

# Health Care Costs in Maine Chart Book

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# Executive Summary

## Introduction

This chart book provides background information on Maine health care costs and demographics and compares Maine to the US and to similar “benchmark” states. The purpose of the chart book is to inform Maine’s planning process for expanding public and private health insurance coverage, with the ultimate goal of realizing universal health coverage in Maine. The intended audience is state policy makers, legislators, advocates, payers, regulators, health care providers, and consumers.

Population characteristics, health care system characteristics, and economic factors can contribute to differences in health care spending. This report compares Maine with the US and the benchmark states on a variety of these measures. We used published data from the US, from four states which are relatively similar to Maine in demographics and economics (North Dakota, Vermont, Wyoming, and West Virginia) and from New Hampshire, a neighboring state, which has higher economic measures than Maine.

The information presented is descriptive and useful for identifying characteristics that policymakers may want to weigh when considering health reform policy options. The report does not establish any causal relationships or measure the relative contribution of any of these characteristics to the rate of health care spending in Maine.

## Findings

### ***Expenditures***

Maine's per capita health care cost is higher than the average across the US, and it is rising more rapidly than costs in the nation as a whole. Maine’s average per person spending of \$4,025 was higher than the US, New Hampshire and Vermont, and all but one of the benchmark states in 1998 (the most recent year for which per capita rates are available). Per capita spending in Maine increased by 7.3 percent annually from 1991 to 1998. This compares to a 4.9 percent increase in the US as a whole and is higher than in any of the benchmark states.

More than \$5.5 billion was spent on personal health care services in Maine in 2000, the most recent year for which state-specific health care spending data are available. Total health care spending in Maine increased by 87.6 percent from 1991 to 2000. This is a higher rate of increase than the US (69.1 percent) and in three of the five benchmark states. The other New England benchmark states (New Hampshire and Vermont) had rates of increase equaling (within a percentage point) Maine's.

### ***Population characteristics***

***Rural population:*** Mainers are almost three times more likely to live in rural areas than US residents overall. Nationally, rural residents tend to use fewer health care services than urban residents and health care wages are lower in rural areas. However, poorer health status, greater need for health care services, and difficulties in achieving economies of scale within the health care delivery system in rural areas can increase costs.

***Elderly population:*** Use of health care increases as people grow older, and Maine's population is slightly older on average than the US population.

***Health status and health behavior:*** The health status of Mainers is generally on a par with the US as a whole on most measures of population health status. On many measures, Maine shows important improvements from past years. For example, Maine used to be among the states with higher than average smoking rates. The reductions in smoking rates suggest that public health efforts to reduce smoking were successful, particularly among teens. However, the high absolute level of problems in Maine and in the US for many health indicators, especially for overweight adults, leaves considerable room for improvement. The mixed findings on health status measures and lack of marked differences between Maine and the comparison populations is a finding that suggests that health status is not a primary contributor to above average health costs in Maine.

### ***The health care system***

For several measures, compared to the US and the benchmark states, access to care in Maine is good. Maine does better than the average in the proportion of the population with appropriate primary care physician-to-population ratios and above average in the use of preventive care – prenatal screening, mammography screening, and vaccinations of children and adults. Maine does

more poorly than the US in two areas -- reduced access to physician care due to costs and access to dental services.

Over half the health care dollar in Maine in 2000 went to two services: hospital care (37 percent) and physicians and other professionals (23.2 percent). Drugs and other non-durables (12.2 percent), nursing home care (8.9 percent), home health care (3.7 percent), and other services (14.9 percent) accounted for the remaining spending.

The number of hospital beds per 1,000 population in Maine is higher than the benchmark states in New England, a little lower than the national average and below the other benchmark states. Hospital admission rates in Maine are lower than US rates but higher than in four of the benchmark states. In the remaining types of health care examined, Maine has higher use rates than the US and most of its benchmark states. The number of emergency department visits per 1,000 persons in Maine is especially striking – it is 47 percent higher than in the US.

### ***Economic factors***

In 1990 and 2002, Mainers had substantially lower average per capita disposable personal income than residents of the US and four of the benchmark states. Thus, the higher per capita health care expenditures in Maine represent a larger percentage of disposable income than is true in the US or most of the benchmark states.

One out of eight Mainers under 65 years of age was uninsured in 2001. This is lower than the percent uninsured for the US as a whole and two of the benchmark states, but higher than three of the benchmark states. A higher percentage of Mainers are covered by Medicaid or other public payers, and a lower percent are covered by employer-based insurance, compared to the US and to four of the benchmark states. This reflects the low level of personal income in the State, the relatively generous eligibility standards for MaineCare, and the high cost of private insurance.

## Limitations

It is informative to compare Maine to other states that are similar in geography or in socio-demographics but, of course, each state is unique and no simple comparison of unadjusted rates can take into account the many differences in the populations, underlying economics, and health care systems in the various states. Similarly, Maine is a small and very rural state with a lower-than-average level of personal income in comparison to the US, which limits comparability with the nation as a whole. As discussed above, this study describes trends and patterns, but does not explain them. While we have used the most recent information we can find from published sources, the availability of comparative data lags behind changes in the health sector, especially given the rapidity with which the health care sector is evolving. This is especially true of the information comparing overall spending in the US and the states by type of health care service.

## Conclusions and Implications

This study has documented that Maine's health care costs are higher and have been rising more rapidly than costs in the US for a decade. This analysis, while descriptive, finds some distinctions in Maine characteristics that may contribute to these higher costs. Among these distinctions are higher use rates for some health care services, particularly emergency department visits. In addition, Maine's rural nature may contribute to inefficiencies in the health care system and lower health status in the population. However, lower health status and poor health behavior – frequently cited as likely explanations for high health costs in Maine – did not emerge as distinctly prominent issues when Maine was compared with the US and other states. Maine's population had slightly lower than average health status on some measures and better than average health status on a number of additional measures.

With the information reviewed here we have been able to describe factors that may be related to higher health care costs. Deeper understanding of the *causes* of higher health care costs requires further study. Based on these analyses, two areas emerge that merit further analysis. One pair of possibly related factors suggesting more research is the high use of hospital emergency departments in Maine and the high rate of reported cost barriers to needed medical care. A second area where additional research may assist policymakers is the relationship between rural population and high health care costs.

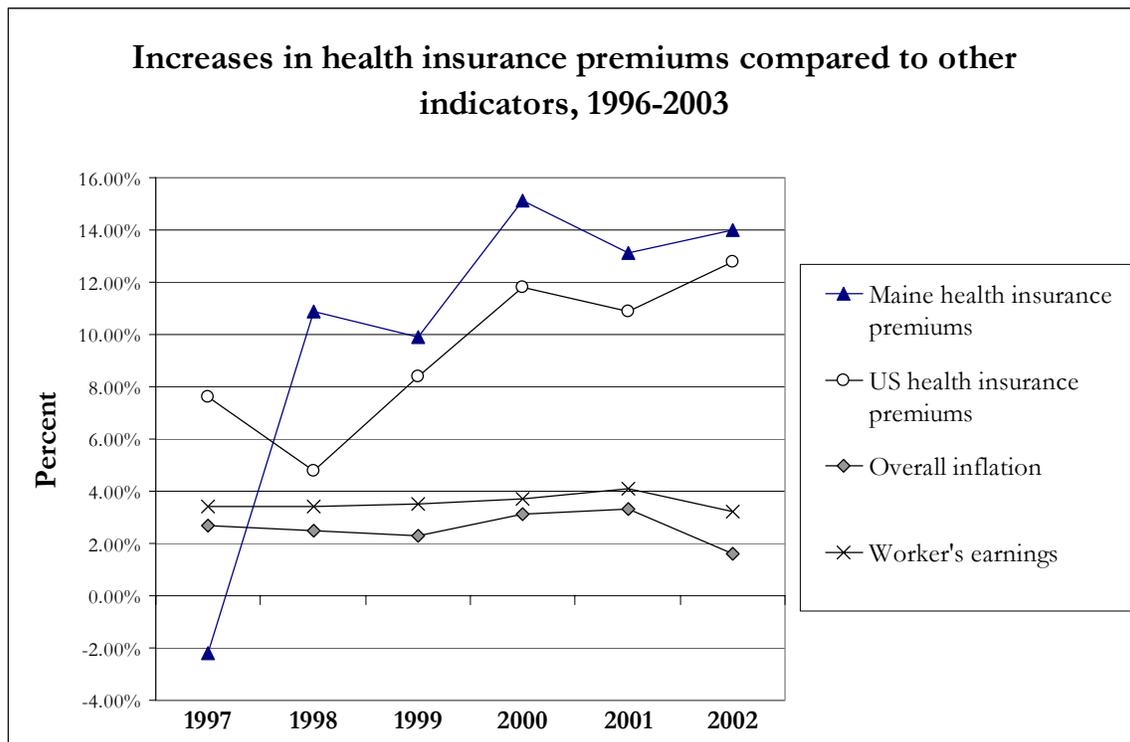
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## Introduction

Private health care coverage in Maine has been eroding due to increases in insurance premium costs that, in recent years, have far exceeded growth in incomes (Figure 1). The increases in premiums reflect increases in underlying health care costs, which on a per capita basis in Maine are higher than in the US as a whole and have been rising at a faster rate than any state in the nation.

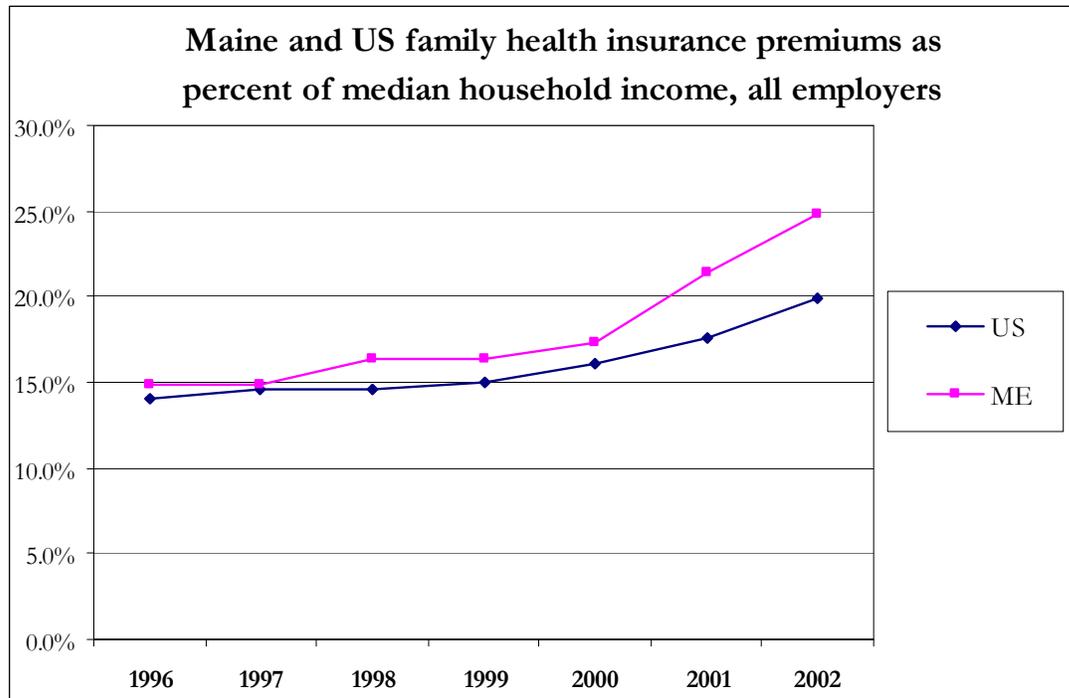
Figure 1



Sources: For national and Maine premium increases, the *National Medical Expenditure Panel Survey Insurance Component*, AHRQ, Center for Cost and Financing Studies. For overall inflation and workers' earnings, Bureau of Labor Statistics, Consumer Price Index, *U.S. City Average of Annual Inflation and Seasonally Adjusted Data from the Current Employment Statistics Survey, '88-2002*, as reported in the Kaiser Family Foundation and Health Research and Educational Trust 2003 Employer Health Benefits Survey Annual Report.

During a five year period in Maine when premiums rose 77 percent, income rose only 6 percent. Average family premium costs for employees of small businesses in Maine rose by more than 50 percent between 2000 and 2002 – to an average annual cost of \$9,844. This average family premium is greater than 25 percent of average household income in Maine (Figure 2).

Figure 2



Sources: Authors' calculation based on premium data from the *National Medical Expenditure Panel Survey Insurance Component*, AHRQ, Center for Cost and Financing Studies and on household income data from US Census Bureau as reported on Kaiser Family Foundation <http://www.statehealthfacts.org>.

The expansion of MaineCare (Maine's Medicaid program) has mitigated the impact of the decline in the private coverage, but lack of insurance, nevertheless, is increasing, and costs within the Medicaid Program are placing severe strains on the State's budget. Maine state government is aggressively trying to increase access to care through public and private sector insurance expansions. However, given rapidly increasing costs, Maine policymakers understand that sustained expansion of access can only be achieved when cost and quality are addressed simultaneously.

The Dirigo Health Reform Act, introduced by Governor Baldacci and enacted by the legislature in May, 2003, is a broad package of reforms based on these concepts. The DirigoChoice Plan, a key element of the act, was developed to

respond to difficulties in providing affordable coverage in the work place and to the self-employed by offering sliding scale discounts to low and moderate income Mainers.

The purpose of this chart book is to profile health care costs in Maine and to compare Maine to the US as a whole and to five benchmark states on some of the characteristics that may affect health care costs and utilization. Four states - - North Dakota, Vermont, West Virginia, and Wyoming -- are relatively similar to Maine in income and demographic characteristics (Year 2000 Blue Ribbon Commission on Health Care, 2000). New Hampshire was added as a neighboring state.

A number of factors are thought to contribute to the high costs of health care, including population aging, health status and health behavior, the structure and organization of the health care delivery system, and the types and quantities of health services used. Some factors, such as the aging population, are long-term trends that are not easily affected by the health care financing system; others, such as high emergency department use, are more tractable to financial incentives, delivery system innovations, or policy initiatives.

While this comparative analysis will not pinpoint the causes of rapid cost increases in Maine or determine the relative contribution of different factors, it will help to identify areas where policy interventions may help address and mitigate cost trends. The intended audience is state policy makers, legislators, advocates, payers, regulators, physicians and health care providers, and consumers.

The first section of the chart book describes general trends in health care spending in the state, the US, and the benchmark states. The next section describes factors related to need for health care, such as demographics and health status. Successive sections describe factors enabling people to obtain health care. Successive sections describe factors enabling people to obtain health care, such as income, health care coverage and health care resources. The section on access to health care describes potential barriers to obtaining care.

## **Data and Methods**

We used published data from public and private publications and agencies to compare Maine to the US and to several benchmark states. In all cases, we identified the most recent data sources where comparable information was available for Maine and the comparison states. Full citations for the sources used are listed in the report's References section.

Benchmark states were selected based on prior analyses conducted on behalf of Maine's Year 2000 Blue Ribbon Commission on Health Care. The Commission's report states "Based on demographic and income characteristics, the State Planning Office ranked the forty-nine states as to their similarity to Maine, based on demographic and income characteristics (R. Sherwood to C. Freshley, personal communication, July 13, 2000). The three most similar states were North Dakota, Wyoming, and West Virginia. Because there was interest in comparing another New England state to Maine, Vermont was also included. Vermont ranks seventh to Maine based on this index" (Year 2000 Blue Ribbon Commission on Health Care, 2000). We adopted the Blue Ribbon Commission benchmark states and added New Hampshire in order to have additional comparative information from the New England region.

## Results

### Total and per capita health care expenditures

In Maine, total personal health care expenditures (which exclude administrative costs) in 2000 (the most recent year with comparative state data) were estimated at \$5.520 billion (Table 1). Total personal health care expenditures in Maine increased by 87.6 percent from 1991 to 2000.

Health care costs increased faster in Maine than in the US or in three of the benchmark states from 1991 to 2000. The aggregate growth rate in New Hampshire and Vermont was within a percentage point of Maine's.

**Table 1. Total personal health care expenditures from 1991 to 2000, US, Maine, and benchmark states**

Region/ State	Personal health care expenditures (millions of dollars)				Percent increase			
	1991	1994	1997	2000	1991- 1994	1994- 1997	1997- 2000	1991- 2000
US	\$672,030	\$816,469	\$959,228	\$1,136,116	21.5%	17.5%	18.4%	69.1%
<b>ME</b>	<b>\$2,943</b>	<b>\$3,566</b>	<b>\$4,533</b>	<b>\$5,520</b>	<b>21.2%</b>	<b>27.1%</b>	<b>21.8%</b>	<b>87.6%</b>
NH	\$2,745	\$3,382	\$4,234	\$5,160	23.2%	25.2%	21.9%	88.0%
ND	\$1,796	\$2,169	\$2,556	\$2,898	20.8%	17.8%	13.4%	61.4%
VT	\$1,251	\$1,554	\$1,887	\$2,360	24.2%	21.4%	25.1%	88.6%
WV	\$4,349	\$5,526	\$6,604	\$7,526	27.1%	19.5%	14.0%	73.1%
WY	\$850	\$1,077	\$1,318	\$1,560	22.4%	18.4%	83.5%	22.4%

Source: Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group. Accessed at: Kaiser Family Foundation <http://www.statehealthfacts.org>, accessed 6 April 2005.

In 1991, per capita personal health care expenditures in Maine were \$2,464, which was 92 percent of US per capita personal health care expenditures (Table 2). By 1998 (the most recent year with state level per capita data), per capita personal health care expenditures in Maine had increased to \$4,025, or 107 percent of US per capita expenditures. Personal health care expenditures in Maine increased by an average of 7.3 percent per year from 1991 to 1998. This was a fastest annual growth rate in the nation and exceeded that of the US and all the benchmark states.

**Table 2. Per capita personal health care spending as a percentage of US per capita spending and average annual growth from 1991 to 1998, US, Maine, and benchmark states**

Region/State	Total		As a percent of US per capita spending		Average annual growth 1991 - 1998
	1991	1998	1991	1998	
US	\$2,685	\$3,759	100%	100%	4.9%
<b>ME</b>	<b>\$2,464</b>	<b>\$4,025</b>	<b>92%</b>	<b>107%</b>	<b>7.3%</b>
NH	\$2,511	\$3,840	94%	102%	6.3%
ND	\$2,555	\$3,881	95%	103%	6.2%
VT	\$2,393	\$3,654	89%	97%	6.2%
WV	\$2,568	\$4,044	96%	108%	6.7%
WY	\$2,234	\$3,381	83%	90%	6.1%

Source: Le Grand, Julian, July/August 2002.

### **Characteristics of Maine's population**

**Rural population:** Mainers are more than three times as likely to live in rural areas than residents of the US (Table 3). This tends to increase the state's health care costs in some ways and to decrease them in others. Elderly populations living in rural areas are more likely to have poor health and to need more health care services than non-rural populations, even after adjusting for differences in age, income, and race (Coward, et al. 1995). Achieving economies of scale may also be more difficult in rural areas. Widely dispersed rural populations need geographically accessible urgent care and chronic care services, but because of lower population density these services are less frequently used – making it difficult for providers to recoup overhead costs. These factors work to increase health care costs in rural areas. However, older people in rural areas make less use of the hospital and physician office visits than urban elders, which may decrease health care costs (Dansky, et al. 1998).

**Table 3. Rural population in 2002, US, Maine, and benchmark states**

	US	ME	NH	ND	VT	WV	WY
Rural population, 2002	19.7%	<b>59.8%</b>	37.5%	54.8%	67.1%	57.6%	69.9%

Source: Flowers, et al. 2003, page 222.

**Elderly population:** Maine's population is older and is increasing in size more slowly than the US population. The population in Maine is slightly older than in

the US as a whole and in three of the five benchmark states (Table 4). This is true for both of the “younger old” – those 65 to 84 – and for the “older old” – those 85 and older.

**Table 4. Projected age distribution in 2003, US, Maine, and benchmark states**

Age group	US	<i>ME</i>	NH	ND	VT	WV	WY
65-84 years	11.0%	<b>11.7%</b>	9.9%	12.5%	10.3%	14.0%	10.7%
85+	1.6%	<b>1.8%</b>	1.7%	2.6%	1.6%	1.8%	1.5%
65+	12.6%	<b>13.5%</b>	11.6%	15.1%	11.9%	15.8%	12.2%

Source: Flowers et al. 2003, page 221.

National analyses show that age, in and of itself, contributes only a small amount to increases in health care costs (Reinhardt, 2003). Technology and general medical sector inflation have a much greater impact. However, because the prevalence of chronic illnesses increases with age, an older population can contribute to a high use of medical care services due to the higher prevalence of chronic illness, driving up average costs.

Overall, the population of Maine increased by 3.8 percent from 1990 to 2000 and by an estimated additional 1.5 percent from 2000 to 2002 (US Census Bureau, 2003). The US population increased substantially faster - by 13.1 percent in the decade ending in 2000, and by 2.5 percent between 2000 and 2002. Between 1995 and 2001, the estimated number of people less than 35 years of age in Maine actually shrank by 25,817 or 4.4 percent, while the number of people 35 and older increased by 10.8 percent or 70,136.

## **Health status and health behavior**

This section looks at a number of population based measures of health status. Many of these are self-reported measures, for example ratings of health status as excellent, good, fair or poor. Some are measures of rates of disease within the population, such as heart disease or cancer deaths. While not providing a comprehensive picture of health of Maine’s population, these measures are important indicators both of underlying health and of access to and use of preventive health care, disease screening, and appropriate early interventions.

In this discussion, we focus on indicators where there is more than a percentage point difference in the measurements.

**Prenatal care and pediatric health status:** On three measures of prenatal care and pediatric health status – teen pregnancy rates, low birth weight infants and infant mortality – Maine is doing substantially better than the US as a whole and two benchmark states (Table 5). The incidence of low birth weight infants is lower in Maine than in all the benchmark states except Vermont.

**Table 5. Low birth weight infants per 100 births and infant deaths per 1,000 live births in 2001, US, Maine and benchmark states**

	US	<i>ME</i>	NH	ND	VT	WV	WY
Infant mortality rate/1,000	6.8	<b>6.1</b>	3.8	8.8	5.5	7.2	5.9
Low birth weight births/1,000	7.7	<b>6.0</b>	6.5	6.2	5.9	8.5	8.3
Teen Pregnancy/1,000	25	<b>12</b>	10	12	10	23	18

Source: Flowers, et al. 2003, page 230.

**Health behavior and population health:** In Maine, more adults (25.8 percent) go without physical activity over the course of a month than is true nationally (24.4 percent) or in any of the benchmark states except West Virginia (Table 6). On the other measures of general health status and health behaviors, Maine scores about the same as the US average on each measure. Three measures are noteworthy. Maine does worse than all states except West Virginia on the proportion of adults in fair or poor health. It is about the same as the US on this measure. The proportion of adults who are overweight in Maine is close to the US rate, but higher than the rate in three of the benchmark states. Maine previously had one of the higher smoking rates among states. It has made significant progress on reducing smoking and now matches the US and matches or does better than three of five benchmark states.

**Table 6. Health status measures in various years, US, Maine, and benchmark states**

Measure	US	ME	NH	ND	VT	WV	WY
Adults in poor or fair general health, 2002	14.3%	<b>14.6%</b>	11.5%	13.6%	10.9%	23.5%	12.1%
Overweight adults, 2002*	59.1%	<b>58.6%</b>	56.3%	61.6	54.5%	63.6%	55.9%
Adults who currently smoke cigarettes, 2002*	23.0%	<b>23.6%</b>	23.2%	21.5	21.1%	28.4%	23.7%
Adults having no physical activity in month, 2002*	24.4%	<b>25.8%</b>	19.9%	21.7%	18.3%	28.4%	20.4%
Diabetes prevalence, 2002*	6.7%	<b>7.2%</b>	6.2%	6.1	5.9%	10.2%	5.6%
High blood pressure prevalence, 2001*	25.6%	<b>25.2%</b>	22.8%	24.1%	21.4%	32.5%	22.4%
Adults whose mental health was not good for >1 week in month, 2001*	12.6%	<b>12.4%</b>	11.3%	9.7%	12.1%	17.1%	11.6%
Cancer deaths/100,000	195.6	<b>207.3</b>	193.9	188.4	194.8	218.7	192.9
Heart disease deaths/100,000, 2001	246.8	<b>218.8</b>	230.9	210.9	221.4	296.0	209.5
Disabled workers and dependents as a percent of population, 2000	2.3%	<b>3.7%</b>	2.4%	1.9%	3.0%	4.5%	2.2%
Difficulty in self-care for persons 65+, 2000	9.6%	<b>8.4%</b>	7.3%	6.4%	8.1%	12.4%	6.8%

Source: Flowers et al., 2003.

**Disease prevalence:** Maine has a higher prevalence of diabetes in the population than is the case nationally (7.2 percent compared to 6.7 percent), or in any of the benchmark states except West Virginia (Table 6). The prevalence of high blood pressure in Maine tracks national rates, but is higher than all benchmark states except West Virginia. The proportion of adults whose mental health status was poor for more than a week of the month in which they were surveyed was the same in Maine as the average for the nation as a whole and within 1 percent of the rates in three of the benchmark states.

**Disease-specific mortality rates:** Maine has a higher rate of death from cancer than the US average (207 per 100,000 compared to 196 per 100,000) and all benchmark states but West Virginia (Table 6). Cancer mortality can reflect both the underlying rate of disease in the population and the effectiveness of early detection and treatment. Many cancers are non-fatal if detected and treated early. Death from heart disease is lower in Maine than in the US as a whole (219 per 100,000 compared to 247 per 100,000) and lower than all benchmark states except for North Dakota and Wyoming. Maine's good performance on this measure may reflect both differences in the prevalence of disease and/or differences in effectiveness of treatment. Because Maine does not differ from the United States on rates of adult smoking and prevalence of

high blood pressure and is a little worse than the national average on rates of adult exercise – all major risk factors for heart disease – it may be appropriate to credit Maine’s health care system with effective treatment of heart disease. On another measure of health status – difficulty in self-care for persons 65+ -- Maine is doing somewhat better than the US.

**Disability and self-care:** Maine has proportionately more disabled workers and dependents than the country as a whole and more than all benchmark states except West Virginia (Table 6). On another measure of health status -- difficulty in self-care for persons 65+ -- Maine is doing somewhat better than the U.S.

**Discussion:** Health status and health behavior can have a dramatic impact on health care costs. For example, *Business and Health* estimates that annual costs of employees are 70 percent higher for those with depression, 35 percent higher for those with diabetes, and 21 percent for those who smoke (Table 7).

**Table 7: How individual risks affect overall health care costs: Contribution of selected health conditions to health care costs**

Depression	+70%
High stress	+46%
Diabetes	+35%
Overweight	+21%
Smoker	+21%
Hypertension	+21%
Sedentary	+10%
<b>Example: ‘Average employee cost’</b>	<b>\$4,784</b>
<b>‘Average employee cost’ + Depression</b>	<b>\$8,133</b>

Source: *Business and Health*, 1998.

The health status of Mainers is generally on a par with the US as a whole on most measures of population health status. On many measures, Maine shows important improvements from past years. For example, Maine used to be among the states with higher than average smoking rates. The reductions in smoking rates suggest that public health efforts to reduce smoking have been successful, particularly among teens. However, the high absolute level of problems in Maine and in the US for many health indicators, especially for overweight adults, leaves considerable room for improvement.

## The health care system

**Expenditures and utilization by type of service:** Personal health care spending, as reported nationally, is broken into six categories: hospital services; physician and other professional services; home health care; nursing home care; drugs and other non-durables; and “other.” The category of “other” includes dental services, durable medical equipment, and miscellaneous other personal health care services. In Maine, as in the rest of the nation, the largest share of the health care dollar goes to hospital services (37.0 percent in 2000) (Table 8). Maine spent proportionately slightly more than the US average on hospital services and slightly less on physician and other professional services (23.2 percent). Maine’s proportionate spending on physicians and other professional services was about the same as in two benchmark states – North Dakota and Wyoming – and less than in the US or the other benchmark states. Maine spent proportionately more on home health care than the US average and four of the benchmark states. Maine also spent proportionately more on “other” services than the nation as a whole and all but one of the benchmark states - Vermont. Drugs and other non-durables (12.2 percent) and nursing home care (8.9 percent), did not deviate noticeably from the US average or most benchmark states.

**Table 8. Personal health spending, by types of service, region, and state of residence in 2000, US, Maine, and benchmark states.**

Region/State	Total Spending (millions)	Percent of total spending					
		Hospital services	Physician/other professional	Home health care*	Nursing home care	Drugs/other nondurables	Other
US	\$1,136,115	36.4%	29.0%	2.8%	8.4%	13.4%	10.1%
<b>ME</b>	<b>\$5,520</b>	<b>37.0%</b>	<b>23.2%</b>	<b>3.7%</b>	<b>8.9%</b>	<b>12.2%</b>	<b>14.9%</b>
NH	\$5,160	33.5%	28.6%	3.7%	9.8%	12.9%	11.4%
ND	\$2,898	43.7%	23.6%	0.8%	11.8%	11.1%	9.0%
VT	\$2,360	34.9%	25.0%	3.1%	8.3%	12.9%	15.9%
WV	\$7,526	40.8%	25.5%	3.0%	7.3%	14.4%	9.0%
WY	\$1,560	42.6%	23.1%	1.2%	7.6%	13.6%	12.0%

Source: Centers for Medicare and Medicaid Services, <http://www.cms.hhs.gov/statistics/nhe/#state>, Accessed 6 April 2005.

In reviewing the patterns of utilization, the most striking difference between Maine and the US is the higher use of emergency department care in Maine (Table 9). Maine’s use rate for emergency room care is second only to that of

West Virginia and it is 47 percent higher than the use rate for the US as a whole. Notably, emergency room visits are higher in each benchmark state than in the US as a whole.

**Table 9. Use of acute and long term care in various years, US, Maine, and benchmark states**

Category	US	ME	NH	ND	VT	WV	WY
Hospital inpatient admissions (per 1,000 pop), 2001*	120.8	<b>115.6</b>	93.3	148.6	85.6	162.5	95.1
Hospital emergency room visits (per 1,000 pop), 2001**	371	<b>545</b>	427	408	388	587	398
Retail prescription drugs per person (average #), 2002*	10.6	<b>10.9</b>	9.7	12.2	10.5	15	9
Medicare SNF users (as % of beneficiaries), 2001*	4.4	<b>4.7</b>	3.8	4.5	3.7	4	3.6
Medicare home health users (as % of beneficiaries), 2001*	7.3	<b>8.4</b>	7.6	5.8	10.6	5.6	4.7
Medicare home health visits per person served, 2001*	30	<b>32</b>	33	23	40	26	28

Sources: \*Flowers et al., 2003 and \*\*Kaiser Family Foundation <http://www.statehealthfacts.org>.

Maine’s inpatient admission rate is less than the US rate, but higher than rates in three of the benchmark states and substantially higher than the two New England comparison states. The admission rate in Maine is 24 percent higher than in New Hampshire and 35 percent higher than in Vermont. Maine has higher use rates than the US and most of its benchmark states in the remaining types of health care.

**Access to health care services and use of preventive services:** By several measures, compared to the US and the benchmark states, access to care in Maine is good. Compared to the US as a whole, Maine has a lower rate of persons underserved by primary care physicians and a higher rate of use of preventive care (early prenatal care and vaccinations of children and adults) (Table 10). Maine also compares well to three or more of the five benchmark states on these measures. On one preventive measure – mammography screening – Maine does better than all five benchmark states and the US as a whole.

**Table 10. Access to care and use of preventive services in various years in US, Maine, and benchmark states**

<b>Category</b>	<b>US</b>	<b>ME</b>	<b>NH</b>	<b>ND</b>	<b>VT</b>	<b>WV</b>	<b>WY</b>
Population underserved by primary care MDs, 2003	11.8%	<b>8.4%</b>	5.4%	17.3%	3.2%	13.1%	16.2%
Persons who didn't visit doctor due to cost, 2000	9.9%	<b>11.2%</b>	9.4%	7.1%	8.6%	16.4%	12.1%
Adults 65+ with 6+ teeth lost to decay or gum disease, 2002	61.9%	<b>65.6%</b>	57.6%	62.5%	61.9%	78.9%	63.8%
Mothers beginning prenatal care in 1 <sup>st</sup> trimester, 2002	83.7%	<b>87.9%</b>	91.5%	86.1%	88.9%	85.0%	84.9%
Women age 50+ receiving a mammogram, 2002	70.8%	<b>76.4%</b>	72.7%	70.8%	74.8%	69.7%	63.0%
Vaccine coverage for children 19-35 months, 2000	77.6%	<b>84.1%</b>	84.8%	81.4%	82.7%	75.8%	79.7%
Pneumococcal vaccine coverage for persons age 65+, 2002	62.9%	<b>66.8%</b>	63.8%	72.5%	66.3%	61.2%	68.2%
Influenza vaccine coverage for persons age 65+, 2002	68.4%	<b>73.8%</b>	72.3%	73.9%	73.6%	65.8%	70.6%

Sources: Flowers et al., 2003 and Kaiser Family Foundation <http://www.statehealthfacts.org>.

However, in spite of the successes for many preventive services, there is much room for improvement. The facts in Table 10 indicate that 1 out of 12 citizens in Maine lived in an area that was under-served by primary care physicians in 2003; 1 in 9 did not visit a doctor due to costs; and 2 out of 3 adults had lost 6 teeth or more due to decay. The proportion of the population that went without physician care due to cost is higher in Maine than the national average and higher than three of the benchmark states. The proportion of adults with tooth loss is also higher than the national average and four of the benchmark states. Despite Maine's outstanding record on the provision of preventive services, there is also room for improvement. The proportion of the population missing these services ranges from 12 percent for early prenatal care to 33 percent for pneumococcal vaccine coverage among persons over age 65.

**Health care resources, capacity, organization, and quality of inpatient care:**

Compared to the US and some of the benchmark states, Maine has a higher ratio of physician generalists, geriatricians, and registered nurses per 100,000 population (Table 11).

**Table 11. Health care resources available in various years, US, Maine, and benchmark states**

Category	US	<i>ME</i>	NH	ND	VT	WV	WY
Physician generalists (per 100,000 pop.), 2001	31	<b>44</b>	34	52	43	38	49
Primary care physicians as a percent of all physicians, 2002	40%	<b>45%</b>	41%	46%	43%	44%	46%
Physician specialists (per 100,000 pop.), 2001	216	<b>197</b>	207	166	269	175	125
Geriatricians (per 100,000 pop.), 2003	26	<b>36</b>	39	33	37	19	19
Registered nurses (per 10,000 pop.), 2002	78	<b>93</b>	93	97	88	87	71
Hospital beds (per 100,000 pop.), 2001	273	<b>258</b>	215	455	209	385	266
Community hospital occupancy rate, 2001*	64.4%	<b>65.8%</b>	58.6%	59.5%	64.7%	62.0%	52.6%
Nursing facility occupancy rate, 2002	82.7%	<b>91.8%</b>	89.7%	91.5%	94.3%	89.7%	82.3%
HMO penetration rate, 2002	26.4%	<b>23.9%</b>	30.3%	10.5%	0.4%	10.0%	2.0%

Sources: Flowers et al., 2003, U.S. Census Bureau. Statistical Abstract 2003, pages 113, and 123 and Kaiser Family Foundation <http://www.statehealthfacts.org>.

\*Calculated by dividing average daily census in 1,000s by the number of beds in 1,000s. Long-term care, psychiatric, tuberculosis, and federal hospitals are excluded. Source: U.S. Census Bureau. *Statistical Abstract 2003*.

Maine has fewer physician specialists than the US, and primary care physicians make up a higher percentage of the physicians in Maine compared to the US. This mix of physicians probably results in the lower proportion of health care spending on physician services in Maine (see Table 8), since the average visit payment is lower for primary care physicians than for specialists. Maine has fewer hospital beds per 100,000 population than the US as a whole and three of the benchmark states, but more than the two New England benchmark states. Community hospital occupancy rates in Maine are about the same as in the US as a whole but higher than all of the benchmark states. Nursing home occupancy rates are higher in Maine than in the US and three of the benchmark states.

Health Maintenance Organization (HMO) penetration rates are lower in Maine than in the US and substantially lower than in New Hampshire. The other

benchmark states have very low HMO penetration rates, ranging from 0.4 percent to 10.5 percent.

**Quality:** A study of the quality of care provided by US hospitals to Medicare beneficiaries conducted by the Centers for Medicare & Medicaid Services examined the performance of hospitals in providing evidence-based care for three acute conditions (acute myocardial infarction, stroke, and pneumonia); two chronic conditions (congestive heart failure and diabetes); and three preventive services (immunization for flu and pneumonia and mammographies) (Jencks et al. 2003). The study found that the quality of care provided by Maine hospitals was good: Maine hospitals were ranked third best in the US, after New Hampshire and Vermont, in each of the two time periods studied, 1998 – 1999 and 2000 - 2001.

### Economic factors

**Personal income:** In 2002, Mainers had substantially lower average per capita disposable personal income than residents of the US and three of the benchmark states (Table 12). Thus, the higher health care expenditures in Maine represent a larger percentage of disposable income than is true in the US or most of the benchmark states. Maine’s per capita income as a percent of US income barely changed from 1990 to 2002, but it increased by 2 percent or more in the five bench mark states.

**Table 12. Average per capita disposable personal income in current dollars in 1990, 2000, and 2002, US, Maine and benchmark states**

Region/State	Average per capita disposable personal income*		Percent of US average	
	1990	2002	1990	2002
US	\$17,135	\$27,083	100.0%	100.0%
<b>ME</b>	<b>\$15,408</b>	<b>\$24,443</b>	<b>89.9%</b>	<b>90.3%</b>
NH	\$18,441	\$30,344	107.6%	112.0%
ND	\$14,313	\$24,463	83.5%	90.3%
VT	\$15,831	\$26,169	92.4%	96.6%
WV	\$12,997	\$21,282	75.9%	78.6%
WY	\$16,067	\$26,818	93.8%	99.0%

Source: U.S. Census Bureau. *Statistical Abstract 2003*, page 448.

\* “Disposable personal income is the income available to persons for spending or saving; it is calculated as personal income less tax and nontax payments” (U.S. Census Bureau. *Statistical Abstract 2003*).

Although on average Mainers have lower incomes than residents of the US and most of the benchmark states, there are differences by age cohort. Older persons in Maine are less well off than the average older person in the US, since a higher percentage of older persons in Maine have incomes below 200 percent of the poverty level (Table 13). However, compared to the US, Mainers who are younger than 50 years old are better off, since fewer have incomes below 200 percent of the poverty level.

**Table 13. Distribution of family income by age group in 2001, US, Maine, and benchmark states**

Category	US	ME	NH	ND	VT	WV	WY
Persons <50 years of age with family income less than 200% of poverty level	32.1%	<b>29.7%</b>	21.2%	34.1%	28.8%	41.6%	30.1%
Persons 65+ years of age with family income less than 200% of poverty level	38.5%	<b>44.1%</b>	30.9%	47.3%	47.7%	46.0%	40.2%

Source: Flowers, et al. 2003, page 233.

**Health insurance coverage:** In Maine in 2001, a lower percentage of the population younger than 65 years of age was uninsured than in the US, West Virginia and Wyoming (Table 14). New Hampshire, North Dakota, and Vermont had lower percentages of the uninsured than Maine.

**Table 14. Health insurance, persons <65 in 2001, US, Maine, and benchmark states**

Category	US	ME	NH	ND	VT	WV	WY
Uninsured	16.5%	<b>12.3%</b>	11.0%	11.2%	10.8%	15.8%	18.1%
Employer or other private	72.1%	<b>73.7%</b>	82.8%	76.4%	76.7%	66.4%	71.5%
Medicaid or other public	11.4%	<b>13.9%</b>	6.2%	12.5%	12.6%	17.8%	10.4%

Source: Flowers et al., 2003.

New Hampshire, North Dakota and Vermont stand out as having higher rates of employer-provided health benefits than Maine, the US as a whole, or the two other benchmark states. Maine and Wyoming have employer health benefit rates close to the US average. Relatively more Mainers are covered by Medicaid or other public payers compared to the US and to four of the

benchmark states. This reflects the lower level of personal income in the State and the eligibility standards for MaineCare. New Hampshire and Vermont have a lower proportion of uninsured than Maine does, a higher proportion covered by private insurance, and a lower percentage covered by Medicaid and other public programs.

**Cost of health insurance coverage:** The primary barrier to health insurance coverage for persons not eligible for Medicare or Medicaid is cost. Average coverage rates in states are affected both by differing insurance costs and by level of personal income. Maine and all of the benchmark states where figures are available, have average employer premium costs above the national average (Table 15). New Hampshire ranks 1<sup>st</sup> in the nation in overall cost of employer family health benefits, and Maine ranks 3<sup>rd</sup>. State-specific rates were not reported for Vermont and North Dakota.

**Table 15. Average total family premium per enrolled employee in private businesses in 2002, US, Maine, and benchmark states**

Category	US	ME	NH	ND	VT	WV	WY
Average total family premium	\$8,469	<b>\$9,174</b>	\$9,672	N.A.	N.A.	\$8,941	\$8,547
Average family premium, business < 50	8,502	<b>9,844</b>	10,266	N.A.	N.A.	8,135	8,335
Average family premium, business ≥ 50	8,463	<b>9,028</b>	9,475	N.A.	N.A.	9,134	8,604
Rank among states		<b>3rd</b>	1st	N.A.	N.A.	6th	15th

Source: Agency for Healthcare Research and Quality, Center for Financing, Access and Cost Trends. 2002 Medical Expenditure Panel Survey – Insurance Component.

New Hampshire differs from Maine and the other benchmark states in having comparatively high total family income – 3<sup>rd</sup> highest among states. The high premium cost in New Hampshire thus requires a smaller share of income than is true in the US, Maine, or the other benchmark states where employer premium cost data are available (Table 16). Compared to the US and the benchmark states, Maine’s premium costs require the second highest proportion of family income.

**Table 16. Average family premium as a percent of average total family income in 2002, US, Maine, and benchmark states**

Category	US	ME	NH	ND	VT	WV	WY
Average family premium as a percent of average household income	19.5%	<b>24.4%</b>	17.5%	N.A.	N.A.	28.6%	20.6%

Source: For household income, U.S. Census Bureau, *Current Population Survey, 2001, 2002, and 2003 Annual Social and Economic Supplements*. For family premium costs, Agency for Healthcare Research and Quality, Center for Financing, Access and Cost Trends. *2002 Medical Expenditure Panel Survey – Insurance Component*.

**Role of health care jobs in the economy:** A higher percentage of workers in Maine are employed in the health care sector (9.1 percent) than in the US as a whole (7.5 percent) (Table 17). Only West Virginia has a higher percentage of workers in health care than Maine does.

Health care is a cost to individuals, corporations, and the government. It is also, however, a source of income for individuals and health care providers. Changing the rate of health care spending in Maine could have a substantial impact on the economy. On the one hand, the health care industry in Maine is a major source of jobs and income. On the other, the high cost of health care benefits represents a drag on growth in other economic sectors within the State. Estimating the net impact of such changes is beyond the scope of this report.

**Table 17. Health care jobs as a percentage of total jobs in 2002, US, Maine, and benchmark states**

US	ME	NH	ND	VT	WV	WY
7.5%	<b>9.1%</b>	7.2%	8.9%	7.9%	9.8%	6.8%

Source: Kaiser Family Foundation <http://www.statehealthfacts.org>. Accessed 8 July 2004.

## **Study Limitations**

It is informative to compare Maine to other states that are similar in geography or in socio-demographics but, of course, each state is unique, and no simple comparison of unadjusted rates can take into account the many differences in the populations, underlying economics, and health care systems in the various states. Similarly, Maine is a small and very rural state with a lower-than-average level of personal income in comparison to the US, which limits comparability with the nation as a whole.

This study describes trends and patterns, but does not establish direct cause and effect relationships between state characteristics and aggregate health care spending. While we have used the most recent information we can find from published sources, the availability of comparative data lags behind changes in the health sector, especially given the rapid changes the health care sector is experiencing. This is especially true of the information comparing overall spending in the US and the states by type of health care service.

## **Conclusions and Implications**

This study has documented that Maine's health care costs are higher and have been rising more rapidly than costs in the US for a decade. A number of factors may contribute to the high costs of health care in Maine. These comparative analyses highlight differences between Maine and the US and the five benchmark states, and point to possible areas for policy interventions to help mitigate Maine's high average per capita health care costs. These analyses also show some findings where Maine's profile meets or exceeds national norms and thus point to factors that likely do not contribute to the excess of spending in Maine above the national average. Key findings are discussed below.

## **Population health status and health behaviors**

A positive finding is that Maine's population health status measures are on a par with or exceed national and benchmark state norms in many instances. In particular, Maine has better than average rates on infant mortality, teen pregnancy and low birth-weight babies and is on a par with the nation on rates of obesity and smoking. The overall rates of self-reported poor health, mental health problems, and high blood pressure prevalence did not differ in Maine

from national rates. Maine also appears to be exceeding national norms in the proportionate use of a number of preventive screening tests and treatments including mammography and vaccinations. These findings are encouraging and support a view that generally lower health status and poor health behaviors contribute less than other state characteristics to Maine's excess of health care costs above the national average.

Factors related to health status and health behaviors identified in this study that merit attention by policymakers and providers include Maine's diabetes prevalence, cancer and heart disease mortality, the high prevalence of dental disease, and the low level of physical activity among adults. Enhanced preventive services would require either additional or reallocated resources in the short-term, but would likely pay off in decreased morbidity in future years. Maine's success in reducing smoking rates in recent years points to the potential effectiveness of population-based interventions.

In addition, Mainers' general health status and health behavior present two challenges for policy makers, providers, and payers. The first is that, while the state is equal to or better off than the US on many measures, when compared to its two neighbors—New Hampshire and Vermont—Mainers have poorer health status and health behavior on all measures studied. The example of our neighbors shows that substantial improvements may be feasible. The second challenge is the high absolute level of problems in Maine and in the US for many health indicators, especially for overweight adults. They leave considerable room for improvement, and shifts in Mainers' health status could markedly change health care costs for better or worse in the future.

## **Health system infrastructure, access, and use**

By several measures of access and provider availability, Maine is doing better than the US. These include a lower proportion of the population that is underserved by primary care physicians and of adults with difficulty in self care. An area in which Maine does not do as well as the US is in having a higher proportion of persons who do not see a physician due to costs. In addition, Mainers lag behind the nation in access to dental services. The US average percent with cost barriers to physician care is lower than Maine's despite the fact that Maine has fewer people uninsured than the national average. The relatively high proportion of Mainers who forego care because of cost most likely flows from the combination of high health care costs and low average per capita income.

People without health care insurance may be less likely to see a doctor when they first become ill and may be less likely to use medications or other services that can help keep illnesses from getting worse. While lower health care use by the uninsured can lower health care costs in the short-term, it can raise costs in the long term if the uninsured use emergency department care or hospitalization to treat serious illness. The costs of treating the uninsured can be shifted to private insurers, increasing the costs of providing health care coverage to their employees.

Another area where Maine exceeds the nation and benchmark states is in the rate of use of emergency department services. This statistic may be strongly associated with cost barriers to physician care. Individuals unable to afford routine medical care may wait until their condition is critical and then seek care in a hospital emergency department. In addition, individuals without an established relationship with a physician or medical office or clinic, or without convenient off-hours access to primary care, may see the local hospital emergency department as the only point of entry into the health care system.

This study shows a strong correlation between rurality and high per capita health care spending. This finding may support consideration of measures to target preventive health initiatives to rural populations and to assist providers in developing innovative ways to realize efficiencies in rural health care settings.

Maine has adequate numbers of primary care physicians and hospital beds, based on national norms, and its hospitals rank highly on quality of care, based on several outcome measures.

Taken together, these findings point to population health issues and high costs as the most significant barriers to full access and high quality health care in Maine. To the extent that preventive care can prevent the spread of infectious disease and that primary and preventive care, dental care, and guideline-based inpatient care can detect illnesses in the early stages and prevent them from becoming more severe and more expensive to treat, improvements in access to and use of these services has the potential both to improve health and to reduce health care costs.

## Areas for future study

Two findings from this comparative analysis seem to us to point to fruitful avenues for more in-depth analysis. One finding suggesting further analysis is the high use of hospital emergency departments combined with the high rate of reported cost barriers to needed care. Are these factors related and, if so, what is the exact nature of this relationship? Is the high rate of emergency department use greater in urban or rural areas? Is it related to barriers to medical advice and urgent care services in non-working hours?

A second finding that lends itself to more analysis is the association of rurality with high health care costs. Although this is an active area of health policy research, there are many questions that remain. To what extent does a small and widely dispersed population disallow economies of scale? Are there innovative delivery system arrangements that can counter these market dynamics? To what extent does the relatively small number of health care providers in rural areas reduce competition and increase costs? How important is the relatively low penetration rate of HMOs in contributing to higher health care costs and will this urban/rural differentiation increase or decrease over time, as managed care continues to change? These and other questions could be fruitfully explored through cross-state comparisons and more in-depth analyses.

With the information reviewed here we have been able to describe factors that may be associated with higher health care costs. Some of these factors suggest possibilities for immediate policy intervention. Deeper understanding of the *causes* of higher health care costs requires further study. Further research is needed to understand persistent barriers more efficient health care services in order to assure affordable, accessible, and high quality care to Maine citizens into the future.

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