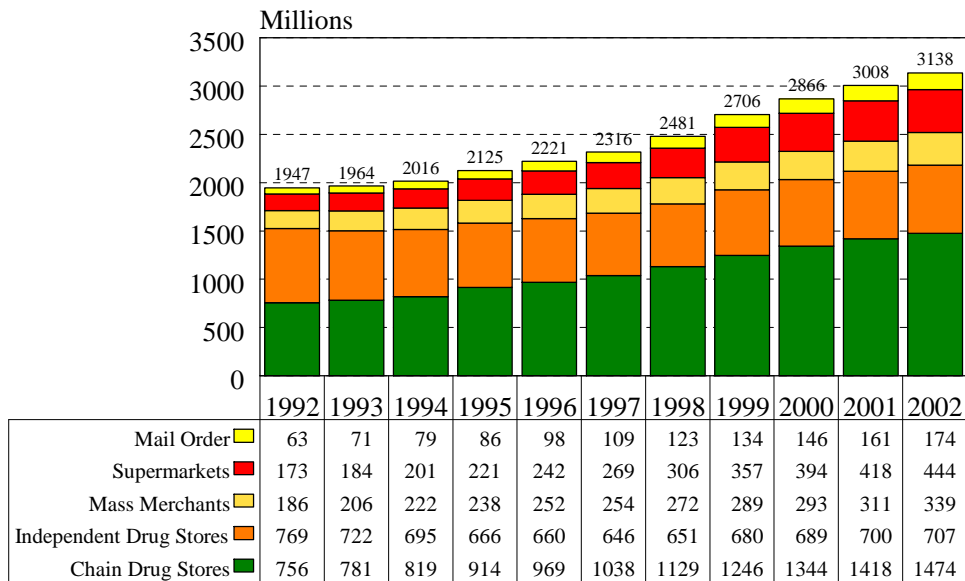
Prescription drug costs is one aspect of health care that managed care has struggled to control. While managed care does lower co-pays to consumers who opt for generic alternatives to brand name drugs, consumers often find that no generic equivalent is available. The drug companies have been savvy in extending the patents on their best sellers through a process called 'evergreening' – a process by which the producer patents new inventions in connection with a popular drug that is already on the market. Under current law, each of those patents can serve as a deterrent to generic entry to the market. This forces consumers to stay with the patented drug, until the time when a generic alternative comes to the market.

Moreover, there are a number of potential top-selling prescription drugs that are due to be on the market within the next few years. These include medication for cholesterol, arthritis, obesity, migraines, and hepatitis. Consequently, drug expenditures are expected to remain among the faster growing health accounts as consumers switch from older drugs to newer, more costly drugs.

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

Although mail order prescription drugs are growing in popularity, they still comprise just 5% of total prescription sales volume (see Figure 2.8 below).

**Figure 2.8**  
**U.S. Prescriptions, by Type of Store, 1992-2002**



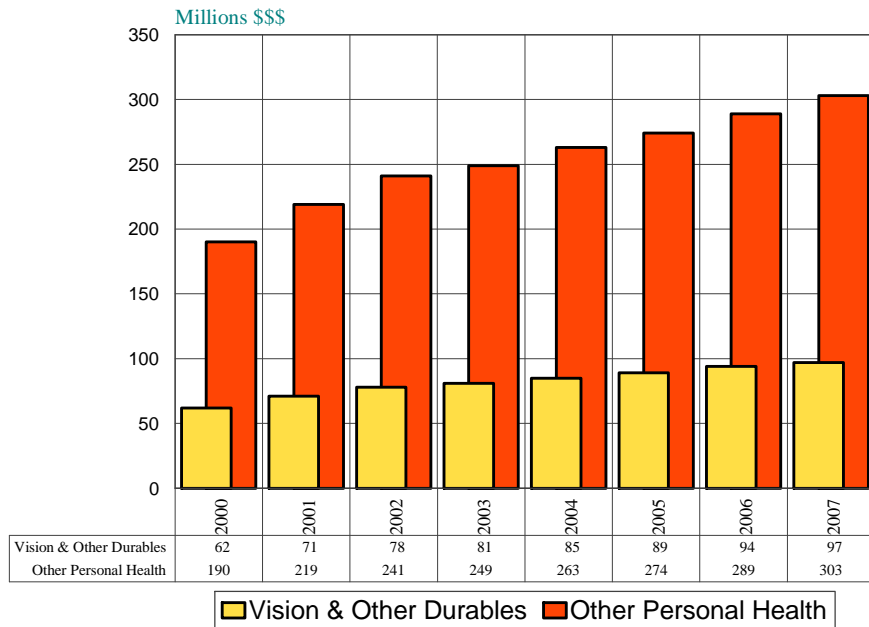
Source: Center for Applied Demography and Survey Research, University of Delaware, National Association of Chain Drug Stores. 2005-7 update not available.

Nevertheless, demand for prescription drugs will only be enhanced further by the emergence of prescriptions-by-mail. Therefore, the trend of rising drug expenditures – the fastest growing component of health care expenditures – is expected to continue unabated. The prescriptions-by-mail program does present a data collection issue. Should these 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 the prescription drug expenditures of the state.

**Vision and Other Medical Durables**

Figure 2.9 reports the estimates for the last two accounts. Vision products are allowed to grow sufficiently to keep the share around 1.6% of personal health care expenditures.

**Figure 2.9  
Delaware Personal Health Care Expenditures:  
Vision Products and Other Medical Durables, and  
Other Personal Health Care**



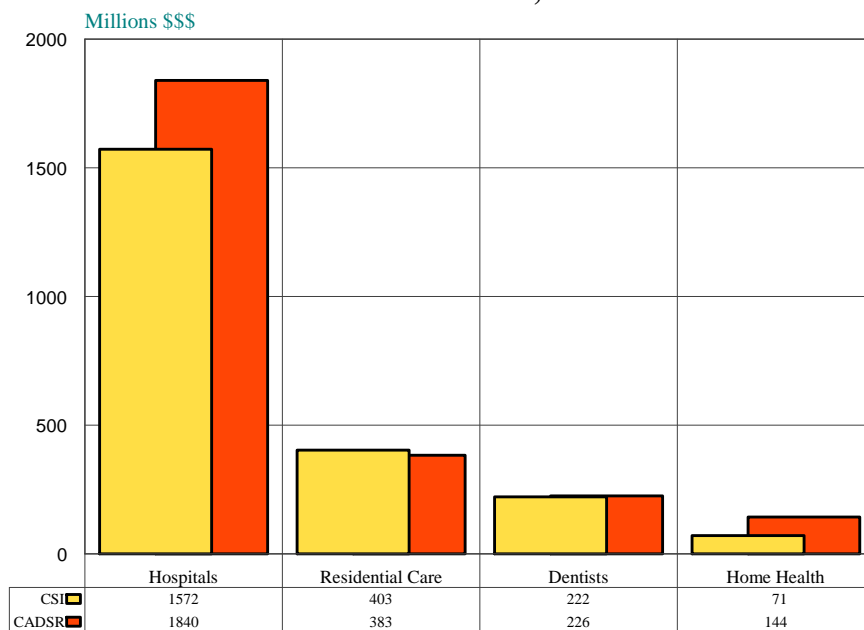
**Source: Center for Applied Demography and Survey Research, University of Delaware  
US Centers for Medicare and Medicaid Services**

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 report’s usefulness for yearly comparisons. Nevertheless, using the two reports in conjunction with each other serves to verify the industry’s trends.

Using the CSI estimates for 2002 as a benchmark tool, the accuracy of the CADSR estimates for 2002 can be assessed. In most cases, where CSI has comparable

data to the sectors considered, the CADSR estimates fall within a reasonable range of the CSI data (see Figure 2.10). The CADSR estimate for home health is consistent with the latest CMS estimate. However, for home health there exists a relatively large difference between the CSI and the CADSR/CMS estimate. Future updates will provide an opportunity to assess the data further.

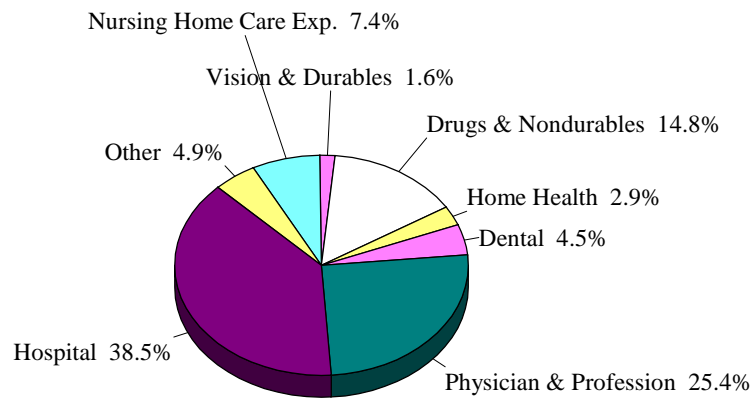
**Figure 2.10**  
**Delaware Personal Health Care Expenditures:**  
**CSI versus CADSR, 2002**



Source: Center for Applied Demography and Survey Research, University of Delaware  
 Census of Service Industries, 2002

The composition of total personal health care expenditures in Delaware continues to evolve. Hospital services command an impressive 39% of total personal health care expenditures in the state (see Figure 2.11). All other accounts save hospitals are increasing their share of health care expenditures. This reflects the trend of health care provision away from traditional hospital care and toward 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 2.11**  
**Delaware Personal Health Care Expenditures:**  
**Share of Total Expenditures in 2007 by Category**



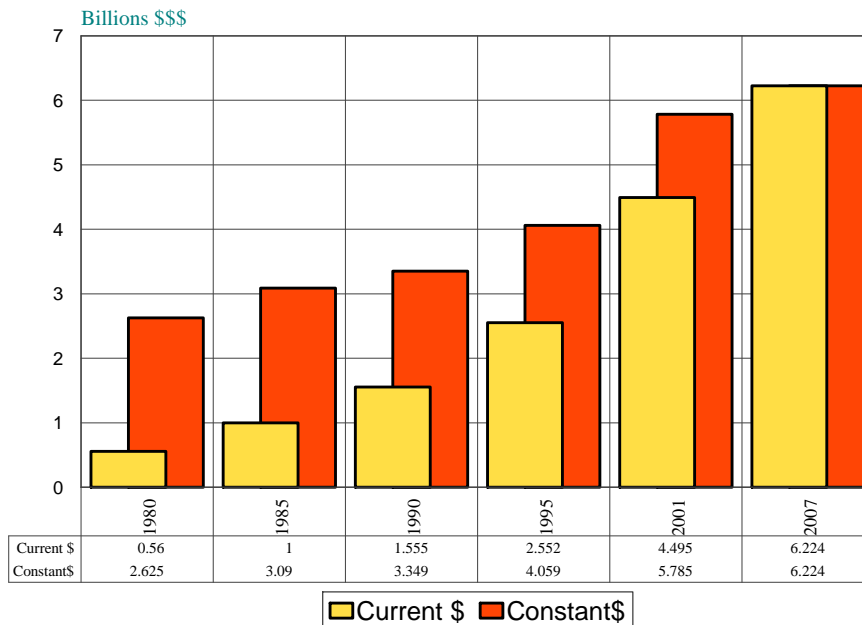
Source: Center for Applied Demography and Survey Research, University of Delaware  
US Centers for Medicare and Medicaid Services

## 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. Figure 3.1 presents that estimate.

**Figure 3.1**  
**Delaware Personal Health Care Expenditures**  
**In Current and Constant Dollars 1980-2007**



Source: Center for Applied Demography and Survey Research, University of Delaware  
US Centers for Medicare and Medicaid Services

In 2007, the estimated total cost of personal health care in Delaware is approximately 6.2 billion dollars. The figure shows estimates both in *Current* dollars and in *Constant* 2006 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. Between 1991 and 1995, the rate of growth slowed to 8.7%. Between 1996-2000, growth slowed again, this time to 5.8%. Rising wages of health care providers augurs increased expenditures

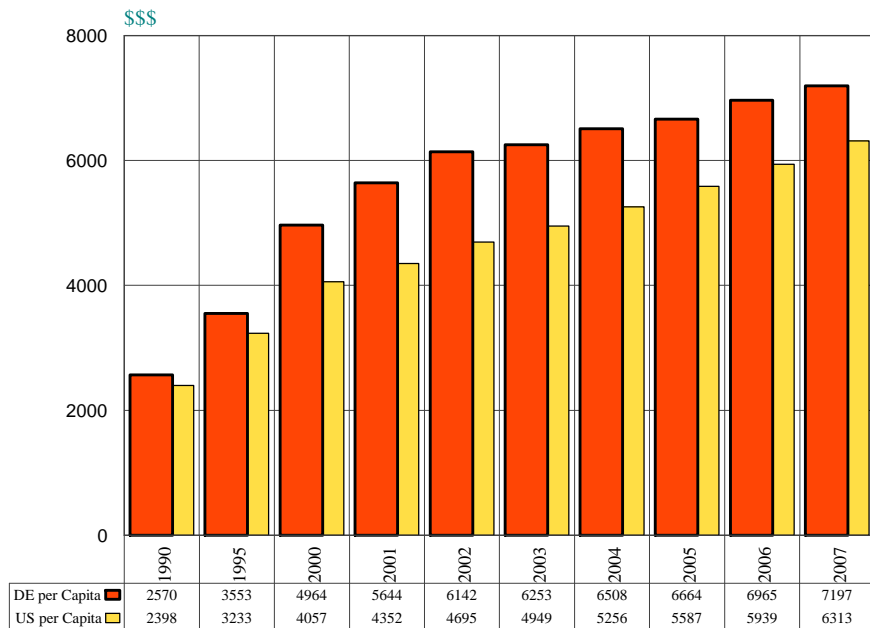
on health care services and, hence, an expanding industry. The Census of Service Industries reports that revenue/receipts of health care providers indeed are on the rise. Moreover, the CSI estimate of total revenue/receipts falls within an acceptable range of the CADSR estimate. The greatest pressure on expenditures is from the hospitals account.

**Per Capita Costs**

Another useful way to examine the total cost of personal health care expenditures is by using the per capita measure: a calculation that removes from the analysis the effect of increases in the population. Those results are shown in Figure 3.2 below.

Per capita health expenditures continue to rise in the state and nation. Because these data control for population growth, a rise in per capita health expenditures reflects increased use of health care (from an aging population, increasing consumption of health care services, and increasing costs of these services).

**Figure 3.2  
Personal Health Care Expenditures Per Capita:  
US and Delaware**



**Source: Center for Applied Demography and Survey Research, University of Delaware US Centers for Medicare and Medicaid Services. US figure estimates using growth in National Health Expenditures applied to Personal Health Expenditures.**

## **Economic Importance**

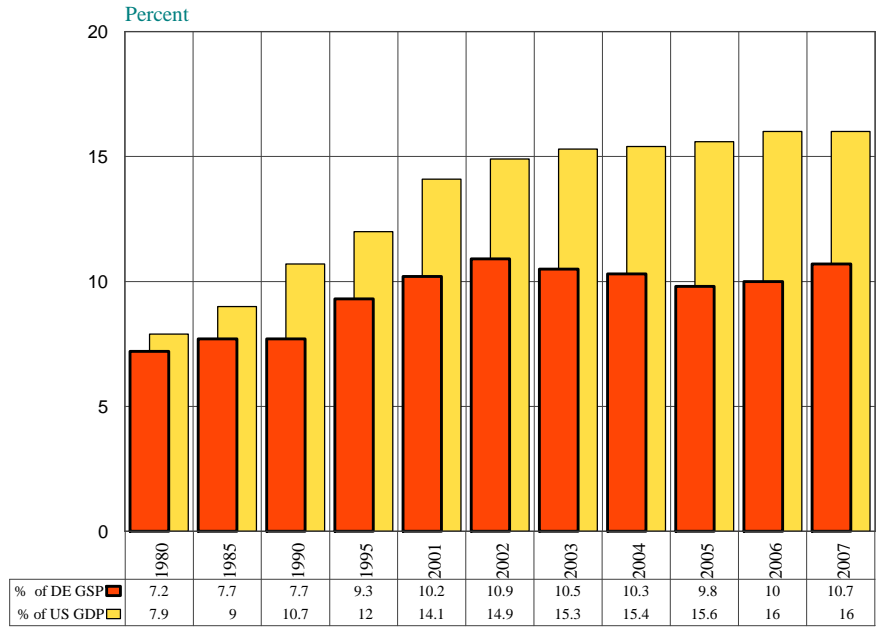
Two provided measures of economic impact show the importance of personal health care expenditures in the Delaware economy. First, Figure 3.3 below displays the ratio of these expenditures to gross state product (the total value of goods and services produced in Delaware). Also shown, for comparison, 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).

This chart illustrates a number of points. First, the health care sector has been growing as a proportion of total output in both the US and Delaware. Second, Delawareans dedicate less GDP than the US as a whole on health care; 11% compared to 16%. A portion 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 gross state product, and below average in poverty<sup>9</sup>. However, Delaware lies slightly above average in age, which tends to increase the share of GSP devoted to health care.

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<sup>9</sup> According to the Kaiser Family Foundation, poverty among Delaware adults is 11% versus 15% for the nation in 2002. Among children, the Delaware poverty rate is 18% versus 22% for the nation. Among the elderly, the Delaware poverty rate is 7% versus 14% for the nation.

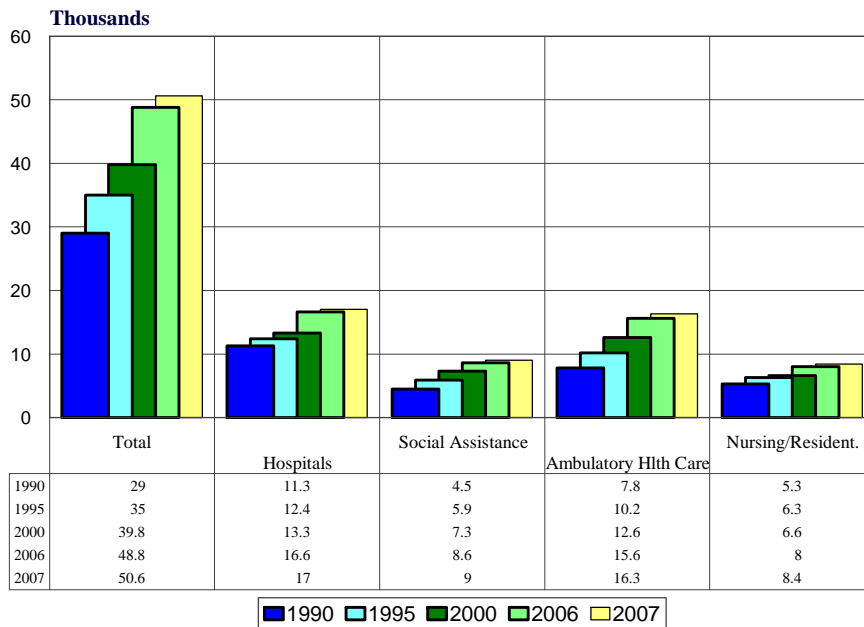
**Figure 3.3**  
**Personal Health Care Expenditures:**  
**Share of US GDP and Delaware GSP**



**Source: Center for Applied Demography and Survey Research, University of Delaware US Centers for Medicare and Medicaid Services. Delaware 2005 GSP estimated. U.S. is based on National Expenditures growth rate.**

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 11% of statewide employment of 436,200. Those workers earn 11% of the reportable wages. In Figure 3.5 below, employment by sector over time is shown.

**Figure 3.4  
Delaware Employment in Health Services**



**Source:** Center for Applied Demography and Survey Research, University of Delaware, Delaware Department of Labor. Employment is reported by NAICS category. Components may not sum to totals due to rounding. Ambulatory Health Care Services includes offices of physicians, dentists, other health practitioners, outpatient care centers, medical and diagnostic laboratories, home health services, and other ambulatory health care services.

Emblematic of the changing structure of the health care industry is the shift in employment in the State. Hospitals command a declining share of Delaware’s health care industry. In 1990, hospital employment accounted for 38% of the state’s health care industry. By 2006, the latest year of complete data, this number had fallen to 33.8%.

There is evidence that hospital employment growth is accelerating once more. Hospital employment growth has increased by 1,000 in 2000-2001, by 600 in 2001-2002 and 2002-2003, by 300 in 2003-2004, by 500 in 2004-2005, by 500 in 2005-2006, and by 800 in 2006-2007. Contributing to this growth is expansion at the state’s health care facilities.

Beebe Medical Center has undertaken a \$35m expansion to meet the growing demand for services in Sussex County. Christiana Care Health System is undergoing its

largest expansion by expanding its ER and adding a Center for Heart and Vascular Health.

In 2004, Bayhealth Medical Center underwent a \$50m expansion including a new cardiac survey program at Kent General Hospital. Also in 2004, Nanticoke Memorial Hospital in Seaford doubled the size of its emergency department and in 2003 added a \$6m cancer care center.

The expansion of health care providers in the state will place further demands on an already undersupplied work force. The Delaware Department of Labor forecasts that health and social services will account for 15% of total job growth between 2002 and 2012, second only to business. Of the 12 fastest growing occupations in Delaware 2002-2012, six are health-related. Medical assistants and physician assistants are expected to see 49% and 48% growth respectively.

Wage pressures will develop as competition for health care workers intensifies in the state, region, and nation. The national vacancy rate for registered nurses is 8.3%.<sup>10</sup> And by 2020, the nurse shortage is expected to be 800,000.<sup>11</sup>

The table below provides the average annual salary of selected Delaware health providers.

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<sup>10</sup> Source: 2004 AHA Survey of Hospital Leaders.

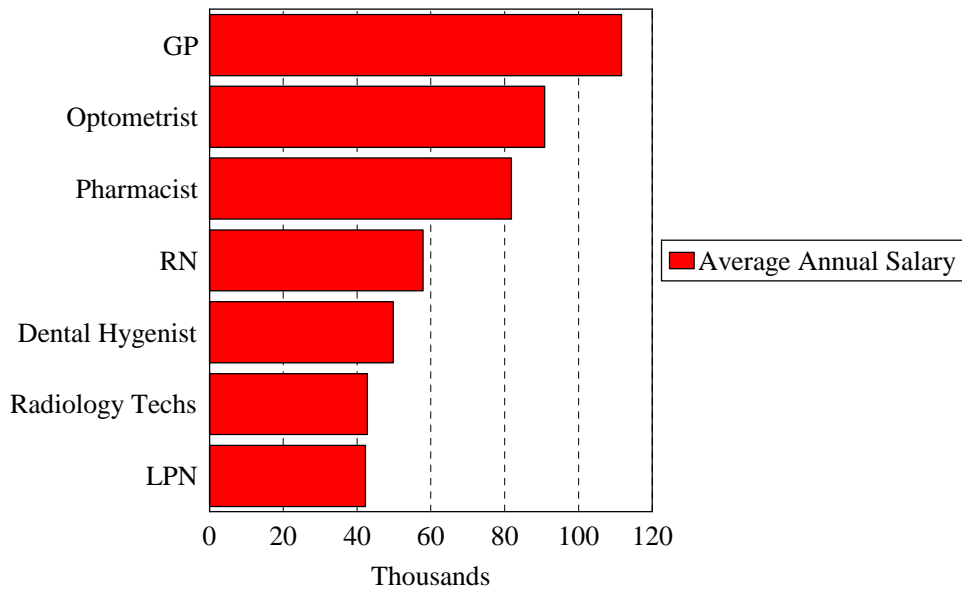
<sup>11</sup> Source: Bureau of Health Professions, National Center for Health Workforce Analysis, Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020, July 2002.

**Figure 3.5**  
**Delaware Average Annual Salary of Selected Health Occupations**

Occupation	Average Annual Wages (\$)
LPN	42,300
RN	57,900
Dental Hygenist	49,800
Radiologic Technologist & Technician	42,800
Pharmacist	81,800
GP	111,700
Optometrist	90,800

Source: Delaware Wages 2004, Office of Occupational and Labor Market Information, Delaware Department of Labor.

**Figure 3.6**  
**Delaware Health Care Provider Salaries**



Source: Delaware Wages 2004, Office of Occupational and Labor Market Information, Delaware Department of Labor.

## Prescription Drugs

Prescription drug coverage, expenditures, and prices garner considerable attention across the nation. Medicines are increasingly relied upon to maintain or improve health. However, concerns have been raised about the rising cost of prescription drugs and its impact on health plans, employers, and uninsured individuals. Other issues include the lack of outpatient prescription drug coverage under Medicare, the methods for determining the price of drugs and the development, the approval process, and the pricing of new drugs.

This section reviews the current research on prescription drugs. The CMS provides data on aggregate prescription drug expenditures for Delaware, albeit with a time lag of several years. *Delawareans Without Health Insurance 2005*<sup>12</sup> provides estimates of the number and profile of the state's uninsured. However, there is no specific information available on prescription drug coverage or expenditures by Delaware's households. Research indicates that those with any type of health insurance typically enjoy some form of prescription drug benefit. It is reasonable, therefore, to infer that Delawareans with health insurance also have some form of coverage for prescription drug expenditures.

Historically, Delaware's uninsured population figures followed closely with those of the region and nation. With this in mind, national research on the subject of prescription drugs will not only offer insight into this industry in aggregate, but will be highly applicable to the State.

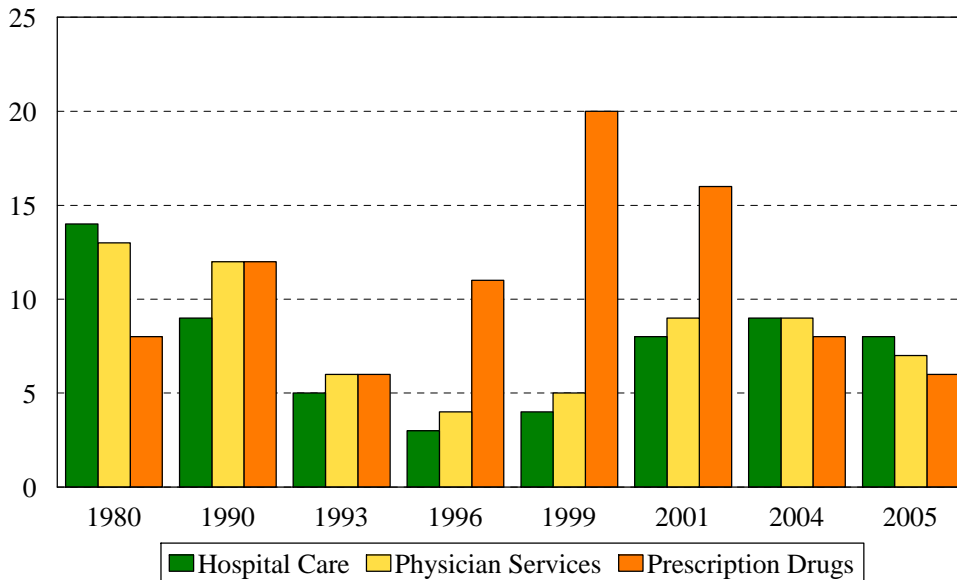
Prescription drugs is one of the fastest growing health care accounts. Nationally, increases in prescription drug expenditures were responsible for almost half (44%) of total health care expenditure increases in 1999, and 27% in 2000. Spending on prescription drugs more than doubled since 1990. Although prescription drug spending is

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<sup>12</sup> See <http://www.cadsr.udel.edu/DOWNLOADABLE/DOCUMENTS/Hcc053.pdf>

a small proportion of personal health care spending (9%), it is one of the fastest growing components, see Figure 4.1 below.

**Figure 4.1**  
**Annual Percent Change from Prior Year in Selected National Health Expenditures, 1980-2004**



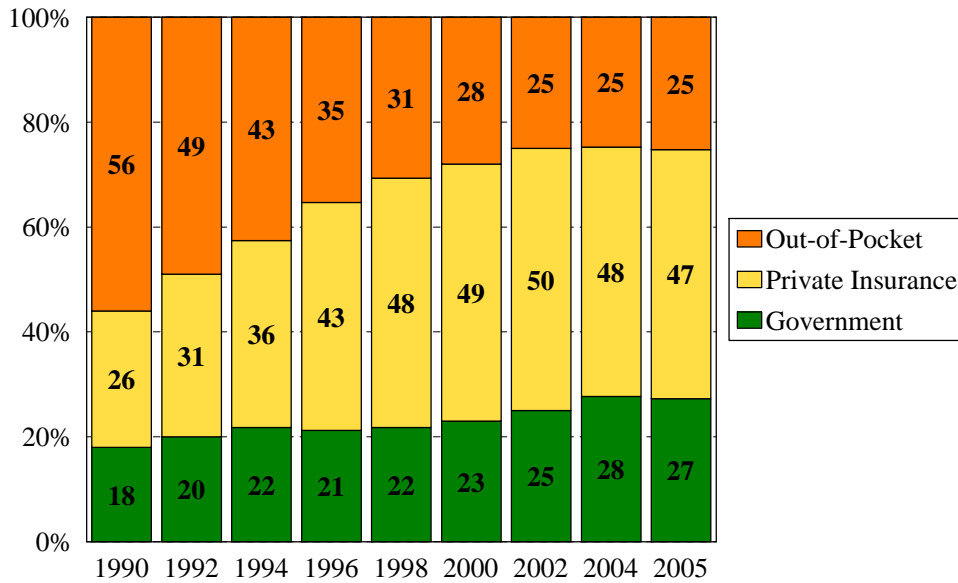
Source: Kaiser Family Foundation.

Despite being only a small component of total health care expenditures, the rise in prescription drug prices has a marked effect on employer-based insurance. Prescription drug costs are the most rapidly increasing expense for employer-based insurance, representing 40% of the premium increase from 1998-1999.

Two factors are at play. First, health insurance coverage for prescriptions greatly expanded over the previous decade. In 1990 approximately one-quarter of all prescription drugs were still paid for by private insurance (see Figure 4.2 below). However, by 2005 private insurance comprised almost fifty percent of prescription drug expenditures. Second, the greater availability of new products, especially antihistamines, antidepressants, cholesterol reducers, and anti-ulcerants, drives increased expenditures as consumers switch from older to newer, more expensive drugs. Moreover, pharmaceutical

companies use aggressive direct-to-consumer marketing to maximize the demand for their products.

**Figure 4.2**  
**Percent of Total National Prescription Drug Expenditures by Type of Payer**  
**1990-2005**



Source: Kaiser Family Foundation.

Retail prescription prices (which reflect both manufacturer price changes for existing drugs and changes in use to newer, higher-priced drugs) increased an average of 7.7% a year since 1991, more than double the inflation rate of 2.7%. Manufacturer prices (which reflect only price increases for existing drugs) grew less rapidly, at an average of 4% a year since 1991.

Most of the top selling prescriptions are newer, higher-price brand name drugs, whose availability directly relates to the research and development (R&D) activities of pharmaceutical manufacturers and government supported research. Manufacturer R&D spending increased from \$10 billion in 1991 to \$30 billion in 2001, though R&D as a percentage of sales (17% in 1991) has remained relatively flat since the mid-1980s (PhRMA). The number of new drugs approved by the US Food and Drug Administration

also affects new drug use. The FDA typically approved 30 drugs a year on average over the past 10 years.

**Figure 4.3**  
**U.S. Prescription Drug Prices and Brand/Generic Mix, 1990-2003**

Year	Brand	All Rx's	Generic	Percent Brand	Percent Generic
1990	\$ 27.16	\$ 22.06	\$ 10.29	69.8%	30.2%
1991	\$ 30.11	\$ 23.87	\$ 10.85	67.6%	32.4%
1992	\$ 33.68	\$ 26.33	\$ 11.78	66.4%	33.6%
1993	\$ 35.28	\$ 26.99	\$ 12.82	63.1%	36.9%
1994	\$ 37.37	\$ 28.37	\$ 14.18	61.2%	38.8%
1995	\$ 40.22	\$ 30.01	\$ 14.84	59.8%	40.2%
1996	\$ 45.11	\$ 32.86	\$ 15.71	58.3%	41.7%
1997	\$ 49.55	\$ 35.72	\$ 16.95	57.6%	42.4%
1998	\$ 53.51	\$ 38.43	\$ 17.33	58.3%	41.7%
1999	\$ 57.17	\$ 40.94	\$ 18.74	57.8%	42.2%
2000	\$ 62.25	\$ 45.19	\$ 20.90	58.8%	41.3%
2001	\$ 68.03	\$ 49.61	\$ 23.50	58.6%	41.4%
2002	\$ 75.82	\$ 54.73	\$ 27.16	56.7%	43.3%
2003	\$ 84.21	\$ 59.30	\$ 30.56	53.6%	46.4%

NACDS, Table 25 "The Chain Pharmacy Industry Profile 2003". Update not available.

The rate of inflation in prescription drug prices at the manufacturers' level continues at its lowest level since the mid-1970's. However, pharmaceutical manufacturer prices still outpace general inflation, and the retail market continues to observe price increases greater than reported at the manufacturer level. Expenditure growth is much larger than price growth - as consumers continue to increase their utilization and new, more expensive products are marketed.

The average sale price per prescription continues to climb. Differences in average prices for third party and cash prescriptions are due in part to the higher rate of generic substitution by cash patients. Figure 4.3 shows average prices for brand and generic prescriptions over time.

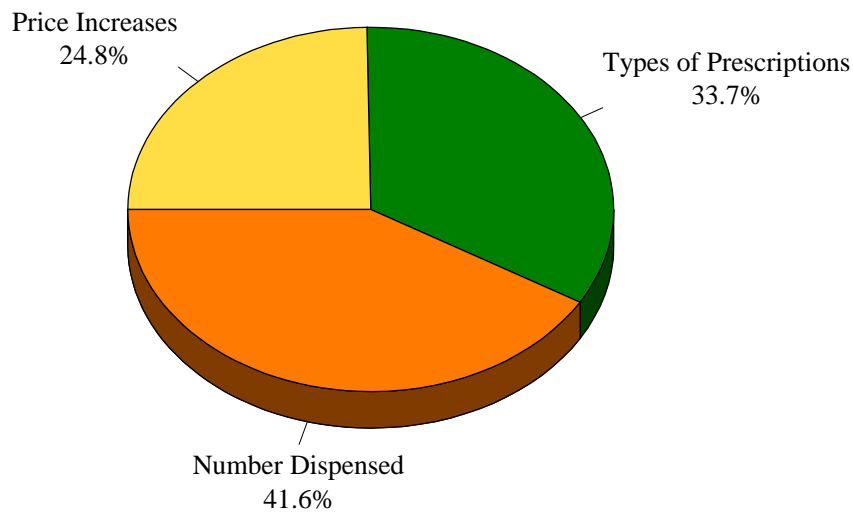
It is important to note that an additional dollar spent on prescription drugs is not necessarily an additional dollar spent on total health care. For many ailments, prescription drugs are a substitute for more costly physician or hospital treatment.

Depression is one example where treatment by prescription drug replaces the more costly traditional treatment methods. Rather than costly outpatient treatment and counseling, which incur lost work time as well as high provider costs, patients are treated via drugs such as Zoloft and Prozac.

With breakthroughs in drug therapy leading to more efficient treatment, rising prescription drug expenditures do not necessarily mark a pure increase in total health care costs; rather they reflect the switch away from traditional treatment techniques.

The driving factors for rising prescription drug expenditures include a combination of increased utilization, rising prices of existing drugs, and the introduction and substitution toward new drugs. Figure 4.4 below illustrates the relative size of each of these factors. Almost fifty percent of the increase in expenditures is attributable to increased utilization. Between 1997 and 2002, the number of prescriptions purchased increased 68% (from 1.9 billion to 3.2 billion), compared to a US population growth of 11%. The average number of prescriptions per person increased from 7.3 to 11.1.

**Figure 4.4**  
**The Relative Contributions of Price, Utilization, and Types of Prescription Drugs Used to Rising Prescription Drug Expenditures, 1997-2002**



Source: Center for Applied Demography and Survey Research, University of Delaware and Kaiser Family Foundation Prescription Drug Trends, March 2003. U.S. data.

Having established that prescription drug expenditures are on the rise, it is useful to put this increase into context. Describing prescription drug expenditures as a percentage of GDP provides a measure of a nation's resources that are devoted to these items. Using OECD data, the United States compares favorably with other nations in terms of its prescription drug expenditures per capita. In 1997, 1.4 percent of GDP was spent on prescription drugs, which gives the country a mid-table placing of nations ranked by prescription drug spending-to-GDP. This measure (the percentage of GDP devoted to prescription drugs) is poised to rise as the baby boomers move into retirement. Persons aged 65-74 use four times as many prescriptions as those aged 25-34. Mitigating this rise are factors like an expanding economy, which should prevent drug expenditures becoming intolerably burdensome on the economy.

However, the aggregate picture gives an artificially sanguine view of the market for prescription drugs. Consider prescription drug spending at the household level. For many families, average outlays on prescription drugs are a manageable budget item, whether or not that family has insurance coverage for drugs. In 2002, for example, the average consumer spent \$884 on prescription drugs, compared with \$415 for alcohol, \$2,167 for entertainment, and \$2,395 on dining out<sup>13</sup>. However, subjecting the national averages to closer scrutiny reveals that some households do face exorbitant costs.

Studies by Express Scripts and Kaiser Family Foundation find that the top two percent of their most costly patients accounted for thirty-three percent of annual drug spending. And the highest spending five percent of households accounted for about fifty percent of total expenditures.

Furthermore, the profile of high expenditure households is not as clear-cut as one would imagine. Research suggests that high expenditure households cannot be simply categorized as elderly or in poor health. Of those with high expenditures (in the top 1% of households for prescription drug expenditures), less than half are elderly. This suggests that a member of this group cannot be assumed to be elderly. Furthermore, the top 1% of spenders do not consider themselves to be in poor health (based on self-reported health status). These statistics point to some of the complexities of providing affordable prescription drugs to the high-cost users.

A similar skewing of expenditures holds for personal health care expenditures in general. For example, health care spending varies greatly across groups and is highly skewed even within age groups. Research revealed a considerably skewed distribution, with a relatively small proportion of the population accounting for a large share of health care expenditures (see Figure 4.5 below).

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<sup>13</sup> Consumer Expenditure Survey, Bureau of Labor Statistics, 2000-2004

**Figure 4.5**  
**Concentration of Health Expenditures in the U.S. Population,**  
**Selected Years 1987-1999**

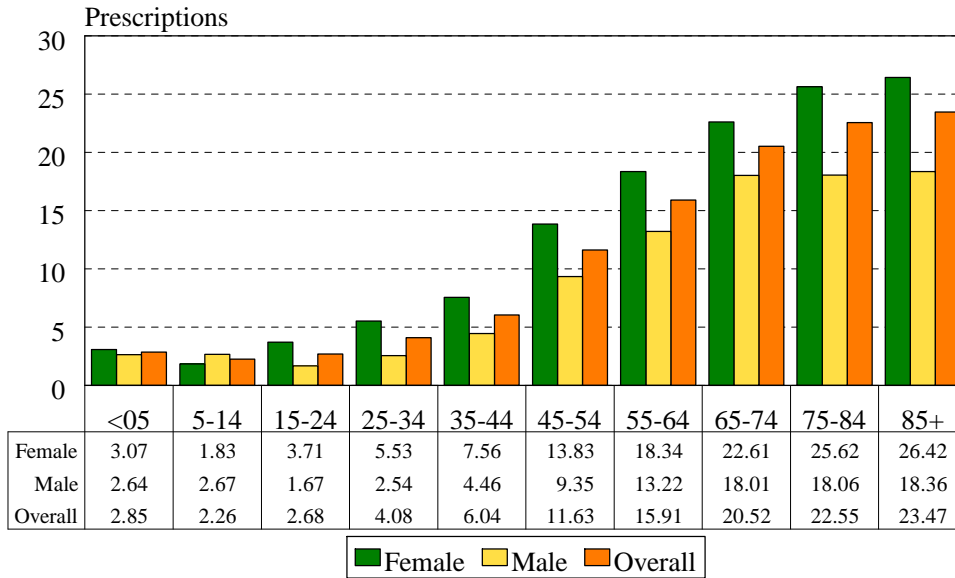
Percent of U.S. population ranked by expenditures	1987	1996	1999
Top 5 percent	56	55	52
Top 10 percent	70	69	67
Top 50 percent	97	97	97
Bottom 50 percent	3	3	3

Source: The Concentration of Health Care Expenditures, Revisited, Health Affairs, March/April 2001.  
 Kaiser Family Foundation

The top five percent of health care spenders account for more than half of total health spending. The top fifty percent of households account for ninety-seven percent of total health spending. It is clear that the majority of Americans collectively are responsible for only a very small proportion of what is spent (or paid for) on health care, and a relatively small proportion of the population spends exorbitant sums of money.

Industry watchers forecast deterioration in health care affordability in the near future. The introduction of new drugs will continue unabated. These drugs typically have no low cost generic during their early years. This coupled with the rise in average copayments and three-tier cost sharing will ensure that consumers' protection from prescription drug costs will erode.

**Figure 4.6**  
**National Prescription Drug Utilization by Age and Gender, 2002**



Source: Center for Applied Demography and Survey Research, University of Delaware, Medical Expenditure Panel Survey 2000, NACDS Economics Department. Prescriptions filled at retail pharmacies.

Health plan organizations and employers already feel the added pressure from rising drug costs. Inevitably, consumers will be asked to meet this additional cost, which impacts households in direct proportion to their prescription drug usage. For many households, the increase will be manageable, for others it will represent a financial hardship.

The purpose of this section is to present research on the prescription drugs. Possible future research includes gathering information on prescription drug health coverage and expenditures in Delaware.

- Prescription drugs are the fastest growing health care account.
- Many households are shielded from the full cost of prescription drugs through insurance.

- For the majority of households, the cost of prescription drugs is a manageable budget item.
- Household prescription drug expenditures are heavily skewed: a small proportion of households account for a sizeable proportion of total expenditures.
- Seniors are the heaviest users of prescription drugs, yet Medicare recipients have proportionately lower prescription drug coverage than their non-Medicare counterparts.
- Rising prescription drug costs are exerting pressure on employers and health plan providers alike. These costs are leading health plan providers to limit their drug coverage, demand higher premiums from employers, or both.
- Employers, in turn, pass on the costs to employees by asking for greater health care enrollment fees, or by opting for higher copayment plans. In either case, consumer spending on health care increases.

## Cost Shift In Delaware

In 1999 the Health Care Commission released a report prepared by the Lewin Group on the subject of Cost Shift. As cost shifting could ultimately impact the financial stability of Delaware's hospital and insurance markets, continued monitoring of cost shifting is important. This section updates some of the findings from that initial report.

Cost shifting is defined as the process by which health care providers recover the unpaid or underpaid costs of care delivered to one patient population by collecting above cost revenues from another patient population. The process is a common dynamic in the health care marketplace and occurs in different contexts and settings.

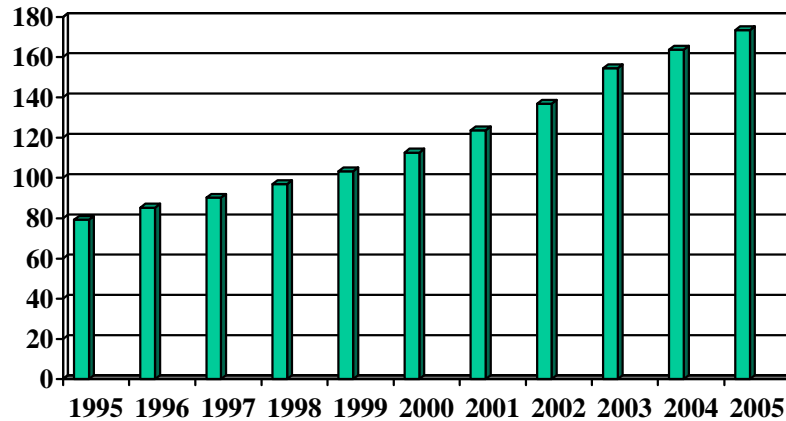
In the case of hospitals and physicians, cost shifting has been attributed to two factors: below-cost reimbursement rates paid by public programs such as Medicare and Medicaid, and uncompensated care losses due to bad debt or charity care.

The data for this update of the original analysis<sup>14</sup> draws from the Public 1991-99 Medicare Payment Advisory Commission (MedPAC) analysis of American Hospital Association (AHA) annual survey data, and the American Hospital Association (AHA) Hospital Statistics. **Citing data integrity issues, MedPAC and the AHA ceased to publish state level hospital cost shift data.** National data are still published, which provides an indicator of the cost shift trend in the nation. The prior findings are available in the Appendix.

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<sup>14</sup> The original analysis covered the period 1991 to 1996. This analysis will, where possible, update the analysis to 1999. MedPAC and AHA have ceased publication of state level hospital financial data. Where available, U.S. data for 2000 and 2001 are included to provide the nation trend.

**Figure 5.1**  
**National Markup of Charges over Costs for All Patient Care Services, 1995-2005**

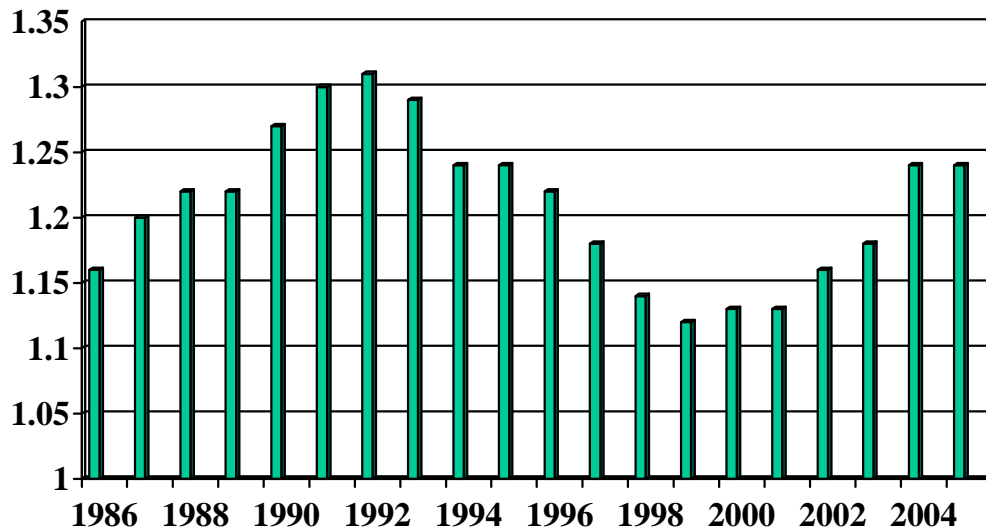


Source: Center for Applied Demography and Survey Research, University of Delaware and MedPac data derived from AHA Annual Survey of Hospitals.

Over the past ten years, hospital charges increased by nearly twice their costs (MedPac). Consequently, the markup of charges over costs rose from 79 percent in 1995 to 173 percent in 2005.

Since few patients pay full charges, hospitals' increasing their charges more than their costs may not have had much impact on their performance. Some are concerned, however, that uninsured individuals may be asked to pay full charge. Faster growth rates for charges in recent years may have resulted from hospitals' attempting to maximize revenue from private payers (who often structure their payments as a discount off charges).<sup>15</sup>

**Figure 5.2**  
**National Private Payer Payment-to-Cost Ratio, 1986-2005**

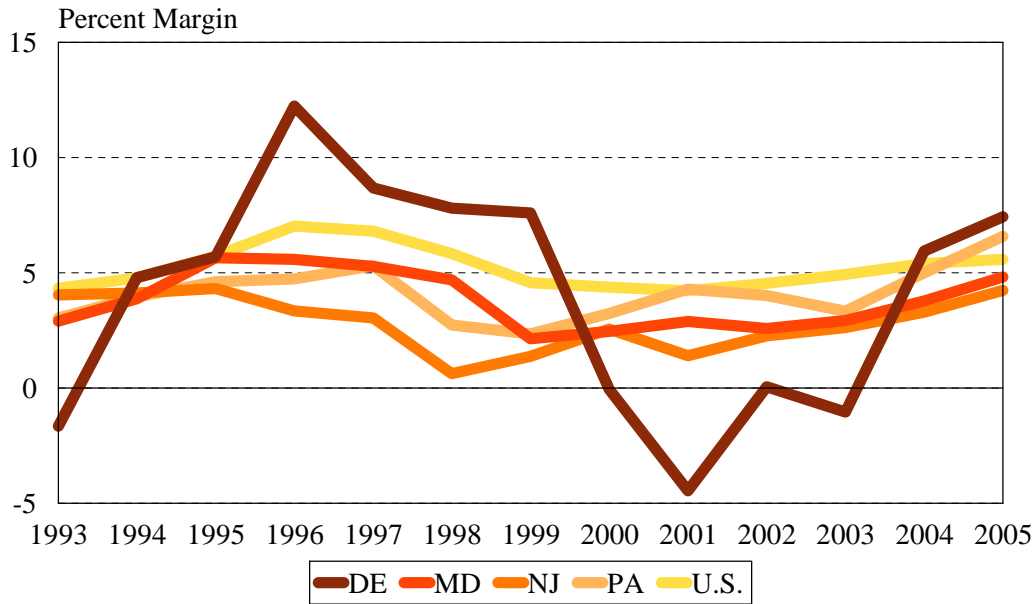


Source: Center for Applied Demography and Survey Research, University of Delaware and MedPac data derived from AHA Annual Survey of Hospitals.

During the period 1986 through 1992, private payers' payments rose much faster than the cost of treating their patients (as seen above in the steep increase in the payment-to-cost ratio). Between 1993 and 1999, the private payer payment-to-cost ratio dropped substantially. The rate of cost growth plummeted to just 0.8%. Since 1999, as pressure from private payers waned, the private payer payment-to-cost ratio has again risen sharply, and hospital cost growth has exceeded growth in the market basket by 2 percentage points a year.

<sup>15</sup> MedPac, A Data Book, Healthcare Spending and the Medicare Program, June 2006.

**Figure 5.3**  
**Hospital Margins**

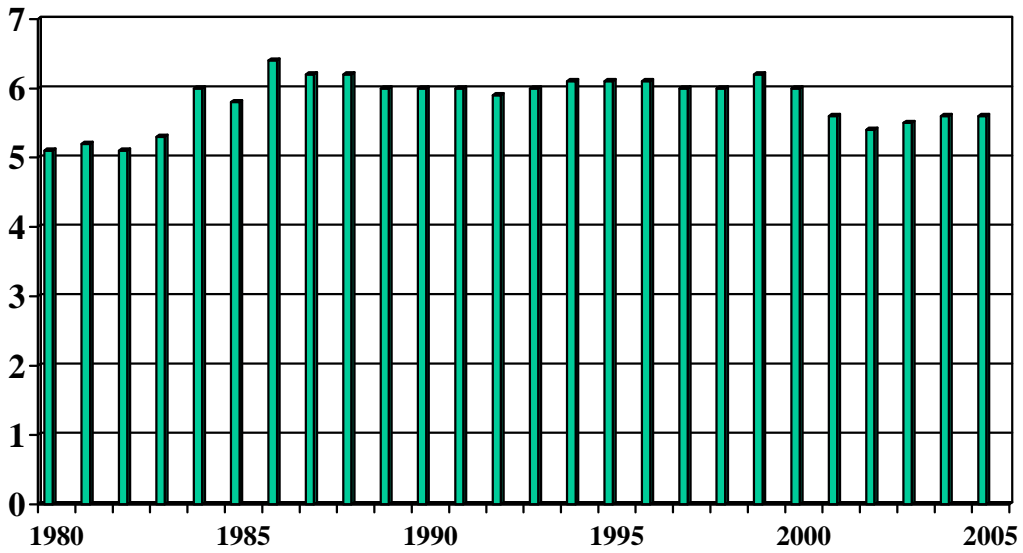


Source: AHA. Total Net Revenue/Total Expenses of Hospital Unit (excludes separate nursing home units).

Hospital margins in Delaware are more volatile than neighboring states’ and the nation. Variation in survey responses may be the cause. If the data were smoothed, Delaware’s margins would fall in the 0-5% range along with its peers. If Delaware’s margins were consistently higher (lower) than surrounding states, this would suggest that margins were contributing (detracting) from cost shift in the state. However, averaging the series reveals a pattern more similar to other states.

Nationally, uncompensated care as a percentage of total expenses is relatively stable. According to AHA statistics, uncompensated care<sup>16</sup> is 5-6% of cost and has been since 2000 (see Figure 5.3).

**Figure 5.4**  
**National Uncompensated Care Based on Cost: 1980-2005 (percent of cost)**  
**Registered Community Hospitals**

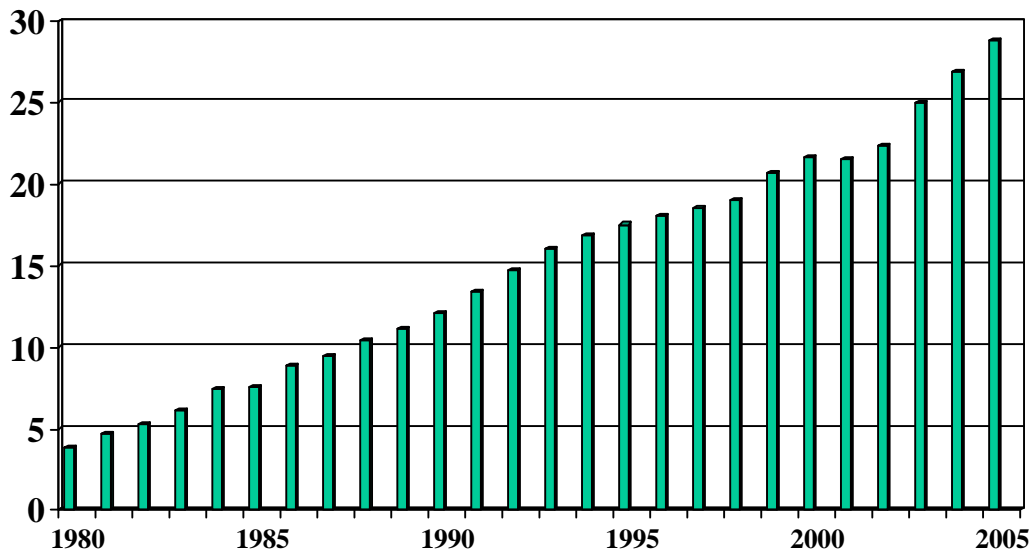


Source: AHA Uncompensated Hospital Care Cost Fact Sheet 2005.

<sup>16</sup> AHA defines uncompensated care as charity care and bad debt.

In dollar terms, however, uncompensated care costs continue to rise. In 2005 uncompensated care exceed \$28bn for the first time (see Figure 5.5).

**Figure 5.5**  
**National Uncompensated Care Based on Cost: 1980-2005 (in Billions)**  
**Registered Community Hospitals**



Source: AHA Uncompensated Hospital Care Cost Fact Sheet 2006.<sup>17</sup>

<sup>17</sup> Bad Debt charges + charity care charges = uncompensated care charges  
 (Total expenses exclusive of bad debt/ Gross patient revenue + other operating revenue) = cost-to-charge ratio  
 Uncompensated care charges x cost-to-charge ratio = uncompensated care costs

## Community Health Statistics

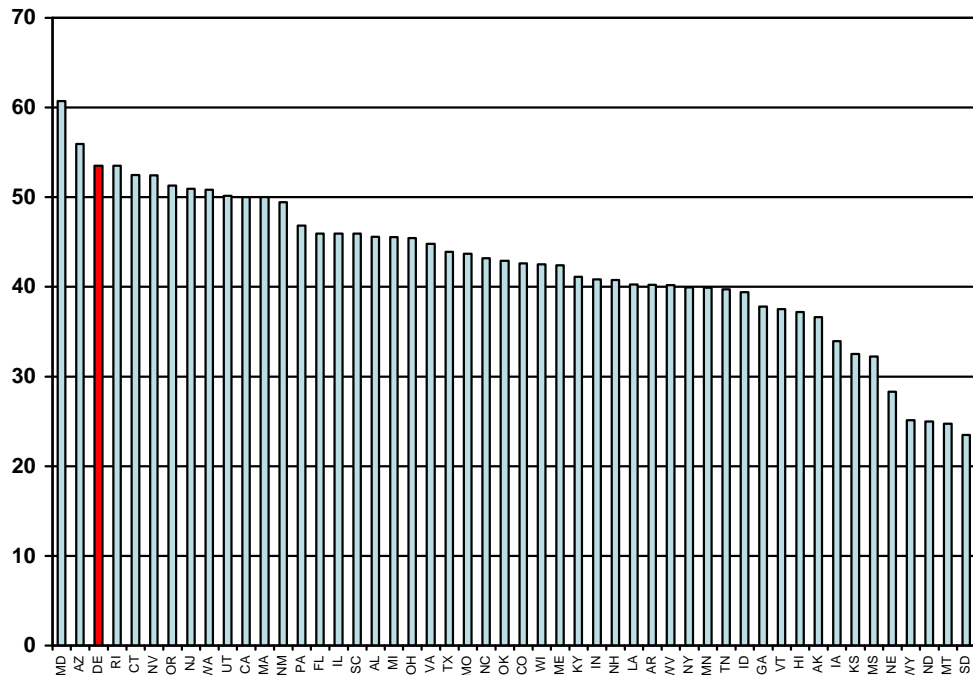
The following charts place Delaware's health indicators in national perspective. Using AHA data, Delaware is ranked against other states.

**Figure 6.1 Community Health Indicators**

Community Health Indicator	Rank (1=first or highest)
Beds	35 <sup>th</sup>
Admissions	22 <sup>nd</sup>
Inpatient Days	17 <sup>th</sup>
Inpatient Surgeries	14 <sup>th</sup>
Births	13 <sup>th</sup>
Emergency Outpatient Visits	29 <sup>th</sup>
Other Outpatient Visits	24 <sup>th</sup>
Total Outpatient Visits	21 <sup>st</sup>
Outpatient Surgeries	14 <sup>th</sup>
Expense per Capita	10 <sup>th</sup>
Utilization	3 <sup>rd</sup>

Source: AHA Hospital Statistics.

**Figure 6.2 Utilization (Admissions per Bed)**



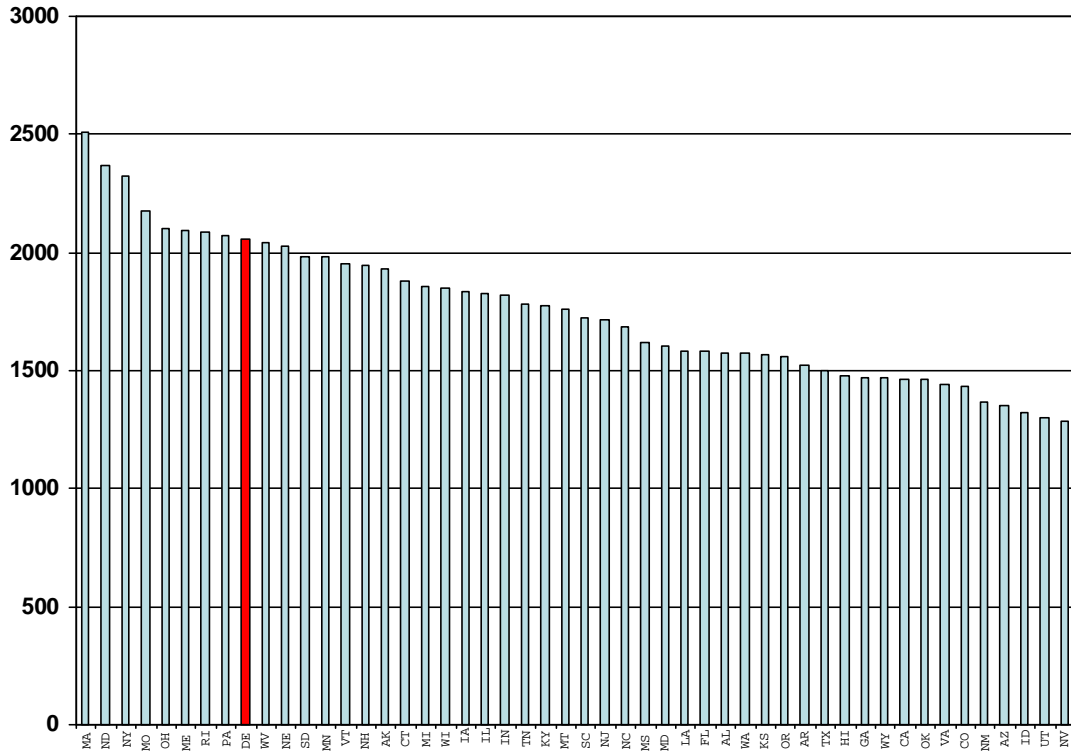
Source: AHA. Center for Applied Demography and Survey Research, University of Delaware.

Delaware ranks third in the nation for admission per licensed bed.<sup>18</sup> This is a measure of how many unique persons use a hospital bed. It is analogous to a utilization rate.

Delaware ranks relatively high on this scale because the state is relatively low in beds per 1,000 population while simultaneously being above average in admissions per 1,000 population.

<sup>18</sup> The AHA defines beds as "number of beds regularly maintained (set up and staffed for use) for inpatients as of the close of the reporting period. Excludes newborn bassinets".

**Figure 6.3 Expense Per Capita**

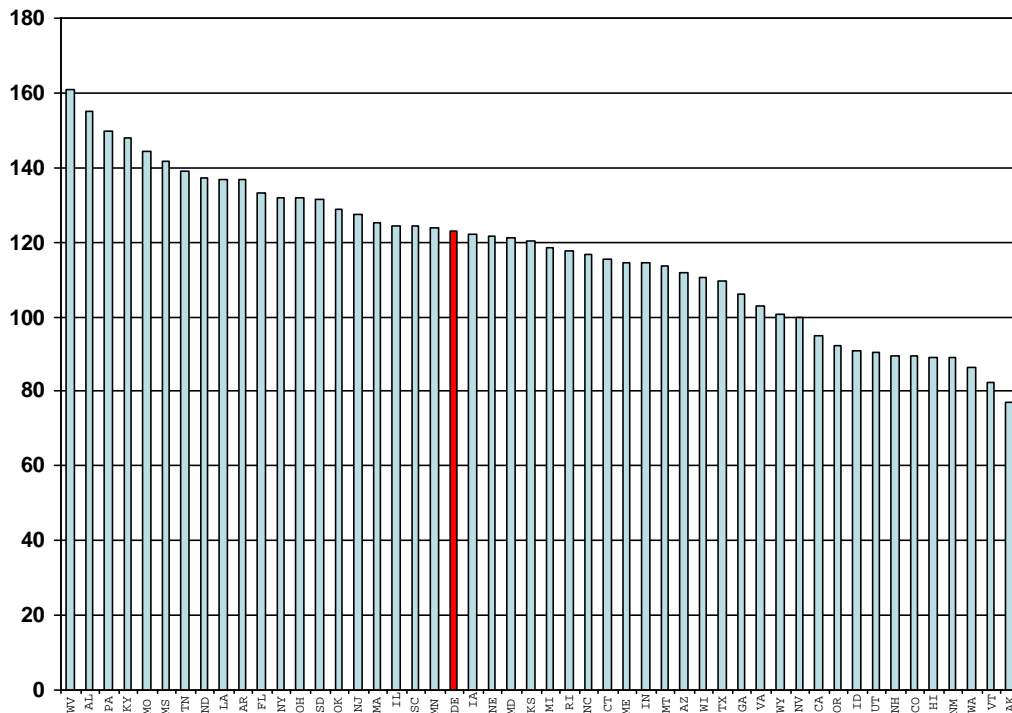


Source: AHA. Hospital expenses per person.

Delaware has a relatively high expense per capita rate. Interestingly, six of the top ten highest are Northeastern states. One possible explanation for this is that the higher costs Northeast is filtering into higher expenses. Southern states are mainly clustered in the lower half of this ranking.



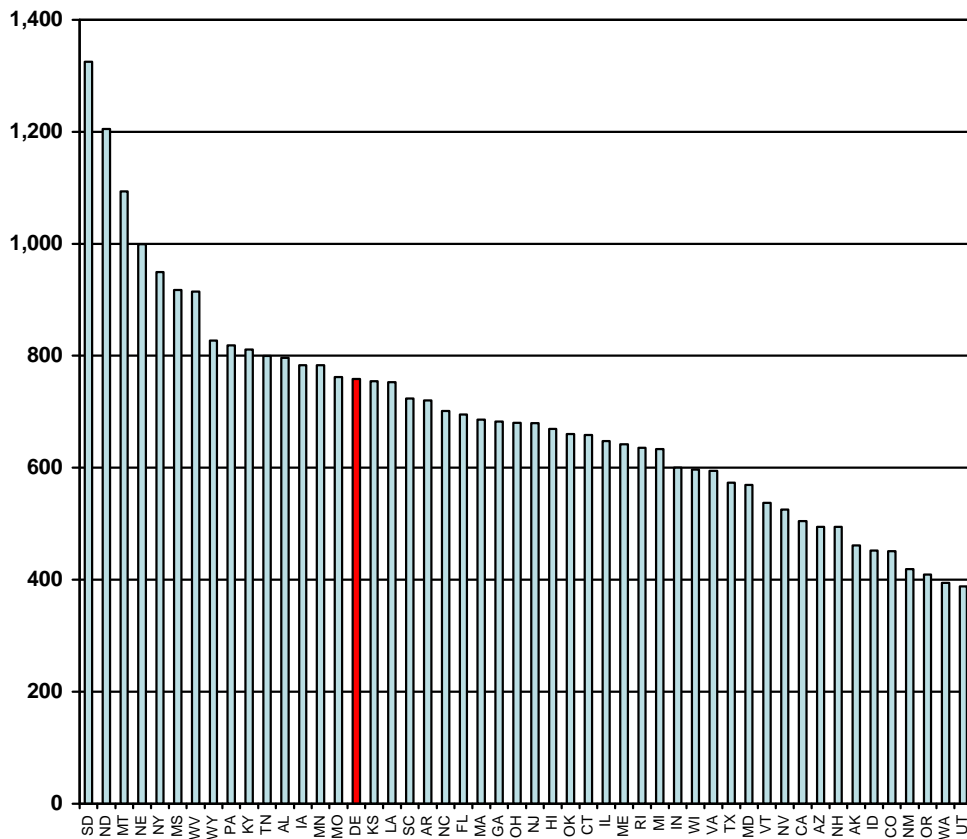
**Figure 6.5 Admissions Per 1,000 Population**



Source: AHA. Center for Applied Demography and Survey Research, University of Delaware.

Delaware’s rank for admissions per 1,000 population is near the median. Admission per 1,000 population exceeds 120 per 1,000 population. This is almost 40 admissions per 1,000 population lower than West Virginia.

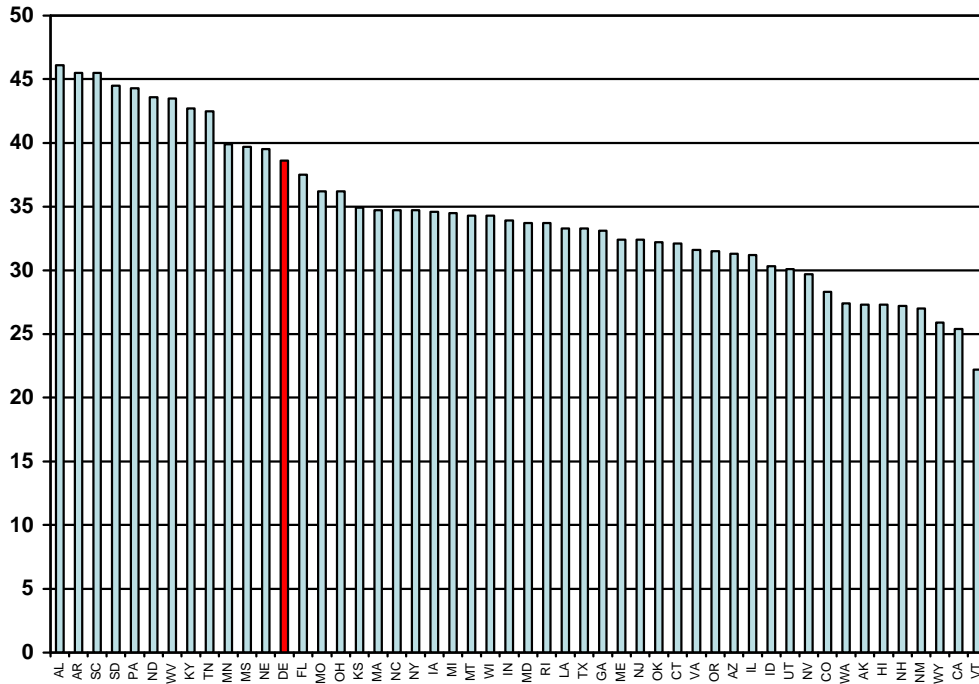
**Figure 6.6 Inpatient Days Per 1,000 Population**



Source: AHA. Center for Applied Demography and Survey Research, University of Delaware.

Inpatient days per 1,000 population in Delaware (759) are slightly higher than the average (692).

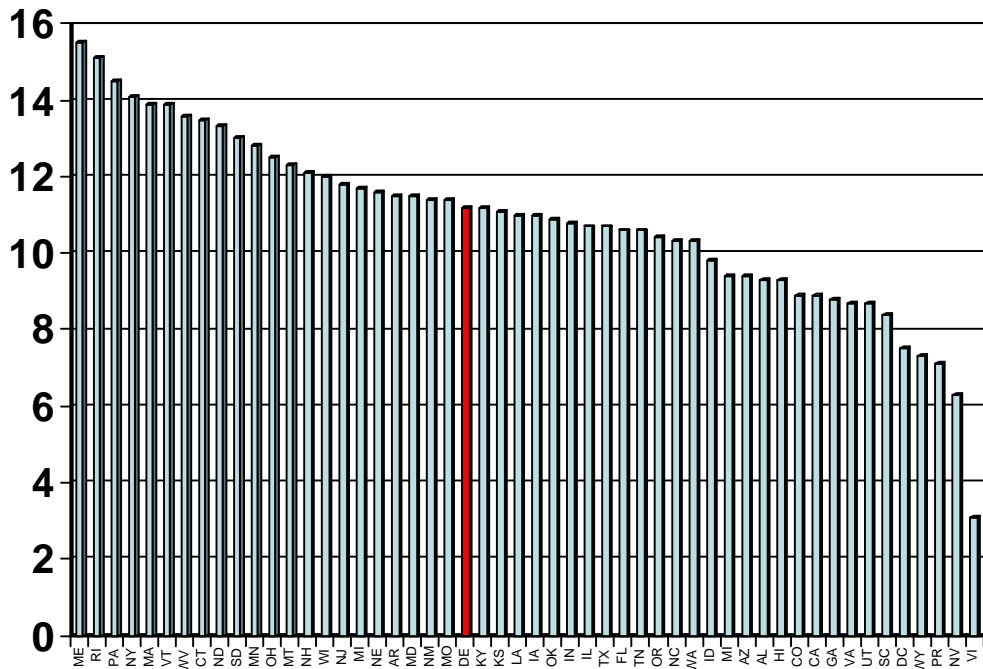
**Figure 6.7 Inpatient Surgeries Per 1,000 Population**



Source: AHA. Center for Applied Demography and Survey Research, University of Delaware.

Inpatient surgeries per 1,000 population are higher in Delaware (39) versus the national average (35).

**Figure 6.8 Health Care Employment as a Percentage of Total Employment**



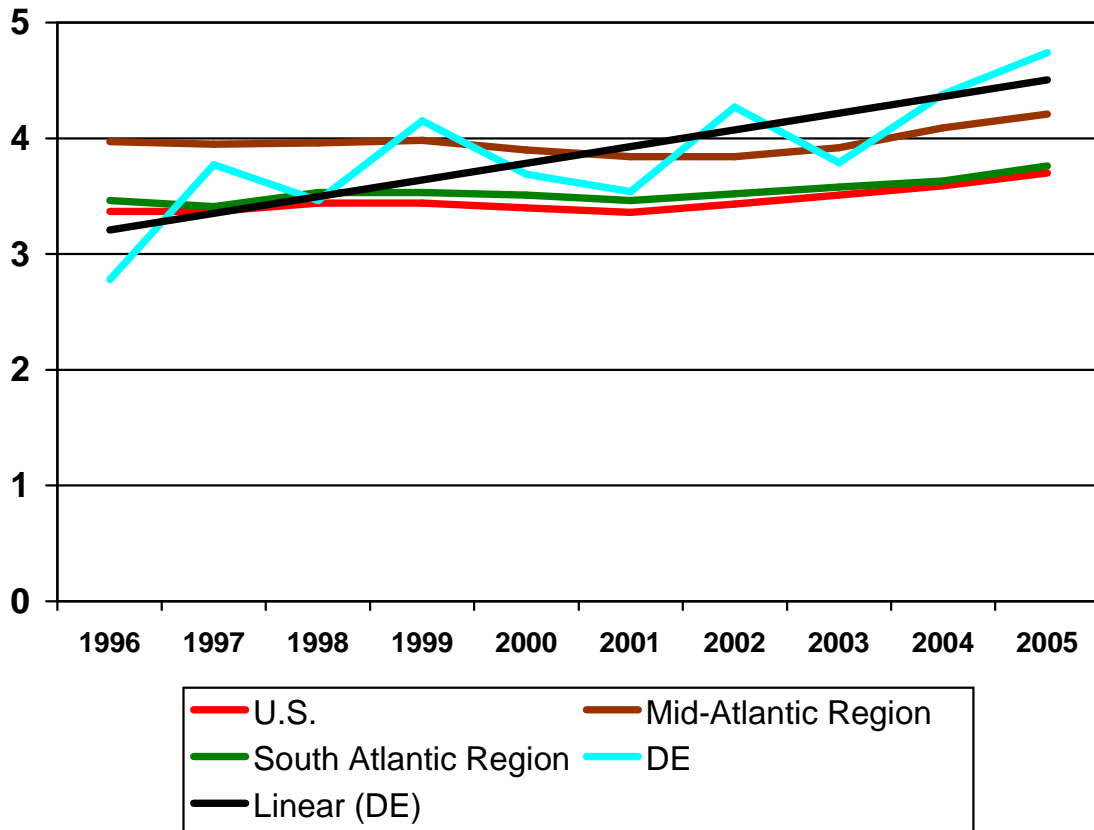
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Source: BLS, 2006. Health care and social assistance as a percentage of total employment. Current employment situation survey.

All states are experiencing rising employment in health care and social assistance as a percentage of total employment. Health care employment is 11% of total employment in the state. This is 3% larger than the ratio in 1990.

**Figure 6.9 Full Time Equivalent RNs per 1,000 Population**

Source: AHA. Center for Applied Demography and Survey Research, University of Delaware.



The number of full time equivalent registered nurses at community hospitals per 1,000 population has been trending upwards. In Delaware, for example, this number has increased from 2.8 in 1996 to 4.7. This appears to be a stronger rate of growth than regionally or nationally, however there is variability in the Delaware data, which could reflect some bias in reporting.

## Observations

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

This project is a step toward measuring the size and structure of personal health care costs in Delaware. It is pursued with a number of constraints; these include using Delaware data wherever possible, keeping comparability with CMS where possible to allow interstate comparisons, utilizing secondary data sources where Delaware data was not available, and using the provider as the basis of measurement.

There are a number of findings that are worth reiterating from the study.

- Medical price is stable at 4% per year. This is higher than the nadir of 2% in 1997, but significantly lower than the double-digit rates of eighties and early nineties.
- 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 decreased both in the US and in the State of Delaware. While traditionally the share earned by hospitals was 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 nation.
- The drug sector is rapidly expanding and shows no sign of abating. Several factors foster this growth. The FDA accelerated its approval process of new drugs. Also managed care greatly reduced the out-of-pocket expense of

prescription drugs. The outlook for drug expenditures is for continued strong growth.

- 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 \$6.2 billion annually is spent on personal health care in Delaware. The average rate of increase is 5% per year.
- Delawareans spend less of Gross State Product (11%) when compared to the US in general (16%).
- The health care sector of the Delaware economy is an important source of employment with 11% of the total workforce and 11% of the reportable wages.
- Nationally, cost shift is rising. The private payer payment-to-cost ratio is at its highest point for 10 years. Hospitals' markup of charges over costs are growing also. Uncompensated care is growing in dollar terms, but as a percentage of total costs, is relatively stable. Hospital margins are relatively stable between 5 and 10 percent.

When taken together, these data suggest that Delaware is essentially in the mainstream regarding personal health care expenditures. While the costs per capita are slightly higher, as a high-income state Delaware can afford to consume more of these services. There will also be alterations in how these payments are allocated between public, private, and individual payers.

Improvements can be made in the estimates presented here. With the release of the 2002 Census of Service Industries, the CMS should soon be ready to release new benchmark data. Currently, the accuracy of the estimates is assessed as +/- 7%. As more data is collected and the methodologies are refined, the accuracy will improve.

## Appendix

### Share of Total Personal Health Care Expenditures

	DE	Mid Atlantic	US
Hospital Care (Millions of Dollars)	33.9%	36.1%	36.6%
Physician & Other Professional Services (Millions of Dollars)	29.7%	25.9%	29.0%
Dental Services (Millions of Dollars)	5.4%	4.6%	5.2%
Home Health Care (Millions of Dollars)	2.2%	3.3%	2.8%
Prescription Drugs (Millions of Dollars)	13.5%	12.5%	12.1%
Other Non-Durable Medical Products (Millions of Dollars)	1.9%	2.0%	2.1%
Durable Medical Products (Millions of Dollars)	1.5%	1.5%	1.5%
Nursing Home Care (Millions of Dollars)	7.5%	9.7%	7.4%
Other Personal Health Care (Millions of Dollars)	4.5%	4.4%	3.4%

Source: 2004 CMS.