Projections of National Health Expenditures, 1980, 1985, and 1990

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This paper presents projections of national health expenditures by type of expenditure and sources of funds for 1980, 1985, and 1990. A major purpose of these projections is to provide a baseline for health care expenditures in the absence of national health insurance and cost containment.

Rapid growth in health expenditures is projected to continue to 1990. National health expenditures increased 350 percent between 1965 and 1978, reaching $192 billion in 1978. They are projected to reach $245 billion in 1980, $440 billion in 1985 and $760 billion in 1990, under current legislation. As a proportion of the Gross National Product (GNP), health expenditures rose from 6.2 percent to 9.1 percent between 1965 and 1978. They are projected to continue to rise, reaching 10.5 percent by 1985 and 11.5 percent by 1990.

Sources of payments for these expenditures are also shifting. From 1965 to 1978, the percentage of total health expenditures that was government financed increased 16 percentage points, from 25 to 41 percent. The Federal share of public funds during the same period grew rapidly, from 53 percent in 1965 to 69 percent in 1978. In 1985, approximately 42 percent of total health spending is projected to be financed from public funds, of which 72 percent will be paid by the Federal government. Public funds are expected to account for 43 percent of total national health expenditures by 1990.

National health expenditures grew at a compound annual rate of 12.2 percent from 1965 to 1978, compared to a 9.0 percent growth rate for the GNP (Table I). As health expenditures continue to consume a greater proportion of the GNP, national attention is focusing on exploring ways to slow this growth. Cost containment, a national health insurance plan, and voluntary efforts by the health care industry are strategies that have been advanced as possible solutions to the growth problem.

The projection model outlined in this paper provides a framework into which economic, actuarial, demographic, and judgmental [1] factors are integrated. We developed a relatively simple and intuitive model to project medium and long-term secular trends [2] for each type of expenditure, e.g., hospital care, physicians' services, nursing home care; and for the sources of payment for these expenditures, e.g., out-of-pocket expenses, the Federal government, and State and local governments (Gibson, 1979).

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[1] For discussions of the role of judgement in economic projections, see Fox and Ezekiel, 1959; Klein, 1971; Kuznets, 1954; and McCracken, 1980.

[2] For medium and long-term projections there is a lack of evidence that econometric models perform significantly better than simpler techniques (Armstrong, 1978; Ascher, 1978).

Table 1
Aggregate and Per Capita National Health Expenditures, by Source of Funds and Percent of Gross National Product, Selected Calendar Years, 1965-1990

Time Period	Gross National Product (in billions)	Health Expenditures								
		Total			Private			Public		
		Amount (in billions)	Per Capita [4]	Percent of GNP	Amount (in billions)	Per Capita [4]	Percent of Total	Amount (in billions)	Per Capita [4]	Percent of Total
Historical Period [1]										
1965	$688.1	$43.0	$217.42	6.2	$32.3	$163.28	75.1	$10.7	$54.13	24.9
1970	982.4	74.7	358.63	7.6	47.5	227.71	63.5	27.3	130.93	36.5
1975	1,528.8	131.5	604.57	8.6	75.8	348.61	57.7	55.7	255.96	42.3
1978	2,107.6	192.4	863.01	9.1	114.3	512.62	59.4	78.1	350.40	40.6
Projections:										
1980	2,572.0 [2]	244.6	1,078.00	9.5	144.1	635.00	58.9	100.6	443.00	41.1
1985	4,168.7 [2]	438.2	1,846.00	10.5	254.2	1071.00	58.0	184.0	775.00	42.0
1990	6,562.5 [3]	757.9	3,057.00	11.5	432.1	1743.00	57.0	325.8	1314.00	43.0
Annual Percent Increases for Selected Periods										
1965-70	7.4	11.7	10.5	---	8.0	6.9	---	20.6	19.3	---
1970-75	9.2	12.0	11.0	---	9.8	8.9	---	15.3	14.3	---
1975-80	11.0	13.2	12.3	---	13.7	12.8	---	12.6	11.6	---
1980-85	10.1	12.4	11.4	---	12.0	11.0	---	12.8	11.8	---
1985-90	9.5	11.6	10.6	---	11.2	10.2	---	12.1	11.1	---
1965-78	9.0	12.2	11.2	---	10.2	9.2	---	16.5	15.4	---
1970-78	10.0	12.5	11.6	---	11.6	10.7	---	14.1	13.1	---
1975-78	11.3	13.5	12.6	---	14.7	13.7	---	12.0	11.0	---
1978-80	10.5	12.7	11.8	---	12.3	11.3	---	13.4	12.5	---
1978-85	10.2	12.5	11.5	---	12.1	11.1	---	13.0	12.0	---
1978-90	9.9	12.1	11.1	---	11.7	10.7	---	12.6	11.6	---

[1] Robert M. Gibson, "National Health Expenditures, 1978", *Health Care Financing Review*, Summer 1979, page 22.

[2] Executive Office of the President, Office of Management and Budget, Mid-Session Review of the 1980 Budget, July 12, 1979.

[3] GNP projections through 1985 were taken from the OMB Mid-Session Review. The 1984-85 annual increase, 9.5 percent, from the Mid-Session Review was used for the 1985-90 period. The resulting 1990 GNP is within 3 percent of the GNP projection made by the private consulting firm Data Resources, Inc.. See *The Data Resources U.S. Long-Term Review*, Summer 1979 (Forecast Trendlong 0679).

[4] Per capita amounts in projections are rounded to nearest dollar.

Projection Assumptions

These projections are predicated on a set of assumptions relating to the medical care sector and the economy as a whole. The fundamental assumption is that historical trends and relationships from 1965 to 1978 will continue into the future. (Complete information is not yet available for 1979, necessitating projections beginning in that year.) More specifically, it is assumed that:

- Per capita use of medical care will continue to grow in accordance with historical relationships and trends.
- The health care delivery system will continue to evolve along patterns similar to those evident in the historical period.
- No mandatory cost containment program will be in effect.
- No major, new, publicly-financed program of medical care, such as national health insurance, will be in effect.

- There will be no major technological breakthrough in treatment of acute and chronic illnesses which would significantly alter patterns of morbidity and mortality.
- Medical care prices will vary with the Consumer Price Index (CPI) for all items, according to relationships established in the historical period.
- Health manpower will increase in accordance with the projections made by the Bureau of Health Manpower (Table 2).
- Population will grow in accordance with projections of the Office of the Actuary, Social Security Administration (Table 2).
- The CPI and the GNP will grow in accordance with the Office of Management and Budget projections through 1985 (Tables 1 and 2). Annual percent changes for 1986 to 1990 are assumed equal to the 1984 to 1985 percent changes.

• Benefit outlays for Medicare and Medicaid through 1985 will grow in accordance with projections made by the Divisions of Medicare and Medicaid Cost Estimates in the Health Care Financing Administration. Projections for 1986 to 1990 were made by the authors.

The projection assumptions relate to only one scenario, the continuation of current trends and relationships. Projections could also be made for alternative scenarios, such as the advent of national health insurance (Trapnell, 1976), cost containment, or the emergence of significant price competition in the health care industry. In the absence of evidence to the contrary, however, the most reasonable assumption, the rationale for which is developed later in the paper, is that current trends and relationships will continue into the future.

Methodology

The projection model has two modules: a Five-Factor Module for types of expenditures and a Channel of Finance Module for sources of funds. Interaction and consistency between these two modules is an essential feature of the projection process.

Projection of Expenditure Types

An equation with five factors is used to project types of expenditures. The five factors are total population, utilization per capita, the CPI, medical care prices relative to the CPI, and a residual category, real expense per unit of service (Technical Note).

Five-Factor Module for Projecting Expenditure Types

The Five-Factor Module for expenditure types can be expressed as an equation that is sequentially solved for each year, 1979 to 1990:

$$E_{it} = E_{it-1}(1 + P\mathring{O}P_t)\left(1 + \left[\frac{U\mathring{T}IL}{POP}\right]_{it}\right)(1 + C\mathring{P}I_t)$$

$$\left(1 + \left[\frac{MED\mathring{P}RICE}{CPI}\right]_{it}\right)(1 + OT\mathring{H}ER_{it})$$

E_{it} is the projected level of health expenditure of type "i" in year "t" (for example, the level of expenditures for physicians' services in 1979, the first year of projected values).

E_{it-1} is the level of health expenditure of type "i" for year "t − 1." E_{it-1} is an historical value for calendar year 1978 and a projected value thereafter. Historical expenditures are from the Health Care Financing Administration (Gibson, 1979).

$P\mathring{O}P_t$ is the projected annual percent change, divided by 100, of total population for year "t" compared to "t − 1". For example, population was projected to grow from 222,995 million in 1978 to 224,873 million in 1979, an increase of 0.84 percent $\left(\frac{224,873}{222,995} = 1.0084\right)$. $P\mathring{O}P_{1979}$ is .0084, and the first term in parentheses of the five factor equation for $E_{i\ 1979}$ is 1.0084.

$\left[\frac{U\mathring{T}IL}{POP}\right]_{it}$ is the projected annual percent change, divided by 100, of per capita utilization of medical service type "i" in year "t," where utilization is measured by patient visits per capita or patient days per capita.

$C\mathring{P}I_t$ is the projected annual percent change, divided by 100, of the CPI for year "t."

$\left[\frac{MED\mathring{P}RICE}{CPI}\right]_{it}$ is the projected annual percent change, divided by 100, of medical care price for service type "i" in year "t," deflated by the CPI for year "t."

$OT\mathring{H}ER_{it}$ is the projected annual percent change, divided by 100, of the residual category of "OTHER" for service type "i" for year "t." OTHER can be interpreted as the percent changes in real expenditures per visit or per inpatient day. It includes changes in the number of services provided per visit or inpatient day and changes in the mix of services. Like all residuals, it is an amalgamation of effects that cannot be individually measured or broken down into separate parts. Since the measures of price used are often imperfect, it is important to interpret OTHER with caution.

Table 2
Historical Estimates and Projections of Key Variables Used in Assumptions, Selected Periods, 1965-1990

Calendar year	Total Population[1] (in thousands as of July 1)	Consumer Price Index for all items[2] (1967 = 100.0)	Active Physicians[3] (as of July 1)	Active Dentists[3] (as of July 1)
Historical Estimates				
1965	197,784	94.5	284,566	95,445
1970	208,402	116.3	318,955	101,470
1975	217,452	161.2	370,156	110,725
1978	222,995	195.4	410,341	119,275
Projections				
1980	226,838	234.8	437,269	124,870
1985	237,353	317.3	511,500	139,310
1990	247,891	406.0	586,500	153,175
Annual Percent Increases for Selected Periods				
1965-70	1.1	4.2	2.3	1.2
1970-75	0.9	6.7	3.0	1.8
1975-80	0.9	7.8	3.4	2.4
1980-85	0.9	6.2	3.2	2.2
1985-90	0.9	5.1	2.8	1.9
1965-78	0.9	5.7	2.9	1.7
1970-78	0.9	6.7	3.2	2.0
1975-78	0.8	6.6	3.5	2.5
1978-80	0.9	9.6	3.2	2.3
1978-85	0.9	7.2	3.2	2.2
1978-90	0.9	6.3	3.0	2.1

[1] Historical estimates of population are based on data from the Bureau of Census. The estimates are reported in Robert M. Gibson, "National Health Expenditures, 1978", *Health Care Financing Review*, Summer 1979, p. 21. Office of the Actuary projection growth rates for population are reported in the Board of Trustees, Federal Hospital Insurance Trust Fund, *1979 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund*, April 13, 1979, p. 56.

[2] Consumer Price Index historical estimates are reported in *Economic Report of the President*, January 1980, p. 259. Projections for 1980 and 1985 were made by Executive Office of the President, Office of Management and Budget, Mid-Session Review of the 1980 Budget, July 12, 1979. CPI projections after 1985 were not available from the OMB Mid-Session Review. The 1984-85 annual increase, 5.1 percent, from the Mid-Session Review was used for the 1985-90 period. This rate is approximately one percentage point higher than the average annual increase for the period 1965-70 and approximately one-half percentage point lower than the average annual increase for the period 1965-78.

[3] Historical estimates and projections of active physicians (MD's and DO's) and dentists are based on data reported in U.S. Department of Health, Education, and Welfare, Public Health Service, Health Resources Administration, Bureau of Health Manpower, Manpower Analysis Branch, *A Report to the President and Congress on the Status of Health Professions Personnel in the United States*, Publication No. (HRA) 78-93, August 1978.

While the general model accounts for five factors, models for individual types of expenditures may have more or less than five factors, depending upon available time-series data and the applicability of the five factors to the type of expenditure being projected (Technical Note).

The combined effects of the five factors are multiplied to obtain a composite annual rate of expenditure growth for each type of expenditure for each year, 1979 to 1990.

Projection of Growth Rates of the Five Factor Module

The numerous data sources that were used to factor individual types of expenditures into three components—utilization per capita, medical care prices relative to overall prices in the economy, and real expenses per unit of service—are listed in the Technical Note at the end of this paper. Growth rates for these factors from 1979 to 1990 are based on historical relationships and trends. We studied annual percent changes and compound growth rates for selected sub-periods between 1965 and 1978. We considered certain sub-periods irrelevant, because they were affected by unique forces not expected to be repeated. For example, the initial impact of Medicare on prices and utilization was not considered relevant in making baseline expenditure projections for 1979 to 1990. Other sub-periods were combined when one offset the other. The Economic Stabilization Program (ESP) period, for example, is combined with the post-ESP bulge period to average a possible offset related to prices and utilization.

To determine the growth rates of medical care prices relative to the CPI $\left(\frac{\text{MEDPRICE}}{\text{CPI}}\right)$, we paid particular attention to the growth in this variable during the initial implementation of Medicare, the Economic Stabilization Program (ESP), the post-ESP bulge, and the current "voluntary period." We also noted atypical movements in the CPI, since during periods of high growth in energy prices, mortgage interest rates, and residential housing prices, the relationship of medical care prices to the overall CPI typically shifts, with medical care prices growing at relatively slower rates.

Growth rates in utilization per capita $\frac{\text{UTIL}}{\text{POP}}$ and real expense per unit of service (OTHER) may be influenced by shifts in the age-sex distribution of the population (Feldstein, 1971c; Fuchs and Kramer, 1972), as well as by changes in the proportion of expenses funded by third parties, health manpower, real income, and regulation of the health sector. When projected changes in these determinants significantly deviated from historical trends, we adjusted the projections to reflect the deviations. Growth rates for utilization per capita and real expenses per unit of service were also examined in combination, since one may offset the other. Years of atypically high growth in visits per capita, for example, may be associated with years of atypically low growth in real expense per visit, and vice versa.

Taking the above considerations into account, we projected year-to-year growth rates for 1979 to 1990 for medical care prices relative to the CPI, utilization per capita, and real expenses per unit of service.

These growth rates, combined with projections of growth rates for total population and the CPI, yielded yearly expenditure growth rates for 1979 to 1990. We projected the levels of expenditures for each year and each type of expenditure. Adding the various projections yielded the projected yearly total of national health expenditures.

Projection of Sources of Funds

For each type of expenditure, the Channel of Finance Module projects eight sources of funds: 1) direct or out-of-pocket payments, 2) private health insurance, 3) philanthropic and industrial in-plant health services (e.g., an on-site nurse), 4) Medicare, 5) Federal Medicaid, 6) other Federal, 7) State Medicaid, and 8) other State and local (Gibson, 1979).[3]

Medicare and Medicaid projections were made independently of those for national health expenditures using the same Office of Management and Budget projection assumptions (for overall inflation, GNP, etc; Tables 1 and 2) that were used for national health expenditures.

Projections for all other sources of funds are based on historical trends. The question we applied was this: What proportion of each expenditure type was attributable to a particular source of funds? Trends in these proportions were projected from 1979 to 1990. In each year for which projections were made, the sum of the proportions for all sources for each type of expenditure was constrained to equal 100 percent. Yearly changes in proportions preserved historical trends. We adjusted figures derived from the Channel of Finance and the Five Factor Modules for consistency and reasonableness. [4]

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[3] These are the sources of funds in Gibson (1979, Table 5). Four categories of sources are displayed in Table 4 of this paper; (1) direct payments, (2) other private (private health insurance, philanthropy, and industrial in-plant health services), (3) Federal (Medicare, Federal Medicaid, other Federal) and (4) State and local (State Medicaid, other State and local).

[4] Similar procedures for iteratively adjusting projection outputs to obtain reasonableness and consistency for both sides of the "equation" are described in Colm, 1958; Lewis and Turner, 1967; and Kuznets, 1954.

Projected Trends

Projected Trends for National Health Expenditures

Expenditures for national health have risen from $43 billion in 1965 to $192 billion in 1978. Total outlays were projected at $245 billion in 1980, $438 billion in 1985, and $758 billion by 1990 (Table 1 and Chart I). Per capita expenditures are projected to be $1,850 in 1985, more than double the 1978 figure of $863 and more than 8 times the 1965 amount of $217 (Table 1). By 1990, per capita expenditures are projected to exceed $3,000. This growth reflects the historical trends in which expenditures have approximately doubled every 6 years.

The projected average annual rate of increase in total national health expenditures from 1978 to 1990 is 12.1 percent, essentially the same as the rate of 12.0 percent for the 1970 to 1975 interval (which included the price control period), but below the 13.5 percent rate for 1975 to 1978. By 1985, increases in health care expenditures are projected to moderate, reflecting the progressively lower rates of overall inflation which were forecast by the Office of Management and Budget in its mid-session review of the 1980 Budget (Table 2). Between 1965 and 1978, national health expenditures increased as a share of the GNP from 6.2 percent to 9.1 percent (Table 1). Increases in health expenditures are projected to continue to outpace growth in the GNP, with national health expenditures accounting for 9.5 percent of the GNP in 1980, 10.5 percent in 1985, and 11.5 percent in 1990 (Chart II).

Projections of the ratio of national health expenditures to the GNP are quite sensitive to small differences in projections of national health expenditures and the GNP. In 1990, the projections for national health expenditures ($757.9 billion) and the GNP ($6,552.5 billion) were each factored up by 5 percent and down by 5 percent. Ratios were calculated for the outside limits. The projected ratios of national health expenditures to the GNP ranged from 10.4 percent to 12.8 percent.

Many intertwined factors contribute to the growth in specific types of medical expenditures. [5] Two factors are particularly notewor-

thy: 1) the role of third-party payments in increasing consumer demand for services; and 2) the associated fee-for-service and cost-based reimbursement systems which lack incentives to provide medical care in the least expensive manner. Studies correlate increases in medical care prices and expenditures not only to increased insurance coverage, but also to the level of such coverage (American Medical Association, 1978; Newhouse, 1978).

The hospital sector exemplifies this. The aggregate coinsurance rate has remained at approximately 10 percent since 1967 (Gibson, 1979), yet expenditures for hospital services during this period have increased at an average annual rate of almost 14 percent (Gibson, 1979). As we approach the point where 100 percent of the consumers' cost is paid for by third parties, providers and consumers of medical care appear to increasingly treat such care as a free good at the time of decision-making.

One of the factors which has contributed to the growth in insurance coverage is the provision of tax subsidies for health insurance (Congressional Budget Office, 1980b; Feldstein and Allison, 1974; Feldstein and Friedman, 1977). These subsidies, i.e., the exclusion from taxable income of employer contributions to employee health insurance plans and the deductibility of health insurance premiums, provide an incentive to purchase more insurance than would otherwise be the case. The additional insurance then encourages further use of medical care.

The third-party reimbursement systems themselves incorporate incentives to increase costs.[6] Cost-based reimbursement for hospitals and fee-for-service reimbursement for physicians reward providers who supply larger quantities and more costly services with more revenues. An incentive is therefore provided to adopt product-innovative rather than process-innovative technologies. The former tend to increase costs, while the latter are associated with efficiency increases and are therefore cost-decreasing.[7]

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[5] There have been numerous articles and monographs written to explain the rapid rise in health expenditures. Some of these are Altman and Blendon, 1979; American Medical Association, 1978; Blumberg, 1979; Christianson and McClure, 1979; Enthoven, 1978a; Fedder, Holahan, and Marmor, 1980; Feldstein and Friedman, 1977; Feldstein and Taylor, 1977; Fuchs, 1979; Marmor, Wittman, and Heagy, 1976; Meyer, 1979; Moloney and Rogers, 1979; National Council on Health Planning and Development, 1980; Newhouse, 1978; U.S. Council on Wage and Price Stability, December, 1976; Virts, 1976; Wu and Zaidi, 1977; Zelten, 1979; and Zubkoff, 1975.

[6] There is a great deal of literature on the impact of our reimbursement system on the utilization and cost of medical care. See Burney, Schieber, Blaxall, and Gabel, 1979; Delbanco, Meyers, and Segal, 1979; Enthoven, 1979; Enthoven, 1978b; Frech and Ginsburg, 1978; Gaus, Cooper, and Hirschman, 1976; Hollahan, 1975; Holahan, Hadley, Scanlon, Lee, and Bluck, 1979; Schroder and Showstack, 1978; Showstack, Blumberg, Schwartz, and Schroeder, 1979; Sloan and Steinwald, 1975; and Zelten, 1979.

[7] The relationship of technology to health care costs has stirred considerable debate. Related to this issue, see Altman and Blendon, 1979; Davis, 1974; Delbanco, Meyers, and Segal, 1979; Feldman, 1979; Feldstein, 1971a; Feldstein, 1977a; Fineburg and Hiatt, 1979; Freeland, 1978; Gaus and Cooper, 1979; Moloney and Rogers, 1979; Relman, 1979; Russell, 1979; Schroeder and Showstack, 1978; Taylor, 1978; and Zelten, 1979.

CHART I
Total National Health Expenditures
Selected Years 1965 to 1990
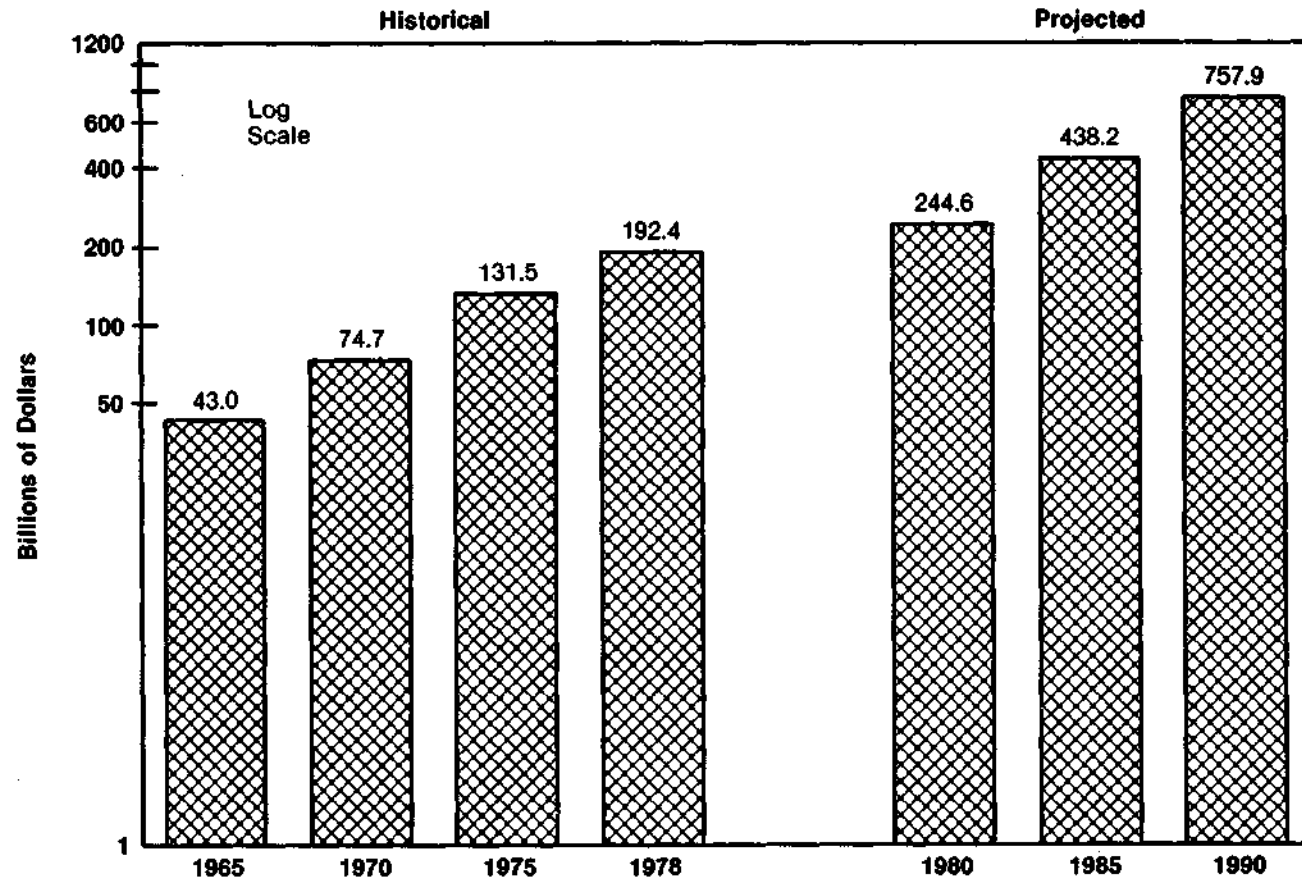
Historical   **Projected**

SOURCE: Office of Research, Demonstrations, and Statistics
         Health Care Financing Administration

CHART II
Total National Health Expenditures
As a Percent of GNP
Selected Years 1965 to 1990
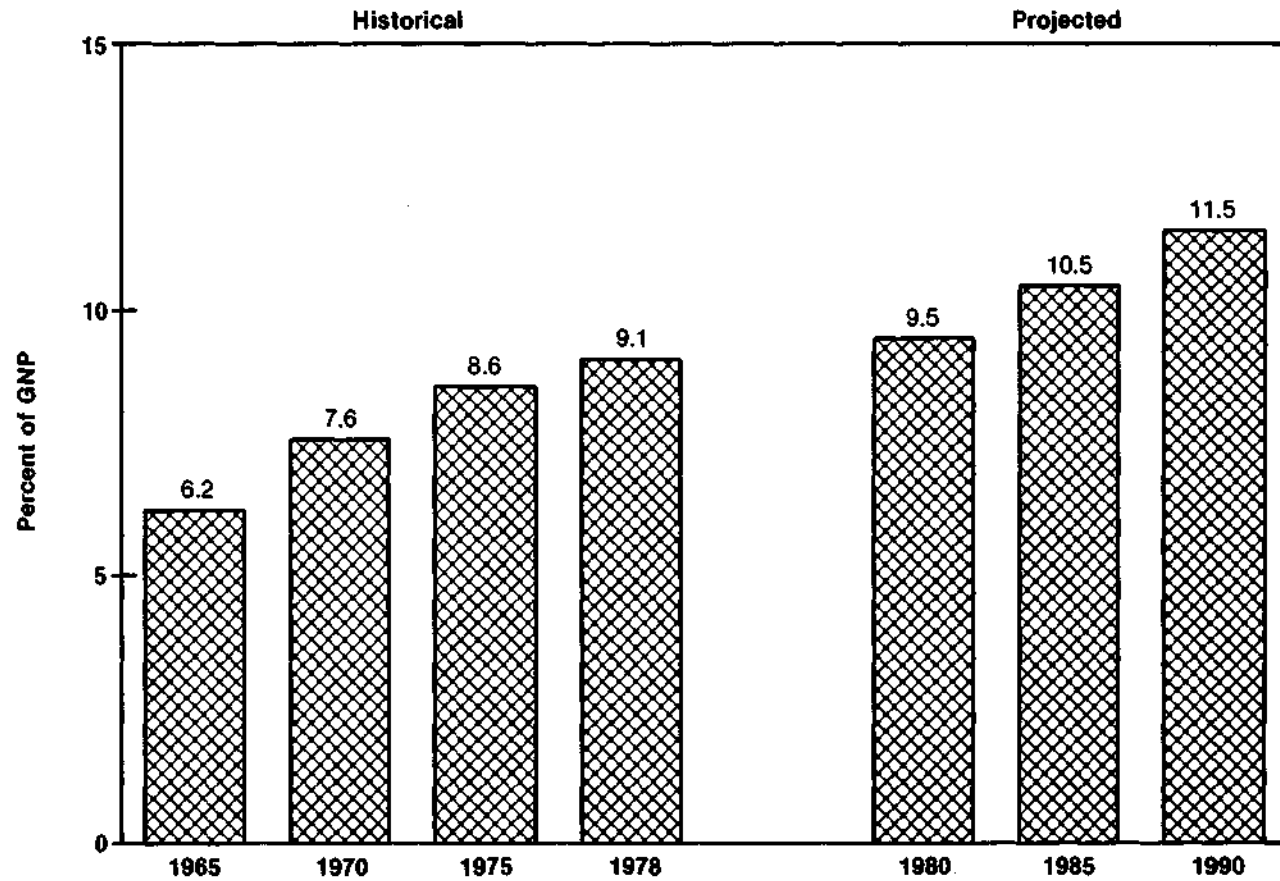
Historical   Projected

SOURCE: Office of Research, Demonstrations, and Statistics
Health Care Financing Administration

It has been alleged that productivity levels in the health services sector are lower than in the overall economy, that the rate of increase in productivity is slower than in the private sector, and that significant increases can be made in current productivity levels.[8] Mushkin, et al. (1978) suggest that Baumol's model of unbalanced economic growth (1967) may have relevance for the health services sector. It can be paraphrased as follows: If productivity or output per manhour increases faster in the nonhealth sector than in the health sector, and wages increase at the same rate in both sectors, then unit costs in the health sector must increase faster than in the non-health sector. There is fragmentary evidence on wages, prices, and productivity which is consistent with such an application of Baumol's model.

Between 1972 and 1978,[9] wages increased 54 percent in both the health services sector and the total private economy (U.S. Department of Labor, July, 1979). In this same period, the medical care component of the CPI rose 20 percent faster than the CPI for all items less medical care.[10] Relatively high price increases in the health field, combined with an inelastic demand for medical care services (Phelps and Newhouse, 1974), contributed to the increase in expenditures for health care. While the problems of measuring output and productivity in the health field should not be understated, it is crucial not to confuse difficulty of measurement with lack of relevance.

Another hypothesis relating to increasing health care expenditures is that physicians may be able to induce demand for their services and/or set their prices and levels of services so as to achieve target incomes. Thus conventional economic models of supply and demand lose their power in explaining pricing and output behavior of physicians.[11] The patient's dependence upon the physician for technical decisions and the existence of third-party payments may provide the means for physicians to raise fees and increase services. According to the physician-induced demand and target-income models, increases in the number of physicians are associated with increases in expenditures for their services. This relationship becomes more important when the joint production of physicians' services and other related health services is noted (Blumberg, 1979; Pauly and Redisch, 1973; Redisch, 1979). Blumberg estimates that the physician directly "controls" approximately 70 percent of all personal health care expenditures. Thus the number of physicians, according to this hypothesis, is correlated not only with expenditures for physicians' services, but also with expenditures for hospital care, other professional services, drugs, nursing home care, etc.

Between 1965 and 1978, the number of active physicians grew at an average annual rate of 2.9 percent, triple the average annual rate for population growth of 0.9 percent (Table 2). For the period 1978 to 1990, the Bureau of Health Manpower projects that the number of active physicians will increase at an average annual rate of 3.0 percent, compared to a population growth rate of 0.9 percent (Table 2). This increase in the number of physicians is likely to be associated with increases in medical expenditures, especially for services significantly covered by third-party payments.

A last hypothesis is that some services once provided for free by household members are now provided by health professionals (Fuchs, 1979). This contributes to growth in the health sector and is of particular importance for one of the fastest growing services, long-term care (Chiswick, 1976). One factor that contributes to this shift in providing services is the increasing proportion of females 16 years of age and over who are in the labor force. This proportion has increased from 39 percent in 1965 to 50 percent in 1978 (Council of Economic Advisors, 1980) and has resulted in a smaller number of persons

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[8] For studies and analyses which bear on the entire issue of productivity in the health services sector, see Altman and Eichenholz, 1974; Applied Management Sciences, Inc., 1979; Business Week, 1979b; Congressional Budget Office, 1980a; Enthoven, 1978a; Jeffers and Siebert, 1974; Medicus Systems, 1980; National Council on Health Planning and Development, 1980; Rafferty, 1977; Reder, 1969; Ruchlin and Leveson, 1974; and Schwartz and Joskow, 1978.

[9] The earliest year for which data are available for average hourly earnings of employees in the health services is 1972 (U.S. Department of Labor, 1979).

[10] Price data were used, rather than unit data, since cost data were not available for either the health services sector nor for the total private economy. If the percent mark-up of unit prices over unit costs is constant over time, the growth in both series will be the same. The difficulty of measuring output in the health services sector (Reder, 1969) has hampered efforts to measure price changes for a fixed unit of service over time. Some factors, such as increasing sophistication of care that cannot be net out from a "fixed" unit of service over time, may result in medical care price statistics being biased upward over time. Other factors, such as separating services and procedures into finer components and billing individually for each service or procedure, may result in medical care price statistics being biased downward over time. On these issues see Ginsburg, 1978; Showstack, Blumberg, Schwartz, and Schroeder, 1979; and Sobaski, Scitovsky, and McCall, 1975.

[11] Because of the overriding role physicians play in the health care delivery system and the unsettled questions relating to the association between changes in the number of physicians and changes in medical expenditures, several citations are listed: Cotterill, 1979; Dyckman, 1978; Evans, 1974, Fuchs, 1978; Fuchs and Kramer, 1972; Green, 1978; Hadley, Holahan, and Scanlon, 1979; Reinhardt, 1978; Sloan and Feldman, 1978; and Wilensky and Rossiter, 1979.

available for productive, non-paying work in the household. Because more women are working, the opportunity cost of providing unpaid personal care services for relatives and friends has increased (Becker, 1976). In addition, size of the average household decreased from 3.3 persons in 1965 to 2.8 in 1978, a decline of 15 percent (U.S. Department of Commerce, 1979). As average household size decreases due to social, economic, and demographic forces, there are fewer household members to provide personal care.

As more women join the labor force and average household size decreases, some long-term care activities have been "pushed" out of the household and into the health sector. It is also likely that increased third-party payments for coverage of health services have increased this trend.

Projection Trends for Expenditure Types

Expenditures for hospital care comprise the largest category of health expenditures, accounting for 32 percent of the total in 1965 and nearly 40 percent in 1978. They are projected to be almost 42 percent by 1985 and 44 percent by 1990 (Table 3). Increases in hospital expenditures are estimated to average 13.1 percent for the projected period 1978 to 1990, below the 1965 to 1978 average of 13.9 percent (Table 4). Expenditures for hospital care will reach $97 billion by 1980 and $335 billion by 1990 (Table 3 and Chart III). Historically, growth in patient days (American Hospital Association, 1979) has been slow, compared to the significant growth in services per patient day (Freeland, Anderson, and Schendler, 1979), which includes such factors as the number of employees, X-rays, and diagnostic laboratory tests. These trends are projected to continue.

The primary driving force behind the rapid rate of growth in the intensity of services is the high level of insurance coverage, combined with cost reimbursement (Feldstein, 1971a; Feldstein, 1977a; Newhouse, 1978; Russell, 1979).

Expenditures for physicians' services quadrupled during the period 1965 to 1978, increasing at an average annual rate of 11.6 percent (Table 4). Expenditures are projected to grow to $45 billion in 1980, $78 billion in 1985 and $129 billion in 1990 (Table 3 and Chart IV). They are projected to grow at an average annual rate of 11.9 percent from 1978 to 1990. The number of physician visits as measured by the National Center for Health Statistics' Health Interview Survey (Wilson and Begun, 1977) has increased at a slower rate than real services per visit. For example, laboratory tests, one component of real services per visit, increased from 850 to 1,510 per 1000 physician visits between 1972 and 1977 (Gibson, 1979). This increase in services is caused in part by growth in insurance

coverage and the fee-for-service reimbursement system (American Medical Association, 1978; Delbanco, Meyers, and Segal, 1979; Showstack, Blumberg, Schwartz, and Shroeder, 1979; Sloan and Feldman, 1975).

The impact of the large projected increase in the number of active physicians (Chart V) on prices, distribution by specialty, incomes, geographic distribution, etc. is not definitive (Katz, Warner, and Whittington, 1977; Lave, Lave, and Leinhardt, 1975; Medical Economics, 1980; Scheffler, Weisfeld, Hyg, Ruby, and Estes, 1978; Scheffler, Yoder, Weisfeld, and Ruby, 1979; Stambler, 1979; and U.S. Department of Health, Education, and Welfare, 1978).

The increasing incidence of malpractice suits in the 1970's has affected expenditures in two ways (Greenspan, 1979; Henderson, 1979): 1) fees were raised to reflect increased costs from higher malpractice insurance premiums; and 2) the quantity of services provided increased as physicians become more thorough in response to the threat of malpractice suits. In the projected period, this threat will continue to be a factor in physicians' practice costs but may not be as significant a cost determinant as it was in the 1970's.

Expenditures for dental services also grew, from $2.8 billion in 1965 to $13.3 billion in 1978. They are projected to increase to $34 billion by 1985 and $59 billion by 1990. The historical rate of growth for expenditures for dental services was 12.7 percent, more than double the 6.1 percent annual growth rate for the dental fees component of the CPI for the period 1965 to 1978.

Factors contributing to this growth include increases in demand caused by more dental insurance coverage (Carroll and Arnett, 1979) and increases in household real income (Manning and Phelps, 1979). Additionally, some lack of competition in the dental services market may have contributed to price increases and thus to expenditure growth (Kushman and Scheffler, 1978).

Nursing home care is the third largest category and one of the fastest growing areas of health care expenditures (Table 4). Between 1965 and 1978, growth in nursing home care expenditures averaged 16.9 percent per year, increasing from $2.1 billion in 1965 to $15.8 billion in 1978. Expenditures for nursing home care are expected to more than double between 1978 and 1985, and to reach $76 billion by 1990 (Table 3). Many factors have contributed to this rapid growth, including increases in the life expectancy of the aged, increases in third-party payments, and increases in prices that nursing homes pay for their resources, especially wages, etc. (Bassak and Gerson, 1978; Chiswick, 1976; CBO, 1977a; CBO, 1977b; Dunlop, 1978; Fuchs, 1979; Federal Register, 1979; HCFA, 1979).

Table 3
Aggregate and Per Capita Amount and Percentage Distribution of National Health Expenditures by Type of Expenditure, Selected Calendar Years, 1965-1990

Type of Expenditure	Historical Years [1]				Projected Years		
	1965	1970	1975	1978	1980	1985	1990
	Aggregate Amount (in billions)						
Total	$43.0	$74.7	$131.5	$192.4	$244.6	$438.2	$757.9
Health services and supplies	39.5	69.4	123.2	183.0	234.1	422.7	735.5
Personal health care expense	37.3	65.7	116.3	167.9	215.5	389.1	676.3
Hospital care	13.9	27.8	52.1	76.0	97.3	182.8	334.6
Physicians' services	8.5	14.3	24.9	35.3	45.0	78.2	128.8
Dentists' services	2.8	4.8	8.2	13.3	17.9	33.9	59.4
Other professional services	1.0	1.6	2.6	4.3	5.7	10.1	16.7
Drugs and drug sundries	5.8	8.4	11.8	15.1	18.1	27.0	38.9
Eyeglasses and appliances	1.9	2.1	3.0	3.9	4.7	7.1	10.2
Nursing home care	2.1	4.7	9.9	15.8	21.6	42.0	75.6
Other health services	1.3	2.1	3.7	4.3	5.2	8.1	12.2
Expenses for prepayment and administration	1.5	2.3	3.7	10.0	11.6	19.6	33.5
Government public health activities	.8	1.4	3.2	5.1	7.0	14.0	25.6
Research and medical-facilities construction	3.5	5.3	8.3	9.4	10.5	15.5	22.4
Research	1.5	1.9	3.2	4.9	5.2	8.3	12.3
Construction	2.0	3.4	5.1	5.2	5.3	7.2	10.1
	Per Capita Amounts [2]						
Total	$217.41	$358.63	$604.57	$863.01	$1,078.00	$1,846.00	$3,057.00
Health services and supplies	199.91	333.25	566.61	820.68	1,032.00	1,781.00	2,967.00
Personal health care expense	188.41	315.37	534.82	752.98	950.00	1,639.00	2,728.00
Hospital care	70.46	133.39	239.77	340.93	429.00	770.00	1,350.00
Physicians' services	42.84	68.81	114.66	158.08	198.00	329.00	520.00
Dentists' services	14.20	22.79	37.88	59.64	79.00	143.00	240.00
Other professional services	5.22	7.65	12.04	19.17	25.00	43.00	67.00
Drugs and drug sundries	29.18	40.34	54.32	67.71	80.00	114.00	157.00
Eyeglasses and appliances	9.43	10.08	13.71	17.40	21.00	30.00	41.00
Nursing home care	10.48	22.44	45.46	70.63	95.00	177.00	305.00
Other health services	6.60	9.88	16.97	19.43	23.00	34.00	49.00
Expenses for prepayment and administration	7.33	10.97	17.09	44.94	51.00	83.00	135.00
Government public health activities	4.16	6.91	14.71	22.75	31.00	59.00	103.00
Research and medical-facilities construction	17.51	25.38	37.96	42.33	46.00	65.00	91.00
Research	7.40	8.93	14.65	19.22	23.00	35.00	50.00
Construction	10.11	16.45	23.31	23.11	23.00	30.00	41.00
	Percentage Distribution						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health services and supplies	91.9	92.9	93.7	95.1	95.7	96.5	97.0
Personal health care expenses	86.7	87.9	88.5	87.3	88.1	88.8	89.2
Hospital care	32.4	37.2	39.7	39.5	39.8	41.7	44.1
Physicians' services	19.7	19.2	19.0	18.3	18.4	17.8	17.0
Dentists' services	6.5	6.4	6.3	6.9	7.3	7.7	7.8
Other professional services	2.4	2.1	2.0	2.2	2.3	2.3	2.2
Drugs and drug sundries	13.4	11.2	9.0	7.8	7.4	6.2	5.1
Eyeglasses and appliances	4.3	2.8	2.3	2.0	1.9	1.6	1.3
Nursing home care	4.8	6.3	7.5	8.2	8.8	9.6	10.0
Other health services	3.0	2.8	2.8	2.3	2.1	1.8	1.6
Expenses for prepayment and administration	3.4	3.1	2.8	5.2	4.8	4.5	4.4
Government public health activities	1.9	1.9	2.4	2.6	2.9	3.2	3.4
Research and medical-facilities construction	8.1	7.1	6.3	4.9	4.3	3.5	2.9
Research	3.4	2.5	2.4	2.2	2.1	1.9	1.6
Construction	4.7	4.6	3.9	2.7	2.2	1.6	1.3

[1] Expenditures for 1965-1978 are reported in Robert M. Gibson "National Health Expenditures, 1978", *Health Care Financing Review*, Summer 1979, pp 1-36.

[2] Per capita amounts in projections are rounded to nearest dollar.

Table 4
National Health Expenditures, Annual Percentage Change, by Type of Expenditure, Selected Periods, 1965-1990 [1]

Type of Expenditure	Calendar Periods										
	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1965-1978	1970-1978	1975-1978	1978-1980	1978-1985	1978-1990
Total	11.7	12.0	13.2	12.4	11.6	12.2	12.5	13.5	12.7	12.5	12.1
Health services and supplies	11.9	12.1	13.7	12.5	11.7	12.5	12.9	14.1	13.1	12.7	12.3
Personal health care expense	12.0	12.1	13.1	12.5	11.7	12.3	12.4	13.0	13.3	12.8	12.3
Hospital care	14.8	13.4	13.3	13.4	12.9	13.9	13.4	13.4	13.1	13.3	13.1
Physicians' services	11.1	11.7	12.5	11.7	10.5	11.6	11.9	12.2	12.9	12.1	11.4
Dentists' services	11.1	11.6	16.8	13.6	11.9	12.7	13.7	17.3	16.0	14.3	13.3
Other professional services	9.1	10.4	16.7	12.2	10.6	11.5	13.1	17.7	15.2	13.1	12.0
Drugs and drug sundries	7.8	7.0	8.9	8.3	7.5	7.7	7.6	8.5	9.5	8.7	8.2
Eyeglasses and appliances	2.4	7.3	9.5	8.6	7.5	5.8	8.0	9.2	9.9	9.0	8.4
Nursing-home care	17.7	16.1	16.9	14.2	12.5	16.9	16.4	16.8	17.1	15.0	14.0
Other health services	9.5	12.4	7.2	9.1	8.5	9.7	9.8	5.5	9.8	9.3	9.0
Expenses for prepayment and administration	9.5	10.2	25.7	11.0	11.4	16.0	20.3	39.2	7.8	10.0	10.6
Government public health activities	11.8	17.3	17.1	14.7	12.9	15.0	17.0	16.6	17.8	15.6	14.5
Research and medical-facilities construction	8.8	9.3	5.0	8.1	7.7	8.0	7.5	4.6	5.5	7.3	7.5
Research	4.9	11.3	10.3	9.9	8.1	8.6	11.0	10.4	10.0	9.9	9.2
Construction.	11.4	8.1	1.0	6.2	7.1	7.6	5.2	.6	1.6	4.8	5.8

[1] Expenditures for 1965-1978 are reported in Robert M. Gibson "National Health Expenditures, 1978", *Health Care Financing Review*, Summer 1979, pp 1-36. Expenditures for 1980-1990 are projections.

Other expenditures expected to approximately double during the 1978 to 1985 period are those for other professional services, government public health activities, and prepayment and administration (Table 3). Increased expenditures for drugs (Trapnell, 1979), eyeglasses and other appliances, research, and construction are projected to continue to grow at rates under 10 percent, consistent with historical growth rates.

Projection Trends for Channels of Finance

Distribution of health expenditures by payment source provides an alternative view of the changing pattern of health care expenditures (Tables 1 and 5).

In the public sector, enactment of Medicare and Medicaid in 1965 initiated large increases in expenditures for health care during the decade which followed. Between 1965 and 1978, public expenditures rose at more than 1.5 times the rate of private expenditures (Table 1), accounting by 1978 for almost 41 percent of all health care spending. During the 1965 to 1978 period, public expenditures for health care grew at an average annual rate of 16.5 percent. However, as the programs matured, public expenditures from 1970 to 1978 grew at an average annual rate of 14.1 percent and are projected to average 12.6 percent from 1978 to 1990.

The consumers' share of expenses dropped 17 percentage points to 29 percent from 1965 to
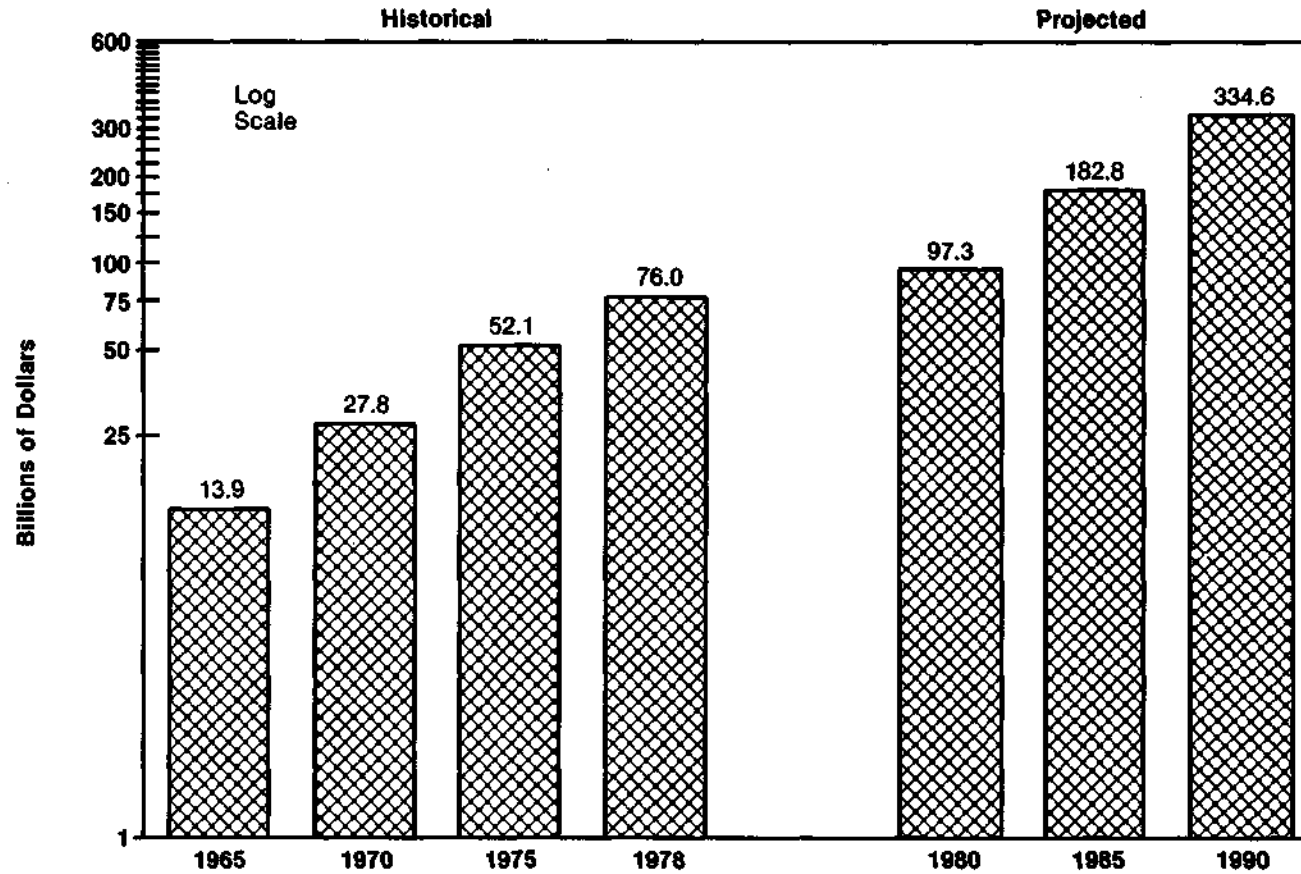
1978. This was mainly a result of increases in the Medicare and Medicaid programs. The drop in this proportion is expected to slow in the future, reflecting a moderation of growth projected for public programs. That is, no large influx of new recipients or major new benefits will be added.

"Other private" expenditures in the category of personal health care (primarily private health insurance benefits) grew from $9.5 billion in 1965 to $47.6 billion in 1978 and are projected to grow to $120 billion by 1985. Private health insurance benefits have become a significant cost factor for employers. For example, in 1979, General Motors outlays for health benefits were greater than its outlay to its largest steel provider, U.S. Steel (*Wall Street Journal*, 1979).

Summary and Discussion

Projections of national health expenditures by type of expenditures and channel of finance were presented for 1980, 1985 and 1990. The projections assumed that historical trends and relationships will continue and that neither a mandatory cost containment program nor national health insurance will be in effect. These baseline projections are consistent with Health Care Financing Administration's projections of Medicare and Medicaid outlays, Bureau of Health Manpower's projections of active physi-

CHART III
Expenditures for Hospital Care
Selected Years 1965 to 1990

Historical   Projected

600
Log
Scale
300
200
150
100
75
50
25
1

13.9   27.8   52.1   76.0   97.3   182.8   334.6

Billions of Dollars
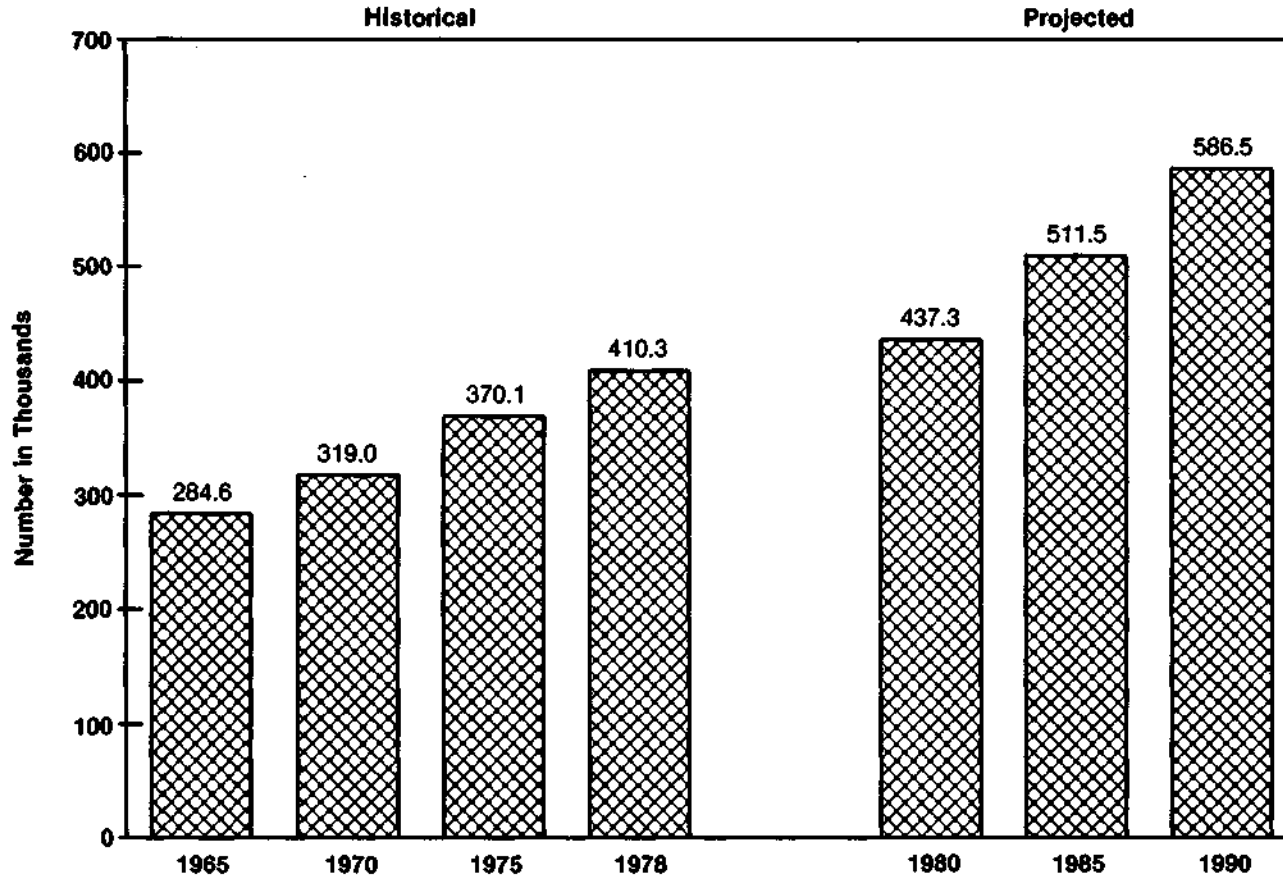
1965   1970   1975   1978   1980   1985   1990

SOURCE: Office of Research, Demonstrations, and Statistics
Health Care Financing Administration

CHART IV
Expenditures for Physicians' Services
Selected Years 1965 to 1990
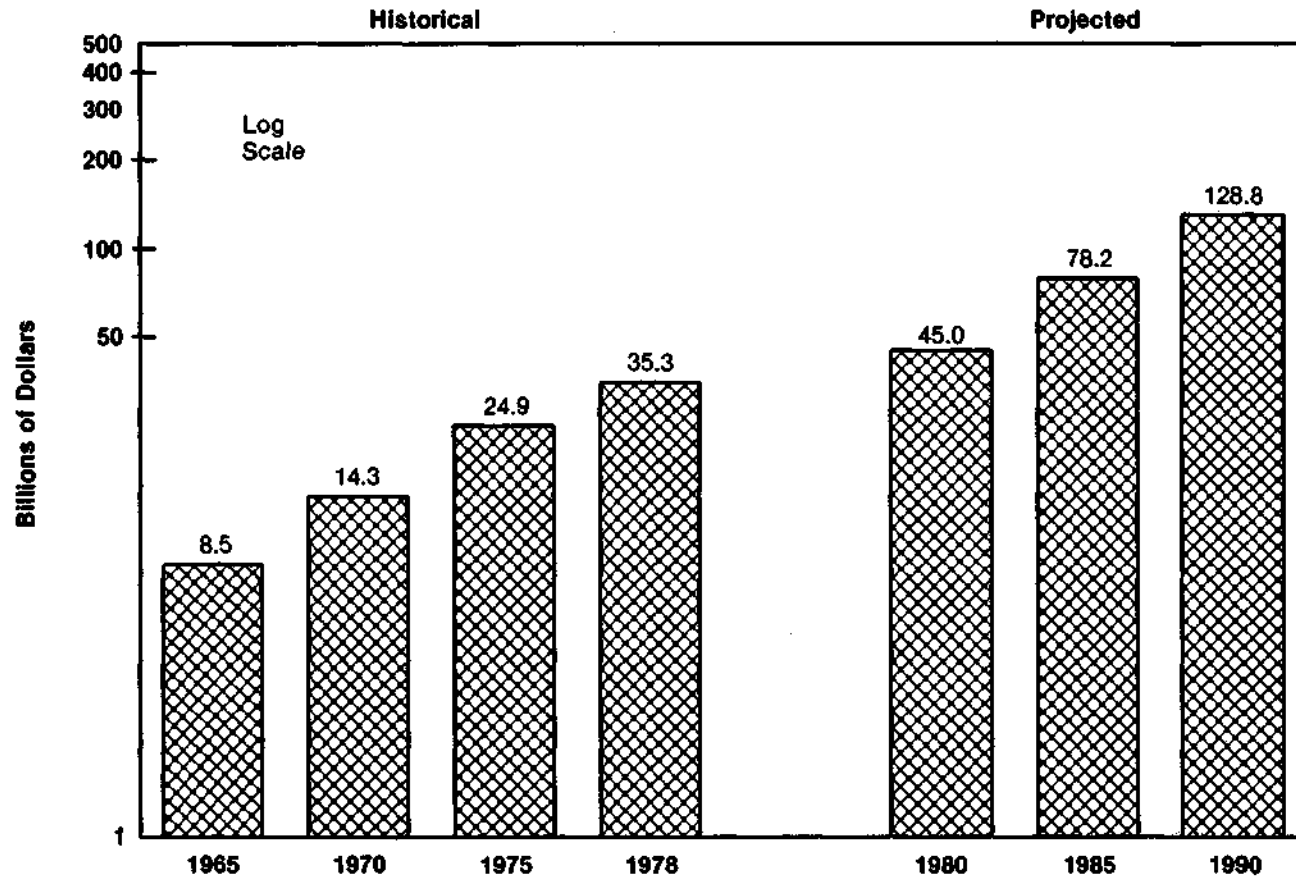
Historical   Projected

SOURCE: Office of Research, Demonstrations, and Statistics
Health Care Financing Administration

CHART V
Active Physicians
(As of July 1)
Selected Years 1965 to 1990

Historical   Projected

Number in Thousands

284.6 — 1965
319.0 — 1970
370.1 — 1975
410.3 — 1978
437.3 — 1980
511.5 — 1985
586.5 — 1990

SOURCE: Historical and Projected — Bureau of Health Manpower,
Health Resources Administration

Table 5
National Health Expenditures, by Type of Expenditure and Source of Funds for Selected Calendar Years 1965-1985, Amounts in Billions of Dollars. [1]

| Type of Expenditure | Total | Source of Funds | | | | | |
| | | Private | | | Public | | |
		Total	Direct Pay-ments	Other [2]	Total	Federal	State and Local
				1965			
Total	$43.0	$32.3	$19.9	$12.4	$10.7	$ 5.6	$5.1
Health services and supplies	39.5	30.8	19.9	10.9	8.7	4.1	4.6
Personal health care	37.3	29.4	19.9	9.5	7.9	3.8	4.1
Hospital care	13.9	8.5	2.5	6.1	5.4	2.4	3.0
Physicians' services	8.5	7.9	5.2	2.7	.6	.2	.4
Dentists' services	2.8	2.8	2.7	*	*	*	*
Other professional services	1.0	1.0	.9	.1	*	*	*
Drugs and drug sundries	5.8	5.6	5.4	.1	.2	.1	.1
Eyeglasses and appliances	1.9	1.8	1.8	*	*	*	*
Nursing-home care	2.1	1.4	1.3	*	.7	.5	.3
Other health services	1.3	.4	.0	.4	.9	.6	.3
Expense for prepayment and administration	1.5	1.4	.0	1.4	*	*	.0
Government public health activities	.8	.0	.0	.0	.8	.3	.5
Research and medical-facilities construction	3.5	1.5	.0	1.5	2.0	1.5	.5
Research	1.5	.2	.0	.2	1.3	1.2	.1
Construction	2.0	1.3	.0	1.3	.7	.3	.4
				1970			
Total	$74.7	$47.5	$26.5	$20.9	$27.3	$17.6	$9.7
Health services and supplies	69.4	44.9	26.5	18.3	24.6	15.7	8.8
Personal health care	65.7	43.3	26.5	16.7	22.4	14.6	7.9
Hospital care	27.8	13.2	2.9	10.3	14.6	9.4	5.1
Physicians' services	14.3	11.3	6.3	4.9	3.1	2.2	.9
Dentists' services	4.8	4.5	4.3	.2	.2	.1	.1
Other professional services	1.6	1.4	1.1	.3	.2	.1	.1
Drugs and drug sundries	8.4	7.9	7.6	· .3	.5	.2	.2
Eyeglasses and appliances	2.1	2.0	2.0	*	.1	.1	*
Nursing-home care	4.7	2.4	2.4	*	2.3	1.3	.9
Other health services	2.1	.6	.0	.6	1.5	1.0	.5
Expenses for prepayment and administration	2.3	1.6	.0	1.6	.7	.6	.1
Government public health activities	1.4	.0	.0	.0	1.4	.6	.8
Research and medical-facilities construction	5.3	2.6	.0	2.6	2.7	1.9	.9
Research	1.9	.2	.0	.2	1.6	1.5	.2
Construction	3.4	2.3	.0	2.3	1.1	.4	.7
				1975			
Total	$131.5	$75.8	$37.8	$38.0	$55.7	$37.1	$18.6
Health services and supplies	123.2	72.5	37.8	34.7	50.7	33.9	16.8
Personal health care	116.3	70.2	37.8	32.4	46.1	31.5	14.6
Hospital care	52.1	23.3	4.0	19.3	28.8	20.3	8.6
Physicians' services	24.9	18.4	8.9	9.4	6.5	4.7	1.9
Dentists' services	8.2	7.8	6.5	1.2	.5	.3	.2
Other professional services	2.6	2.0	1.5	.6	.6	.4	.2
Drugs and drug sundries	11.8	10.8	10.1	.7	1.0	.5	.5
Eyeglasses and appliances	3.0	2.8	2.7	*	.2	.2	.1
Nursing-home care	9.9	4.2	4.1	.1	5.7	3.2	2.5
Other health services	3.7	.9	.0	.9	2.8	2.1	.7
Expenses for prepayment and administration	3.7	2.3	.0	2.3	1.4	1.2	.3
Government public health activities	3.2	.0	.0	.0	3.2	1.2	2.0
Research and medical-facilities construction	8.3	3.4	.0	3.3	4.9	3.2	1.7
Research	3.2	.3	.0	.3	2.9	2.7	.2
Construction	5.1	3.1	.0	3.1	2.0	.5	1.5

See footnotes at end of table   (Continued)

Table 5 (Continued)
National Health Expenditures, by Type of Expenditure and Source of Funds for Selected Calendar Years 1965-1985, Amounts in Billions of Dollars [1]

Type of Expenditure	Total	Private			Public		
		Total	Direct Payments	Other [2]	Total	Federal	State and Local
1978							
Total	$192.4	$114.3	$55.3	$59.0	$78.1	$53.7	$24.4
Health services and supplies	183.0	110.8	55.3	55.5	72.2	49.4	22.8
Personal health care	167.9	102.9	55.3	47.6	65.0	46.5	18.5
Hospital care	76.0	35.1	7.5	27.6	40.9	30.3	10.6
Physicians' services	35.3	25.8	12.0	13.8	9.4	7.1	2.4
Dentists' services	13.3	12.8	10.2	2.5	0.5	0.3	0.2
Other professional services	4.3	3.3	2.2	1.1	1.0	0.7	0.3
Drugs and drug sundries	15.1	13.8	12.7	1.1	1.3	0.7	0.6
Eyeglasses and appliances	3.9	3.5	3.5	*	0.4	0.3	0.1
Nursing-home care	15.8	7.4	7.2	0.2	8.4	4.7	3.6
Other health services	4.3	1.2	0.0	1.2	3.2	2.4	0.7
Expenses for prepayment and administration	10.0	7.9	0.0	7.9	2.1	1.7	0.4
Government public health activities	5.1	0.0	0.0	0.0	5.1	1.2	3.9
Research and medical-facilities construction	9.4	3.5	0.0	3.5	5.9	4.3	1.6
Research	4.3	0.3	0.0	0.3	4.0	3.7	0.3
Construction	5.2	3.2	0.0	3.2	1.9	0.6	1.3
1980							
Total	244.6	144.1	68.4	75.7	100.5	70.4	30.1
Health services and supplies	234.1	140.2	68.4	71.8	93.9	65.3	28.6
Personal health care	215.5	131.1	68.4	62.7	84.3	61.8	22.5
Hospital care	97.3	44.3	8.8	35.6	53.0	40.7	12.3
Physicians' services	45.0	32.7	14.9	17.9	12.2	9.2	3.0
Dentists' services	17.9	17.3	12.9	4.4	0.6	0.3	0.3
Other professional services	5.7	4.3	2.7	1.5	1.4	1.0	0.4
Drugs and drug sundries	18.1	16.5	15.0	1.5	1.6	0.8	0.8
Eyeglasses and appliances	4.7	4.2	4.2	0.1	0.5	0.4	0.1
Nursing-home care	21.6	10.3	10.0	0.3	11.3	6.4	4.9
Other health services	5.2	1.4	0.0	1.4	3.8	3.0	0.8
Expenses for prepayment and administration	11.6	9.1	0.0	9.1	2.5	2.0	0.5
Government public health activities	7.0	0.0	0.0	0.0	7.0	1.4	5.6
Research and medical-facilities construction	10.5	3.9	0.0	3.9	6.7	5.2	1.5
Research	5.2	0.3	0.0	0.3	4.9	4.5	0.4
Construction	5.3	3.5	0.0	3.5	1.8	0.6	1.1
1985							
Total	438.2	254.2	113.2	141.0	184.0	132.0	52.0
Health services and supplies	422.7	249.0	113.2	135.9	173.7	123.6	50.1
Personal health care	389.1	233.5	113.2	120.3	155.6	118.2	37.4
Hospital care	182.8	84.4	16.5	67.9	98.4	79.1	19.3
Physicians' services	78.2	55.6	23.7	31.9	22.6	17.6	5.0
Dentists' services	33.9	33.0	21.4	11.8	0.9	0.5	0.4
Other professional services	10.1	7.5	4.4	3.1	2.6	1.9	0.7
Drugs and drug sundries	27.0	24.5	21.8	2.8	2.5	1.3	1.2
Eyeglasses and appliances	7.1	6.3	6.1	0.1	0.8	0.7	0.1
Nursing-home care	42.0	20.1	19.4	0.7	21.9	12.3	9.6
Other health services	8.1	2.2	0.0	2.2	5.9	4.9	1.0
Expenses for prepayment and administration	19.6	15.5	0.0	15.5	4.1	3.2	0.8
Government public health activities	14.0	0.0	0.0	0.0	14.0	2.1	11.9
Research and medical-facilities construction	15.5	5.2	0.0	5.2	10.3	8.4	1.9
Research	8.3	0.3	0.0	0.3	8.0	7.5	0.5
Construction	7.2	4.9	0.0	4.9	2.3	0.9	1.4

[1] Historical estimates for 1978 are from Robert M. Gibson, "National Health Expenditures, 1978", *Health Care Financing Review*, Summer 1979. Data for 1965-75 are unpublished tabulations from the Division of National Cost Estimates, Office of Financial and Actuarial Analysis, Office of Research, Demonstrations, and Statistics, Health Care Financing Administration.

[2] Private health insurance benefits, spending by philanthropic organizations, industrial inplant services and privately financed construction. In 1978 private health insurance benefits were 95 percent of "other" for the category personal health care.

* Less than $0.05 billion

cians and dentists, and Office of Management and Budget projections of the GNP and CPI.

There are significant implications for the economy as the health sector continues to absorb larger percentages of the GNP. The major one is that as more labor and capital are drawn into the health sector, relatively fewer resources are available for producing goods and services in other sectors.

There seem to be few incentives or constraints to retard the growth of health expenditures under current institutional arrangements. As health costs increase, so does the risk of financial burden to consumers with inadequate health insurance coverage. As this risk increases, the demand for public programs and private health insurance also rises. Tax subsidies for health insurance premiums add to this increased demand, by encouraging the purchase of more insurance than would otherwise be the case. As the coinsurance rate (proportion paid out-of-pocket by consumers) declines with the additional insurance, both consumers and providers increasingly tend to treat health care services as a free good at the time of purchase. The ensuing increased demand for medical care interacts with our fee-for-service and cost-based reimbursement systems to further increase costs. That is, more services and more costly services reward providers with additional revenues from third-party payers. The reimbursement policy provides an incentive for providers to adopt product-innovative technologies which increase costs. There is relatively less incentive to adopt process-innovative technologies which are associated with increased productivity and decreased costs.

Our current institutional arrangement of third-party payments, with fee-for-service and cost reimbursement, has evolved out of a pragmatic interaction among providers, third-party payers, and consumers, based on their economic, social, and political needs and demands. Until an alternative institutional arrangement is devised that better meets the often conflicting needs and demands placed on the current system, the affected parties will probably resist significant changes to the current arrangement.

Assuming that the current incentive mechanisms and constraints affecting the demand for and provision of medical care are not significantly modified,[12] the projections of health expenditures presented in this paper are a reasonable approximation of what can be expected for the next decade.

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[12] In addition to changes in government regulations, there appears to be no shortage of proposals to modify the incentives of our present system. See for example American Medical Association, 1978; Blumberg, 1979; Business Week, 1979a; Christianson and McClure, 1979; Enthoven, 1979; Enthoven 1978b; Feldstein, 1971b; Feldstein, 1977b; Gabel and Redisch, 1979; Gifford and Anlyan, 1979; Havighurst and Hackbarth, 1979; Luft, 1978; McClure, 1978; Mechanic, 1978; Moore, 1979; National Council on Health Planning and Development, 1980; U.S. Council on Wage and Price Stability, December, 1976; and Walsh and Egdahl, 1977.

Technical Note
Definitions of Selected Variables Used in Five-Factor Module

Type of Expenditure	Utilization	Medical Care Price	Other	Comments
Hospital care Non-Federal short-term general and other special inpatient care	Inpatient days, American Hospital Association, *Hospital Statistics*, various issues	No specific price index was used for hospital care.	Average revenue per adjusted patient day deflated by the CPI for all items	Revenue data are from American Hospital Association, *Hospital Statistics*, various Issues. The last two factors, $\dfrac{MEDPRICE}{CPI}$ and OTHER, are combined and treated as one factor in the five-factor equation.
Non-Federal short-term general and other special out-patient care	Outpatient visits, American Hospital Association, *Hospital Statistics*, various issues	No specific price index was used for hospital care.	Average revenue per outpatient visit deflated by the CPI for all items	Revenue data are from American Hospital Association, *Hospital Statistics*, various issues. The last two factors, $\dfrac{MEDPRICE}{CPI}$ and OTHER, are combined and treated as one factor in the five-factor equation.
Federal hospital care	Adjusted patient days, American Hospital Association, *Hospital Statistics*, various issues	No specific price index was used for hospital care.	Average expense per adjusted patient day deflated by the CPI for all items	Expenses are derived from data reported to the Office of Management and Budget by the various Federal agencies. The inpatient day-outpatient visit adjustment used to derive adjusted patient days was made by the Health Care Financing Administration. The last two factors, $\dfrac{MEDPRICE}{CPI}$, and OTHER, are combined and treated as one factor in the five-factor equation.

Type of Expenditure	Utilization	Medical Care Price	Other	Comments
Other hospital care (non-Federal long-term care hospitals and non-Federal short-term psychiatric hospitals)	Adjusted patient days, American Hospital Association, *Hospital Statistics,* various issues	No specific price index was used for hospital care.	Average expense per adjusted patient day deflated by the CPI for all items	The inpatient day-outpatient visit adjustment used to derive adjusted patient days was made by the Health Care Financing Administration. Expense data are from American Hospital Association, *Hospital Statistics,* various issues. The last two factors, $\dfrac{\text{MEDPRICE}}{\text{CPI}}$ and OTHER, are combined and treated as one factor in the five-factor equation.
Physicians' services	Physician visits, *Current Estimates from the Health Interview Survey,* various issues, and inpatient days in community hospitals, National Hospital Panel Survey, "Hospital Indicators," *Hospitals,* various issues. The Health Interview Survey data omit physician visits while a patient is an inpatient. Panel Survey data on inpatient days are used to provide an indicator of inpatient physician visits.	Physicians' services component of CPI	Average revenue per physician visit deflated by physicians' services component of CPI	Revenues and visits per non-Federal office-based physician (MD's and DO's) are projected simultaneously with the five-factor method of projecting expenditures for physicians' services. Historical estimates and projections of active physicians (MD's and DO's) are based on data from the Health Resources Administration, Bureau of Health Manpower, Manpower Analysis Branch, *A Report to the President and Congress on the Status of Health Professions Personnel in the United States, Publication No. (HRA) 78-93, August 1978.*

Type of Expenditure	Utilization	Medical Care Price	Other	Comments
Dentists' services	Dental visits, *Current Estimates from the Health Interview Survey*, various issues	Dental services component of CPI	Average revenue per dental visit deflated by dental services component of CPI	Revenues and visits per non-Federal office-based dentist are projected simultaneously with the five-factor method of projecting expenditures for dentists' services. Historical estimates and projections of active dentists are based on data from the Health Resources Administration, Bureau of Health Manpower, Manpower Analysis Branch, *A Report to the President and Congress on the Status of Health Professions Personnel in the United States*, Publication No. (HRA) 78-93, August 1978.
Other professional services	Not available, see Other category	Professional services component of CPI	Per capita expenditures for other professional services deflated by professional services component of CPI	
Drugs and drug sundries	Not available, see Other category	Medical care commodities component of the CPI	Per capita expenditures for drugs and drug sundries deflated by medical care commodities component of the CPI	
Eyeglasses and appliances	Not available, see Other category	Examination, prescription and dispensing of eyeglasses component of the CPI	Per capita expenditures for eyeglasses and appliances deflated by the "examination, prescription, and dispensing of eyeglasses" component of the CPI	

Type of Expenditure	Utilization	Medical Care Price	Other	Comments
Nursing-home care				
Nursing-home care excluding Medicaid covered intermediate care facility services in institutions for the mentally retarded	Nursing-home days, National Center for Health Statistics, *The National Nursing Home Survey,* various issues	No specific price index was used for nursing home care.	Average revenue per nursing-home day deflated by the CPI for all items	Revenue data are compiled from various sources by the Health Care Financing Administration.
				The last two factors, $\dfrac{\text{MEDPRICE}}{\text{CPI}}$ and OTHER, are combined and treated as one factor in the five-factor equation.
Medicaid covered intermediate care facility services in institutions for the mentally retarded	Medicaid recipients for intermediate care facility services in institutions for the mentally retarded, Health Care Financing Administration, *Medicaid Statistics,* various issues	Not available, see Other category.	Medicaid payments per recipient of intermediate care facility services in institutions for the mentally retarded, deflated by the CPI for all items	
Other health services	Not available, see Other category.	Medical care component of the CPI	Per capita expenditures for Other Health Services deflated by medical care component of the CPI	

Type of Expenditure	Utilization	Medical Care Price	Other	Comments
Expenses for prepayment and administration	Not applicable, see comments	Not available, see comments	Not applicable, see comments	A different methodology was used for projecting expenses for prepayment and administration. Administration expenses for Medicare and Medicaid were projected by the Office of Financial and Actuarial Analysis, Health Care Financing Administration. Expenses for administration for all other government programs were projected based on past relationships and trends. Private health insurance expenses for prepayment and administration were separated into operating expense and net underwriting gain. The two components were projected based on historical trends and relationships.
Government public health activities	Not applicable, see Other category	Services component of the CPI	Per capita expenditures for government public health activities deflated by services component of the CPI	
Research	Not applicable, see Other category	Biomedical R&D deflator, National Institute of Health	Per capita expenditures for research deflated by the Biomedical R&D deflator	

Type of Expenditure	Utilization	Medical Care Price	Other	Comments
Construction	Not applicable, see Other category	Implicit price deflator for construction of private "religious, educational, hospital and institutional, and other" structures and implicit price deflator for construction of government "industrial, educational, hospital, and other" structures, Bureau of Economic Analysis, *Survey of Current Business*	Per capita expenditures for construction deflated by a weighted average of implicit price deflators for construction of private and public nonresidental structures	

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