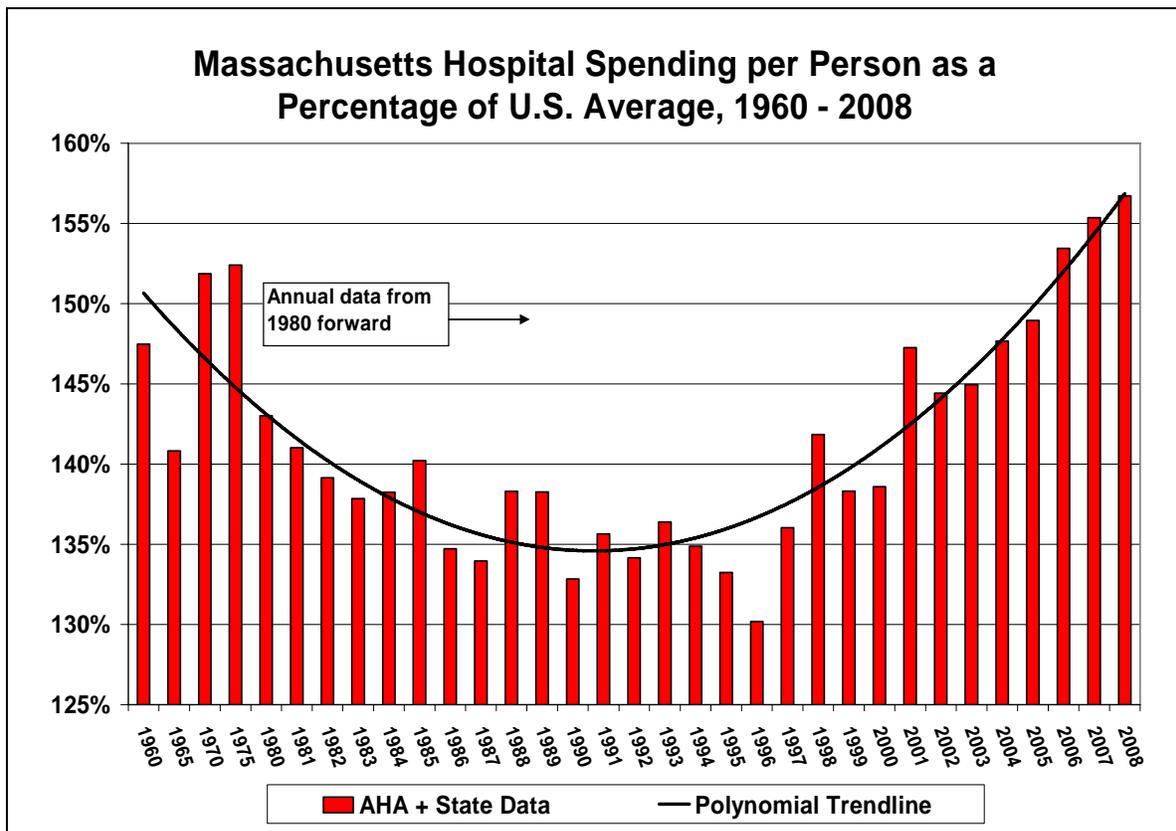


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## **MASSACHUSETTS HOSPITAL SPENDING REACHED 55.4 % PER PERSON ABOVE THE U.S. AVERAGE IN 2007**

***Most of Excess is Unjustified, and  
State's Health Reform Law Is Negligible Factor***



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## **SUMMARY**

### **A. Short Overview**

This report documents and investigates the excess in Massachusetts hospital costs per person above the average for the United States. It examines the recent rise in this excess after a prolonged earlier decline, analyzes the many causes of the excess, assesses their reasonableness, and offers recommendations for addressing the state's resurgent hospital cost crisis.

**1. What?** Acute hospital costs per person in Massachusetts have long been the highest in the nation, and therefore in the world. **In hospital fiscal year 2007, hospital costs here reached 55.4 percent above the U.S. average—the greatest excess then recorded.**<sup>1</sup>

That meant an excess of \$1,074 for each resident of this state. **Hospital cost per person in 2007 here was \$3,015, versus the U.S. average of \$1,941.** Had 2007 hospital cost per person equaled the U.S. average, we would have saved almost \$7 billion of the \$19.5 billion in Massachusetts statewide hospital costs.

This report mainly addresses **spending by hospitals**—their costs—rather than their revenues. While higher revenues can enable higher spending, other things equal, they are not the only factor making for higher costs.

**2. When?** Striking changes over the previous four decades gave rise to the 2007 Massachusetts excess. Hospital costs here were 52 percent above the national average in the mid-1970s, then fell to **a nadir of 30 percent above in 1996**, but soon began climbing again. The two decades of decline until 1996, associated partly with concerted pressures to constrain hospital costs here, shows that **the excess can be reduced when powerful forces are at work.**

But two cautions are vital. The past methods used in Massachusetts to shrink excess hospital costs appear to have been dangerous to some patients—and to many hospitals and ERs. And in the late 1980s, rising costs of non-hospital care more than offset the constraints on hospital costs, so overall *health care* costs per person here rose farther above the U.S. average. That rise has continued. Compounding this, **the state's hospital cost excess began to rapidly rebound in the late 1990s. The 2004 hospital cost excess reached 43 percent, a level not seen since 1980. It climbed to new heights in 2004, 2006, and 2007.**

The size of each year's increase in the Massachusetts hospital cost excess since 2000 varies somewhat with the data set used. One data set indicates a gradual rise in the excess during the years just after 2000 and a steeper one starting in 2006. The other indicates a longer and more even climb. But both agree that, by 2007, hospital costs here had soared to 55.4 percent above the U.S. average.

**3. Why?** To try to explain this state's long-standing hospital cost excess, its two-decade decline from 1975 to 1996, and its subsequent rapid rebound, we have analyzed a number of hospital characteristics since 1960, performed a 50-state regression analysis for 2007, and drawn on other evidence. We found:

- The Chapter 58 Massachusetts reform law of 2006 is, simply, not responsible for the recent rise in the Massachusetts hospital cost excess.
- It was clearly possible to shrink the excess from 1975 to 1996; powerful economic and political forces were responsible.
- Did reductions in the hospital cost excess harm patients? Firm evidence is lacking, but it seems probable that the reductions came disproportionately at the expense of patients vulnerable to deprivation of needed care.
- When political and economic forces for cost control eased in the 1990s, our hospitals' excess costs took only 11 years to rise beyond the 1970s' peaks.
- That post-1996 rebound in this state's excess featured cost acceleration here, not deceleration of hospital costs nationally.
- Compared to the U.S. average, hospitals here don't have excess beds, long stays, or low occupancy, so these can't explain the current excess.
- No single smoking gun explains the durable excess or the rebound. **Many hospital, physician, payment, political, and other forces are at work.**
  - ✓ Long-standing sources of this state's high costs: High teaching hospital share of patients, MD supply, surgery rates, and non-ER outpatient visits.
  - ✓ New or recently reinvigorated factors: admissions, ER visits, staffing levels (not average compensation, wages or benefits), non-labor costs.
  - ✓ Substantial growth in revenue helped to make higher spending possible.
  - ✓ Very heavy and rising reliance on costly teaching hospitals. Across states, that correlates with high costs.
  - ✓ Nation's highest physician-to-population ratio and past private insurance regulations limiting fees also spurred development of an elaborate and expensive pattern of physician and hospital care.
  - ✓ Hospitals in Massachusetts are unusually influential politically; they argue that they are vital to the state's economy; they have become central members of business groups that once fought to restrain hospital costs; and some won vast financial leverage and power to obtain higher prices.

**4. Justified? Only about one-sixth of the 2006 hospital cost excess here of \$6.1 billion was justified by reasonable factors.** We examined 9 factors that might justify or help to legitimize or rationalize parts of this state's excess costs.

- Four factors contribute to the Massachusetts hospital cost excess yet seem largely legitimate: exports, research, training, and living costs.
- Two appear to be neutral: outcomes/quality and elderly population share.
- Three other factors not only fail to explain high costs here; they should make for lower hospital costs per person. These are bed-to-population ratios, severity of illness of hospital patients, and hospital profits. Thus, for example,

hospitalized patients here are *less* sick than the national average, so severity of illness does not contribute to our hospital cost excess. Our less severely ill patients should in fact mean lower costs in Massachusetts. This factor therefore adds to the unexplained, unjustified hospital cost excess.

**Summary: Actual Hospital Cost Excess, Explained Share, and Add-backs, 2006**

Actual Massachusetts hospital cost excess, 2006	\$6.1 billion
Explained by exports, research, training, and living costs	- \$2.5 billion
Outcomes/quality and elderly population share are neutral factors—neither explanatory or counter-predictive	—
Add-backs for counter-predictive factors: hospital beds, severity of illness, and profits	+ \$1.5 billion
<b>Net excess cost explained by widely-cited factors</b>	<b>\$1 billion (16.3% of excess)</b>
<b>Net excess after explanations and add-backs</b>	<b>= \$5.1 billion</b>

**5. Lessons.** We have long urged that more money to finance business as usual in health care is both unaffordable and unnecessary. Both free markets and regulations have failed, resulting in financial anarchy and higher health costs.

Most past efforts to contain hospital costs have failed about as badly here as nationally. But there have been some successes. It will be helpful to recall the forces that squeezed the state’s hospital excess to 30 percent in 1996.

But since costs quickly rebounded, it will be vital to craft new, solid, and popular ways to contain costs. It may take some dramatic changes to inspire, reassure, and motivate some parties to embrace new aims, roles, and methods. That’s not surprising: “No problem can be solved from the same level of thinking that created it.”<sup>2</sup>

Bundled or globally capitated payments to accountable organizations, and other mechanical changes in formulas, units, and incentives might be helpful but can’t substitute for negotiated deals among the stakeholders. We urge serious talks among private and public payers, hospitals, and physicians to craft payment levels and methods that are acceptable to all parties and are durably affordable.

This will entail substantial changes. Unless doctors and hospitals wholeheartedly commit to working—patient-by-patient—to weed out clinical waste (unneeded services, and needlessly costly ones), it will be impossible to assure both affordable, high-quality care for all Massachusetts residents and adequate, guaranteed revenues for all needed Massachusetts doctors and hospitals.

As the Commonwealth tackles the hospital cost excess, it will be vital to protect patients who are vulnerable to deprivation of needed care and also their doctors, hospitals, nurses, and other caregivers. It will be important to ensure that costs are not simply again shifted from one arena of health care to another. And new cost controls should target specific causes of excess hospital costs in this state.

## ***B. Long Overview: Main Findings***

### ***1. What: The Rebounding, Soaring Massachusetts Hospital Cost Excess***

Hospital costs in Massachusetts in 2007 reached \$3,015 per person, 55.4 percent more per person than the national average, an unprecedented level. If hospitals here had spent at the national per person average, their expenses would have been \$12.6 billion, saving \$6.9 billion.

This \$6.9 billion constitutes excess hospital costs in Massachusetts in 2007. It amounts to 36 percent of the nearly \$19.5 billion in actual statewide hospital expenses reported by hospitals to the American Hospital Association (AHA).

The \$6.9 billion excess is up sharply from the 2005 Massachusetts hospital cost excess of \$5.2 billion (adjusted for inflation), when hospital spending per person here exceeded the national average by 43.2 percent—and up from \$6.4 billion in 2006, which was an excess of 51.7 percent.<sup>3 4</sup>

In 1996, hospital cost per person in Massachusetts had moved closer to the United States average than at any other time examined—yet this nadir was still 30 percent above the U.S. average. Had Massachusetts hospitals in 2007 spent at the 30 percent excess of 1996, \$3.2 billion would have been saved here.

While Massachusetts hospital spending greatly exceeds the U.S. average per person, the U.S. figure itself far exceeds the average level prevailing in 12 other wealthy OECD nations. The U.S. was more than two-thirds (70-72 percent) higher in 2004-2005.

It is right to focus on hospital cost per person because this is how much hospitals expend to provide care. These are the costs that they must cover in order to stay in business. Cost per person measures the burden of hospital costs on all who pay them.

Alternative measures, such as cost per adjusted patient-day, are not helpful because they inherently assume that current rates of use of hospital care—for inpatient admissions, surgery, emergency room care, and non-emergency outpatient care—are somehow correct and needed. But high rates of use of hospitals, for some purposes, are some of the main reasons why hospital cost per person is so high in Massachusetts. Therefore, using a measure like cost per adjusted patient-day inherently sweeps a big part of the cost problem under the rug. Obscuring the nature or dimensions of a problem does not help to actually solve it.

Some hospital advocates claim that higher spending by hospitals is a good thing because it boosts the state's economy. That can be true only to the extent that

hospital care is an export industry, one that brings money into the state for research or to serve out-of-state patients, for example.

## **2. When?**

The excess in Massachusetts hospital costs fell from 1975's then-record 52 percent above the U.S. average to the 1996 nadir, 30 percent above the U.S. We don't think that even this 30 percent excess was justified, but we do note that it was associated with a drop in hospital total margins, admission rates, ER use rates, and hospital staffing levels statewide. Many hospitals closed during those two decades.

Since 1996, the excess in hospital costs here has quickly rebounded. Hospital admissions and staffing rose again, and non-labor costs hit unprecedented levels. In 2004, our hospital cost excess reached 43 percent, a level not seen since 1980. The Massachusetts hospital cost excess reached new heights in 2006 (51.7 percent above the U.S.) and in 2007 (55.4 percent above). The 2008 excess is between 55.0 percent and 57.5 percent.

The timing and pace of annual increases in this state's hospital cost excess since 2000 vary with the data set used, though its severity is not affected.

In this report, almost all analyses rest on financial data provided by hospitals, in Massachusetts and elsewhere in the nation, to the AHA. At times, the report incorporates financial data provided by Massachusetts hospitals to the state's Division of Health Care Finance and Policy (DHCFP).<sup>5</sup>

The AHA and DHCFP hospital expense data agree that, by 2007, hospital costs here had soared to an extraordinary 55.4 percent above the U.S. average. But annual expenses reported to DHCFP are somewhat higher than those reported to AHA for 2001-2006. This data discord affects the steepness of the climb in the Massachusetts excess since 2000. The DHCFP data indicate a shallower climb, beginning earlier, while the AHA data indicate a somewhat steeper climb, beginning later.<sup>6</sup>

## **3. Why Is Our State's Hospital Cost Excess So High—and Rising?**

As summarized shortly, the hospital cost excess here reflects several factors:

- a. Not the Chapter 58 Massachusetts reform law
- b. Acceleration here, not deceleration nationally.
- c. Not excess beds, long stays, or low occupancy rates

- d. Long-standing sources of high costs: high and rising shares of care in major teaching hospitals, high physician-to-population ratios, high surgery rates, and high reliance on hospitals for non-emergency outpatient visits
- e. Drops in volumes of care and hospital personnel were associated with the shrinkage of the excess from 1975 to 1996. Most of these rebounded or surged from 1996 to 2007: admissions, ER visits, staffing levels (not average compensation wages or salaries), and non-labor costs.
- f. A number of hospital characteristics were associated with the surge in hospital costs after 2005.
- g. The rate of rise in expenses differed substantially among hospitals.
- h. Substantial growth in revenue helped to make higher spending possible.
- i. An array of factors evident in a multivariate analysis
- j. Lessons: It's essential to protect vulnerable patients and the hospitals that serve them, and one financial size doesn't fit all hospitals

a. Not Chapter 58. Given the focus on Massachusetts during the present health care debate, it is important to note that Massachusetts hospital costs began to rise rapidly relative to the national average in 1997; in nine of the 11 years from 1997 to 2007, hospital costs rose faster here than nationally. The pace of this state's rise accelerated in 2004, when costs here rose more than one-third faster than the national rate. So our hospital costs per person in 2004 hit a level not seen since 1980—43 percent above the U.S. figure. This was well before the enactment of the Chapter 58 health reform law in April of 2006, and before its implementation, which began in earnest in the fall of 2006.

Overall, the very large recent growth in excess expenses of Massachusetts hospitals builds on long-standing patterns and is not visibly associated with the 2006 Massachusetts health reform law. There is no correlation between the timing of the growth in the number of insured people and the timing of the growth in hospital costs in Massachusetts.

Hospital fiscal year 2006 saw the biggest jump in Massachusetts hospital costs per person relative to the U.S. average, with AHA data showing costs up here more than twice as fast as nationally. But HFY2006 ended on 30 September 2006, less than six months after passage of the Massachusetts law, when coverage improvements had barely even begun to take effect. Hospital expenses statewide, adjusted for inflation, rose by 8.9 percent from 2005 to 2006 but the number of insured people actually fell by 1.2 percent from 2005 to 2006.

From 2006 to 2007, the rate of rise in inflation-adjusted hospital expenses statewide slowed to 4.8 percent while the number of insured people rose by a whopping 5.7 percent.

Over the decade from 1999 to 2008, annual rises in hospital costs (inflation-adjusted) were actually correlated negatively with rises in the number of insured

people. Coverage improvements therefore cannot account for more than a very small fraction of the rise in hospital costs in Massachusetts—and in the Massachusetts excess. This view is reinforced by the observation that a visible share of the dollars used to subsidize new insurance coverage under the health reform law were not new spending but rather dollars transferred from the hospital uncompensated care pool/safety net fund.

b. Acceleration here, not deceleration nationally. The jump in the Massachusetts hospital cost excess farther above the U.S. average stemmed from unusually rapid increases in hospital costs here, not from abnormally slow increases nationally. In 2006, for example, the U.S. hospital cost per person rose by 6.0 percent over 2005, *but in Massachusetts, cost per person rose by 12.3 percent*, more than twice as fast as nationally. (These figures are not adjusted for inflation—acceptable because the focus is comparing this state to the nation.) The U.S. rise showed no deceleration, as it was very close to the nation's 5.5 percent average annual rise prevailing from 1998 to 2007. But the 2006 Massachusetts rise was one and three-quarters times as high as the average 7.0 percent increase prevailing here from 1998 to 2007. The next year, in 2007, both Massachusetts and national increases in cost per person slowed, but the rate of rise here in 2007 was still more than half again as fast as nationally—7.5% in Massachusetts vs 4.9% for the U.S.

c. Not excess beds, long hospital stays, or low occupancy rates. Massachusetts has a *lower* hospital bed-to-population ratio, shorter average hospital stays, and higher occupancy rates than does the nation as a whole. These factors, therefore, can't help to explain the hospital cost excess here.

d. High and growing reliance on major teaching hospitals, the nation's highest physician-to-population ratio, heavy reliance on hospitals for outpatient care, and high surgery rates are durable explanations of the Massachusetts hospital cost excess.

e. Drops in volumes of care and hospital personnel were associated with the shrinkage of the excess from 1975 to 1996; most of these rebounded or surged from 1996 to 2007: admissions, ER visits, staffing levels (not average compensation, wages or benefits), and non-labor costs.

***From 1975 to 1996***

- Acute hospital bed-to-population ratios fell below national levels.
- The rate of inpatient admissions here declined steeply, though roughly at the same pace as the nation's.
- Inpatient days dropped to the U.S. average (from 12 percent above in 1975).

- ER visits per 1,000 residents fell from 44 percent to 20 percent above national rates.
- The number of RNs per 1,000 people in Massachusetts dropped from a 58 percent excess above the U.S. average to a 14 percent excess.
- Total hospital personnel per 1,000 residents fell from a 39 percent excess to one of 26 percent.
- Owing to drops in pay per employee and in personnel per 1,000 residents relative to the national average, total Massachusetts hospital payroll costs per resident of the state fell from a 58 percent excess over the U.S. level in 1975 to an excess of 32 percent in 1996.
- Non-labor costs, though, fell only slightly from a 37 percent excess per resident to a 30 percent excess in 1996.
- Interestingly, Massachusetts rates of surgery per 1,000 people had an 11 percent excess in both 1975 and 1996, and rates of non-emergency outpatient visits barely fell from a 42 percent excess to a 39 percent excess.

#### ***From 1996 to 2007***

- The Massachusetts hospital admission rate rose markedly after 1996 to an 11 percent excess in 2007 even though the bed-to-population ratio here remained below the national average.
- Surgeries in 2007 rose to 18 percent above national rates per 1,000 residents.
- ER visits rebounded only slightly, but non-emergency outpatient visits rose from a 39 percent excess in 1996 to a 58 percent excess in 2007.
- RNs per 1,000 Massachusetts residents rose slightly to a 22 percent excess above the U.S. average, but total hospital personnel per 1,000 residents rose to a 38 percent excess.
- Average pay per *worker* here was restored to a 13 percent excess above the U.S. level.
- Hospital workers' payroll plus benefit costs per Massachusetts *resident* hit 54 percent above the U.S. average (reflecting both the number of workers and compensation per worker, but mainly the former).
- Non-labor costs of Massachusetts hospitals showed an even greater excess—57 percent above the national average.

#### **f. A number of hospital characteristics have been associated with the surge in excess Massachusetts hospital costs after 2005.**

- The reported rate of hospital admissions per 1,000 people rose far faster here than nationally in 2006 (4.4 percent), the largest one-year percentage rise in admissions ever seen here. In Massachusetts, the admission rate has risen solidly in most years since 2000, and in 2007 it exceeded the U.S. rate by 10.9 percent, more than in all but two previous years.

- Emergency room use here jumped greatly in 2006, by almost 275,000 visits, boosting ER visits per 1,000 people from 14.5 percent above the national average in 2005 to 22.6 percent above in 2006. The state's 2007 excess was similar. Before 2006, that excess had declined steadily for a quarter century.
- In 2007, the ratio of hospital staffing to population in Massachusetts rose by 8.8 percent, the biggest one-year jump ever seen. (Meanwhile, the national ratio rose 1.8 percent.) Hospitals here added 11,000 jobs. Astonishingly, this was nearly one-tenth of all hospital jobs added nationwide in 2007. Hospital staffing here reached 38.1 percent above the U.S. average, the largest excess in over two decades.
- Higher staffing levels are more than twice as important as per worker payroll and benefit costs in explaining why hospital labor costs per resident in Massachusetts were so far above the national average in 2007.

g. Individual hospitals differed substantially in expense increases from 2001 to 2007. For example, teaching hospitals' expenses rose faster than those of non-teaching hospitals. Most Partners hospitals showed above-average growth in expenses. By contrast, most Caritas hospitals showed below-average expense growth.

h. Substantial growth in revenue helped to make higher spending possible. Massachusetts hospitals' total revenues rose rapidly in 2003 and again in 2006 and 2007. Total hospital revenues statewide stayed substantially above expenses through 2007. This constitutes the period with the highest and most consistent profits for Massachusetts hospitals in at least 50 years. It is possible that, after several years of revenue increases and higher margins, hospitals felt able to spend more freely, contributing to the jump in 2006-7 expenses. (Margins here and nationally dropped somewhat in 2008.)

i. Massachusetts hospital costs don't behave as predicted, in some respects. Factors that do good jobs of differentiating costs of hospital care across the 50 states do poor jobs of predicting Massachusetts hospital costs. We examined ten major factors to see which systematically predicted differences across the 50 states in hospital costs per person in 2007. Four of the ten variables were statistically significant at 0.05 or better.

Everything else equal, these factors were calculated to predict higher hospital costs per person in a given state:

- a higher ratio of beds per 1,000 people,
- a greater number of M.D. and D.O. physicians per 10,000 residents,
- a greater teaching hospital (COTH<sup>7</sup>) share of admissions, and
- a *lower* ratio of ER visits to total outpatient visits

A state's acute hospital beds/1,000 people was the most powerful predictor of expenses per person, controlling for the other variables in the equation. Both the ratio of practicing physicians to population and the COTH hospitals' share of admissions are less than half as important, and the ER percent of outpatient visits is about one-quarter as important.

Since the ratio of beds to population (which is low here) is not at all predictive of Massachusetts' high hospital expenses per person, it is reasonable to suppose that the three remaining variables are more important here.

In particular, the major COTH teaching hospital share of admissions and the ratio of practicing patient care physicians to population are probably salient. The four-variable regression analysis had an adjusted  $R^2$  of 66.9 percent, meaning that the regression statistically explained just over two-thirds of the inter-state variation in hospital cost per person.

Massachusetts was distinctly an outlier in the regression analysis. We are costly for reasons that are different from the factors that generally predict high costs elsewhere, as will be discussed. The prediction for Massachusetts costs per person was worst in dollars per person among the states, and third-worst in the absolute value of the residual as a percentage of predicted expense per person.

k. Lessons: It's essential to protect vulnerable patients and the hospitals that serve them; one size doesn't fit all hospitals.

- Ignoring or obscuring differences among hospitals is dangerous. Hospitals differ greatly in their efficiency and in their shares of statewide hospital costs. Teaching hospitals were responsible for 43 percent of Massachusetts admissions in 2004 but fully 60 percent of costs.
- A state that saw one-half of its hospitals (and almost one-half of its ERs) close from 1960 to 2007 should be on guard against threats to surviving hospitals. With so many hospitals lost, and with a bed-to-population ratio that's below the national average (an average that is itself very low by international standards), winter weeks already often see many hospitals filled to capacity. In a crisis, the state could face a grave shortfall of beds. The burden of proof should be on those who would advocate or tolerate additional closings.
- This burden of proof is important, since some efforts to shrink our state's cost excess might rely on a policy of across-the-board tightening of revenue. With community hospitals generally suffering lower financial margins than teaching hospitals, such a policy could disproportionately threaten many of those community hospitals, including many that provide good care at lower costs.

- Lessons from the shrinkage of the Massachusetts excess from 1975 to 1996 highlight the importance of respecting differences among hospitals, and of proceeding with caution. Hospital closings and bed reductions may have disproportionately harmed lower-income and minority residents of the state. Loss of lower-cost community hospitals and increasing concentration of care increasingly in teaching hospitals may have helped set the stage for the post-1996 resurgence in this state's hospital cost excess.

The first of the two following tables highlights hospital characteristics associated with the shrinkage of the Massachusetts hospital cost excess from 1975 to 1996 and also those associated with the excess's rebound from 1996 to 2007. The second includes comparisons of various characteristics of Massachusetts and U.S. hospitals in 2007; it displays Massachusetts's rank among the states.

**Summary of Main Hospital Characteristics in 1975, 1996, and 2007, and Association with Long-term Drop and Rise in Massachusetts Excess Cost**

Hospital characteristic	Mass. % of U.S. in			Comments—Mass. hospitals relative to U.S. average in '75, '96, '07, as excess cost dropped, then rose
	1975	1996	2007	
Beds/1,000 residents	107%	91%	96%	Drop coincided with lower excess
<b>Admissions/1,000 residents</b>	102%	102%	<b>111%</b>	Jumped substantially in 2006, 11% above U.S. ratio in 2007
Inpatient days/1,000	112%	99%	105%	Follows admissions, length-of-stay
Average length-of-stay	110%	98%	95%	Fell with excess but did not rise again
Occupancy rate	105%	110%	110%	Long above U.S., but measure not related to costs
<b>Surgery rate/1,000</b>	111%	111%	<b>118%</b>	Well above U.S. for decades
<b>ER visits/1,000 residents</b>	<b>144%</b>	<b>120%</b>	123%	Durable excess, associated with drop but not really with rise
<b>Other outpatient visits/K</b>	142%	139%	<b>158%</b>	Associated not with drop, but with rise
<b>Total outpatient visits/K</b>	<b>143%</b>	<b>135%</b>	<b>151%</b>	Mainly driven by non-ER visits
Salaried physicians/1,000	351%	363%	335%	
<b>RNs/1,000 residents</b>	<b>158%</b>	<b>114%</b>	<b>122%</b>	Fell for decades from 58% to 14% above U.S. in 2006 ; jumped to 22% in 2007—rose from staffing issue push?
<b>Total personnel/1,000 residents</b>	<b>139%</b>	<b>126%</b>	<b>138%</b>	Dipped with drop in volume excess from 1975 to 1996; jumped sharply from 24% excess in 2005 to 38% in 2007
<b>Hospital Payroll cost/Mass. resident</b>	<b>158%</b>	<b>132%</b>	<b>156%</b>	Fell for decades; jumped from 45% excess in 2005 to 56% in 2007; driven by personnel, not wages per worker
Benefit costs for hospital workers/Mass. resident *	145%	123%	145%	Decades of decline but jumped from 27% excess in 2005 to 38% in 2006 to 45% in 2007
Payroll + benefit cost/Mass. resident *	148%	131%	154%	Decades of decline but jumped from 41% excess in 2005 to 49% in 2006 to 54% in 2007
<b>Average pay/FTE worker</b>	<b>114%</b>	<b>105%</b>	<b>113%</b>	About 10% excess for decades
<b>Benefits/FTE worker *</b>	105%	97%	<b>105%</b>	Close to U.S. most years
Pay + benefits % of expenses*	104%	100%	99%	
<b>Non-labor cost/Mass. resident *</b>	137%	130%	<b>157%</b>	Plateau at 39% excess in 2005, rise to new peak, 47% excess in 2006 and 57% in 2007—partly driven by volume
<b>Hospital expenses/person</b>	<b>152%</b>	<b>130%</b>	<b>155%</b>	

Source: Authors' analysis of ratios calculated from American Hospital Association data.

Ratios "per 1,000" are per 1,000 residents of Massachusetts.

Note: \* = 1980 (1975 not available).

**The bold typeface highlights factors that appear to be associated with the fall and multi-year rise in excess Massachusetts hospital costs.**

**Hospital Resources, Use, and Costs, Mass. versus U.S. and Other States, 2007**

	USA	Massachusetts	Mass. as % of USA	Mass. rank among states, 2007
Cost/person	\$1,941	\$3,015	155.4%	1
Beds/1,000 people	2.7	2.6	96%	29
Admissions/1,000	118	130	111%	13
Inpatient-days/1,000	647	680	105%	19
Average length-of-stay	5.5	5.2	95%	29
Occupancy rate	66.6%	72.9%	110%	7
Surgeries/1000	91	107	118%	16
ER visits/1000	402	493	123%	8
Other outpatient visits/1000	1,605	2,537	158%	7
Salaried physicians/1,000	0.30	0.99	335%	2
RN FTEs/1,000	3.96	4.82	122%	10
Total personnel/1,000	14.9	20.5	138%	4
Payroll + benefits/FTE	\$66,905	\$74,385	111%	10
Payroll + benefit costs/ people	\$994	\$1,526	154%	1
Non-labor costs/capita	\$947	\$1,489	157%	1
COTH % beds, 2004	18.5%	38.1%	206%	5
COTH % admissions, 2004	20.7%	43.1%	208%	5
Med. resident FTEs/1,000 people	0.30	0.74	241%	3
Operating margin	4.3%	3.4%	79%	37
Total margin	6.9%	6.7%	97%	31

Notes: ER is emergency room. OPD is hospital outpatient department. FTE is full-time equivalent. COTH is Council of Teaching Hospitals of the American Association of Medical Colleges; these are generally the major teaching hospitals.

Source: Authors' analysis of ratios calculated from American Hospital Association and COTH data.

#### 4. *Is the Massachusetts excess justified?*

Of the 2006 Massachusetts hospital cost excess of \$6,149 million (\$6.1 billion), only about one-sixth—an estimated \$1,000 million (\$1 billion)—was justified by reasonable factors.

As shown in the following table, we examined nine factors that might justify or help to legitimize or rationalize parts of the Massachusetts hospital cost excess.

- Four seem clearly legitimate: exports, research, training, and living costs.
- Two appear to be neutral: outcomes/quality and elderly population share.
- Three are the opposite of justifications. They don't explain high costs here, but instead are counter-predictive. Our lower-than-average bed-to-population ratio, severity of illness of hospital patients, and hospital profits all actually should make for lower costs here. Because costs here are higher than expected, add-backs for these factors increase the unexplained Massachusetts hospital cost excess. These increases are included in the summary tally of the excess, as shown below.

#### ***Summary: Actual Hospital Cost Excess, Explained Share, and Add-backs, 2006***

Actual Massachusetts hospital cost excess, 2006	<b>\$6,149 million</b>
Explained by (1) exports, (2) research, (3) training, and (4) living costs	<b>- \$2,473 million</b>
(5) Outcomes/quality and (6) elderly population share are neutral factors—neither explanatory or counter-predictive	—
Add-backs for counter-predictive factors: (7) hospital beds, (8) severity of illness, and (9) profits	<b>+ \$1,473 million</b>
Net excess cost explained by widely-cited factors	<b>\$1,000 million (16.3 % of excess cost)</b>
Net excess after explanations and add-backs	<b>= \$5,149 million</b>

After taking account of the effects of these nine factors on 2006 Massachusetts hospital costs, we find that they reasonably account for only one-sixth of the excess hospitals costs here above the U.S. average—an estimated \$1 billion (\$1,000 million). Five-sixths of the excess remained unjustified—a net excess of \$5.1 billion. That \$5.1 billion in excess 2006 hospital costs was fully 28.5 percent of the \$18.1 billion in total hospital spending that year in Massachusetts.

## **5. What to Do? Meanings of the Study**

There are powerful reasons to act to shrink the Massachusetts hospital cost excess. But translating motivation into effective efforts will require learning from the many failures of past cost control efforts both nationally and in this state, and particularly learning from the shrinkage of the Massachusetts excess from 52 percent in 1975 to 30 percent in 1996. It will also require understanding the reasons for the Massachusetts excess—both its durable sources and the causes for the excess's resurgence since 1996. Finally, efforts to shrink the excess must be designed to address special factors that make Massachusetts health care so costly. Approaches that might work nationally, while often worth undertaking, may well be less effective in this state. All these efforts must be designed to be safe for vulnerable patients, and to prevent a shifting of excess costs from hospital care to other health care sectors, as seems to have happened in the years before 1996.

### **1) Three reasons to act**

Because the size of the Massachusetts excess in hospital costs has soared since 1996, and because the great bulk of that excess is not justified by reasonable explanations, it should be reduced.

Reducing the excess is both warranted and urgent. Doing so will help slow health insurance premium growth generally. Specifically, it will lower the cost of subsidizing expanded health insurance coverage under Massachusetts's 2006 health reform law. Further, our state's residents do not seem to be getting their money's worth from the recent rises in hospital spending.

But shrinkage of this state's excess hospital costs must be undertaken carefully and it must be informed by more than a little humility. First, few efforts to contain hospital costs or other health costs have succeeded nationally.

Both competitive market cost controls and those imposed through government regulations have generally failed. Without either an effective market and competent government action, financial anarchy prevails.

Second, while the shrinkage in the Massachusetts hospital cost excess from 1975 to 1996 might be considered successful financially if only hospital costs are considered, it may have brought some harm.

- As community hospitals closed, hospital care would be more heavily concentrated in costlier teaching facilities in the future.
- Shrinkage of excess hospital costs was, at times, associated with increases in the Massachusetts excess in other aspects of health care costs—probably partly through shifting care and costs to other health care sectors. For these reasons, it is essential to shrink the hospital cost excess in ways that don't cause health care costs to balloon in other places or at other times.
- And the non-financial consequences are particularly worrisome: the declining excess seems to have been associated with hospital closings that disproportionately affected communities where patients were already vulnerable to deprivation of needed care. For these reasons, it is essential to identify ways to contain costs that are safe for all residents of the Commonwealth.

Third, while it will be hard to again win slower hospital cost increases, and doing so safely will be harder still, a further challenge will be to shed costs durably, and without exciting backlashes that delegitimize cost control and open the door to resurgent cost increases.

Over the past year, many individuals responsible for passing or implementing the state's 2006 health care law have frequently said that preserving it—both for the long haul and especially during the present crisis in state revenues and in the economy broadly—depends on containing costs of health care.

Despite this rhetoric, most recent activity has focused on boosting revenues and cutting benefits. Until now, those have been easier, both financially and politically.

Early signs of more serious interest in cost control are visible, though it is not clear whether these will make for fundamental changes that could lead to successful cost control.

- In July 2009, the state's Special Commission on the Health Care Payment System evidenced worry about high costs and recommended risk-adjusted global payments to accountable organizations, along with increased reliance on primary care and other reforms.<sup>8</sup>

But to what degree would such efforts differ from the transiently popular but ultimately popped managed care bubble of the 1980s and 1990s? Would the new efforts be informed by the lessons from those recent decades? Will high-cost caregivers, particularly Partners, go along? Some early signs are encouraging. Blue Cross, Tufts, and perhaps other payers are working with groups of physicians to build capacity to manage capitated budgets. This is a very slow process. Will there be enough time and patience to continue to build this capacity from the bottom up? If it succeeds, will it help to attract more physicians to work in primary care? More generally, will enough physicians undertake this work in the absence of a comprehensive peace treaty that markedly and dramatically gets their attention and improves their professional lives?

- In August of 2009, analysts from the RAND Corporation, working under contract to the state's Division of Health Care Finance and Policy, reported on 21 potential cost control options and sought to model savings associated with twelve of these.<sup>9</sup>

We are concerned that the modeling is, inevitably, somewhat mechanical and that winning political acceptance of many, most, and perhaps even all of the options will be difficult or even impossible to implement in the current climate. In particular, we are concerned that, absent a political agreement about whether and how to lower the Massachusetts hospital cost excess, application of mechanical solutions will engender not progress but rather years of game-playing and public theater, including finger-pointing and shouts of rationing. We will assert that different approaches are needed.

It is important to appreciate some of the political and other lessons from the success in shrinking the hospital cost excess from the mid-1970s to the mid-1990s. In particular, a substantial though evolving political consensus on the importance of hospital cost control seemed to prevail in Massachusetts during those years. This resembles, in some ways, the consensus supporting passage, implementation, and retention of the state's 2006 health reform statute.

But rebuilding a politically and financially effective consensus to support renewed cost control will be much harder than agreeing to improve coverage. It will not succeed without support from physicians and without support—or, at least, peaceful acceptance—from hospitals.

Their support will be vital to substitute for the greatly diminished pressure from employers—disproportionately though not exclusively manufacturers—that helped to rein in hospital costs in the years before 1996.

## ***2) Action should be informed by the failures of most past cost control efforts—and by the temporary successes of some***

New efforts to slow hospital cost increases in Massachusetts should be informed by the failures of strategy, tactics, and understanding—and the undesirable side effects—that plagued past cost control efforts nationally.

### a. Failures of strategy

Since about 1972, Americans have employed government regulation and market competition to try to slow the growth in hospital and other health care costs. Both have usually failed. Market competition has failed partly because none of the six requirements for genuine free markets are—or, we believe, can be—remotely satisfied in health care.

Competition. Some of the main competitive efforts involved getting hospitals to compete by price and quality; using managed care to capitate patients and induce hospitals, physicians, and other caregivers to bid down their prices in exchange for greater volumes of patients; and increasing patients' out-of-pocket costs in hopes they will act as more careful consumers.

But hospital competition quickly gave way to regional hospital oligopolies or monopolies in many areas. Some hospitals were closed because payments were not adequate, and many of the others merged to strengthen their own selling power and win back higher prices. (Thus, survivors often prevailed by boosting their market power, not by boosting their efficiency.)

Managed care, for example, was promoted as a way to leverage purchasers' buying power to reduce use of the hospital and also pay lower prices for the use that persisted. Managed care apparently helped to slow the national rate of hospital cost increases temporarily (and also to help lower the Massachusetts excess briefly). But it was resented by doctors and patients because it restricted clinical freedom and also seemed to enrich insurers and caregivers when patients received fewer services. The backlash against managed care seems to have been associated with rapid recoupment of hospital volumes and prices. In this, managed care resembles a crash diet that succeeds for a time but shortly fails, demoralizing sensible weight control regimens and leading to even greater weight gains.

Recent efforts to boost out-of-pocket costs in hopes of encouraging individual patients and families to analyze and refuse costly health services are doomed to fail, for numerous reasons. Notably, very few patients have or can obtain the knowledge needed to weed out unnecessary care. Evidence from past efforts along these lines indicates that patients are about as likely to refrain from seeking or accepting needed care as they are in refusing futile or marginal care.

Higher out-of-pocket costs are more likely to deter lower-income patients from seeking care. Further, if appropriate use is the goal, it would be necessary to pay stoics to seek care, since they arguably use less care than they need.

This strategy of raising patients' required payments is therefore medically unsafe. And it is badly mis-targeted, because physicians', not patients', decisions obligate most spending on the costliest care and sickest patients.

Regulation and planning. Government regulation and planning, nationally and in Massachusetts, have generally failed because political support for cost control has usually been great enough only to push for passage of cost controls but not strong enough to design or implement effective controls.

Political support for regulatory cost controls has been broad but shallow, while opposition has been focused and effective. Few saw any direct benefits from controlling cost. At best, if slower cost increases result, their benefits are in the future. Benefits are neither concrete nor immediate. But the pain of cost controls to hospitals or other caregivers appear immediate and certain.

Cost controls have been watered down before passage and successfully gamed by caregivers. Perhaps most important, they have generally squeezed, manipulated, or ignored the group of professionals whose decisions control almost 90 percent of personal health care spending—physicians.

Rising health costs are a problem everywhere, so success should be gauged by slower cost increases coupled with good access and outcomes. Other wealthy nations have effectively contained costs largely through national political negotiations among employers, unions, private insurers or public programs, hospitals, doctors, and other concerned parties. These parties together settle on the size of acceptable cost increases. Payers provide revenue and negotiate with caregivers about mechanisms to hold costs to those levels.<sup>10</sup>

In the absence of such top-down negotiations in the United States, payers try to shift costs to one another, caregivers try to manipulate price and volume to their advantage, everyone tries to avoid financial risk, and no party is accountable for protecting coverage, containing costs, improving appropriateness and quality of care, or securing the right hospitals, physicians and other caregivers in the right places.

More broadly, in the absence of effective markets or government action, Americans suffer health care cost anarchy, allowing powerful caregivers and insurers to impose higher prices.

## b. Failures of tactics

The cleverest tactics can't substitute for strategic weaknesses or failures.

Hopes of containing costs safely by closing acute care beds or entire hospitals have usually been disappointed. As noted earlier, often, less costly hospitals closed and survivors—disproportionately larger teaching hospitals—found it easier to raise prices. Hospitals have been more likely to close in lower income areas of Massachusetts and in African-American neighborhoods of 52 cities studied separately, probably exacerbating access problems. Inefficiency has never predicted closings, and surviving hospitals are not more efficient ones.

In the decades after 1960, almost one-half of Massachusetts hospitals were closed in hope of saving money. Hospitals were closed, but money wasn't durably saved. Possibly, closing hospitals served as a distraction. Worse, the closed hospitals may have served as scapegoats.

Hopes of containing costs by moving care out of the hospital have often failed. Cutting length-of-stay, for example, meant chopping the inexpensive pre-surgery diagnostic days or shortening in-hospital recuperation from medical problems or surgery. Similarly, moving surgery from the hospital may have lowered costs of some care (although much of the savings may stem from better anesthesia chemicals and techniques, and superior imaging studies), but construction of ambulatory surgery centers greatly increased surgical capacity. That added to capital costs (since the bonds used to build existing hospital capacity still needed to be paid off even if volume declined), and it may have resulted in increases in unnecessary but costly surgery, as the new facilities and the old each sought to fill their capacity and cover their fixed costs.

While there are often good medical and psychological reasons to get some patients home quickly after hospitalization, the financial arguments for shorter stays have often been false. Sending patients home earlier may be very costly if they need infusions, specialized equipment and wound care, or multiple other home care staff. (And if patients lack adequate family and professional supports at home, this dehospitalization of care may be unsafe as well.)

When Medicare substituted prospective payment of hospitals by the diagnosis for cost reimbursement, some hospitals did work to become more efficient. But others unbundled services that had formerly been part of inpatient care by submitting separate bills for outpatient diagnostic services, skilled nursing facility recuperative care, and home health services.

Further, even when hospital costs in Massachusetts were constrained for a period, so that they declined relative to the U.S. per capita average, costs bulged in other health care sectors. The state's health care cost excess rose partly

because physician and other non-hospital health costs per capita here were rising sharply against the national average.<sup>11</sup> Clearly, genuine cost control must address all costs and preclude shifting or re-packaging of costs.

Politics, not gimmicks. Hospitals and other caregivers have shown that they can game formulas. Successful cost controls will rest on successfully-negotiated political and financial arrangements, not on market or regulatory efforts to evade, sidestep, muffle, or finesse grave political and financial conflicts. Successful reforms should address the core needs of all parties.

### c. Failures of understanding

Looking beyond strategy and tactics, past cost control efforts in Massachusetts (and in the U.S. generally) have suffered from three types of failure of understanding.

First, advocates of past cost controls did not identify wasted health care and its costs, and did not design efforts to squeeze out waste, capture the resulting savings, and recycle those savings to cover previously uninsured, under-insured, and underserved people.

Second, they did not appreciate physicians' central role in controlling health care costs, work with physicians to negotiate durable arrangements that encourage doctors to spend money carefully, and thereby overcome the Massachusetts pattern of relatively elaborate and costly care.

Third, they did not seek careful ways to shift care appropriately from costly teaching hospitals to less costly community hospitals, while buffering those teaching hospitals that might be vulnerable to short-term financial harm from that shift. Tiered cost-sharing policies are likely to move patients based on income, regardless of where particular patients truly can best be served. They may also punish patients who lack practical access to hospitals with lower cost-sharing. And supporting community hospitals in improving quality of care is not the same as duplicating costly high-technology equipment.

### d. Four lessons from temporary successes in reducing the Massachusetts excess

The first three lessons are related. They speak to the importance of a broad and balanced view—but not so balanced that pressure to contain cost is neutralized.

A first lesson is to first, do no harm. It is vital to anticipate consequences of cost controls for patient care. Health care leaders can be counted on to trumpet their

fears and grievances, but whose job is it to analyze effects of cost controls on those groups of patients whose voices are hard to hear?

A second lesson, related to the first, is to avoid extreme behavior. Containing costs is very hard. In the past, mobilizing support for lower costs often depended on emotional narrowing of vision and focusing on means (like closing hospitals) rather than on objectives. For example, fixated on their cost control method of cutting beds, proponents lost sight of surviving hospitals' greater ability to raise prices (and of the need for surge capacity). This helped allow cost rebound.

A third is to avoid idealized absolutes, formulas, and financial incentives, and instead pay empirical attention to actual means of slowing cost growth and actual consequences of reductions in excess costs. Formulas can be gamed. So can changes in financial incentives. They are not worth fighting for. Genuine, bottom-line buy-in by hospitals and doctors is essential. This is as necessary as it is inconvenient. Accept no substitutes.

A fourth lesson is to beware of cost rebound (when costs bounce back after political pressure subsides, or after lower-cost hospitals close and survivors merge). Moderation in pursuit of cost control helps to mitigate rebound. So does instituting arrangements that will contain costs durably.

From 1975 to 1996, the Massachusetts hospital cost excess fell from 52 percent to 30 percent. Achieving this success required building a considerable amount of political, economic, and financial momentum. High hospital costs were widely seen as a problem. A series of public policy and insurance/payment interventions were undertaken. Hospitals were squeezed. Entire hospitals were closed. Survivors closed beds. Many merged. Statewide bed-to-population ratios, admissions rates, ER visit rates, and overall hospital employment all fell.

It may be that building up this momentum required a focused attack on excess hospitals and excess beds as sources of high costs and closing entire hospitals as the main remedy. Roemer had argued, essentially, that a bed built is a bed filled.<sup>12</sup> McClure had asserted that closing beds was desirable and that closing entire hospitals saved the most money.<sup>13</sup>

With excess hospitals portrayed as a sort of public enemy, too little attention was given to the actual consequences of hospital closings for actual people.

Smaller hospitals were much more vulnerable. As discussed earlier, hospital closings were more likely in lower-income cities and towns of Massachusetts. Thus, there is reason to suspect that hospitals have been closing in communities with more than average unmet health care needs. Our national study tracking 1,200 hospitals in 52 cities since 1936 has shown that teaching hospitals are more likely to survive, that hospitals in black/African-American neighborhoods

are more likely to close, and that efficiency has absolutely no value in predicting which hospitals survive.

When hospitals are lost, doctors who depend on them may be more prone to retire or to relocate their practices. When a closing is feared, new physicians may be unwilling to locate nearby and seek admitting privileges, making the fear of closing a self-fulfilling prophesy.

### **3) *Reasons for optimism***

We are optimistic. Viewing Massachusetts and U.S. health care overall, we believe that roughly one-half of health care spending is wasted. Squeezing out waste, capturing the savings, and recycling those savings to finance care for previously under-served people is the best way to contain cost while improving coverage and appropriateness of care—and while protecting needed hospitals and other caregivers.

In diminishing order of importance, the four types of waste are clinical waste, administrative waste, excess prices, and theft/fraud. The distribution of hospitals—by degree of specialization (teaching versus non-teaching) and by location—contributes to both clinical waste and excess prices. Each type of waste has specific causes and remedies.

### **4) *Action to lower the Massachusetts excess needs to address the specific causes of that excess***

Cost controls that might work nationally—such as improved managerial efficiency<sup>14</sup>—cannot be adequate to address the Massachusetts excess. That's because there is no reason to believe that Massachusetts hospitals are markedly less managerially efficient than those in other states.

Action to lower the Massachusetts excess requires addressing its durable causes and those responsible for its recent rises. Some causes are visible while others are off-stage.

a. Causes of high hospital costs in Massachusetts—long-standing and recent. Some long-standing causes involve the shape of hospital care itself. Others center on physicians.

Hospitals. First, we conclude that the configuration of hospital care in Massachusetts—particularly the growing reliance on major COTH teaching

hospitals for inpatient care—does much to explain high costs here. How beds are used is much more important than the number of beds per 1,000 people.

Physicians. Second, we conclude that high physician-to-population ratios in Massachusetts do much to explain high health costs and high hospital costs here. By any measure, physician-to-population ratios in Massachusetts are highest in the nation (though still substantially below the median for wealthy nations in the OECD).

This high ratio is part of an explanation for high hospital costs and other health costs in Massachusetts. This explanation combines multiple factors over several decades. In the 1950s and 1960s, Massachusetts physicians' fees were held down by Blue Shield, which dominated the private insurance market for physicians' services and contractually required participating physicians to accept Blue Shield payments as payment in full. No balance billing of patients was permitted. Blue Shield's dominance as a payer in Massachusetts meant that almost all physicians signed contracts with it, accepting the ban on balance billing and thus reduced incomes.

Massachusetts already had a large supply of MDs—and, in a sense, therefore, had a relative shortage of patients, so it was, for example, easy for an MD to fit in more frequent appointments for patients than they might have in done elsewhere.

A state with fewer patients per physician and with low fees is a state in which physicians would logically give more services per patient in order to fill their time and earn incomes they considered reasonable. In this way, clinical services here may have evolved toward a more elaborate and expensive pattern of clinical care. Doctors' incomes remain below the national average, we have calculated, but cost of care given or ordered by doctors is very high.

Third, despite the high ratios of physicians to population in Massachusetts, the state relies very heavily on hospital outpatient departments as sites of non-emergency physician visits, and those are relatively costly.

These factors are long-standing and do more to explain durably high hospital costs per person here than they do to explain the recent increase in costs.

b. The fall and subsequent rise of the Massachusetts excess could be broadly explained along these lines:

- In the early years examined, 1960 to 1975, hospital costs per person were typically some 47 to 52 percent above the national average.
- As discussed in the Introduction to the report, a number of forces during the oil shock and stagflation years of the 1970s and 1980s led powerful economic

and political actors in Massachusetts to press hospitals to hold down growth of their expenses below national rates.

- Since 1960, one-half of Massachusetts hospitals have been closed, often with the acquiescence or encouragement of other hospitals, payers, and even state government. Little was saved; higher costs probably resulted.
- Gradually, surviving hospitals won deregulation of their revenues, pushed back against managed care pressures, dominated health policy discussions in employer/business organizations, neutralized business and other political pressure to restrain expenditures, and asserted their claims that they needed to spend more money to deliver first-class care. One cluster of hospitals, Partners, acquired so much market and political power that it won high prices from Blue Cross, and then other payers. At the same time, managed care generally relaxed its financial incentives and regulatory restrictions to contain costs. The Massachusetts excess soared again.

At least three factors make new types of cost control essential.

- Since hospital closings and bed reductions probably increased health care costs in the long run, enthusiasm for wholesale cuts has been dampened. This is probably healthy. But if wholesale cuts are not going to be effective, what will be effective?
- Most types of cost controls attempted over the years have failed—those relying on market competition and those relying on government regulation, and both in Massachusetts and nationally.
- Past cost controls were often unpopular if they addressed broad middle-income groups, and some risked doing harm to vulnerable patients.

Several complementary methods are worth considering.

***5) Cost control can't proceed in a vacuum; it requires reforms in paying hospitals and doctors, and in configuring hospitals' and doctors' care—reforms that win hospitals' and doctors' political support***

Some people say that the way to tell whether cost controls are really working is to squeeze hospitals, doctors, nursing homes, and drug makers until they scream with pain.

We assert that this is wrong-headed for at least two reasons. Complaints from caregivers might be one way to gauge tightness of cost control efforts. But they are not very sensitive gauges because caregivers sometimes complain even when cost controls are not working. Just as bad, some hospitals don't complain very loudly (because they are embarrassed that they "can't compete," or worried about scaring away potential patients, staff, or bond buyers) even when they and their patients are being hurt badly.

**More important, we firmly believe that cost controls must and can be shaped to protect needed and efficient caregivers and thereby to win at least their political acquiescence and at most their political support. Cost controls that are safe for patients will weed out waste at the retail level—one patient and one service at a time. Only doctors can do this. And they must do so willingly and wholeheartedly. Angry doctors could and would defeat any cost control efforts.**

Hospital cost controls should rest on a wide consensus that they are necessary and should be designed to reflect and reinforce that consensus.

First, cost controls will enjoy much greater political support if their benefits are concrete and immediate. One such benefit would be to pledge that savings from cost control would be used only to subsidize more affordable coverage for previously uninsured people and improved coverage for under-insured people. Dollars saved would then return to caregivers as they serve newly-covered patients.

Second, cost controls will face much lower political opposition if hospitals are buffered from harm. Again, one of the best ways to do this is to use a substantial share of the savings to finance care for growing numbers of newly-insured patients.

Third, such commitments should begin by identifying all needed hospitals, a job that only one state (Maryland) regularly undertakes.

It would be a mistake to try to save money by resuming the old practice of throwing financially weaker hospitals out of the lifeboat. As mentioned earlier, the size and distribution of hospital closings may have caused disproportionate harm to lower-income and minority patients. Closings probably accelerated the shift of patients to costly teaching hospitals.

With so many Massachusetts hospitals lost—along with their emergency rooms—and with bed-to-population ratios here below the national average, the burden of proof that further closings are both safe and money-saving must be on those who would advocate or tolerate additional closings.<sup>15</sup>

Identification of needed hospitals is a function that can be accomplished only through careful assessment and planning. It should be done with an eye toward:

- a. satisfying total need for inpatient and outpatient capacity, both routine and emergency, and both today and tomorrow—with analysis of specific services (such as pediatrics, intensive care, psychiatry) and not merely total beds;
- b. minimizing travel times by retaining the right care in the right places;

- c. assuring economic, geographic, racial, and ethnic equity by retaining needed care in fair proportion to the residential locations of patients who rely more heavily on hospitals and who are more vulnerable to deprivation of needed care;
- d. promoting efficiency by slowing or reversing the drift to delivering a greater share of hospital care in costlier teaching hospitals; and
- e. helping to retain and restore needed primary and specialty care physician services in reasonable proximity to patients' jobs and housing.

Such commitments should be bolstered by unbreakable commitments, from all payers together, to pay all needed hospitals enough money to finance the costs of effective and high-quality care that's provided efficiently. This requires fair measures of that cost.

All-payer rate setting is probably the best vehicle to accomplish this. It is a mechanism that is compatible with a variety of methods of both raising money to finance health care and of covering uninsured people. Maryland has shown that all-payer rate setting can be designed, sustained, and administered with reasonable adequacy, fairness, and political support over decades of changing circumstances.

Enough money includes dollars to finance inpatient, outpatient, and emergency care in the hospital. It could also include dollars to retain or recruit primary care and specialists to deliver office-based physician services in the region surrounding the hospital.

At any hospital, all payers would pay each hospital essentially the same price for the same care, reinforcing payers' collective accountability to the hospital, and eliminating wasteful, distracting, and ineffective game-playing cost-shifting among payers. Hospitals would not face any pressure to discriminate among patients by their payer status. Clinical need would trump financial expediency.

All patients' care would be equally profitable; there would be no cost-shifting among patients by diagnosis, and therefore no financial incentive for hospitals to prefer some diagnoses over others. Again, clinical need would trump financial expediency.

Fifth, it is essential to reduce avoidable clinical and financial burdens on hospitals. This entails greater reliance on genuine primary care, a subject that has long been discussed, but about which very little has actually been done. Better primary care, provided by well-trained, experienced, and self-confident physicians, would reduce need for ER visits, costly imaging studies, lab testing, specialist consultations, and hospitalizations.

This is especially important in Massachusetts, where, for reasons noted above, it is likely that physicians have evolved toward relatively elaborate and expensive patterns of clinical practice.

The problems of the shortage of primary care physicians—and of their general willingness and ability to provide a greater range of services and reduce reliance on diagnostic imaging studies, laboratory tests, specialist consultations, referrals to the ER, and inpatient admissions—will be hard to address in isolation. So will the relatively elaborate and expensive practice patterns of Massachusetts physicians generally.

We have therefore urged negotiation of a peace treaty with physicians, one that gives them thoroughgoing relief from malpractice litigation and from payment-related paperwork. This peace treaty should very substantially boost primary care physicians' before-tax income without lowering specialists' before-tax incomes. In exchange, physicians would take on the jobs of serving all residents of the Commonwealth, and of managing risk-adjusted capitated budgets by weeding out care of no or very low clinical value.<sup>16</sup>

Some will complain that cost controls that require such comprehensive reforms in the organization and delivery of hospitals' and physicians' services attempt everything and will probably result in nothing. We reply, first, that past incremental efforts have failed badly. Second, so have formula-driven substitutes for political consensus.

Instead, we harken back to two successful political consensuses in Massachusetts health care. One was political and economic consensus on squeezing the Massachusetts hospital cost excess from the mid-1970s to the mid-1990s. This showed that the excess can be reduced. But it must be reduced next time with much more careful attention to retail-level patient-by-patient need, not by dangerously broad wholesale hacks or mere cost-shifts to other settings. The other was the success in building a political consensus in support of the 2006 Chapter 58 Massachusetts health reform law.

Once something approaching a genuine political consensus on the central importance of again reducing the state's hospital cost excess is won, it will be possible to implement individual components of an integrated cost-reduction strategy. It would therefore be helpful to begin soon to design and debate those components and to think through how to integrate them.

## **6) *Design principles for cost containment***

For patients: cost controls should be safe for patients and should not impose adverse and disproportionate impacts on patients who are already vulnerable to denial of needed care. This is vital in itself. It is also likely to reduce backlash against cost control.

For hospitals generally: efforts to shrink the Massachusetts hospital cost excess should give special attention to the important causes of that excess, not to problems that make for high hospital costs across the nation. Some of the proposals to attack high hospital costs nationally may be useful while others are oversold. (These include better management to find ways to more efficiently provide the services now being given; aggregating the unit of payment to hospitals; electronic medical records; and payment of hospitals for improved clinical performance.) Unfortunately, none of these could be expected to shrink the excess cost of Massachusetts hospitals. Likewise, steps to reduce financial administrative costs—whether by merely standardizing forms or by moving to an all-payer or even a single-payer system—could not be expected to do enough to reduce this state’s hospital cost excess.

For teaching hospitals: the state’s high and growing reliance on costly teaching hospitals is not sustainable. It will be essential to debate the share of care that should or must be provided in major teaching hospitals. This is best done as part of an effort to identify which hospital capacity is needed—how much, and in which hospitals in which locations.

For doctors: only a greater role for physicians, working from upstream, can reduce the downstream flow of non-emergency patients to hospitals. But it is completely unrealistic to ask physicians to do more to diagnose and treat patients without initiating quick and sustained action to rebuild the state’s primary care capacity.

For addressing clinical waste: retail cost controls will be superior to most wholesale cost controls because clinical waste in health care is widely diffused. Costs should be contained one laboratory test, one imaging study, one prescription, one surgery, and one specialist consultation at a time. Doing this requires putting the health care dollar into the hands of physicians under arrangements that allow us to trust them to spend the money carefully. Negotiating a clinical, legal, political, and financial peace treaty with Massachusetts physicians will help to liberate them (and ourselves) from the pattern of elaborate and costly clinical practices that developed and has persisted here in the years since the Second World War.

As noted earlier, the state’s Special Commission on the Health Care Payment System endorsed a return to capitation of accountable organizations.

For a number of years, our Program has urged that only doctors can identify and squeeze out the waste and make the trade-offs that will allow successful capitation. **We emphasize not the mechanical re-adoption of capitation, but rather a set of changes and reforms that invite, enable, and persuade doctors to act as fiduciaries for their patients.**

This is not fundamentally about a change in a payment formula, though that can help. This is not fundamentally about a change in malpractice law, though that can also help. This is not fundamentally about cutting payment-related paperwork, though such cuts will follow from the reforms we suggest.

Rather, it is fundamentally about liberating, enabling, and persuading physicians to spend money more carefully on behalf of their patients.

# CONTENTS

Short summary	i
Longer summary	iv
Contents	xxxi
List of exhibits	xxxiii
<b>INTRODUCTION</b>	1
<b>A. CONTEXTS</b>	11
1. U.S. Hospital Costs in an International Context	11
2. Hospital Costs as a Share of Personal Health Care Costs, 1980-2004	13
3. Massachusetts Hospital Costs Are High, But So Are Many Other Health Care Costs Here	14
4. Total Health Costs in Massachusetts Rose Farther Above U.S. Average	16
<b>B. TRENDS IN HOSPITAL COSTS PER PERSON, U.S.A. AND MASSACHUSETTS, 1960 – 2007, WITH EARLY DATA FOR 2008</b>	18
1. Trends in Excess Hospital Costs per Person in Massachusetts – AHA Data	18
2. Excess Costs Adjusted for Inflation	21
3. Preliminary Estimates of the 2008 Massachusetts Excess	23
4. Stages in the Growth of Excess Massachusetts Hospital Costs	24
5. Another View of Trends in Excess Hospital Costs per Person in Massachusetts — State DHCFP Data	25
<b>C. WHY ARE HOSPITAL COSTS SO HIGH IN MASSACHUSETTS?</b>	30
1. Factors associated with durably higher costs in Massachusetts over the years, with attention to possible reasons for the drop in the excess from 1975 to 1996, and with the resurgence of the excess after 1996	30
2. Have Massachusetts hospital costs risen disproportionately at certain hospitals?	61
3. What factors statistically predicted the differences in hospital costs per person across the 50 states in 2007?	65
4. The Massachusetts Pattern: more care in hospitals and more care in costly teaching hospitals	74
<b>D. FACTORS THAT MIGHT JUSTIFY OR EXPLAIN EXCESS HOSPITAL COSTS IN MASSACHUSETTS</b>	78
1. The Durability of High Costs	78
2. Roles of Specific Factors in 2006	79
a. Exports of hospital care do help explain higher costs	81
b. Research is very helpful in explaining higher costs	88
c. Training more physicians is somewhat helpful in explaining higher cost	90

d. A higher cost of living does help explain higher costs	91
e. Outcomes neutral: they neither explain higher costs nor add to costs	92
f. Population slightly older than average doesn't help explain higher cost	98
g. Lower-than-average bed-to-population ratio should make for lower cost	99
h. Severity of illness is lower in Mass. and this should make for lower cost	104
i. Hospital profits are lower here, and this should make for lower cost	106
j. Other possible factors, briefly noted	106
<b><i>E. DISCUSSION: MEANINGS FOR HEALTH REFORM AND FOR ACTION TO CONTAIN COST</i></b>	111
1. Meanings for Health Reform	111
2. Meanings for Action to Contain Hospital Cost	114
(1) Three reasons to act	115
(2) Action should be informed by the failures of most past cost controls	118
(3) Reasons for optimism	124
(4) Actions to lower the Massachusetts excess need to address the specific causes of that excess	125
(5) Cost control can't proceed in a vacuum—it requires reforms that win hospitals' and doctors' political support	129
(6) Design principles for cost containment	133
<b>Appendix Tables</b>	135
<b>Endnotes</b>	158

## **EXHIBITS**

- 0 Massachusetts Acute Hospitals, 1950 – 2008
- 1 Hospital Spending per Person, 13 Wealthy OECD Nations, 2004-5
- 2 Hospital Spending per Person, 13 Wealthy OECD Nations, 2004-5
- 3 Shares of Massachusetts Health Spending by Sector, 1980 – 2004
- 4 Savings by Sector, If Massachusetts Spent at U.S. Average, Personal Health Care, 2004
- 5 Savings by Sector in 2004, If Massachusetts Spent at U.S. Average
- 6 Excess Massachusetts Personal Health Cost per Person, Above U.S. Average, 1980-2004
- 7 Total Hospital Expenses and Hospital Expenses per Person, 1960 – 2007
- 8 Massachusetts Hospital Spending per Person as a Percentage of U.S. Average, 1960 - 2007
- 9 How Much Would Statewide Massachusetts Hospital Costs Have Fallen If We Spent at the National Average Hospital Cost per Person, 1960 – 2007? (In Current Dollars and Constant 2007 Dollars)
- 10 How Much Would Massachusetts Hospital Costs Fall If We Spent at the National Cost per Person, 1960-2007, CPI-adjusted 2007 Constant Dollars
- 11 Massachusetts Hospital Spending per Person as a Percentage of U.S. Average, 1960 -2008
- 12 How Much Would Massachusetts Hospital Costs Fall If We Spent at the National Cost per Person, 1960-2008, CPI-adjusted 2008 Constant Dollars
- 13 Comparing Expenses Reported by Hospitals to the Massachusetts Division of Health Care Finance and Policy with Expenses Reported by Hospitals to the American Hospital Association, 2001 – 2007
- 14 Comparing Excess Massachusetts Hospital Expenses per Person Using AHA and DHCFP Data
- 15 Massachusetts Hospital Spending per Person as a Percentage of U.S. Average, 1960-2008, with Added DHCFP Expenses
- 16 Massachusetts Excess Hospital Costs per Person during Eight Periods
- 17 Outpatient Share of Hospital Surgical Operations, Massachusetts and U.S., 2007

- 18 Massachusetts Hospital Excess in Labor and Non-Labor Costs
- 19 Massachusetts Hospital Revenues and Expenses, 2002 – 2007
- 20 Massachusetts Hospitals' Total Revenues and Expenses, 1992 – 2007
- 21 Acute Hospital Total Margins, USA and Massachusetts, 1949 – 2007
- 22 Massachusetts Hospitals' Total Margins and Total Dollar Surpluses, 1992 – 2007
- 23 Three Sources of Massachusetts Hospital Revenue, 1992 – 2007
- 24 Hospital Cost per Person versus Share of Admissions in COTH Hospitals, by State
- 25 Massachusetts COTH Teaching Hospitals' Share of Admissions and Excess Hospital Costs, 1970-2007
- 26 Analysis of Main Hospital Characteristics Reported by AHA—Are They Associated with Longstanding High Massachusetts Costs or with 2006 or 2007 Rise?
- 27 Summary of Main Massachusetts Hospital Characteristics in 1975, 1996, and 2007, and Association with Long-Term Drop and Rise in Massachusetts Excess Cost
- 28 Characteristics of Hospital Resources, Use, and Costs, Massachusetts versus the Nation, 2007, with State Rank
- 29 Expense Growth at Partners Hospitals versus All Other Mass. Hospitals
- 30 Expense Growth at COTH Hospitals versus All Other Mass. Hospitals
- 31 Percentage Rise in Expenses, Massachusetts Hospitals, 2001 - 2007
- 32 Characteristics Used to Predict Differences among the 50 States in Hospital Costs per Person, 2007, and Comparison with Massachusetts
- 33 Regression Results: Predictors of Differences in Hospital Cost per Person among the 50 States, 2007
- 34 Regression Results: Tolerances, Partial, and Semi-partial Correlations for Predictors of State Differences in 2007 Hospital Cost per Person
- 35 Predicted Hospital Expenses per Person versus Actual Expenses per Person, by State, 2007
- 36 Predicted versus Actual Hospital Expenses per Person, by State, 2007 ( )
- 37 Practicing Physicians per 1000 People, 2006, OECD Nations and Massachusetts

- 38 COTH Members' Share of Admissions in 2004, with Resident FTEs / 1,000 People in 2007
- 39 COTH Members' Share of Massachusetts Hospital Admissions, 1970 – 2007
- 40 COTH Members' Share of Massachusetts Hospital Beds, Admissions, and Expenses, 2004
- 41 Summary: Actual Hospital Cost Excess, Explained Share, and Add-backs, 2006
- 42 Net Exports as Shares of Care Provided in Massachusetts, 1991-2004
- 43 Medicare and Medicaid Spending as Shares of Personal Health Spending and of Hospital Spending, Calendar Year 2004
- 44 To the Boiling Point—Boston Area 2006 Health Costs per Employee Reach 212% of 1999 Level
- 45 Weak Inter-state Correlation between Personal Health Spending per Person and Age-Adjusted Deaths per 100,000 People, 2003
- 46 Death Rates, Massachusetts and U.S.A., Age-adjusted, 2003
- 47 Medicare Spending Shares of Personal Health Spending and Hospital Spending, Calendar Year 2004
- 48 Inter-state Correlation of Hospital Beds per 1,000 People and Hospital Costs per Person, 2006
- 49 Hospital Cost/ Person (CPI-Adjusted) and Beds/ 1,000, U.S. 1946-2004
- 50 Acute Beds per 1,000 People, 2006, OECD Nations and Massachusetts
- 51 Acute Beds per 1,000 People versus Total Spending on Medical Services per Person, OECD Nations, 2006
- 52 Medicare Case Mix Index, U.S.A. and Massachusetts, Hospital Fiscal Year 2006
- 53 Nine Factors that Might Justify or Explain Excess Hospital Costs in Massachusetts in 2006
- 54 Percentage Change in Insured People in Massachusetts versus Constant-dollar Hospital Expenses, 2000 – 2008
- 55 Percent Changes in Massachusetts Insured and in Constant-dollar Statewide Hospital Expenses, from Previous Year, 2000-2008
- 56 No Correlation between Annual Massachusetts Rise in Constant-dollar Hospital Costs and Changes in Number of Insured People, 2000-2008

## ***INTRODUCTION***

The United States has the costliest hospital care in the world and Massachusetts has the costliest hospital care in the United States. Some have tried to deny this and others have tried to justify it. But evidence presented here shows that only a small share of this state's extraordinary costs are justified by legitimate and durably affordable factors like research, teaching, and exports.

The large and durable Massachusetts excess over the national average in hospital cost per person has risen steeply since the mid-1990s, reaching an unprecedented level in 2007. This cost excess is important. Higher hospital costs here make for higher health insurance premiums, which burden everyone who lives, works, does business, or pays taxes in Massachusetts.

Health care here is often now under a microscope because this state enacted nearly universal health care coverage in 2006 despite our high costs. This raises the question of whether improved coverage led to greater hospital cost.

It seems clear—from a number of different types of evidence that will be outlined here—that the rise in the Massachusetts hospital cost excess did not stem from coverage improvements under the state's 2006 reform law. But the rising excess does make the law's promises steadily harder to afford each year.

### ***1. The U-shaped trend in the Massachusetts hospital cost excess: Why the fall and why the sharp rebound?***

Massachusetts acute hospital costs per person can be expressed as a percentage above the national average for hospital costs per person. We call that the Massachusetts excess. As we document in this report, that excess peaked in 1975 at about 52 percent above the U.S. level, fell to a low of about 30 percent twenty-one years later in 1996, and rose sharply again to a new high more than 55 percent above the U.S. level during the next eleven years, through 2007. Early estimates suggest that the rise in the excess persisted into 2008. (Annual data on U.S. and Massachusetts hospital spending, total and per person, are presented below in Exhibit 7, and in more detail in Appendix Table 20.)

This report will address what forces accounted for the fall in the excess, and what forces accounted for the subsequent rise in the excess. In light of the pattern of failed health care cost controls in the United States and most states since those efforts began around 1972, what accounts for the temporary success that Massachusetts has had in shrinking its hospital cost excess? (These trends are discussed briefly in this Introduction and in detail later in this report.)

And did the excess shrink safely? Was the cut in the excess associated with harm to patients or to hospitals? Did patients suffer measurable harm? Did hospital closings accelerate? This will require further analysis.

## **2. Fall**

1975 – 1996: How were drops in the excess manifested? As presented in Section B of this report, our calculations from American Hospital Association (AHA) data show that this state's excess in per person hospital costs fell from 52 percent in 1975 to 30 percent in 1996 (data shown below in Exhibit 7). Excess spending thus persisted, but it shrank markedly, and this shrinkage had widely-ramifying affects on hospitals in the state.

Hospital beds and the number of nurses and other employees per resident of Massachusetts fell during those two decades relative to the national average. So did average pay per employee. So did non-personnel expenses per resident. And so did some measures of hospital use.

It appears that a number of economic and political forces converged in the 1970s, 1980s, and early 1990s to result in a shrinking of the Massachusetts hospital cost excess. Because these forces generally were exerted against all hospitals, many of the most vulnerable closed. Reported hospital profit margins here remained near zero from 1998 to 2002.

From 1975 to 1996, acute hospital beds per 1,000 residents of Massachusetts dropped from slightly above the U.S. average to about 9 percent below that average. We detail these trends and others from AHA data in Section C of this report. During that same period, the rate of admissions to hospitals fell by about 24 percent in Massachusetts—down from 155.3 per 1,000 people in 1975 to 118.3 in 1996, and further to a low of 116.6 in 2000. (The nation experienced a similar drop in admissions rate, although slower than here at some times, and faster than here at others—so the state's admissions rate was 2 percent above the nation's in both 1975 and 1996.)

Length of stay declined faster here than nationally. From 1975 to 1996, inpatient days per 1,000 residents dropped to the U.S. average from 12 percent above.

In-hospital surgery rates remained about 10 percent above the U.S. average. ER visits per 1,000 residents fell from 44 percent above the U.S. average in 1975 to 20 percent above in 1996; non-emergency hospital outpatient visits fell only slightly and remained about two-fifths above the U.S. rate.

Hospital-employed RNs per 1,000 residents of Massachusetts fell from 58 percent above the national average to 14 percent above. Total hospital

employees per 1,000 fell from 39 percent to 26 percent above. Average pay per full-time employee fell from 14 percent above to five percent above.

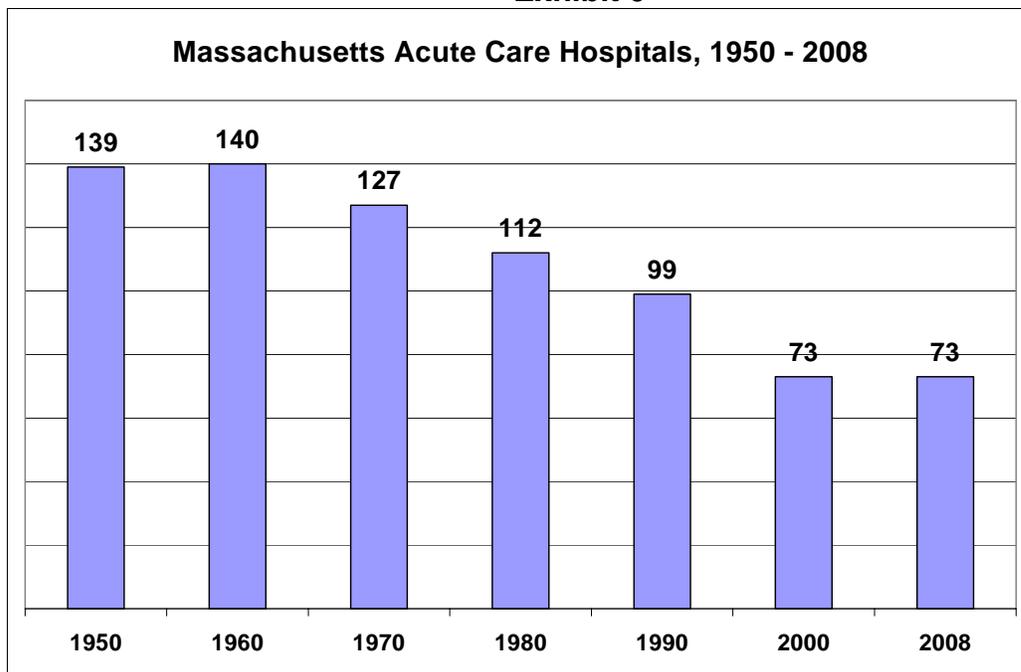
Overall, hospital labor costs per Massachusetts resident fell from 48 percent above the national average in 1980 (the first year reported) to 31 percent above in 1996, while non-labor costs per resident fell slightly less sharply—from 37 percent higher to 30 percent higher.

Was the drop in some measures of hospital use and resources safe for patients and hospitals? The drop in the rate and number of hospital admissions—here as well as nationally—may have been associated with reductions in access to care. Whose access? Were the reductions felt across-the-board? Were they focused deliberately on types of care that were less effective and useful? Were they diffused geographically across the state or concentrated in certain areas? Did peak season use run up against hospitals filled to capacity? The plummeting admissions rates warrant concern about whether access declined and whether patients were harmed—in Massachusetts or nationwide.

These questions are not easy to answer today because, unfortunately, the state has not systematically studied effects of the reduced hospital admissions rate here. Still, a few relevant observations are possible.

In 1960, there were 140 acute care hospitals in Massachusetts. In 1970, 127 remained open. There were 112 in 1980, 99 in 1990, 85 in 1995, and 81 in 1997. Since 1997, the pace of closings has abated markedly; about 70 acute care hospitals remain open in Massachusetts at this writing—roughly one-half the number open in 1960.<sup>17</sup>

**Exhibit 0**



It would not be surprising to learn that the reductions in admissions, inpatient days, and ER visits were felt disproportionately in cities and towns that lost their hospitals. In a multi-variate analysis, we found that Massachusetts hospitals that closed from 1990 to 1997 were non-teaching hospitals, and were disproportionately hospitals with smaller financial reserves, and hospitals located in lower-income cities and towns. That suggests that patients with lower incomes were likelier to lose their nearby hospital, and this may have resulted in disproportionate reductions in access to care.<sup>18</sup>

Disruption of inpatient care may also follow hospital closings. Some who are sanguine about hospital closings, relocations, or mergers may regard hospitals largely as interchangeable parts in a health care machine. But this may be somewhat inaccurate. Many patients appear to respond conservatively when their customary hospital closes. Shepard found that 30 percent of the inpatients displaced by a hospital closing do not re-appear at surviving institutions nearby, at least not for some time.<sup>19</sup> Patients may be hesitant about seeking care in an unfamiliar place from unfamiliar caregivers, and may face travel barriers, while sometimes caregivers at a closing hospital fail to arrange appropriate follow-up care elsewhere.

This matter goes beyond inpatient care alone. It's noteworthy that African-American patients nationally rely on hospitals for more over one-third of their ambulatory care visits to physicians, a rate double that of whites. The racial disparity in sites of ambulatory care widened slightly from 1995 to 2006.<sup>20</sup>

In one eastern Massachusetts community, half of all residents never or only occasionally leave the immediate area to obtain health care. "Eighty-five percent said that distance was the most important factor in deciding where to get care."<sup>21</sup>

Bindman, Keane, and Lurie followed patients of a closed county hospital. In the year after the closing, they found a doubling in the share of patients lacking a regular provider, a rise of more than one-half in the share reporting a denial of care, a drop in perceived health, and a rise in pain. Patients of a surviving county hospital experienced no deterioration.<sup>22</sup>

We have found that hospital efficiency is of no value in predicting which hospitals survive. This holds for both a 52-city study<sup>23</sup> and also for a somewhat similar look at hospital closings in the three southern New England states. (Efficiency was measured as cost per adjusted average daily census, further adjusted for the hospital's case mix index.) Since inefficient hospitals are no likelier to close, there is little basis for anticipating that savings will result.

For these reasons, we are concerned that both the reductions noted above in the rate of Massachusetts hospital admissions and the large drop in the rate of

excess ER visits from 1975 to 1996 may have reflected a loss of needed care from areas of Massachusetts that lost hospitals—areas whose residents suffered relatively low incomes.

Even looking just at total capacity, closings probably have gone too far. In winter, typically, many Massachusetts hospitals are nearly full, or full. Pandemic flu, a plane crash, earthquake, or other crisis could mean a grave shortfall of beds generally and ICU beds in particular.<sup>24 25</sup>

Two conclusions are reasonable. One is that, in the twenty years after 1975, it proved possible to shrink excess hospital costs in Massachusetts. The second is that some of the shrinkage may have been reasonable and justified, but some may have imposed disproportionate costs on patients in lower-income communities and on patients who relied more heavily on hospitals for needed inpatient and outpatient care. This suggests that future efforts to reduce the Massachusetts hospital cost excess—and other cost controls—should be more mindful of effects of cost reductions on patients who are vulnerable to deprivation of needed care.

Why did the hospital cost excess drop? First, the weak national economy, just recovering from Viet-Nam era inflation, suffered oil shocks in 1973 and 1979, resulting in both high inflation and deep recession. This stagflation helped elect President Reagan in 1980. Massachusetts experienced particularly high unemployment during the recession years of the 1970s. Manufacturing suffered greatly; remnants of this state's long-established textile and shoe manufacturing industries disappeared. The recession generated grave questions about whether the state's economy was deep enough to float the high cost of health care in Massachusetts.

Second, blank-check cost reimbursement insurance coverage by Blue Cross and Medicare had led to soaring health care spending nationwide. Massachusetts responded in 1971 with one of the nation's first certificate of need laws to regulate hospital building and equipment purchases. In 1975, the state added regulation of hospital charges in Chapter 424.<sup>26</sup> Certificate of need had teeth in its early years, though hospitals later found ways around and through the law. Charge regulation had little practical force but greatly worried hospitals. Both laws were clearly warning shots.

Hospitals heard them. The hospital cost excess fell substantially from 1975 to 1980.

Third, a political consensus favoring health care cost restraint seemed to form in this state. It was manifested in one far-reaching regulatory action and one that was legislative. In 1982, a vigorous state insurance commissioner, Peter Hiam, pressured Blue Cross to sign a prospective payment contract with hospitals. In

1983, the state briefly adopted all payor prospective hospital rate setting in Chapter 372. It was largely borrowed from a method successfully pioneered in Maryland, one that instituted hospital inpatient revenue caps, and that ceased to reward hospitals financially for higher volume. In 1985, Massachusetts abandoned its Medicare waiver in favor of Medicare hospital payments by the DRG. The main reason was that hospitals concluded they would enjoy higher payment rates under DRGs. .

In 1988, the state enacted the first of its two historic universal health care laws—Chapter 23—which mandated employers to provide health insurance coverage or finance it through a new tax. Attempts by managed care organizations to use financial incentives or revenue controls to induce hospitals and doctors to provide fewer services at lower prices may have temporarily helped to hold down cost increases.

(Hospital price competition also spurred cost-shifting from large managed care plans to people in plans with less bargaining clout and to self-pay patients; though the state's hospital free care pool moderated the impact on uninsured people, this trend further jeopardized access to care for vulnerable patients.)

All of these efforts either worked to hold down health care cost increases or could succeed only if costs were restrained. Hospitals got the message and, after increases in the excess in 1988 and 1989 (probably in response to the law's hikes in hospital prices and its financial incentives to boost volumes), the Massachusetts excess shrank to its second-lowest measured level in 1990 and remained relatively low for most of the 1990s.

### **3. *Sharp rebound***

In the eleven years after 1996, the Massachusetts hospital cost excess rose to levels even higher than those of 1970 and 1975. Why did that happen?

First, the economic and political consensus supporting hospital cost restraint largely melted away. Some large manufacturers ceased to fight to restrain health care costs. Builders of jet engines and mini-computers, for example, cut Massachusetts employment sharply and consequently came to care less about high costs or health insurance premiums here.

Hospitals and health insurers moved into more prominent and influential positions within the state's business organizations, allowing them to neutralize business support for cost control. (It might also be that they gained those positions because other businesses had already come to care less about health cost increases.)

Second, it is possible that the 1997 federal Balanced Budget Act's cuts in Medicare payments to hospitals had less effect on hospitals in Massachusetts than elsewhere, perhaps because of earlier successes here in shrinking our excess hospital costs. But this is highly speculative.

Third, payments to hospitals had been effectively fully deregulated in 1991. This bestowed financial rewards on hospitals that boosted volumes. Some hoped that hospitals would compete by price, allowing powerful insurers and HMOs to extract price concessions. That seemed to work for a time, but then inter-hospital competition gave way to substantial consolidation in many parts of the state. A combination of closings of some hospitals and mergers of some survivors gave some hospitals extraordinary and unwarranted market power, allowing them to extract high prices for high volumes of care. The share of patients served in costly teaching hospitals continued to increase.

#### ***4. Did rising health insurance coverage do much to boost the Massachusetts hospital cost excess?***

From 30.2 percent above the U.S. average in 1996, per person Massachusetts hospital costs rose to 36.0 percent above in 1997, 43.0 percent above in 2004, and an unprecedented 55.4 percent above the U.S. in 2007.

Thus, again, it is important to note that the Massachusetts excess in per person hospital costs began to rebound after 1996, a decade before the state's 2006 health reform law was enacted. Indeed, the average excess in the late 1990s was larger than the early 1990s average.

But did coverage expansion play a role in the 2006-2007 rise in excess costs? It's important to note that the number of insured residents of Massachusetts actually declined slightly in 2006, the year of record increases in the Massachusetts hospital cost excess. Coverage improvements, however, may have played a small role in boosting the excess in 2007.

Please consider that from 1999 to 2008, years for which reasonably consistent Current Population Survey data are available from the U.S. Census Bureau, the number of insured people in Massachusetts rose from 5,723,000 to 6,069,000, an average rise of 0.7% annually. (These and additional figures on the state's insured and uninsured population are discussed further in section E of this report.)

During these years, hospital costs in Massachusetts rose from \$13.6 billion to an estimated \$21.1 billion in 2008, an average annual rise of 5.0 percent. And the Massachusetts hospital cost excess rose from 38.3 percent above the national

average in 1999 to 55.4 percent in 2007. *Our state's hospital costs and cost excess were rising far more rapidly than the number of insured people here.*

In 2007, as just noted, Massachusetts hospital cost per person jumped to 55.4 percent above the U.S. average. With per person spending of \$3,015 on hospital care (from all sources) here, compared to \$1,941 nationally, that Massachusetts *excess of 55.4 percent in 2007 was the highest recorded in more than three decades.*

Two data sets show different timing of the rise in the Massachusetts excess. These calculations rest on financial data reported by hospitals, in Massachusetts and elsewhere in the nation, to the American Hospital Association (AHA). Later, in Section B (5) of this report, we incorporate financial data reported by Massachusetts hospitals to the state's Division of Health Care Finance and Policy (DHCFP). The AHA and DHCFP hospital expense data agree for 2007, both showing a 2007 cost excess of 55.4 percent in hospitals here. Expenses reported to DHCFP, however, are somewhat higher than those reported to AHA for 2001-2006.

This disagreement has consequences for the steepness of the climb in hospital costs in Massachusetts. As we will detail later, the DHCFP data indicate a more gradual climb, beginning earlier, while the AHA data indicate a faster climb, beginning later. The gap between the two sets of data on expenditures before 2007 point to the possibility that the AHA data may have gradually become more complete or accurate over time (through better reporting by hospitals). The same possibility (improved AHA data over time) also may apply to data on potential explanations for higher spending, such as volumes of care or number of employees.

Given the focus on Massachusetts during the 2009-2010 national health care debate, it is important to note that **the Massachusetts hospital cost excess began to rise well before the passage of the state's Chapter 58 health reform law in the spring of 2006.** This holds true regardless of which set of data is used, AHA or DHCFP. From the low of 30.2 percent above the U.S. average in 1996, hospital cost per person here had, for example, risen to fully 43.0 percent above by 2004. As we have previously reported, the 2004 hospital cost excess was the greatest in a quarter century.<sup>27</sup>

Hospital costs here averaged 41.0 percent above the U.S. per person average in the AHA data during the five years from 2001 through 2005, gradually climbing almost five percentage points over those five years. (Annual data on total hospital spending and per person hospital spending for Massachusetts and the nation are presented in Exhibit 7. More detailed data are found in Appendix Table 20.)

But then in 2006 and 2007, this state's hospital cost excess rose sharply. Per person spending on hospital care in Massachusetts soared from 43.2 percent above the U.S. average in 2005 to 51.7 percent above in 2006, and—confirming the trend—to 55.4 percent above the U.S. average in 2007. By AHA data, the excess stabilized at 55.0 percent in 2008; it rose to 57.5 percent by DHCFFP data.

##### **5. Great savings available if hospital costs here were restrained**

Total hospital spending statewide in 2007 was \$19.5 billion. As a crude comparison, and one that is not inflation-adjusted, this sum was roughly equal to total U.S. hospital spending in 1970.

If hospital spending per person in Massachusetts in 2007 had been at the U.S. 2007 average, some \$6.9 billion would have been saved for all who pay for care here—or 36 percent of actual costs. That \$6.9 billion excess is up sharply from the 2005 Massachusetts hospital cost excess of \$5.2 billion (adjusted for inflation), when hospital spending per person here exceeded the national average by 43.2 percent—and up from \$6.4 billion in 2006, an excess of 51.7 percent.<sup>28 29</sup>

In 1996, hospital cost per person in Massachusetts was closer to the U.S. average than at any other time—yet was still 30 percent above that average. Had Massachusetts hospitals in 2007 spent at the 30 percent excess of 1996, \$3.2 billion would have been saved in 2007.

Suppose that hospital spending per person in Massachusetts in 2007 had simply held to the average excess prevailing here from 2001 to 2005 (41.0 percent) rather than the actual excess of 55.4 percent. In that case, the saving in 2007 alone would have been some \$1.8 billion (actual 2007 spending of some \$19.5 billion less \$17.7 billion at the 41.0 percent average excess from 2001 to 2005).

##### **6. A consistently growing and consistently unjustified excess: what to do?**

Our 1991 report on hospital costs in Massachusetts concluded that fully two-thirds of the excess costs of Massachusetts hospitals were not justified by reasonable and durably affordable factors.<sup>30</sup> Updating some of those analyses and adding others, we find—as documented in this report—that an even larger share of today's excess, five-sixths, is not justified.

*The evidence from the years from 1975 to 1996 shows that the size of the excess in hospital costs in Massachusetts can be reduced. While winning another slowdown in cost increases will not be easy, the precedent indicates that it is possible.*

Nationally, neither competitive forces of a market nor regulatory actions by government have succeeded in reining in health care costs generally or hospital costs specifically. Without either effective markets or competent government action, Americans have suffered decades of growing financial anarchy in health care. Since the mid-1990s, Massachusetts has led the way toward higher health care costs generally and higher hospital costs particularly. Possibly, we can lead the way toward more affordable health care for all.

At the same time that spending increases must be slowed, all needed hospitals must be protected and sustained. Needed hospitals—and their emergency rooms and other services—must be kept open and paid enough to finance the costs of efficiently delivering needed and high-quality services.

It would be a mistake to try to save money by throwing financial weaker hospitals out of the lifeboat. As the exhibit above showed, one-half of Massachusetts hospitals have been closed since 1960. Those closings have often occurred with the passive acquiescence of other hospitals, payers, and even government. The observed pattern of closings may have won occasional savings but, if so, these were clearly short-lived. Over time, more and more care has been shifted gradually into surviving hospitals that are often more costly than those that closed—and hospitals with regional oligopolies have gained greater power to raise prices.

With so many hospitals lost—with their emergency rooms—and with bed-to-population ratios in Massachusetts below the national average (as shown in Appendix, Table 1), the burden of proof that further closings are both safe and money-saving must be on those who would advocate or tolerate them.

\* \* \*

The four main aims of this report are

- to document the excess hospital costs in Massachusetts,
- to analyze possible reasons for the long-standing excess, its drop from 1975 to 1996, and its substantial rise since 1996,
- to assess the share of the excess that is justified by reasonable and durably affordable factors, and
- to suggest workable methods of slowing the increase in hospital costs in Massachusetts.

## A. CONTEXTS

It is useful to discuss four types of comparisons across space or time.

- When comparing hospital costs in Massachusetts to the U.S. per capita average, it's important to recognize how much U.S. hospital costs exceed those in other wealthy nations.
- Massachusetts hospital expenses as a share of all personal health expenses were highest of any state in 1980, dipped in the 1990s, and then rose sharply.
- All health care costs are high here, not only costs of hospital care.
- Excesses in Massachusetts *health care* costs per capita have grown during the years when the hospital excess shrank and also during the years when the hospital excess soared again.

### 1. U.S. Hospital Costs in an International Context

As exhibits 1 and 2 show, the U.S. national average hospital spending per person is very high in comparison to levels prevailing in other wealthy nations. In 2004 and 2005, the last two years for which full data are available, U.S. hospital spending per person was more than one-third above the second-costliest (Norway) of the other wealthy nations belonging to the Organization for Economic Cooperation and Development (OECD). Indeed, hospital spending in the U.S. was more than two-thirds (70-72 percent) above the average level prevailing in 12 other wealthy OECD nations. The U.S. excess is particularly striking since less wealthy OECD nations are excluded from this comparison.

#### Exhibit 1

#### Hospital Spending per Person, Thirteen Wealthy OECD Nations, 2004-2005

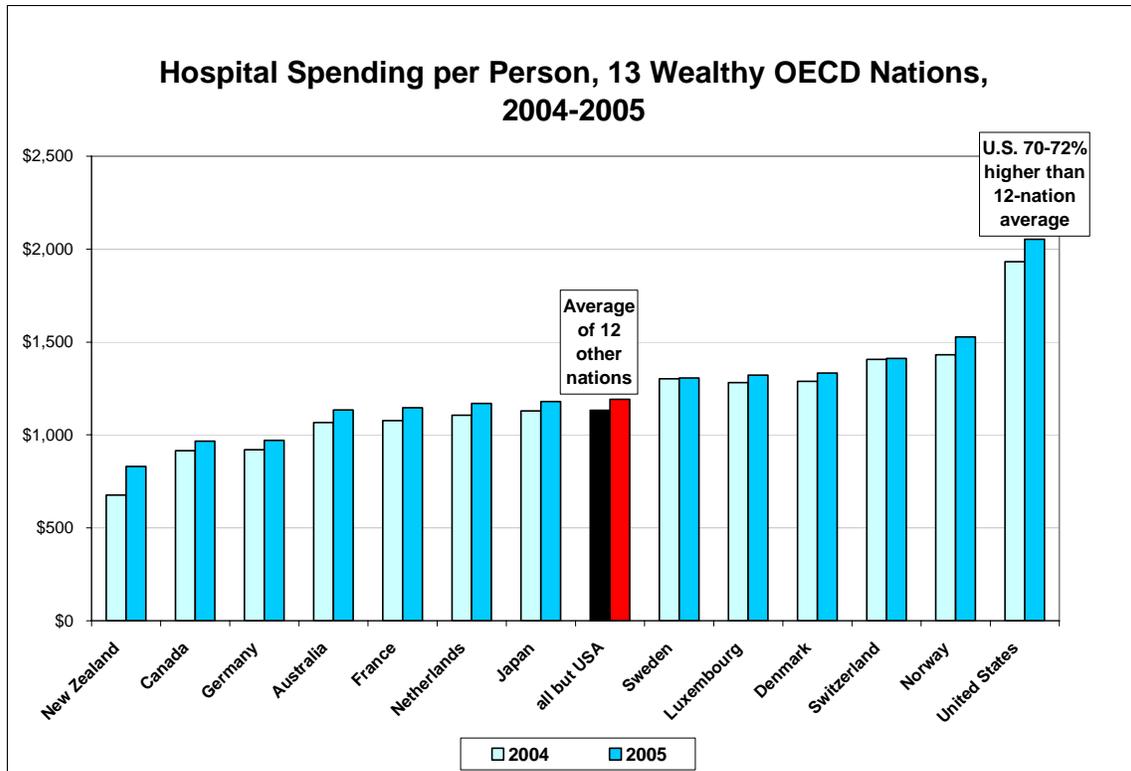
	2004	2005
Australia	\$1,067	\$1,135
Canada	\$915	\$967
Denmark	\$1,288	\$1,333
France	\$1,077	\$1,147
Germany	\$920	\$971
Japan	\$1,129	\$1,180
Luxembourg	\$1,282	\$1,322
Netherlands	\$1,107	\$1,169
New Zealand	\$677	\$830
Norway	\$1,431	\$1,528
Sweden	\$1,302	\$1,307
Switzerland	\$1,406	\$1,412
United States <sup>31</sup>	\$1,933	\$2,053
all but USA	\$1,133	\$1,192
<b>U.S. percent of all others</b>	<b>170.5%</b>	<b>172.3%</b>

Source: OECD Health Data 2009, July 2009.

Notes: All dollars in U.S. currency. Currency conversion by purchasing power parities.

Exhibit 2 presents these data in a simple chart.

**Exhibit 2**



It is worth noting that “hospital costs” are sometimes defined in slightly different ways. The OECD and the United States national health expenditure accounts generally seek to include *all* hospital care. In this report, we focus on *acute* hospital care, that provided by what the American Hospital Association defines as non-federal short-stay acute general and other special (pediatric, obstetrical, and the like) hospitals. In hospital fiscal year 2007, these short-stay hospitals accounted for 91.0 percent of all reported hospital spending in the United States.<sup>32</sup>

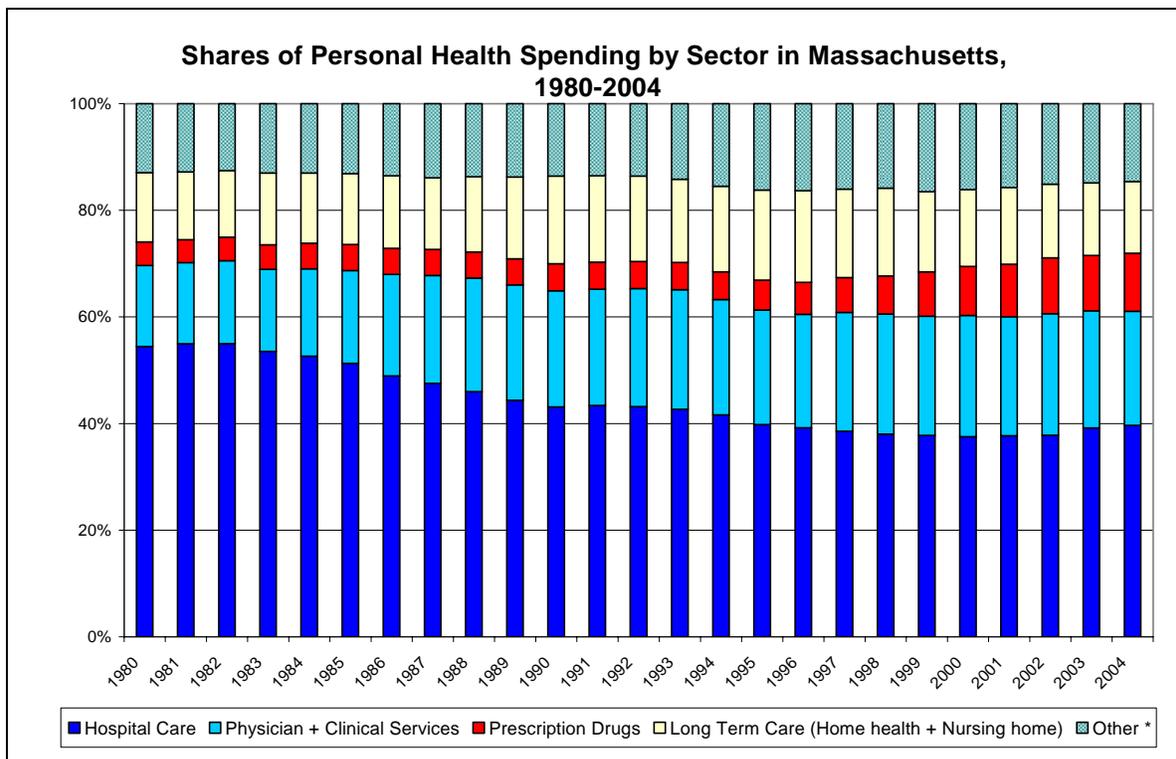
Because of these differences in definitions, we don’t add Massachusetts into the above international comparison or calculate the Massachusetts excess above an international average. Nonetheless, in considering the Massachusetts excess above the U.S. average, it’s important to bear in mind that the U.S. average is itself extraordinarily high by any international standard.

## 2. Hospital Costs as a Share of Personal Health Care Costs, 1980 – 2004

Hospitals' share of all spending on personal health care in Massachusetts (from all sources) dropped from a peak of 54.9 percent in 1981-1982 to a trough of 37.5 percent in 2000. (See Exhibit 3.) This is partly associated with the previously noted dip to a 1996 low in the Massachusetts hospital cost excess—a reduction in the percentage by which Massachusetts hospital cost per person exceeds the national average hospital cost per person. That reduction is discussed in sections B and C of this report. The drop in hospitals' share of spending on all personal health care in Massachusetts is also associated with faster annual growth in spending on physician services, prescription drugs, and long-term care in Massachusetts.

But, more recently, the hospital share of statewide personal health care spending jumped from 37.5 percent in 2000 to 39.7 percent in 2004. It is likely that this share was well over 40 percent by 2007.

**Exhibit 3**



Source: U.S. Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group, "Health Expenditures by State of Provider, 1980-2004," February 2007.<sup>33</sup>

From 1980 to 1985, hospitals represented a higher share of personal health care costs in Massachusetts than in any other state. But as spending on other health sectors grew here relative to hospital spending, and as hospital costs grew in other states, this state's rank on hospital share of costs fell to 16<sup>th</sup> by 1990, and tied for 29<sup>th</sup> in 1995 (the low), then rose again to 20<sup>th</sup> in 2000 and rose sharply further in the most recent years available, to 10<sup>th</sup> in 2003 and 2004.<sup>34</sup> In light of the very substantial rises in the Massachusetts hospital cost excess since 2004, it is likely that this state is now again close to top-ranked in the nation in hospital costs' share of personal health care spending.

### ***3. Massachusetts Hospital Costs Are High, but So Are Many Other Health Care Costs Here***

Although high hospital costs in Massachusetts have been among the most widely discussed and debated aspects of the state's health care cost problem, they are certainly not the only health sector in which Massachusetts suffers excess costs.

This is fairly important, since some parties wishing to minimize the severity of the hospital cost excess might say that, in other states, more of the care is given outside hospitals—in sites such as freestanding ambulatory surgery centers, for example. But our state's high hospital cost excess is not, apparently, offset by lower-than-average costs in other sectors.

Federal government data<sup>35</sup> indicate that spending on all personal health care<sup>36</sup> in Massachusetts was \$7,528 per person in 2004 (the most recent year for which comparable data are available). This was **33 percent above the U.S. average** of \$5,653, as discussed shortly.

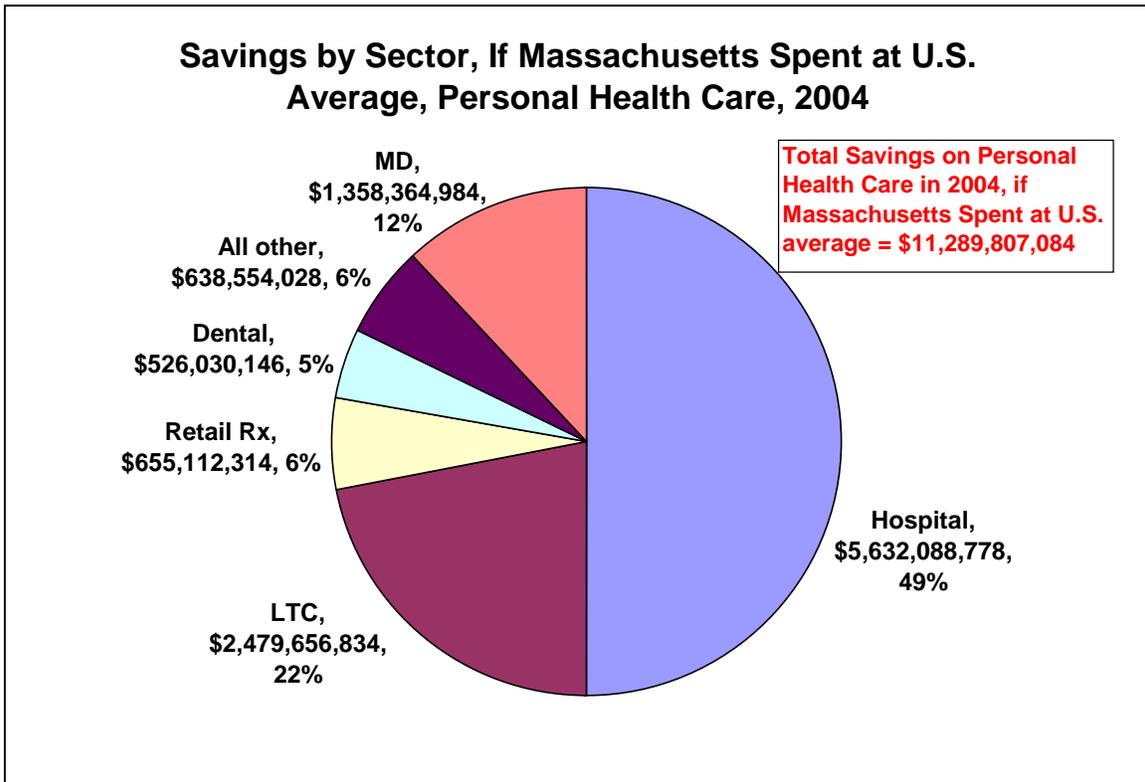
That meant, we calculate, a statewide excess of \$11.3 billion in personal health care costs.<sup>37</sup> Thus, had personal health spending in 2004 fallen to the national average, the savings would have been \$11.3 billion.

The 2004 federal government data are available for spending on each category of health care in each state.<sup>38</sup> We have estimated the 2004 savings on health care, sector by sector, if personal health care spending per person in Massachusetts were at the 2004 average spent per person nationally. The pie chart in Exhibit 4 identifies the slices of the \$11.3 billion in savings from hospitals, physicians, and other sectors.

Exhibit 5 displays the sums that would have been saved statewide, in dollars and as a share of actual spending in 2004, for each of the main categories of care.

The hospital spending excess in Massachusetts of \$5.6 billion did amount to half of the state's total 2004 health spending excess—but as Exhibit 5 shows, there was substantial excess spending in other health care sectors as well.

**Exhibit 4**



**Exhibit 5**

**Savings by Sector in 2004, If Massachusetts Spent at U.S. Average**

- Hospitals            \$5.6 billion, or        31.1 % of actual hospital spending
- Physicians        \$1.4 billion, or        13.5 % of actual spending on MDs
- Long-term care    \$2.5 billion, or        41.8 % of actual LTC spending
- Rx                    \$0.7 billion, or        13.7 % of actual Rx spending
- Dental              \$0.5 billion, or        22.8 % of actual dental spending
- All other            \$0.6 billion, or        15.4 % of all other actual spending
- Sum                 \$11.3 billion, or      24.9 % of actual personal health spending in Mass. would be saved if spent at U.S. average

#### 4. *Total Health Costs in Massachusetts Rose Farther above U.S. Average*

Overall personal health spending per person in Massachusetts—on hospitals, physicians, pharmaceuticals, long-term care, and other services—as just noted, was fully 33 percent above the national average in 2004 (the latest year for which comparable federal government data are available).<sup>39</sup> That is the greatest excess in overall health costs ever reported for Massachusetts.

The Massachusetts excess over U.S. personal health spending per person has grown substantially in recent years, as shown in Exhibit 6. In the early 1980s, the Massachusetts per-person excess for all health services was about 21 percent.<sup>40</sup> But the excess rose steeply in the late 1980s, stabilized in the mid-1990s, and then rose again recently. The Massachusetts health spending excess averaged almost 30 percent from 1997 through 2003, and jumped to 33 percent in 2004.

**Exhibit 6**

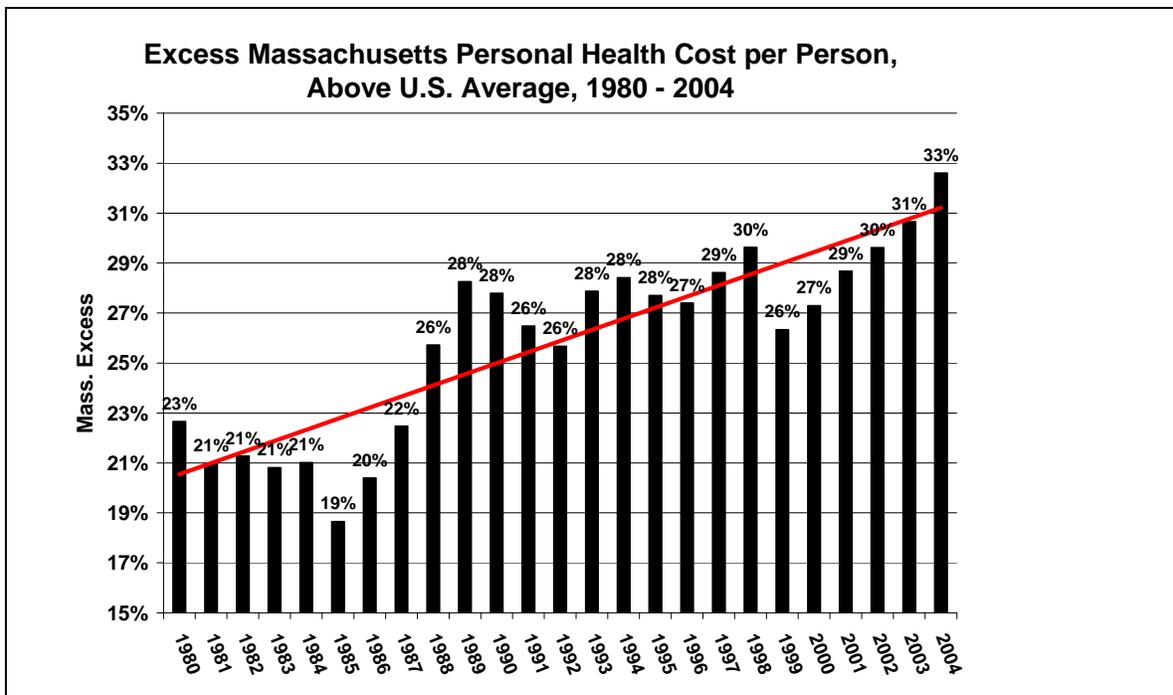


Exhibit 6 presents data by state of provider because it is available all the way back to 1980, presenting a consistent 25-year series. The Massachusetts excess by state of resident is slightly lower; these data are available starting only in 1991. In section D, we present estimates of net exports of hospital care and of all health services to non-residents.

### ***Shrinking Hospital Cost Excess Offset by Rise in Other Costs***

As this report highlights, hospital costs per capita in Massachusetts did decline relative to the U.S. average during the years before 1996. However, as we have noted elsewhere, spending on non-hospital care in Massachusetts—especially for physicians, drugs, and long term care—was rising sharply against national averages.<sup>41</sup>

Non-hospital health care spending per person in Massachusetts, we reported nine years ago,

had been just 3.2 percent above the national average in 1980, and 6.8 percent above in 1985. But non-hospital spending rose sharply relative to the U.S. average during the late 1980s, and steadily thereafter. By 1998, non-hospital spending in Massachusetts exceeded the national average by ... 29.5 percent. Thus, while Massachusetts hospital spending moved gradually closer to the national average, the slight progress on hospital costs has been more than offset by the rapid rise of non-hospital costs. ...[N]on-hospital costs rose sharply enough to boost Massachusetts health spending per person ...[farther] above the U.S. average...by the mid-1990s. In 1980, Massachusetts ranked 13th among the states in spending per capita on non-hospital care. By 1998, per person spending on non-hospital care in Massachusetts had risen to second-highest among the states.<sup>42</sup>

Thus, the rise in non-hospital expenses here more than offset the constraint in hospital costs, boosting the state's overall health care cost excess.

The result was seen in Exhibit 6. Overall spending on personal health care per person in Massachusetts was 21-23 percent above the U.S. average in the early 1980s, but then climbed to 26-30 percent above throughout the 1990s. The excess rose to 33 percent in 2004.

## ***B. TRENDS IN HOSPITAL COSTS PER PERSON, U.S.A. AND MASSACHUSETTS, 1960 – 2007, WITH EARLY DATA ON 2008***

### ***1. Trends in Excess Hospital Costs per Person in Massachusetts – AHA Data***

In 2007, hospital spending in Massachusetts rose to \$3,015 per person, fully 55.4 percent above the national average of \$1,941, we find, calculating from data reported by hospitals to the American Hospital Association.<sup>43</sup>

Looking back nearly a half century, **that 55.4 percent excess is the highest recorded** in years examined.

Exhibit 7 displays the basic data on total hospital spending in the U.S. and Massachusetts, spending per person, and the dollar and percentage differences in hospital spending per person.<sup>44</sup>

The data in Exhibits 7 and 8 make the following points clear:

- Hospital spending per person in Massachusetts was 40-50 percent in excess of the national level from 1960 through about 1980.
- The excess then dipped to some 30-40 percent through the 1980s and 1990s. (Nonetheless, just as they had previously, hospital costs per person here still exceeded those in every other state.<sup>45</sup>)
- After reaching a *low of 30.2 percent* in 1996, the excess in Massachusetts hospital costs above the U.S. average began rising again. The average excess during the late 1990s (35.9 percent) was slightly more than the average excess in the early 1990s (34.8 percent). [re: 1990-94 vs 1995-99.
- The Massachusetts excess rose steadily in every year from 2000 to 2007.
- For the five years starting in 2003, hospital spending per person has been more than 40 percent above the U.S. average..
- In 2006 the excess here soared above 50 percent for the first time since 1975, and it rose further in 2007.

(Although the dollar figures in Exhibit 7, for total and per person U.S. and Massachusetts hospital expenses, are not adjusted to take account of general inflation over time, that has no effect on the estimated excess in per person costs here as compared with the U.S. average.)

**Exhibit 7**  
**Total Hospital Expenses and Hospital Expenses per Person, 1960 – 2007**

year	Total Hospital Expenses		Hospital Expenses per Person		
	U.S.A.	Massachusetts	U.S.A.	Massachusetts	Mass. % above U.S.A.
1960	\$5,616,940,000	\$237,857,000	\$31	\$46	47.5%
1965	\$9,147,158,000	\$366,559,000	\$47	\$67	40.8%
1970	\$19,559,675,000	\$815,344,000	\$94	\$142	51.9%
1975	\$38,961,563,000	\$1,562,277,000	\$178	\$271	52.4%
1980	\$76,851,146,000	\$2,733,340,000	\$335	\$479	43.0%
1981	\$90,572,422,000	\$3,159,773,000	\$391	\$551	41.0%
1982	\$104,875,624,000	\$3,582,627,000	\$448	\$623	39.1%
1983	\$116,437,675,000	\$3,921,711,000	\$493	\$679	37.9%
1984	\$123,336,420,000	\$4,159,720,000	\$517	\$715	38.2%
1985	\$130,499,066,000	\$4,458,559,000	\$542	\$760	40.2%
1986	\$140,654,175,000	\$4,598,913,000	\$579	\$780	34.7%
1987	\$152,584,542,000	\$4,944,140,000	\$622	\$833	34.0%
1988	\$168,722,539,000	\$5,636,706,000	\$681	\$942	38.3%
1989	\$184,897,504,000	\$6,160,608,000	\$739	\$1,022	38.3%
1990	\$203,692,591,000	\$6,543,022,000	\$819	\$1,088	32.8%
1991	\$225,023,388,000	\$7,284,846,000	\$895	\$1,214	35.6%
1992	\$248,094,866,000	\$7,845,886,000	\$976	\$1,309	34.2%
1993	\$266,089,085,000	\$8,507,912,000	\$1,033	\$1,409	36.4%
1994	\$275,778,770,000	\$8,672,792,000	\$1,057	\$1,426	34.9%
1995	\$285,588,378,000	\$8,823,926,000	\$1,081	\$1,441	33.2%
1996	\$293,755,251,000	\$8,819,046,000	\$1,098	\$1,430	30.2%
1997	\$305,763,487,000	\$9,539,109,000	\$1,129	\$1,535	36.0%
1998	\$318,833,871,000	\$10,315,438,000	\$1,162	\$1,648	41.8%
1999	\$335,246,268,000	\$10,518,161,000	\$1,206	\$1,669	38.3%
2000	\$356,563,790,000	\$11,148,180,000	\$1,267	\$1,756	38.6%
2001	\$383,734,757,143	\$12,055,797,429	\$1,346	\$1,882	39.8%
2002	\$416,951,058,927	\$12,979,804,604	\$1,448	\$2,015	39.1%
2003	\$450,124,257,375	\$14,000,779,782	\$1,551	\$2,174	40.1%
2004	\$481,246,587,226	\$15,124,176,850	\$1,643	\$2,349	43.0%
2005	\$515,740,325,861	\$16,079,248,699	\$1,745	\$2,499	43.2%
2006	\$551,835,328,219	\$18,075,916,295	\$1,850	\$2,805	51.7%
2007	\$583,252,287,933	\$19,480,349,556	\$1,941	\$3,015	55.4%

Source: American Hospital Association, *Hospitals, J.A.H.A. Annual Guide Issue and Hospital Statistics*, various years.

Notes: Expenses by hospitals are as reported by hospitals to the A.H.A. We calculated expenses per person using the most current population data from the Census Bureau.

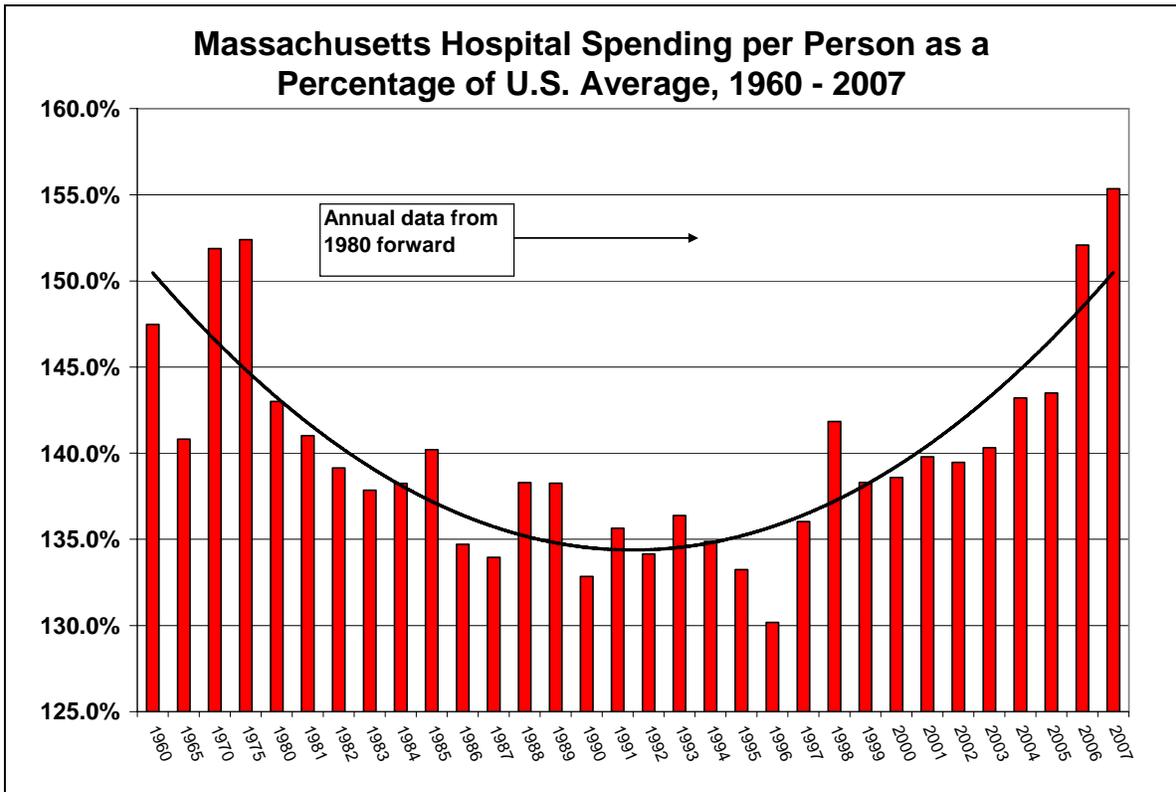
The U.S.A. hospital cost per person in 2004 and 2005 from the A.H.A. differs from the cost reported by the O.E.C.D. in Exhibit 1 because different hospitals are included (acute hospitals by A.H.A. versus all hospitals by O.E.C.D.). Each exhibit, though, is internally consistent.

Table 20 in the Appendix shows the percentage change in per person spending each year.

Exhibit 8 graphically displays how much Massachusetts hospital costs per person exceeded the U.S. average over nearly half a century. The graph powerfully shows the decline in the Massachusetts excess until about the mid-1990s, its leveling out, its gradual rise until 2005, and its steep increases in 2006 and 2007.

(Please note that the data in exhibits 7, 8, 9, 10, and 11 are shown for every five years from 1960 to 1980 and for each year after 1980.)

**Exhibit 8**



Calculating from the data in Exhibit 7, we show in Exhibit 9 the annual savings statewide in Massachusetts if hospital spending per person here equaled the U.S. average. These are the sums by which hospital costs in our state would have fallen if spending per person equaled the national average. Exhibit 9 also adjusts savings for inflation.<sup>46</sup>

## **2. Excess Costs Adjusted for Inflation**

Inflation-adjusted savings in 1960 would have been over \$500 million in constant 2007 dollars if hospitals here spent at the U.S. per person average. In 2004 and again in 2005, inflation-adjusted savings would have been over \$5 billion. Then, as previously noted, the annual statewide savings achievable if spending were at the U.S. average rose in 2006 to \$6.2 billion, and further in 2007 to \$6.9 billion.

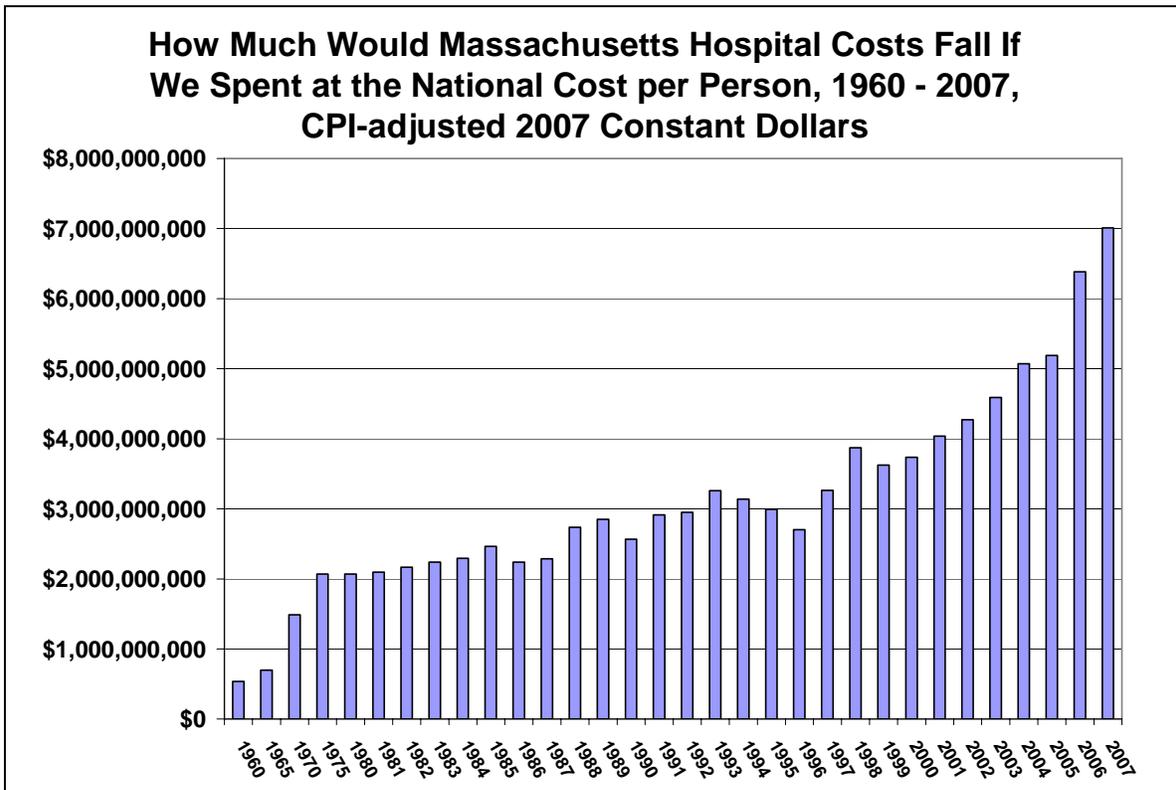
### **Exhibit 9**

#### **How Much Would Statewide Massachusetts Hospital Costs Have Fallen If We Spent at the National Average Hospital Cost per Person, 1960 – 2007? (In Current Dollars and Constant 2007 Dollars)**

<b>Year</b>	<b>Annual Savings If Massachusetts Hospital Cost per Person Equaled the U.S. Average (stated in current dollars of the year shown)</b>	<b>All-items All-urban Annual Average Consumer Price Index (1982-1984 base)</b>	<b>Inflation-adjusted Annual Savings (in constant 2007 dollars)</b>
1960	\$76,574,710	29.6	\$536,390,323
1965	\$106,250,302	31.5	\$699,369,847
1970	\$278,478,340	38.8	\$1,488,150,929
1975	\$537,149,492	53.8	\$2,070,142,193
1980	\$822,000,816	82.4	\$2,068,389,480
1981	\$918,997,822	90.9	\$2,096,224,934
1982	\$1,007,865,561	96.5	\$2,165,521,878
1983	\$1,076,891,896	99.6	\$2,241,816,462
1984	\$1,150,776,317	103.9	\$2,296,479,915
1985	\$1,278,706,394	107.6	\$2,464,029,193
1986	\$1,185,154,572	109.6	\$2,242,083,205
1987	\$1,253,163,636	113.6	\$2,287,266,327
1988	\$1,560,812,774	118.3	\$2,735,604,752
1989	\$1,704,689,644	124.0	\$2,850,433,550
1990	\$1,617,542,393	130.7	\$2,566,063,312
1991	\$1,914,183,520	136.2	\$2,914,028,189
1992	\$1,997,637,456	140.3	\$2,952,203,460
1993	\$2,269,803,933	144.5	\$3,256,925,171
1994	\$2,242,889,053	148.2	\$3,137,956,154
1995	\$2,201,732,436	152.4	\$2,995,482,983
1996	\$2,044,741,202	156.9	\$2,702,107,905
1997	\$2,526,454,047	160.5	\$3,263,800,842
1998	\$3,043,016,307	163.0	\$3,870,828,755
1999	\$2,913,211,980	166.6	\$3,625,637,446
2000	\$3,103,823,675	172.2	\$3,737,241,629
2001	\$3,425,760,521	177.1	\$4,010,751,202
2002	\$3,669,177,411	179.9	\$4,228,874,835
2003	\$4,021,582,228	184.0	\$4,531,754,904
2004	\$4,564,753,711	188.9	\$5,010,403,197
2005	\$4,874,258,569	195.3	\$5,174,800,411
2006	\$6,189,578,589	201.6	\$6,365,871,051
2007	\$6,940,828,960	207.3	\$6,940,828,960

Exhibit 10 depicts the data in the right-hand column of Exhibit 9—the inflation-adjusted sums by which total statewide Massachusetts hospital costs would have fallen, in each of various years from 1960 to 2007, if hospital costs in our state had equaled the national average cost per person.

**Exhibit 10**



Note: The urban consumer price index for all items was used to adjust for inflation. The producer price index for hospital care is superior but, unfortunately, the producer price index for hospital care is available only after 1992.<sup>47</sup>

The inflation-adjusted hospital savings that could be won statewide if spending were at the U.S. average jumped by nearly \$1.2 billion dollars from 2005 to 2006, and by over half a billion dollars more in 2007.

In Section C of this report, we will examine explanations for the hospital cost excess in Massachusetts, its drop from 1975 to 1996, and its resurgence from 1996 to 2007.

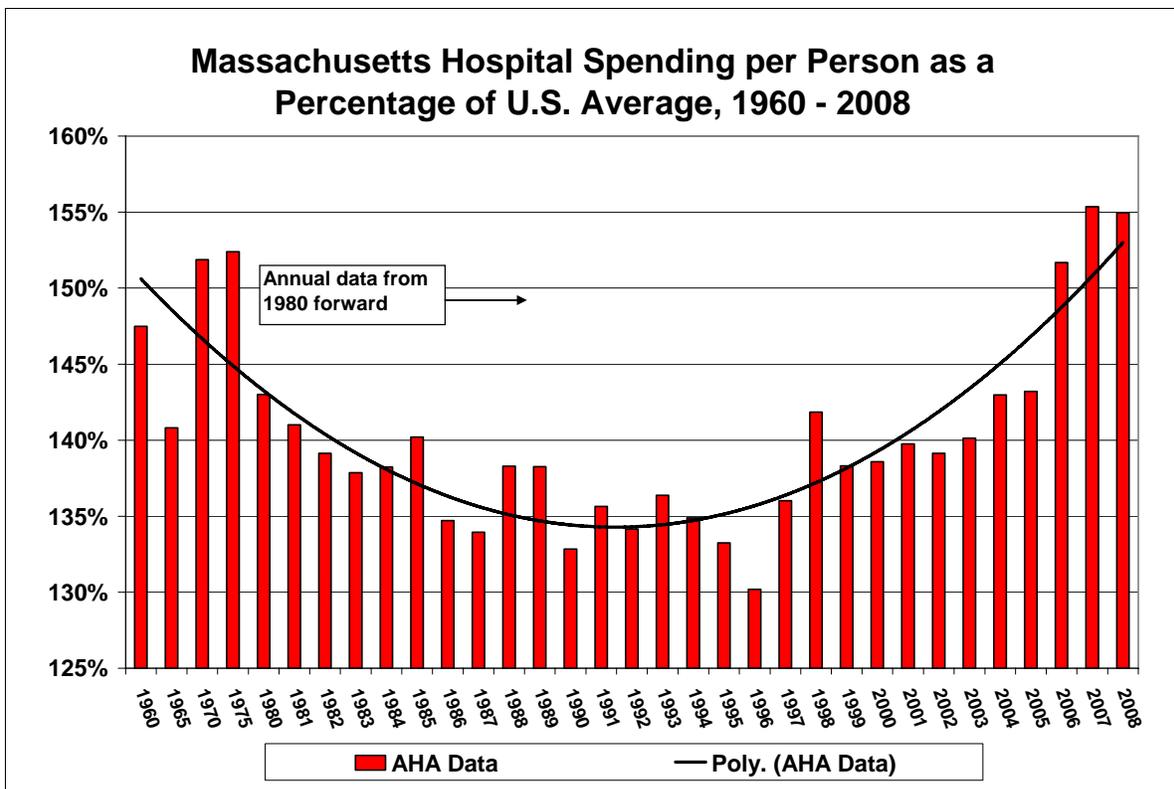
In Section D, we will focus on the 2006 excess of \$6.4 billion. How much of this excess cost is apparently justified by legitimate and durably affordable factors? How much is not?

### 3. Estimates of the 2008 Massachusetts Excess

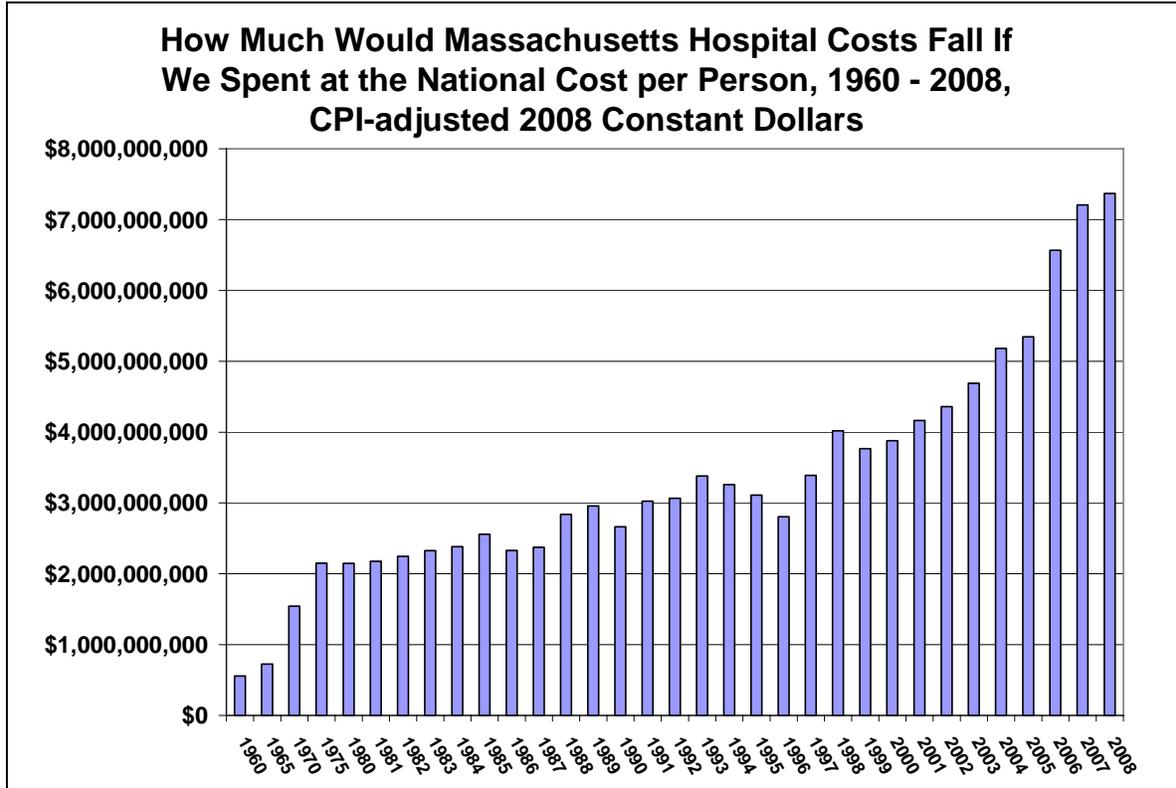
Cost data reported by hospitals to the AHA have very recently become available. They indicate U.S. per capita hospital costs of \$2,065 and Massachusetts costs of \$3,200.<sup>48</sup> Massachusetts was 55.0 percent above U.S. hospital spending per person. This reflects a 6.4 percent rise in per capita hospital spending nationally, just above the 6.2 percent rise in Massachusetts. (By contrast, over the ten years from 1998 to 2007, the average U.S. annual rise was 5.6 percent and the average Massachusetts annual rise was 7.0 percent.)

Extending previous exhibits through 2008, Exhibit 11 shows the Massachusetts percentage excess over U.S. per person spending through 2008, and Exhibit 12 shows the CPI-adjusted dollar excess through 2008. (Exhibit 11 simply updates Exhibit 8 through 2008, and Exhibit 12 updates Exhibit 10.)

**Exhibit 11**



## Exhibit 12



Note: The urban consumer price index for all items was used to adjust for inflation. The producer price index for hospital care is superior but, unfortunately, the producer price index for hospital care is available only for years after 1992.<sup>49</sup>

### ***4. Stages in the Growth of Excess Massachusetts Hospital Costs***

The percentage by which costs per person here exceed the national average of hospital costs per person, as shown above, has varied over time.

Please refer back to Exhibit 7. Its data cover 48 years, a period that can be divided roughly into four parts. During the first part, from 1960 to about 1975, hospital costs per person in Massachusetts were some 40-50 percent or more above the U.S. average.

During the second part, 1975 to about 1985, the percentage hospital cost excess in Massachusetts gradually declined; hospital costs per person here moved closer to the U.S. average. (As Exhibit 9 shows, however, even adjusting for inflation, the dollar excess generally continued rising from year to year.)

Third, from about 1986 through the mid-1990s, Massachusetts hospital costs per person hovered 30-40 percent above the U.S. average.

Fourth, from a low that was still fully 30.2 percent above the U.S. average in 1996, Massachusetts hospital costs per person generally rose again relative to the nation for more than a decade, through 2007.

In 2006, Federal analysts noted that hospital spending was growing faster in New England than elsewhere in the nation. They highlighted recent rapid growth in statewide aggregate spending on hospitals in Massachusetts, averaging “10.2 percent annually from 2000 to 2004.”<sup>50</sup>

We have calculated that the rate of growth in hospital spending per person in Massachusetts from 2000 to 2004 was tied for sixth-highest among the states. That is remarkable because hospital spending per person here had long been highest of any state.

Even more remarkably, inflation-adjusted excess hospital spending statewide in Massachusetts rose by 53 percent (\$2.4 billion) from 2003 to 2007—from \$4.5 billion in 2003 to \$6.9 in 2007. In three of those four years, the rise here was substantially faster than the U.S. rise.

A great share of this surge in hospital spending occurred from 2005 to 2006 alone. In this one year, total hospital spending, not adjusted for inflation, rose by one-eighth, 12.3 percent, in Massachusetts, more than double the national rate of 6.0 percent. That was the fastest rise here in almost 20 years, and it pushed the Massachusetts excess up from 43.2 percent in 2005 to 51.7 percent in 2006. And the 2007 rise, unusually large as well, was half again as fast as the national rate, pushing our excess to 55.4 percent.

## **5. *Another View of Trends in Excess Hospital Costs per Person in Massachusetts – State DHCFP Data***

For the years 2001 through 2008, data on hospital expenses in Massachusetts are now available from two sources: expenses reported by hospitals to the AHA and expenses reported by hospitals to the Massachusetts Division of Health Care Finance and Policy (DHCFP).

We compared the two sets of data for 2001 through 2008. In 2001, the expenses reported to the DHCFP were 5.0 percent higher than expenses reported to the AHA. The gap vanished in 2007 but reappeared in 2008. (Please refer to Exhibit 13.)

It is worth underlining that the DHCFP data and the AHA data agree on the size of the 2007 Massachusetts excess: According to both, the 2007 Massachusetts hospital cost per capita was 55.4 percent above the U.S. average.

From one viewpoint, as shown in Exhibit 13, the differences between the two sets of hospital cost estimates were relatively small and, over time, shrank to zero.

From a second viewpoint, by the AHA data, 2008 was a year of consolidation of the Massachusetts excess over the U.S. average cost per person. From the DHCFP data, though, 2008 was a year of marked continued growth in the excess.

**Exhibit 13**  
**Comparing Expenses Reported by Hospitals**  
**to the Massachusetts Division of Health Care Finance and Policy and**  
**to the American Hospital Association, 2001 – 2007**

	Massachusetts hospital expenses reported to		\$ Difference	% Difference	% rise in expenses from previous year	
	DHCFP	AHA			DHCFP	AHA
2001	\$12,696,213,342	\$12,055,797,000	\$640,416,342	5.0%		
2002	\$13,469,233,885	\$12,979,805,000	\$489,428,885	3.6%	6.1%	7.7%
2003	\$14,482,617,573	\$14,000,780,000	\$481,837,573	3.3%	7.5%	7.9%
2004	\$15,619,312,863	\$15,124,177,000	\$495,135,863	3.2%	7.8%	8.0%
2005	\$16,725,466,275	\$16,079,249,000	\$646,217,275	3.9%	7.1%	6.3%
2006	\$18,285,526,678	\$18,075,916,000	\$209,610,678	1.1%	9.3%	12.4%
2007	\$19,479,887,182	\$19,480,350,000	-\$462,818	0.0%	6.5%	7.8%
2008	\$21,062,825,000	\$20,772,348,000	\$292,050,000	2.2%	8.1%	6.6%

From a third—and perhaps more important—viewpoint, the two data sets suggest differences in the earlier years in the rate (slope) of Massachusetts hospital costs’ approach to the substantial 2006 and 2007 excesses.

The state’s own data from DHCFP on the angle of approach to the 2006 – 2007 excess is somewhat shallower than the AHA approach. Because, according to the DHCFP data, the Massachusetts excess was higher in 2001 through 2005 than in the AHA data, the subsequent percentage increase in costs in 2006 and in 2007 were not as large as seen in the AHA data.

In other words, because the DHCFP data raise the height of the foothills of 2001 through 2005, the climb to the peaks of 2006 and 2007 is not as steep as it appeared from the AHA data. The state’s own data smooth out the 2006 rise.

As shown in Exhibit 14, Massachusetts costs per person, when calculated from DHC FP data, were 48.9 percent above the U.S. average in 2005, rising to 53.5 percent above in 2006. When calculated from AHA data, the cost excess here rises from a lower figure of 43.2 percent in 2005 to nearly as high as the DHC FP figure, 51.7 percent in 2006.

Two points of similarity seen in Exhibit 13s and 14 are noteworthy.

- First, in the six years shown in Exhibit 13, the 2005-2006 jump is the greatest annual rise in costs in both data sets (with the next largest rises coming in 2004 and 2003 in both data sets, and with a dip in the excess in 2002).
- Second, both data sets show the same Massachusetts hospital cost per person for 2007 and the Massachusetts excess rises to 55.4 percent in 2007 using either set of data. (See Exhibit 14.)

As noted earlier, the 2008 gap of 2.2 percent between Massachusetts costs reported by hospitals to DHC FP and AHA indicated either a continued steady growth in the Massachusetts excess or a small pause and consolidation in the size of the excess.

Without a detailed hospital-by-hospital comparison, audit, and reconciliation of expenses reported by hospitals to AHA and DHC FP, it is not possible to identify which set of data measures expenses more accurately.

**Exhibit 14**  
**Comparing Excess Massachusetts Hospital Expenses per Person Using AHA and DHC FP Data**

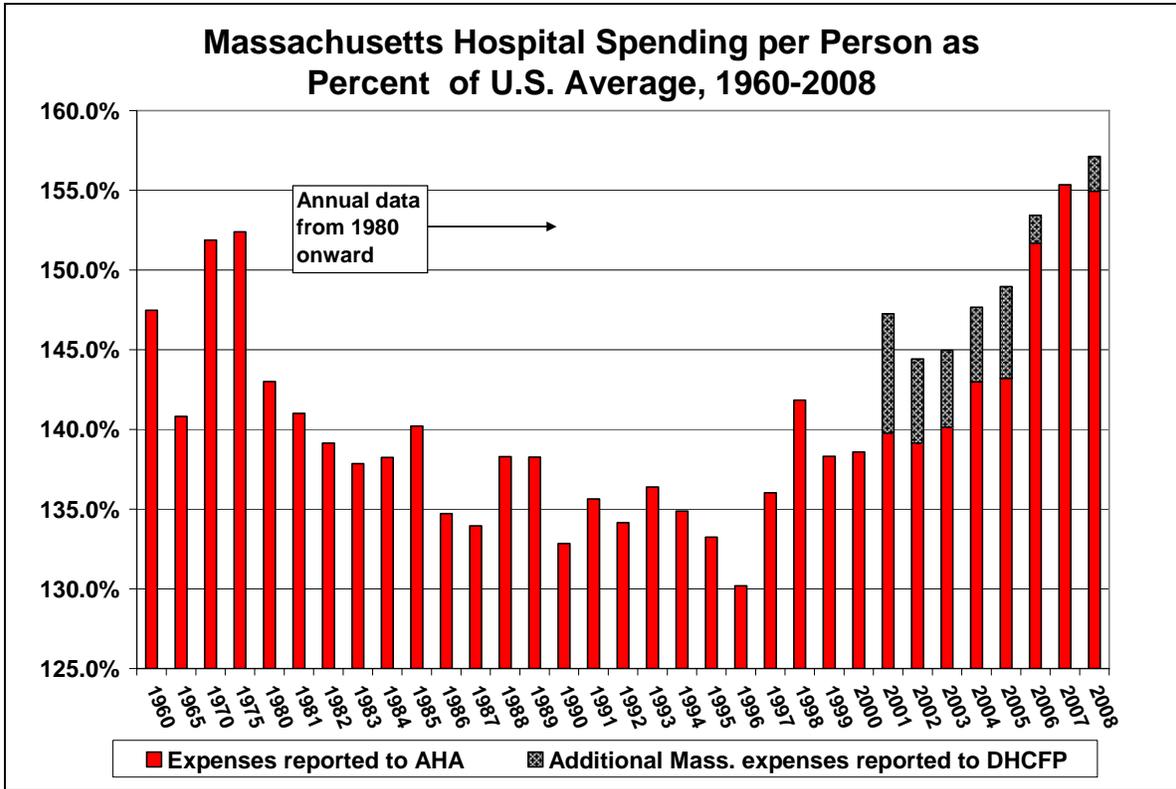
	Hospital costs per person			Mass. excess over USA hospital cost per person	
	AHA USA	DHC FP Mass	AHA Mass	DHC FP	AHA
2001	\$1,346	\$1,985	\$1,882	47.4%	39.8%
2002	\$1,448	\$2,093	\$2,015	44.6%	39.1%
2003	\$1,551	\$2,248	\$2,174	45.0%	40.1%
2004	\$1,643	\$2,426	\$2,349	47.6%	43.0%
2005	\$1,745	\$2,599	\$2,499	48.9%	43.2%
2006	\$1,850	\$2,839	\$2,805	53.5%	51.7%
2007	\$1,941	\$3,015	\$3,015	55.4%	55.4%
2008	\$2,065	\$3,245	\$3,200	57.1%	55.0%

As it happens, as shown in Exhibit 15, using the higher hospital expenses reported by hospitals to DHC FP for 2001-2006 does not greatly affect the overall pattern of Massachusetts hospital costs per person relative to the national average. (Compare Exhibit 11.) The jump from 2005 to 2006 persists even though it is slightly less dramatic. More important, this state's very high excess

costs in 2006, 2007, and 2008 build somewhat on higher-than-previously-calculated excesses in 2001-2004. (As noted earlier, the 2008 excess, estimated from data from DCHFP and the Office of the Actuary, Center for Medicare and Medicaid Services, should be regarded as a preliminary estimate.)

Overall, adding in the costs reported to DCHFP but not to AHA reinforces the view that the very large recent excess expenses of Massachusetts hospitals build on long-standing patterns and are not mainly associated with the 2006 Massachusetts health reform law. This is not surprising, considering that hospital fiscal year 2006 ended on 30 September 2006, less than six months after passage of the law and barely time for coverage improvements to begin to take effect.

**Exhibit 15**



Is it appropriate to include the additional dollars reported to DCHFP but not to AHA? Does this adjust Massachusetts costs upward without making parallel adjustments to reflect expenses that might actually have been incurred by hospitals in other states? On balance, we think it is useful to consider the DCHFP data as one reasonable view of reality. It is likelier that some hospitals reported some costs to DCHFP that they failed to not report to the AHA than the reverse. It's easier to forget or lose sight of some costs than to imagine them.

This raises a question about reporting to AHA and DHCFP in 2006 and 2007: why the small gap in 2006 and the congruence in 2007? Did some hospitals decide to submit the same data to both in 2006 and did more decide to do so in 2007? Also, if spending reported to AHA rose in 2006 and 2007, does that mean that reported admissions and other data also rose? Conclusive answers to these questions would rest on hospital-by-hospital comparison of key data reported to the two sources in the years in question—an effort that is beyond the scope of this report. .

Sections C and D, which now follow, rest on hospital costs reported to the AHA. This is appropriate (and probably unavoidable) since only the AHA data allow for Section C's detailed Massachusetts – U.S. comparisons. It is worth noting that the jump in expenses per person in Massachusetts, relative to the national average, remains very substantial in 2006, no matter whether the AHA or the DHCFP data are used.

## ***C. WHY ARE HOSPITAL COSTS SO HIGH IN MASSACHUSETTS?***

Hospital costs per person have long been higher in Massachusetts than in any other state.<sup>51</sup> The previous section documented a growing excess in hospital costs here above the national average since the mid-1990s, a rise that accelerated after about 2000.

We will examine forces behind the rise in the Massachusetts excess since 1996—and especially since 2000. And we will seek to understand the reasons for the 2006 and 2007 jumps in the Massachusetts hospital cost excess.

In this section, therefore, we examine

1. factors correlated with higher costs in Massachusetts over the years, with special attention to possible reasons for the drop from 1975 to 1996, and reasons for the resurgence of excess costs from 1996 to 2007;
2. whether the growth in excess hospital costs in recent years has been across-the-board or whether it is disproportionately concentrated at certain hospitals; and
3. whether factors associated with high costs in Massachusetts match the statistical predictors of hospital costs per person across the 50 states in 2007.

Section D, which follows, will address the legitimacy or appropriateness of excess hospital costs in Massachusetts.

### ***1. Factors Associated with Durably Higher Costs In Massachusetts over the Years, with Attention to Possible Reasons for the Drop from 1975 to 1996, and with the Resurgence of the Excess from 1996 to 2007***

A number of detailed characteristics help to portray what has changed in Massachusetts hospitals from 1975 to 1996 and from 1996 to 2007, but few capture why the statewide excess above the U.S. per-person average fell and then rose again. We will begin by describing what has changed. These characteristics are manifestations of the change in costs, but not a description or an analysis of probable underlying causes, which will be addressed later.

As shown in Exhibits 7 and 8, the Massachusetts percentage excess in hospital costs per person over the national average fell from 1975 to the mid-1990s and has risen subsequently, according to data reported by hospitals to the AHA.

The jump of nearly \$1.2 billion in inflation-adjusted dollars in 2006 (shown in Exhibits 9 and 10) and the large 2007 jump as well were so costly in part because they followed and built on almost a decade of fairly steady increases in excess costs here.

This steady rise in the Massachusetts excess launched from a platform, 1994 through 1996, when Massachusetts hospital costs per person averaged 32.8 percent above the U.S. average. (As noted earlier, 1996 was the year when per person costs in Massachusetts were their closest to the U.S. average of any year for which data are available.) Starting then, the rising excess can be seen by considering four successive periods.

This excess in Massachusetts hospital costs rose from 32.8 percent during the mid-1990s to 42.3 percent above the nation from 2003 through 2005. Then in 2006-2007 the average excess soared to 53.6 percent. These data are displayed in Exhibit 16.

### **Exhibit 16**

#### **Massachusetts Excess Hospital Costs per Person during Eight Periods**

Period	Stage	Average Excess Cost per Person
1960 + 1965	Pre-Medicare/M'caid	44.2%
1970 + 1975	Blank check years	52.5%
1980-1985		39.9%
1986-1993		35.5%
1994-1996	Launching pad/trough	32.8%
1997-2002	1	38.9%
2003-2005	2	42.3%
2006-2007	3	53.6%

If recent excess costs were a rocket, the bottoming out of the Massachusetts excess in 1994 to 1996 would be the launching pad. The gradual lift-off from 1997 to 2002 would be the first stage. The accelerating increase from 2003 to 2005 would be the second stage. And the extra large excess in 2006 and 2007 would be the third stage, perhaps the one that achieves escape velocity.

In this Section C, we examine a number of factors that are associated with the drop in the excess after 1975, its rise after 1996, the 2006 and 2007 jumps, and also explanations for what has been a persisting and substantial overall excess.

In examining these factors, we rely very heavily on data reported by the American Hospital Association annually for hospitals in this state and in the nation as a whole. Several decades of data are presented in Appendix tables for most of these factors.

Near the end of this section, three exhibits summarize the discussion. Exhibit 26 examines factors long and durably associated with higher costs and those that seem to have been associated with the 2006 and 2007 surges in excess costs here. Exhibit 27 presents the Massachusetts excess in 1975, 1996, and 2007 and notes salient factors. And Exhibit 28 summarizes a number of Massachusetts – U.S.A. comparisons for 2007.

**a. Beds.** The number of beds per 1,000 people here fell from 107 percent of the U.S. average in 1975 to 91 percent in 1996 and then rose slightly to 96 percent in 2007. But it is by no means clear that bed reductions helped to cause the drop in the excess. Hospitals that closed were originally smaller and often less costly. If patients obtained substitute care, it was at more costly surviving institutions. The number of beds per 1,000 people has been at or below the U.S. average since 1989, and was lower in Massachusetts than nationally throughout the period from 1996 to 2007 so it's hard to see how it can help to explain the jump in excess costs here. (See Appendix Table 1.) This factor will be discussed in detail in Section D. Also, as discussed in Section C – 3, Massachusetts clearly departs from the inter-state association between beds per 1,000 and cost per person.

**b. Use of inpatient care.** Interestingly, Massachusetts hospital admissions per 1,000 people were almost identical at 102 percent of the U.S. average in 1975 and 1996, though there were several swings in the intervening years. The admissions rate here then rose to 111 percent of the national rate in 2007, the third highest excess the state has seen, with most of the rise coming since 2003. (See Appendix Table 2.)

Looking in more detail, admissions here dipped from 2 percent above the national average in 1975 down to 96 percent of the U.S. rate in 1981. But then, the excess in the Massachusetts rate of admissions began rising in 1989 to a 1992 peak at 14 percent above the U.S. admissions rate, dropping back to 2 percent above by 1996. Admissions per 1,000 people hovered within two percentage points of the national average from 1998 through 2002, but rose to 4.9 percent higher than the U.S. rate in 2003, 6.2 percent higher in 2004, and after a small dip in 2005, up to 9.7 percent above the national average in 2006,

and 10.9 percent more in 2007. The actual admissions rate rose in most years after 2000 both here and nationally, but generally rose faster here.

Only a few of the underlying sources of changes in the rate of admissions (such as financial constraints and relaxation, payment methods, changes in medical tools and knowledge, or changes in physician or hospital capacity) can be sketched from the aggregate data reported to the American Hospital Association. It's unlikely that underlying differences in pathology are responsible.

The rate of admissions per 1,000 people rose nationally by 0.4 percent from 2005 to 2006 but jumped 4.4 percent in Massachusetts, the largest one-year percentage rise in admissions ever seen here. (Only one other year has come close.) Massachusetts hospitals in 2006 saw a rise of over 35,000 admissions. Then in 2007 the rate of admissions nationwide fell very slightly (0.1 percent) while in this state, it rose by 0.9 percent—to 130.4 admissions per 1,000 residents of Massachusetts, the highest admission rate here since 1993. As a result, our admission rate in 2007 exceeded the U.S. rate by 10.9 percent, a greater excess than in all but two previous years (1992-1993).

In Massachusetts, this decade has seen the reversal of a trend. The admission rate generally declined after 1975 to a low of 116.6 admissions per 1,000 residents in 2000, but it has risen in most years since then, to 130.4 in 2007, as just noted. Nationwide, the admission rate also fell through the 1980s and much of the 1990s, but it has not climbed recently, instead hovering between 115.7 and 119.7 admissions per 1,000 people since 1993.

Inpatient-days per 1,000 people dipped from 112 percent of the national average in 1975 to 99 percent in 1996 and then rose slightly to 105 percent in 2007. This figure rose only moderately in 2006 and fell in 2007 (see Appendix Table 3).

The number of days of inpatient care used in a year reflects both the volume of admissions and the length of stay in the hospital. Although admissions in Massachusetts rose sharply in 2006 and rose again (less sharply) in 2007, patient days didn't rise much because the jumps in admissions were partly offset by a drop in average length-of-stay (ALOS) from 5.5 days in 2005 to 5.3 days in 2006 and 5.2 days in 2007.

Average length-of-stay (ALOS) fell fairly steadily relative to the national average even as the Massachusetts excess fell and rose. ALOS fell from 105 percent of the national average in 1975 to 98 percent in 1996 and to 95 percent in 2007.

Considerable attention and effort has been invested in shortening ALOS in acute care hospitals. These have certainly come down both nationally and—even faster—in Massachusetts. ALOS here has been below the national average in

almost all years since 1991, and it fell in five of the last six years here. Indeed, ALOS in Massachusetts fell to 5.2 days in 2007, compared to the national average of 5.5 days. (See Appendix Table 5.)

The 2007 drop here put the ALOS 5.5 percent below the national average, down from 1.8 percent below in 2005. (See Appendix Table 5.) It may be that some hospitals worked to cut length-of-stay in 2006 to accommodate a rise in admissions—but this is speculative because it supposes saturation in 2005, which does not seem likely in light of the 74 percent occupancy rate prevailing in Massachusetts in 2005.<sup>52</sup> The Massachusetts ALOS in 2006 and 2007 was farther below the U.S. average than in all but two previous years. Thus, ALOS certainly did not contribute to the recent jump in costs.

ALOS, we suggest, is not a very good measure of efficiency because days saved when stays are trimmed are typically recuperative or pre-surgery testing days that are usually relatively inexpensive. When days are trimmed, average cost per day rises.

A hospital's occupancy rate and average-length-of-stay have long been viewed as measures of efficiency. Massachusetts occupancy rates have remained at 110 percent of the national average in 1975, 1996, and 2007. As with ALOS, this purported measure of efficiency is useless in explaining changes in the Massachusetts excess.

In 2006 and 2007, Massachusetts' occupancy rate was substantially above the national average (see Appendix Table 4) and average-length-of-stay here was somewhat shorter than the national figure. Further, occupancy in Massachusetts has exceeded the U.S. average consistently since 1960, and the length of stay has been shorter than average for many years. So, clearly, neither factor can help explain either endemic higher costs per person here or the 2006 jump in costs.

High occupancy is traditionally viewed as a sign of efficiency, because beds are not standing empty. But occupancy rate is not a very good measure of efficiency today, for several reasons.

One reason why *occupancy doesn't measure efficiency* is that occupancy rate is supposed to be calculated by dividing average daily census (the number of inpatients a hospital has each day, averaged for the year) by beds set-up-and-staffed—beds actually available for use on a given day. The national 66.6 percent occupancy rate in 2007 simply can't reflect average daily census divided by beds set-up-and-staffed because no hospital currently staffs beds on a given day unless they are expected to be used on that day. We suspect that many hospitals are still reporting licensed beds in place of beds set-up-and-staffed.

We don't know whether this is less common in Massachusetts, where the 2007 state-wide occupancy rate was 72.9 percent, 9.6 percent above the U.S. average. (See Appendix Table 4.)

Other reasons why occupancy rates don't measure efficiency are that a high occupancy rate may reflect a low bed-to-population ratio, or excessive admissions, or hospital stays that are longer than needed, on average. For example, if a hospital or region has high occupancy because patients are admitted inappropriately, that boosts revenue (so the hospital may seem to be doing well), but it boosts costs needlessly for all who pay for care.

Perhaps more important, once beds are built—whether needed or not—the fixed or sunk cost of construction is a surprisingly small share of the cost of hospital care. So spreading this fixed cost over more patients, while a good thing, may not be a very important way to lower the costs of hospital care.

**c. Surgery.** An excess in the number of surgeries per 1,000 people in Massachusetts hospitals does help to explain the long-standing excess in hospital costs per person. A higher rate of surgeries here is one important indication that high costs here reflect more elaborate, intensive services. The Massachusetts surgery rate was 11 percent above the U.S. average in both 1975 and 1996, so it can't help to explain the constricting excess in costs between those years. But it rose to 18 percent above the U.S. by 2007.

In-hospital surgery rates in Massachusetts have been 10 percent or more above the U.S. average in almost every year since 1980. (See Appendix Table 6.) The gap grew from a 1997 low to a 2004 peak excess of 24.7 percent. And our surgery rate was more than 20 percent above the U.S. average from 2004-2006, an excess matched only in one previous year.

However, changes in the surgery rate here don't help explain the 2006 and 2007 jumps in the excess costs of Massachusetts hospital care. That's because the hospital-based rate of surgeries actually dropped slightly faster in Massachusetts in 2006 and 2007 than the national decline in hospital surgeries. So in 2007, our rate stood at 17.7 percent above the national average.

Costs and hospital admissions rose here sharply in 2006 even though the absolute number of inpatient surgeries in Massachusetts hospitals reportedly dropped about 10 percent in 2006, while the number nationwide dropped very slightly.

In recent decades, insurers have pushed to shift a large share of surgeries from inpatient to outpatient settings (in hospitals or elsewhere). Many observers have assumed that shift would help lower costs. It's worth noting, therefore, that (as Exhibit 17 shows) the outpatient share of hospital-based surgeries is higher in Massachusetts than nationally.

**Exhibit 17**

**Outpatient Share of Hospital Surgical Operations,  
Massachusetts and United States, 2007**

	Inpatient Surgeries	Outpatient Surgeries	Total Surgical Operations	Outpatient Share of Total Surgeries
Massachusetts 2007	229,481	462,064	691,545	66.8%
2006	201,727	515,027	716,754	71.9%
2005	222,012	507,335	729,347	69.6%
United States 2007	10,189,630	17,146,334	27,335,964	62.7%
2006	10,095,683	17,235,141	27,330,824	63.1%
2005	10,097,271	17,445,587	27,542,858	63.3%

Source: American Hospital Association. *Hospital Statistics, 2009 edition*, Tables 3 and 6.

**d. Use of outpatient care.** On the outpatient side, use of the emergency room in Massachusetts dropped from a 1975 rate 44 percent above the U.S. average to 20 percent above in 1996. It rose slightly to 23 percent above the U.S. in 2007.

The drop in the Massachusetts rate of ER use relative to the national average from 1975 to 1996 is dramatic. Why did this happen? Is it associated with a drop in need for ER care or in demand for that care—perhaps associated with patients’ real or perceived understandings of some managed care organizations’ requirements for prior approval of ER visits? Is it associated with the closing of some hospitals and ERs?

ER use jumped greatly in 2006, by almost 275,000 visits. That boosted the excess in our ER use rate (visits per 1,000 people) from 14.5 percent above the national average in 2005 to 22.6 percent above in 2006. That does not appear to have been a data anomaly, as the 2007 excess was similar.

This is a remarkable reversal of a fairly steady trend over a quarter-century. Generally, the Massachusetts excess in rates of ER use had declined from a 50-60 percent excess in the early 1980s, to a 30-40 percent excess in the mid-

1980s and early 1990s, to a 14-20 percent excess in the mid-1990s and early 2000s. (See Appendix Table 7.) The Massachusetts excess declined because our ER use rate fell in most years since 1980 while the national ER use rate rose in most of those years.

In 2006, the ER use rate nationally rose by 2.2 percent, but the use rate in Massachusetts jumped by 9.4 percent. In 2007, the rates here and nationally each rose just over 1 percent.

This rise in ER use directly imposes a substantial cost on hospitals. Also, since many patients who visit the ER are subsequently admitted to the hospital, the rise in ER visits in 2006 may help to explain the rise in admissions and therefore in inpatient hospital costs. But what are the underlying forces that propel the dramatic rise in ER visits in only one year? Also, in 2006, ER visits rose much faster than admissions (9.4 percent vs. 4.4 percent), so independent forces are clearly at play on the ER side.

A very high rate of use of non-emergency outpatient care has long been responsible for much of the high spending on hospital care in Massachusetts. The rate of non-emergency visits to Massachusetts hospitals dipped slightly from 142 percent of the U.S. average in 1975 to 139 percent in 1996, but then soared to 158 percent in 2007.

During the past decade, the Massachusetts excess in *non-emergency* outpatient care was generally three times as large as the state's excess rate of emergency room use.

The Massachusetts rate of non-emergency outpatient visits per 1,000 residents has hovered very close to three-fifths above the U.S. average since 2000. In both 2006 and 2007, our use rate and our excess over the national use rate rose so slightly that it does not help explain the jump in the overall cost excess in that year. (See Appendix Table 8.)

As will be discussed later, the heavy reliance on hospitals in Massachusetts for outpatient physician services is particularly surprising in light of the large numbers of physicians in office-based (non-hospital) practices in this state. Moreover, the state's excess over the national average in both office-based and total physicians per 1,000 residents has grown steadily over the years.

**e. Number of hospital employees.** Turning to hospital workers, we find a mixed picture.

Compared with hospitals nationwide, Massachusetts long had an excess in hospitals' rate of use of full-time-equivalent (FTE) registered nurses per 1,000

people. But that excess dropped fairly steadily from 58 percent above the U.S. average in 1975 to 11 percent above in 1998—and since then has generally hovered 12-16 percent above the U.S. average. The excess probably reflected, in part, lower rates of use of licensed practical nurses in Massachusetts than nationally, though the importance of this factor seems to have diminished over the years.

Because our excess shrank slightly in 2006, use of nurses per 1,000 residents of the Commonwealth can't help to explain any of this state's rise in hospital costs in 2006. (See Appendix Table 11.) But in 2007, hospital employment of RNs rose far faster here than nationally (up 10.8 percent here versus 3.6 percent nationally), with this state's use rate jumping to 21.7 percent above the U.S. average. This may have been one component of the 2007 rise in cost.

We can speculate that the 2007 jump may have been, in part, a somewhat lagged response to the rise in admissions during the previous year. Hospitals' increased revenues and margins also may have encouraged them to put more resources into trying to recruit and retain nurses.

Another possible influence—nurse staffing levels were facing intensified scrutiny in several forms, which may have prompted some hospitals here to try harder to improve nurse staffing levels. There was more than simply discussion by the media, legislators, the Massachusetts Nurses Association, and others of the hazards of understaffing. Going beyond mere words, hospitals may have boosted staffing as they sought to prevent the possible passage of heatedly-fought legislation that would set minimum nurse staffing ratios.

Further, on a Massachusetts Hospital Association website, after posting their planned staffing levels for various inpatient units in 2006, the state's hospitals in early 2007 for the first time reported on the previous year's actual staffing levels. While this potential for public exposure of under-staffing may also have spurred some hospitals to try to improve staffing, we are skeptical of this explanation in light of the difficulty of using the website to understand or compare hospital staffing levels.<sup>53</sup>

The ratio of total hospital employees per 1,000 people in Massachusetts fell from a 39 percent excess over the U.S. ratio in 1975 to a 25 percent excess in 1996, but then rose back to a 38 percent excess in 2007. Hospital staffing levels therefore seem to be centrally associated with the U-shaped curve of the Massachusetts excess over the national average from 1975 to 2007.

With employee pay and benefits historically equal to one-half of hospital expenses, hospital employment per 1,000 residents of the Commonwealth is inevitably closely tied to the overall Massachusetts hospital cost excess. And, as

we will see, the number of employees has been much more salient than average pay per employee.

Interestingly, the rise in the ratio of employees per 1,000 people from 2005 to 2006 did little more than offset the decline from 2003 to 2005. Generally, this ratio simply remained high—29.2 percent in excess of the national ratio. Like the rate of surgery per 1,000 people, it helps explain the state's long-standing pattern of high costs but not the 2006 jump in costs (Appendix Table 12.)

In 2007, however, the ratio of hospital staffing to population in Massachusetts rose sharply by 8.8 percent, by far the largest one-year rise seen here or nationally in AHA data. That jump contrasts with the year's 1.8 percent rise for the U.S. as a whole. The Massachusetts increase reflected the addition of 11,000 jobs—remarkably, nearly one-tenth of all hospital jobs added nationwide in 2007. That drove hospital staffing here to 38.1 percent above the U.S. average—the biggest excess since 1985. As with RNs, we can speculate that the 2007 jump in Massachusetts hospital staffing may have been, in part, a somewhat lagged response to the rise in admissions during the previous year.

Although this does not pertain to the cost excess, it is important to note that hospital staffing ratios both in Massachusetts and nationally hit record highs in 2007.

There is no reason to think that the high ratio of hospital staffing to population in Massachusetts means that hospital workers here are under-worked and sitting idle. To the extent that hospitals in Massachusetts have higher than average rates of admission and surgery, and to the extent that physicians in our teaching facility-dominated hospitals practice a more intensive and elaborate style of medicine than the national average, hospital workers here are kept busy. If more of the population here becomes hospital patients, and if more is done to or for the patients in our hospitals than average, then more work is being generated for hospital staff to do. Although many of those additional services may be inappropriate, unnecessary care, the shape of care is driven by physician orders, not by frontline staff themselves.

Massachusetts' excess in salaries (non-resident/non-trainee) hospital physicians per 1,000 people has long been extraordinarily large. Our state's hospitals employed almost three times as many (283 percent) physicians per 1,000 people as did hospitals nationally in 2006 and more than three times in 2007 (335 percent). Please refer to Appendix Table 10. Massachusetts ranked 4<sup>th</sup> among the states in salaried hospital physicians per 1,000 residents of the state in 2006. These figures are remarkably unstable from year to year, so the data on annual changes are probably unreliable, but over the past 30 years, physician employment in hospitals here per 1,000 residents was consistently at least two-and-one-half times the national average.

Similarly, Massachusetts hospitals rank very high in medical residents (trainees) per 1,000 people. In 2006, for example, we were 3<sup>rd</sup>-highest in the nation, just behind New York State and Rhode Island.

Massachusetts hospitals employ many more salaried hospital physicians of both types than hospitals do nationwide—probably because we have more teaching hospitals and fewer of the community hospitals dominated by private practice community physicians with admitting privileges.

Thus, the number of salaried hospital physicians per 1,000 people residing in the state has not been associated with the rise and fall in the Massachusetts excess. But the cost of salaries for attending and resident/trainee physicians is included with costs of hospital care in federal government data on health care spending, not with physician costs. This is one small factor that consistently makes hospital costs here higher than in other states.

**f. Payroll and benefit costs per resident.** Hospital payroll costs per resident of the state fell from an excess of 58 percent above the U.S. average in 1975 to a low of 32 percent above in 1996, but rose back to a 56 percent excess in 1997—a U-shaped arc generally paralleling the state's overall cost excess.

Payroll costs jumped by an aggregate \$765 million in 2006 statewide, and \$550 million more in 2007. That meant a rise of 11.4 percent per resident of Massachusetts in 2006—or \$118 for each resident of the state. Nationally, payroll costs rose only half as fast (5.8 percent) as in Massachusetts, and from a lower base—so the added cost in 2006 equaled \$42 per American. This propelled the Massachusetts excess in hospital payroll costs per person to 52.0 percent above the U.S. ratio in 2006—\$1,154 per person here versus \$759 nationally, up from a 44.5 percent excess in 2005. (See Appendix Table 13.) That was the first time since the 1970s that this gap topped 50 percent. In 2007, hospital payroll costs again rose substantially faster here than nationally, so the Massachusetts excess climbed further, to 55.8 percent, confirming the trend.

But the question that remains unanswered is why did the Massachusetts excess in hospital payroll costs per resident reach such a high level in 2006 and 2007 (which was the third-highest year ever reported here)? The following sections address some of the factors involved.

The rise in hospital employees per 1,000 residents of the Commonwealth, noted just above, is salient. Indeed, as seen below, it appears the dominant factor.

Additionally, hospital fringe benefit costs per resident had a somewhat similar arc. The data were not available for 1975, but in 1980, benefit costs per Massachusetts resident were 45 percent above the U.S. average, falling to a 23 percent excess in 1996 and then rising, before dropping to a low of 20 percent in 2002—then in just five years, soaring back up to a 45 percent excess in 2007. Trends in benefit costs per resident were driven mainly by the number of employees paid fringe benefits.

Benefits per state resident also rose dramatically in 2006, more than twice as fast as the national increase. That drove our excess from 27.2 percent above the U.S. average in 2005 to 37.5 percent above the U.S. average in 2006, the largest gap since 1993. (See Appendix Table 14.) And in 2007, benefit costs in Massachusetts rose far more than the national average, pushing our excess in hospital benefit costs per resident to 44.7 percent, the second-highest recorded since such data became available in 1980.

Not surprisingly, hospital labor costs (payroll plus benefits) per resident, fell from a 48.1 percent excess in 1980 to a 30.5 percent excess in 1996 and rose to 49.1 percent above the national average in 2006—the highest excess then recorded. They rose further to a new high in 2007, 53.5 percent above the U.S. average. (See Appendix Table 15.)

In 2007, hospital labor costs per resident in Massachusetts were \$1,526 per person, \$532 more per person than the U.S. costs of \$994 per person.

By performing a Massachusetts – U.S.A. variance analysis, we calculated that the number of hospital employees per Massachusetts resident explained a much greater share of this \$532 per resident gap than did labor cost per hospital employee.<sup>54</sup>

- ***About 71 percent of the 2007 Massachusetts excess in hospital labor costs per resident was attributable to higher rates of hospital employment per 1,000 people in Massachusetts.***
- ***Only about 29 percent of this excess in hospital labor costs per person was attributable to higher payroll plus benefits per employee in Massachusetts hospitals.***

In 2006, the rate of hospital employment per 1,000 state residents here explained about two-thirds of the total gap in hospital labor costs per resident. In 2007, thus, the higher number of hospital employees per 1,000 residents in Massachusetts was accountable for a greater share of the gap in labor costs per resident than in 2006.

This distinction is important because some claim—as will be discussed later—that the high cost of living in Massachusetts is an important explanation for high labor costs specifically and high hospital costs generally. It appears, though, that higher staffing levels are more than twice as important as per worker payroll and benefit costs in explaining why hospital labor costs per resident here are so far above the national average.

**g. Payroll and benefit costs per worker.** Hospital payroll per worker (average pay per FTE hospital employee) fell from 114 percent of the U.S. average in 1975 to 105 percent in 1996 and rose back to 113 percent of the U.S. average in 2007 (with several other swings along the way).

Payroll per worker rose only slightly faster in Massachusetts than nationally from 2005 to 2006—increasing our excess to 17.7 percent above the U.S. average. It did not, therefore, play a prominent role in the 2006 jump in hospital expenses per person in Massachusetts.

Over the years since 1960, this excess averaged 9.5 percent. (See Appendix Table 17.) Pay in Massachusetts hospitals peaked at 19.1 percent above the U.S. average in 1991, and then hit a 40-year low in 2001 relative to the U.S. average, when pay per FTE here averaged only 0.2 percent above the level nationwide. Then we had five consecutive years of substantial increases in Massachusetts hospital pay per worker, putting pay here more than 15 percent above the U.S. average for the first time since the early 1990s.

But this five-year rise in the excess appears to have stopped in 2007. Average pay per FTE hospital worker in Massachusetts *fell* by 1.6 percent in 2007 (while the U.S. average rose 2.6 percent). That was only the second time this state has ever reported a drop in hospital workers' average pay. So the excess here declined to 12.8 percent—but that was still higher than in any year from 1994 to 2004.

(These data on payroll increases from year to year are not adjusted for inflation—but that does not affect the estimated Massachusetts excess.)

Note that this 2007 decline in average hospital worker pay in Massachusetts—which preceded the economy's collapse—may not reflect actual cuts in pay for most existing workers. It may instead reflect a shift in the skill mix of hospital workers employed here, with more of the 2007 hiring in lower-paid positions, or possibly a combination of lower starting pay for new workers with capped pay or low pay increases for existing workers.

Next consider fringe benefits per FTE employee. Benefits per employee were 105 percent of the U.S. average in 1980, 97 percent in 1996, and back to 105 percent in 2007. (See Appendix Table 18.)

As with pay per FTE, 2006 was a fifth year of very substantial increases in benefits costs per worker (9.0 percent here, and 5.0 percent nationally) that exceeded the U.S. average. But as with pay per worker, that trend stopped in 2007 (which saw only a 0.2 rise in benefit costs here.)

Remarkably, although some observers may assume that Massachusetts employers have liberal benefit policies overall, along with high health insurance costs, hospitals' benefit costs here per worker have generally hovered within 5 percent of the national average, except for a few years in the early 1990s. But Massachusetts hospitals had—strikingly—fallen 8-12 percent *below* the national average in spending on benefits per worker between 2001 and 2003 (years when hospital pay here was at or just above the U.S. average). This suggests that hospitals here may have more than offset high costs for workers' health insurance benefits by providing fewer benefits in some other respects than U.S. hospitals do on average.

Thus, in 2007, even though the state's new health insurance law was taking effect, there is little evidence that the mandate boosted hospitals' expenses for health insurance because more workers enrolled themselves or their families. (Still, it is possible that hospitals here offset increased health insurance costs by cutting other benefits.)

Combining the two, the overall Massachusetts excess in payroll plus benefits costs per worker was 15.4 percent in 2006, continuing a five-year steady rise from a level that had been slightly and transiently *below* the U.S. average in 2001. (See Appendix Table 19.) In 2007, this excess declined to 11.2 percent.

Generally, the labor share (payroll plus benefits) of total hospital expenses in Massachusetts has long been fairly close to the national average. The labor share of hospital costs here was four percent above the national average in 1980, peaked at seven percent above in 1989, drifted downward in the mid-1990s, then falling slightly below the U.S. average since 1997, but hovering just *below* the average in 2004-2007. (See Appendix Table 21.)

This and other evidence signal that both labor and non-labor costs contribute about equally to Massachusetts' high hospital costs per person.

And both contribute to the jump in excess Massachusetts hospital costs per person, although in 2006 the labor cost increase does so slightly more, while in 2007 the rise in non-labor costs was the bigger factor (as described below).

**h. Non-labor hospital costs.** Massachusetts hospitals face enormous excesses in both their labor and non-labor costs compared with the national average. Non-labor costs per resident were 137 percent of the U.S. average in 1980, 130 percent in 1996, but then jumped to a new high of 140 percent in 1997. They have remained at 139 percent or more of the U.S. average since then, and soared to an unprecedented 157 percent in 2007. (See Appendix Table 16.)

Hospital costs today in Massachusetts are closely divided between labor and non-labor costs, with labor costs representing 50.6 percent of the total in 2006 and 2007 (slightly lower than the national average share), and non-labor costs equaling 49.4 percent. (See Appendix Table 21.) Non-labor costs include all costs for hospitals other than besides payroll and benefits. These include depreciation and interest on capital projects, equipment, medications, medical supplies, food, insurance, utilities, and more.

Labor costs of hospitals here in 2007 totaled \$9.86 billion, and non-labor costs were \$9.62 billion. (See Appendix Tables 15 and 16.)

As Exhibit 18 indicates, the non-labor costs of Massachusetts hospitals per 1,000 people in 2006 exceeded the U.S. average by 46.7 percent. That was up from a 39.4 percent excess the year before, and was close to the 49.4 percent excess in 2006 labor costs per 1,000 people for hospitals here.

**Exhibit 18**

**Massachusetts Hospital Excess in Labor and Non-Labor Costs**

	Mass % above US	
	Labor cost/ 1000 residents	Non-labor cost/ 1000 residents
2005	41.0%	39.4%
2006	49.1%	46.7%
2007	53.5%	57.3%

Source: See Appendix Tables 15 and 16.

Non-labor costs of Massachusetts hospitals in 2006 rose a little faster (12.8 percent) than did their labor costs (12.0 percent). But the labor cost rise outpaced the U.S. by more, so it contributed slightly more to boosting the 2006

Massachusetts cost excess. Then in 2007, the situations reversed—labor costs rose faster in Massachusetts than non-labor costs did, but for the nation, non-labor costs per 1,000 residents actually fell, so the excess in our state’s non-labor costs jumped especially steeply.

It seems worth exploring which elements of Massachusetts hospitals’ non-labor costs have recently risen so much faster than the national average. For example, is hospital purchasing here less and less efficient relative to the national average? Or have hospital construction projects proliferated here more than average? <sup>55</sup> Have hospitals here been buying more new equipment than hospitals nationally? Are this state’s hospitals increasingly using costlier medications, or using more supplies and medications in the course of doing more surgeries and offering a more elaborate style of medical practice?

**i. Revenues and surpluses from 2002 to 2007.** As shown in a group of exhibits below (see Exhibit 19 and Exhibit 20), Massachusetts hospitals’ total revenues rose rapidly in 2003 and again in 2006 and 2007. Total hospital revenues statewide stayed substantially above expenses through 2007.

This constitutes the period with the highest and most consistent profits for Massachusetts hospitals during all the years from 1949 to 2007—and a fairly dramatic departure from past years (see Exhibit 21).

Between 2003 and 2007, Massachusetts hospitals enjoyed five years of total margins (surplus as percentage of total revenue) that were visibly greater than during any previous period. After several years of high revenue and surpluses, it is possible that hospitals began to spend money more freely. Thus, it is possible that higher revenues allowed Massachusetts hospitals to incur increased expenses in 2006 and 2007.

We expect that hospital total margins (surplus as a percentage of revenues) dropped substantially in Massachusetts and nationally during hospital fiscal year 2008, ending 30 September 2008 for most Massachusetts hospitals. In one view, even sharper drops are likely for 2009; in another view, some recovery is likely. The latter seems more persuasive so far. <sup>56</sup>

Across those years displayed in Exhibit 21 from 1959 to 2002,<sup>57</sup> total margins of U.S. hospitals averaged 4.3 percent, more than four times as high as Massachusetts hospitals’ average total margins of 1.0 percent.

But for the entire period from 2003 to 2007, the U.S. average total margin of 5.6 percent barely exceeded the Massachusetts average of 5.0 percent.

In 2003, for the first time ever among the years examined (beginning with 1959), Massachusetts hospitals’ total margins exceeded the hospital total margins for

the U.S. as a whole, as Exhibit 21 shows. During the five years from 2003 through 2007, hospitals here garnered a cumulative total surplus of almost \$4.4 billion, 5.0 percent of total revenue during the five years.

**The 6.2 percent total margin attained by Massachusetts hospitals in 2003 was higher than in any previous year. But it was surpassed by the 6.7 percent total margin here of 2007.**

Revenue growth may enable higher expenditures. Improved profitability during the five years from 2003 to 2007 and the factors contributing to it are worth examining closely. Even though higher revenues are clearly not a **component** of cost increases, they can **enable** hospitals to increase their expenditures.

From 2002 to 2003 alone, Massachusetts hospitals' total revenue rose by 15 percent (Exhibit 19). A 2005-2006 rise of 13.7 percent nearly matched that pace.

Three types of hospital revenue. Hospitals' revenue is customarily divided among three main categories:

- patient revenue,
- other operating revenue (research grants, parking, cafeteria, and gift shops), and
- non-operating revenue (interest and dividends on investments, capital gains, and unrestricted donations)—

Despite some year-to-year fluctuations between 2003 through 2007, no one type of revenue consistently dominated the growth in total revenue in Massachusetts. Patient revenue generally remained close to 85 percent of the total; other operating revenue, close to 13 percent; and non-operating revenue about 2 percent. (See Exhibit 19.)

Patient revenue is, of course, driven by the combination of volume and price. Data used here include substantial information on volume, but do not directly address prices paid to hospitals. When changes in revenue and volume are known, however, some information on prices can be deduced, as will be shown shortly. For example, if revenue and volume were both stable one year, average prices paid (revenue per unit) also must have been essentially stable.

Other operating revenue's share of total revenue was 12.6 percent in 2006 and 12.5 percent in 2007, just below the average of 13.1 percent prevailing between 2003 and 2007. Thus, other operating revenue—such as hospitals' income from research grants—does not seem to have substantially enabled or powered the surge in hospital expenditures in 2006 and 2007. Indeed, with net patient

revenue comprising about 85 percent of all hospital revenue in Massachusetts, the rate of its growth very powerfully shapes the growth in total revenue.

Other operating revenue did surge in 2006 but its level that year was actually a little lower than in 2003. It's worth noting that (even though it ranged only between 11.5 percent and 16.9 percent of the total) other operating revenue fluctuated greatly between 2002 and 2007. It rose 38 percent from 2002 to 2003, dropped 20.5 percent in 2004, dropped another 4.0 percent in 2005, rose by 23.6 percent in 2006, and rose by 9.4 percent in 2007.

Non-operating revenue rose by 67 percent from 2005 to 2006 and another 72.7 percent in 2007, but it still accounted for only 3.4 percent of total revenue in 2007. Still, the dollar rise from \$246 million in 2005 to \$710 million in 2007 (\$464 million or 188.6 percent in two years) was large enough to have a perceptible effect on total revenue.

The national distribution of hospital revenue was somewhat different during these years:

- Nationally, patient revenue averaged just over 92 percent of hospital revenue nationally between 2003 and 2007 (compared to 85 percent here).
- As will be discussed later, Massachusetts hospitals relied on other operating revenue—research grants in particular—for more than double the 5.7 percent share of total revenue that prevailed nationally from 2003 to 2007.
- Non-operating revenue provided almost exactly the same two percent share of total revenue in both this state and the entire nation between 2003 and 2007.

Exhibit 23 displays Massachusetts hospital revenue by type over the years.

Revenue and expense growth in Massachusetts, 2002-2003. As noted above, total hospital revenue in Massachusetts rose a remarkable 15 percent in 2003.

The rapid growth in *patient* revenue in 2003 over 2002 (9.9 percent) seems to have been driven mainly by price increases. We deduce this because inpatient admissions, patient-days, surgical operations, emergency room visits, and other outpatient visits grew very modestly. Other things equal, slow volume growth would be associated with slow growth in expenditures by hospitals. This first year of rapid revenue growth, unaccompanied by rapid volume increases, resulted in a rapid rise in total margins here.

Other operating revenue, which often exhibits substantial year-to-year fluctuations, rose by 38 percent.

The rapid growth in total revenue of 15 percent from 2002 to 2003 was devoted partly to financing an increased rate of growth in expenses and partly to building up hospital financial reserves. From 2002 to 2003, expenses rose by 7.9 percent. Statewide, hospitals' surpluses rose to almost \$1 billion in 2003. Again, please refer to Exhibit 19.

Revenue and expense growth, 2003-2005. In 2004 and 2005, the rate of rise in revenue in Massachusetts slowed markedly but in 2004 the rate of rise in expenses increased slightly, perhaps enabled or fueled partly by the revenue gains of the previous year. Total margins consequently fell. These two years mark a breathing space between the very rapid revenue growth of 2003 and the almost-as-fast growth of 2006.

Revenue and expense growth, 2006. In 2006, this state's hospital expenses jumped fully 12.4 percent (a rise of \$2 billion), but revenue growth was even faster, at 13.7 percent (for a rise of almost \$2.3 billion). Total margins eased up to 4.6 percent. The statewide hospital surplus was \$863 million.

All three types of revenue rose sharply in 2006, as shown in Exhibit 19. Net patient revenue was up fully 11.5 percent that year (the fastest rise in the 2002-2007 period), yet falling as a share of total revenue because of even bigger jumps in other revenue sources.

The big rise in 2006 patient revenue appears to have been at least partly volume driven—reflecting the year's 4.4 percent rise in the admission rate, noted earlier, along with the 9.4 percent rise in ER visits per 1,000 residents, and 2.4 percent rise in other outpatient visits. (Because patient revenue rose faster than any of these elements of patient volume, however, price increases or a shift in the mix of services must also have contributed to the revenue increases.)

The jump in expenses in 2006 seems to have stemmed

- in part from the increases in volumes of care from 2005 to 2006, just noted; and
- in part from hospitals' financial comfort with spending more money, stemming from several successive years of high revenue growth; this comfort may have been reinforced, at some hospitals, by anticipation of substantial Medicaid rate hikes called for by the new chapter 58 health law, passed early in April of 2006, just over one-half of the way through hospital fiscal year 2006. (Please recall that hospital fiscal year 2006 began on 1 October 2005.)

One-third of a century ago, Vladeck argued that non-profits tend to spend the money they receive.<sup>58</sup> Hospital margins here have been, historically, substantially lower than the U.S. average. This suggests that Vladeck's assertion has long been more true of Massachusetts hospitals than of hospitals

elsewhere. After many years of tight total margins, hospitals may have needed several years of strong revenue growth and rapidly accumulating surpluses (see Exhibits 19 and 22) before they would allow expenses to rise very rapidly.

Revenue growth, 2007. Massachusetts hospitals' revenue and cost increases slowed in 2007, but costs slowed slightly more. As a result, total margins moved up to 6.7 percent, for a statewide hospital surplus of fully \$1.4 billion. This 2007 revenue growth may have helped to enable a consolidation of 2006's rise in hospital costs per person and even a continued increase.

**Exhibit 19**  
**Massachusetts Hospital Revenues and Expenses, 2002 – 2007**  
**(\$ millions)**

	2002	2003	2004	2005	2006	2007	2003 to 2007
Net patient revenue	\$11,179	\$12,287	\$13,502	\$14,489	\$16,149	\$17,554	\$73,982
Other operating revenue	\$1,823	\$2,515	\$1,999	\$1,920	\$2,379	\$2,603	\$11,416
Non-operating revenue	-\$20	\$122	\$258	\$246	\$411	\$710	\$1,747
Total revenue (TR)	\$12,982	\$14,925	\$15,759	\$16,655	\$18,938	\$20,868	\$87,145
Total expenses	\$12,980	\$14,001	\$15,124	\$16,079	\$18,076	\$19,480	\$82,760
% rise from previous year in							
Net patient rev.		9.9%	9.9%	7.3%	11.5%	8.7%	57.0%
Other oper. rev.		38.0%	-20.5%	-4.0%	23.6%	9.4%	42.8%
Non-oper. rev.		-----	111.5%	-4.7%	67.0%	72.7%	-----
Total revenue		15.0%	5.6%	5.7%	13.7%	9.2%	60.7%
Expenses		7.9%	8.0%	6.3%	12.4%	7.8%	50.1%
% of revenue from							
Patients	86.1%	82.3%	85.7%	87.0%	85.3%	84.1%	84.9%
Other operating	14.0%	16.9%	12.7%	11.5%	12.6%	12.5%	13.1%
Non-operating	-0.2%	0.8%	1.6%	1.5%	2.2%	3.4%	2.0%
Operating surplus	\$22	\$802	\$377	\$329	\$452	\$677	\$2,637
Total surplus	\$2	\$924	\$635	\$575	\$863	\$1,388	\$4,385
Operating margin	0.17%	5.42%	2.43%	2.01%	2.44%	3.36%	3.09%
Total margin	0.02%	6.19%	4.03%	3.45%	4.55%	6.65%	5.03%

Sources: American Hospital Association, *Hospital Statistics*, various years.

Exhibit 20

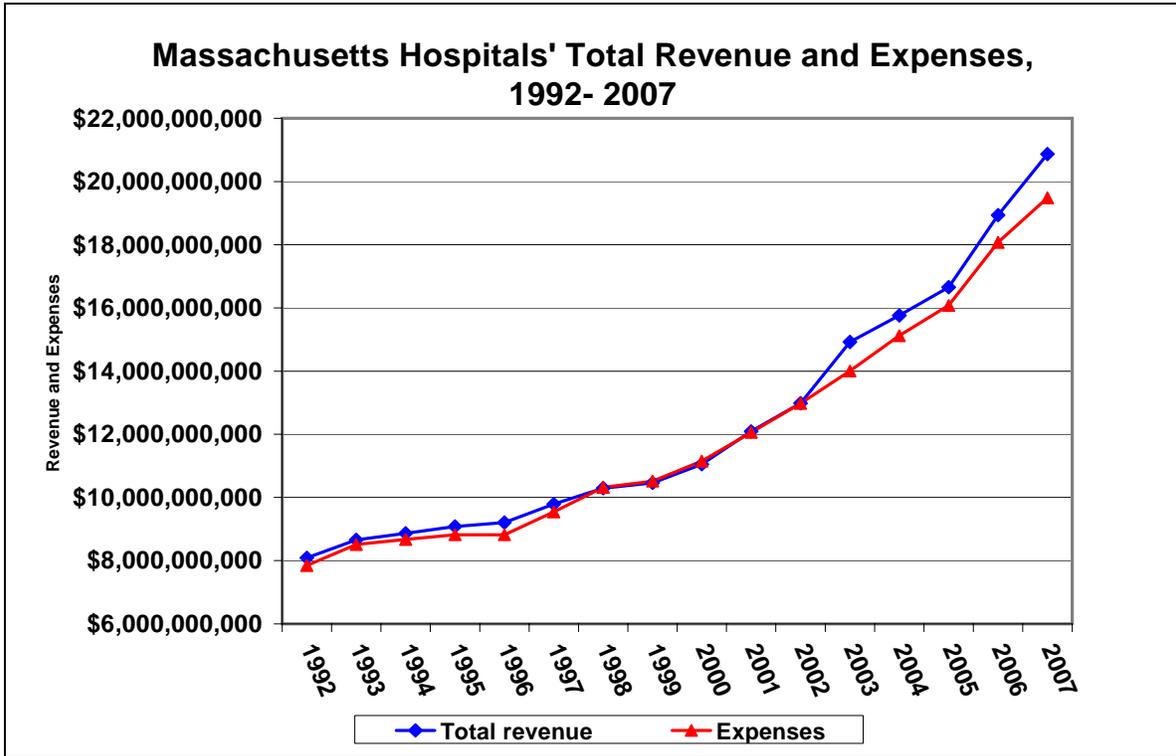


Exhibit 21

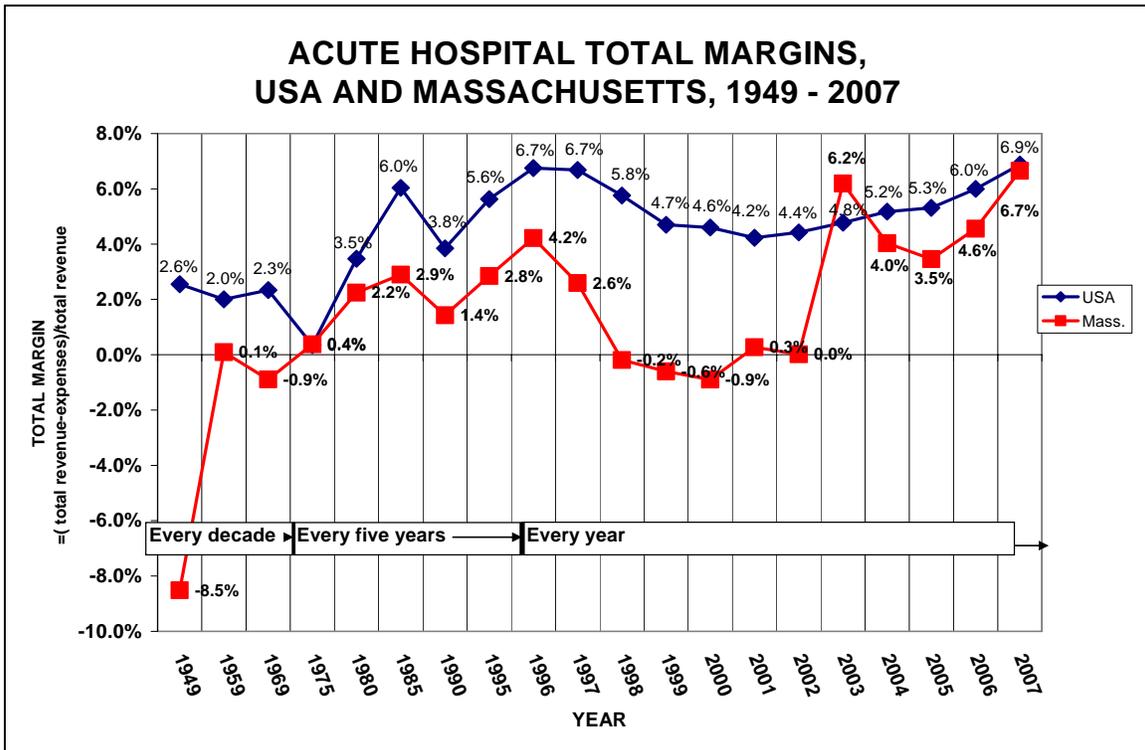


Exhibit 22

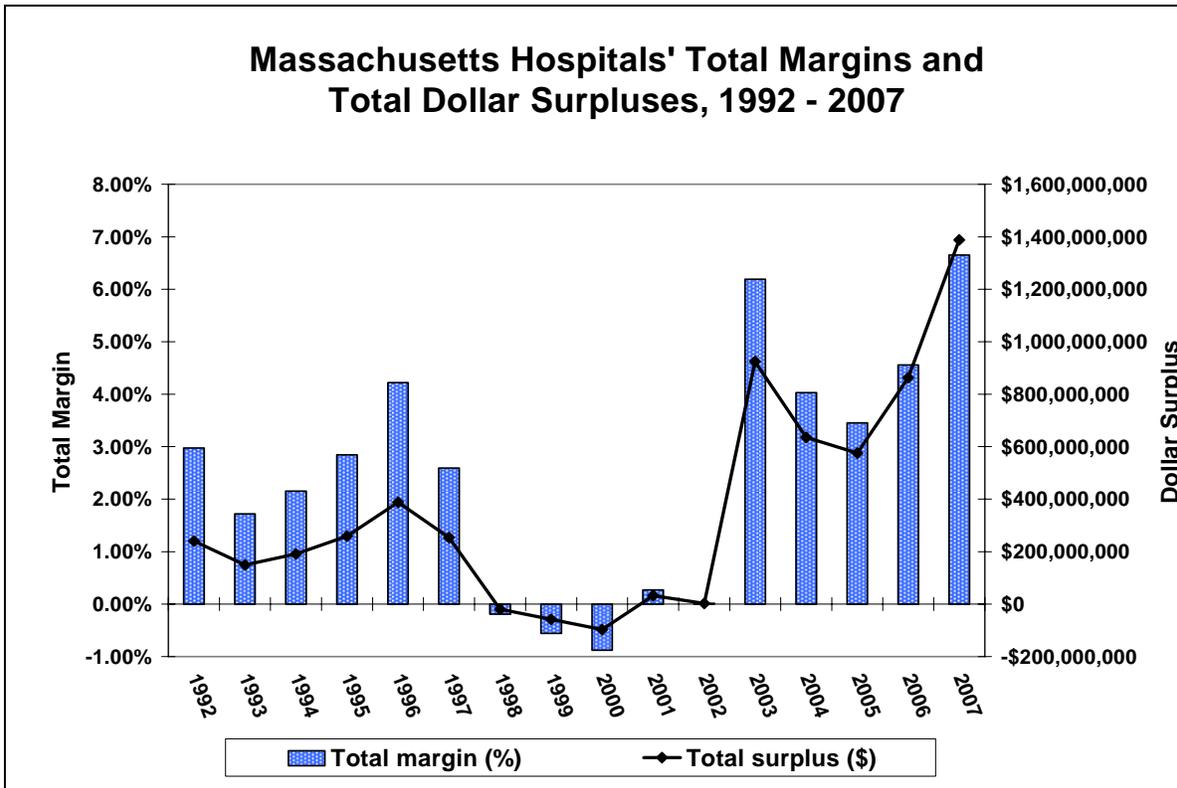
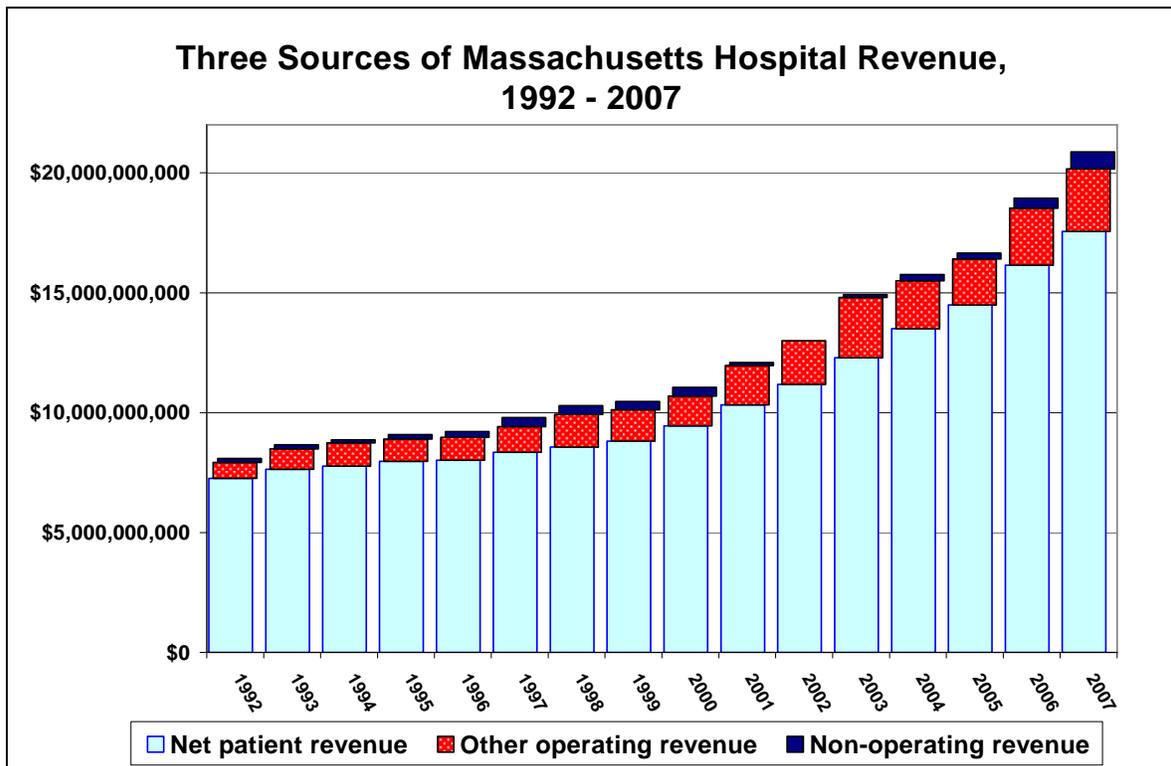


Exhibit 23



**j. Share of care provided in costly teaching hospitals.** We examine this across the states in 2004 and then over time in Massachusetts.

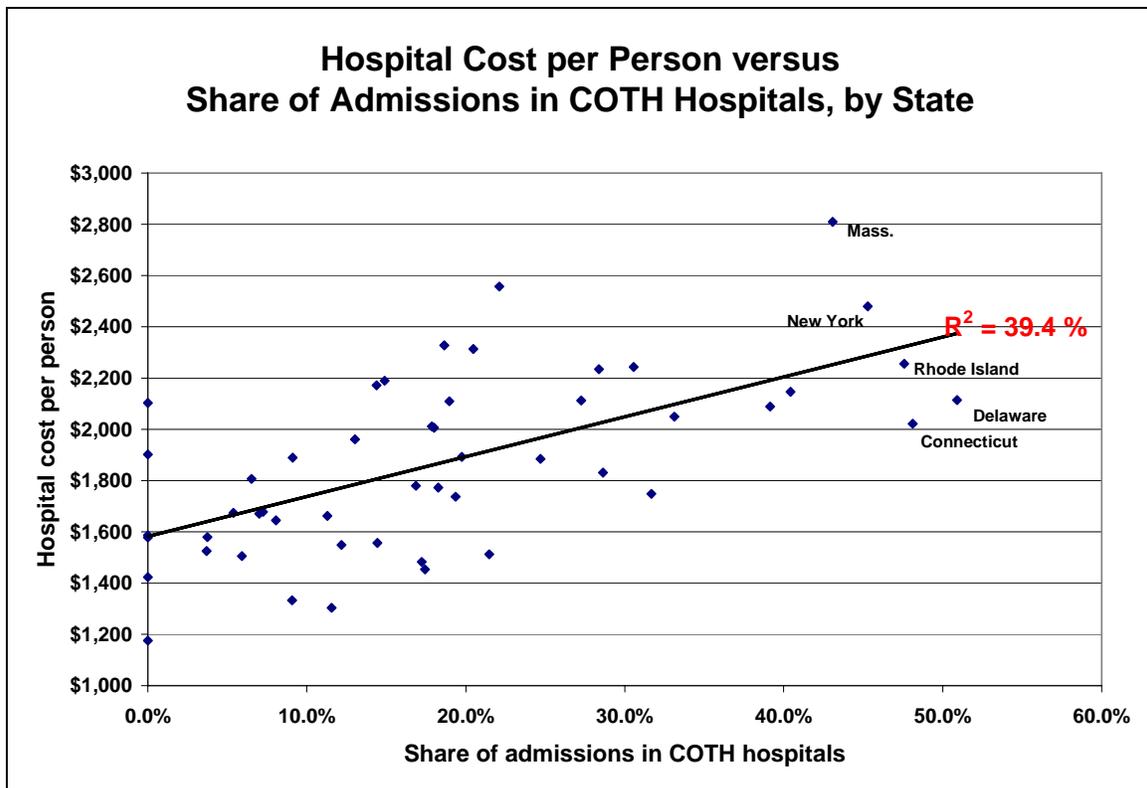
In 2004, this state was fifth-highest in the nation in the share of its hospital care provided in costly major teaching hospitals-- those belonging to the Council of Teaching Hospitals (COTH) of the American Association of Medical Colleges.

In 2004, fully 41.3 percent of acute care admissions in non-federal hospitals in Massachusetts were to COTH hospitals, fully double the national COTH share of 20.7 percent. This factor is helpful in explaining the long-standing pattern of high costs here.<sup>59</sup>

Nationally, some 270 individual non-federal acute care hospitals are members of COTH.<sup>60</sup> Of these, 14 hospitals, or five percent of all COTH hospitals, are located in Massachusetts, which has two percent of the nation's population.<sup>61</sup> These 14 teaching hospitals are one-fifth of the 73 non-federal acute hospitals in Massachusetts.

Interestingly, as shown in Exhibit 24, states' **hospital cost per person in 2006 was very closely correlated with COTH share of admissions in that state in 2004.** The  $R^2$  between the two was 39.4 percent, meaning that variation in either factor predicts (or statistically explains) 39.4 percent of the variation in the other.

**Exhibit 24**



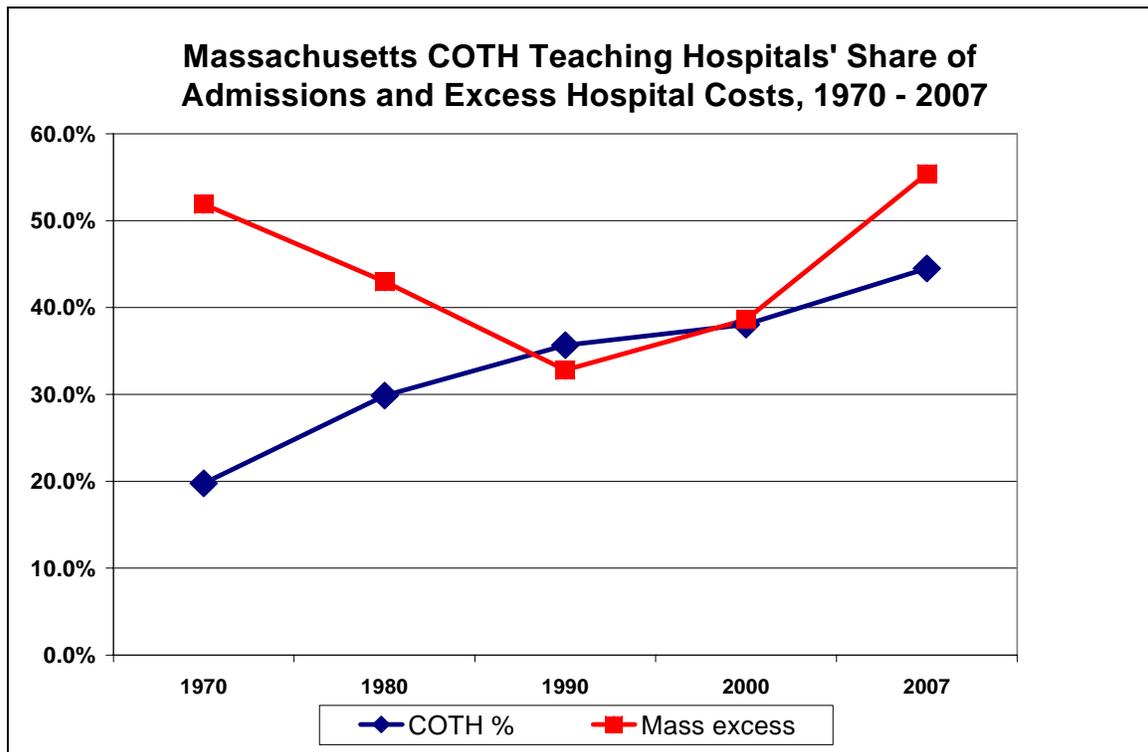
As Exhibit 25 shows, the share of Massachusetts hospital admissions in COTH hospitals rose fairly steadily from 1970 to 2007, looking every ten years, but the Massachusetts excess in per person hospital cost over the national average fell from 1970 to 1990 and then rose from 1990 to 2007.

Between 1970 and 1990, hospital costs per person here fell from 51.9 to 32.8 percent above the national average despite the rise in COTH hospitals' share of admissions here from 19.8 percent to 37.5 percent. But from 1990 to 2007, costs per person rose to 55.4 percent above the national average while the COTH hospitals' admissions share rose further to 44.5 percent.

We could conclude from Exhibit 25 that excess costs are unrelated to COTH hospitals' share of admissions. Alternatively, we might wonder whether different dynamics were at work early and late in the 37 years from 1970 to 2007.

- It might be that teaching hospitals' costs were closer to the all-hospital average in 1970.
- Alternatively, it could be that teaching hospitals worked to reduce their costs from 1970 to 1990 in the face of the state revenue regulation then in place, or fears of price competition from non-teaching hospitals, but that changed around 1990. They may have been much less worried about either regulation or competition after the repeal of rate regulation in 1988 and 1991, and the closing of many hospitals and the merging of many of the survivors in the 1990s. Certainly, this explanation is in closer accord with the cross-sectional multi-state data from 2004 shown in Exhibit 24.

**Exhibit 25**



**Summary: Massachusetts hospital characteristics' associations with cost**

Exhibit 26 summarizes the main factors long associated with high hospital costs per capita in this state and those associated with the 2006 and 2007 jumps in costs.

**Exhibit 26**

**Analysis of Main Hospital Characteristics Reported by AHA—  
Are They Associated with Longstanding Higher Massachusetts Costs or  
with 2006 or 2007 Rise?**

Hospital characteristic	Long associated with high costs?	Associated with 2006 or 2007 Rises?	Comments—Massachusetts hospitals relative to U.S. average
Beds/1,000 residents	No	No	Long below U.S. ratio
Admissions/1,000 residents	No	Yes	Jumped substantially in 2006, 11% above U.S. ratio in 2007
Inpatient days/1,000	No	No	Close to U.S. ratio
Average length-of-stay	No	No	Long below U.S. ratio
Occupancy rate	No	No	Long above U.S., but measure not related to costs
Surgery rate/1,000 residents	Yes	No	Well above U.S. for decades
ER visits/1,000 residents	Yes	Yes	Decades of decline to 15% above U.S. in 2004 but jump to 23% excess in 2006
Other outpatient visits/ 1,000	Yes	No	Some 60% above U.S. since 2001
Salaried physicians/1,000	Yes	No	Long triple the U.S. ratio
RNs/1000 residents	Yes	Yes	Decades of decline to 14% above U.S. in 2005+2006 but jumped to 22% excess in 2007; partly offset by lower rates of LPN use here
Total personnel/1,000 residents	Yes	Yes	Long about 30% above U.S. but jumped from 24% excess in 2005 to 38% in 2007
Hospital Payroll cost/Mass. resident	Yes	Yes	Decades of decline but jumped from 45% excess in 2005 to 52% in 2006 and 56% in 2007
Benefit cost for hospital workers/Mass. resident	Yes	Yes	Decades of decline but jumped from 27% excess in 2005 to 38% in 2006 to 45% in 2007
Payroll + benefit cost/Mass. resident	Yes	Yes	Decades of decline but jumped from 41% excess in 2005 to 49% in 2006 to 54% in 2007
Average pay/FTE worker	No	No	About 10% excess for decades
Benefits/FTE worker	No	No	Close to U.S. most years
Pay + benefits % expenses	No	No	Very close to U.S. most years
Non-labor cost/capita	Yes	Yes	Plateau at 39% excess in 2005, rise to new peak, 47% excess in 2006 and 57% in 2007—partly driven by volume

Source: Authors' analysis of ratios calculated from American Hospital Association data.

Exhibit 27 compares the excesses here in 1975, 1996, and 2007, and considers the long-term drop and then rise in the Massachusetts hospital cost excess.

**Exhibit 27**  
**Summary of Main Hospital Characteristics in 1975, 1996, and 2007, and Association with Long-term Drop and Rise in Massachusetts Excess Cost**

Hospital characteristic	Mass. % of U.S. in			Comments—Mass. hospitals relative to U.S. average in '75, '96, '07, as excess cost dropped, then rose
	1975	1996	2007	
Beds/1,000 residents	107%	91%	96%	Drop coincided with lower excess
<b>Admissions/1,000 residents</b>	102%	102%	<b>111%</b>	Jumped substantially in 2006, 11% above U.S. ratio in 2007
Inpatient days/1,000	112%	99%	105%	Follows admissions, length-of-stay
Average length-of-stay	110%	98%	95%	Fell with excess but did not rise again
Occupancy rate	105%	110%	110%	Long above U.S., but measure not related to costs
Surgery rate/1,000	111%	111%	118%	Well above U.S. for decades
<b>ER visits/1,000 residents</b>	<b>144%</b>	<b>120%</b>	123%	Durable excess, associated with drop but not really with rise
<b>Other outpatient visits/K</b>	142%	139%	<b>158%</b>	Associated not with drop, but with rise
<b>Total outpatient visits/K</b>	<b>143%</b>	<b>135%</b>	<b>151%</b>	Mainly driven by non-ER visits
Salaried physicians/1,000	351%	363%	335%	
<b>RNs/1,000 residents</b>	<b>158%</b>	<b>114%</b>	<b>122%</b>	Fell for decades from 58% to 14% above U.S. in 2006; jumped to 22% in 2007—rose from staffing issue push?
<b>Total personnel/1,000 residents</b>	<b>139%</b>	<b>126%</b>	<b>138%</b>	Dipped with drop in volume excess from 1975 to 1996; jumped sharply from 24% excess in 2005 to 38% in 2007
<b>Hospital payroll cost/Mass. resident</b>	<b>158%</b>	<b>132%</b>	<b>156%</b>	Fell for decades; jumped from 45% excess in 2005 to 56% in 2007; driven by personnel, not wages per worker
Benefit costs for hospital workers/Mass. resident *	145%	123%	145%	Decades of decline but jumped from 27% excess in 2005 to 38% in 2006 to 45% in 2007
Payroll + benefit cost/Mass. resident *	148%	131%	154%	Decades of decline but jumped from 41% excess in 2005 to 49% in 2006 to 54% in 2007
<b>Average pay/FTE worker</b>	<b>114%</b>	<b>105%</b>	<b>113%</b>	About 10% excess for decades
<b>Benefits/FTE worker *</b>	105%	97%	<b>105%</b>	Close to U.S. most years
Pay + benefits % of expenses*	104%	100%	99%	
<b>Non-labor cost/Mass. resident *</b>	137%	130%	<b>157%</b>	Plateau at 39% excess in 2005, rise to new peak, 47% excess in 2006 and 57% in 2007—partly driven by volume
<b>Hospital expenses/person</b>	<b>152%</b>	<b>130%</b>	<b>155%</b>	

Source: Authors' analysis of ratios calculated from American Hospital Association data.

Note: \* = 1980 (1975 not available). The **bold typeface** highlights factors that appear to be associated with the fall and multi-year rise in excess Massachusetts hospital costs.

**Exhibit 28**

**Characteristics of Hospital Resources, Use, and Costs,  
Massachusetts versus the Nation, 2007, with State Rank**

	USA	Massachusetts	Mass. as % of USA	Mass. rank among states, 2007
Cost/person	\$1,941	\$3,015	155.4%	1
Beds/1,000 people	2.7	2.6	96%	29
Admissions/1,000	118	130	111%	13
Inpatient-days/1,000	647	680	105%	19
Average length-of-stay	5.5	5.2	95%	29
Occupancy rate	66.6%	72.9%	110%	7
Surgeries/1000	91	107	118%	16
ER visits/1000	402	493	123%	8
Other outpatient visits/1000	1,605	2,537	158%	7
Salaried physicians/1,000	0.30	0.99	335%	2
RN FTEs/1,000	3.96	4.82	122%	10
Total personnel/1,000	14.9	20.5	138%	4
Payroll + benefits/FTE	\$66,905	\$74,385	111%	10
Payroll + benefit costs/ people	\$994	\$1,526	154%	1
Non-labor costs/capita	\$947	\$1,489	157%	1
COTH % beds, 2004	18.5%	38.1%	206%	5
COTH % admissions, 2004	20.7%	43.1%	208%	5
Med. resident FTEs/1,000 people	0.30	0.74	241%	3
Operating margin	4.3%	3.4%	79%	37
Total margin	6.9%	6.7%	97%	31

**Notes:** Populations were estimated as of 1 April 2007. They were calculated from 1 July 2006 and 1 July 2007 U.S. Census Bureau estimates. ER is emergency room. OPD is hospital outpatient department. FTE is full-time equivalent. COTH is Council of Teaching Hospitals of the American Association of Medical Colleges; these are generally the major teaching hospitals. In state ranks, 1 = highest.

**Sources:** American Hospital Association, *Hospital Statistics, 2009 Edition*, Chicago: American Hospital Publishing, 2008, Tables 3, 6, and 8; and American Association of Medical Colleges, personal communication.

Exhibit 28 complements Exhibits 26 and 27 by summarizing U.S. and Massachusetts values for factors that may be associated with high or rising hospital costs per person in Massachusetts, along with this state's figures as a percentage of the national average and the Massachusetts rank among all states. It also includes financial margins and other variables of interest.

### **Discussion of hospital characteristics long associated with high costs in Massachusetts, or associated with 2006 jump or 2007 rise**

As summarized in Exhibits 26, 27, and 28, we find that certain hospital characteristics have been long associated with the state's high costs or with the recent rise in this state's excess.

We also find evidence that certain characteristics apparently are not associated with high costs even though others often perceive them as causes of high costs. This discussion also notes how Massachusetts ranks among states (Exhibit 28).

Inpatient care. Excess hospital beds per 1,000 people can't be a factor in this state's excess hospital costs. The state's bed-to-population ratio has long and consistently been below the national average. (See Appendix Table 1.) We rank 29<sup>th</sup> among the states in beds per 1,000 people. (Exhibit 48 in a later section illustrates the correlation between bed supply and costs among the states.)

The rate of hospital admissions per 1,000 people has long been very close to the national average. It jumped substantially in 2006. Massachusetts ranked 13<sup>th</sup> among the states in its 2007 rate of hospital admissions per 1,000 people.

Average length-of-stay in hospitals has long been below the national average. We ranked 29<sup>th</sup> in 2007. But this has probably done little to reduce the cost of hospital care, since inpatient days that can be trimmed to shorten length-of-stay are typically recuperative, and these are inexpensive for the hospital to provide.

The combination of a higher admission rate and a lower average length-of-stay made for a slightly above-average number of inpatient-days per 1,000 people in 2007 in Massachusetts hospitals; we ranked 19<sup>th</sup> among the states.

Fewer beds and slightly more inpatient-days made for an above-average occupancy rate, 10 percent above the national average in 2007 and 7<sup>th</sup>-highest among the states. Some people make much of occupancy rates; we do not. The cost of building the beds themselves is a sunk (fixed) cost. There is no added cost unless they are occupied and staffed. Empty beds are not staffed—no hospital can afford to do so. Therefore, there's not much reason to worry about the cost of empty beds. That's no reason to build beds that won't be needed. On the other hand, because empty beds cost little to maintain, it is wise

and conservative to refrain from closing beds or hospitals that might be needed in the future—whether because of long-term aging of the population, or because a crisis might temporarily bring a need for hospital surge capacity.

Surgery. Our state's rate of hospital-based surgery per 1,000 people has long been substantially above the national average, so it has been a factor long associated with high hospital costs per person here. The rate here fell relative to the U.S. average in 2006 and 2007, so it has no role in explaining the jump in excess hospital costs per person in 2006. Our state's surgery rate was 16<sup>th</sup> among the states in 2007.

Outpatient care. The rate of ER visits per 1,000 people has long been high here, and therefore long associated with high hospital costs per person. It had been gradually declining relative to the national average for decades but this was sharply reversed by a jump in 2006. We were 8<sup>th</sup> among the states in 2007.

The rate of other (non-ER) outpatient visits per 1,000 people has long been two-fifths to three-fifths above the national average. It is not associated with the jump in costs in 2006. We ranked 7<sup>th</sup> among the states in 2007.

Staffing levels/numbers of personnel. Massachusetts hospitals have long employed many more salaried physicians per 1,000 people than hospitals nationally. This factor has long helped slightly to explain high costs here; it does not help to explain the 2006 jump in costs. In 2007, our rate was triple the national average and we ranked second among the states.

The number of FTE registered nurses per 1,000 people in Massachusetts hospitals has long been well above the national average, though it had been trending down for many years. It was not associated with the rise in costs in 2006 but it jumped sharply in 2007, perhaps in response to the sharp rise in the numbers of admissions and ER visits in 2006. We were 22 percent above the national average in RNs per 1,000 people in 2007 and ranked 10<sup>th</sup>-highest among the states.

Total hospital FTE employees or personnel per 1,000 people has ranged between one-quarter and one-third above the national average since 1960. It jumped from near the bottom end of this range, a 24 percent excess, in 2005 to a 29 percent excess in 2006, and to a 38 percent excess in 2007—the greatest excess recorded since the early 1980s. On the labor side of hospital costs, it is the number of hospital employees per 1,000 people in the state—not salary or benefits per employee—that is both long associated with high hospital costs per Massachusetts resident and also with the 2006 jump in the cost excess and the

2007 consolidation. In 2007, our ratio of hospital employees per 1,000 people was 40 percent above the national average, ranking us 4<sup>th</sup> among the states.

By contrast, payroll and benefit costs per FTE hospital employee were only 11 percent above the national average, 14<sup>th</sup> among the states. This is a salient finding because speakers for hospitals often claim that high costs of living help to explain or justify high hospital costs in Massachusetts. Were that the case, payroll and benefits costs per employee would be substantially higher than reported.

*As noted earlier, about 71 percent of the large 2007 Massachusetts excess in hospital labor costs per resident was attributable to higher rates of hospital employment per 1,000 residents in Massachusetts—in other words, to the number of hospital employees. Only about 29 percent of this excess in hospital labor costs per person was attributable to higher payroll plus benefits per employee in Massachusetts hospitals.*

Total payroll and fringe benefit costs per capita (per resident of the state) have long been associated with higher hospital costs here. Both payroll and benefit costs per capita had been gradually declining relative to the national average for many years, but both jumped markedly in 2006 and again in 2007. (To repeat, however, this rise appears to have been driven by a rise in the number of hospital workers rather than a rise in pay or benefits per worker.) We were 54 percent above the national average in hospital pay and benefit costs per capita in 2007, highest in the nation.

Similarly, non-labor costs per capita jumped from a 39 percent excess in 2005 to a 47 percent excess in 2006 and then to a 57 percent excess in 2007.

It is striking that both payroll plus benefits per capita and non-labor costs per capita made parallel substantial contributions to the 2006 jump and the 2007 consolidation.

Heavy reliance on teaching hospitals has long been associated with high costs of hospital care per person. It does not seem that a shift of even more patients to teaching hospitals since 2000 is responsible for the recent run-up in excess hospital costs in Massachusetts. This is a possibility, though, one that deserves more careful year-to-year examination than has been feasible for this report.

Substantial increases in revenues paid to Massachusetts hospitals since 2000 seem to be associated with higher operating and total margins here. Increases in revenues and in surpluses may have permitted some hospitals to increase expenses. The reasons for increased revenue warrant more careful analysis.

**In summary, factors associated with longstanding high hospital costs per person in Massachusetts include**

- **high use rates of surgery, emergency room visits, and other (non-emergency) outpatient visits**
- **high ratios of hospital staff (including salaried MDs) to the state's population**
- **high hospital payroll and benefit costs per Massachusetts resident (associated more with number of workers and less with high rates of compensation per worker)**
- **high non-labor costs as well.**
- **heavy and growing reliance on costly teaching hospitals to care for patients.**

**Summarizing factors that appear associated with the state's steep jump in 2006 hospital costs per person, or with the 2007 consolidation of that rise, we find a substantial rise in use of hospital care relative to the national average, accompanied by increased staffing levels and non-labor costs.**

1. **a jump in the rate of admissions per 1,000 Massachusetts residents relative to the U.S. average**
2. **a sharp rise in the rate of ER visits**
3. **a rise in the numbers of RNs and other hospital employees, boosting hospitals' expenses for pay and benefits**
4. **a substantial rise in hospitals' non-labor expenses.**

## **2. Have Massachusetts hospital costs risen disproportionately at certain hospitals?**

Have some individual hospitals been particularly or disproportionately responsible for the increases in statewide expenses in 2006 and 2007? We examined individual acute hospitals' financial data submitted annually to the Massachusetts Division of Health Care Finance and Policy (DHCFP).<sup>62</sup>

Earlier, we compared these statewide data with those reported by hospitals to the AHA. But now, it is perhaps worth recalling that adding in the costs reported to DHCFP but not to AHA reinforces the view that the very large recent excess expenses of Massachusetts hospitals build on long-standing patterns and are not mainly associated with the 2006 Massachusetts health reform law. After all, hospital fiscal year 2006 ended on 30 September 2006, less than six months after passage of the law and barely time for coverage improvements to begin.

Great inter-hospital differences in rate of increase in expenses. Using the DHCFP data on individual hospitals, we have examined changes in costs by type of hospital.

**First**, there were great differences among Massachusetts hospitals in their percentage increase in expenses between 2001 and 2007. Exhibit 31 displays the percentage increases for the 67 hospitals open in 2001 and 2007. (These 67 include several multi-hospital systems reporting as one organization; the 67 together include the 73 separate sites of acute hospital care included in Exhibit 0.)

Conspicuous for their rapid increases in expenses over those six years were Dana-Farber (105 percent), Jordan Hospital in Plymouth (98 percent), Newton-Wellesley (95 percent), Cambridge (94 percent), and Childrens (89 percent).

At the other extreme were Hale/Merrimack Valley (-9 percent), Hubbard Regional (6 percent rise), Boston Medical Center (plus 18 percent), Tufts (20 percent), and Hallmark (26 percent).

The average of the percentage increases of the individual hospitals' increases was 53.4 percent. The standard deviation was 0.219. The coefficient of variation (standard deviation divided by average—sometimes called the relative standard deviation) was a substantial 41 percent.

This compares with a 19 percent coefficient of variation in 2007 hospital spending per capita among the 50 states. (In other words, the variation in the 2001-2007 growth of Massachusetts hospitals' expenses was more than double the variation among states in 2007 hospital spending per capita.)

**Second**, Partners Health Care has been singled out as a beneficiary of a remarkably high rate of increase in payments from Blue Cross Blue Shield of Massachusetts in the years after 2000.<sup>63</sup> These higher revenues may have subsequently enabled higher spending. (Without identifying specific hospitals, a recent report from the state attorney general’s office likewise suggests that hospital revenues may influence costs more than the reverse, noting that “it appears that [Massachusetts] hospitals manage costs, including capital expenditures, to budgets based on their anticipated revenue from payment rates.”<sup>64</sup>) The six Partners acute care hospitals are Brigham and Women’s, Dana-Farber, Faulkner, Massachusetts General, Newton Wellesley, and Salem/North Shore Medical Center.<sup>65</sup> Five of the hospitals are members of Partners; the sixth, Dana-Farber, is engaged in a joint venture with Partners.<sup>66</sup>

Indeed, as shown in Exhibit 29, the six Partners hospitals’ expenses rose by \$2.2 billion or 69.3 percent from 2001 through 2007, a growth rate over 44 percent faster than the \$4.6 billion or 48.1 percent rise in expenses at the 61 non-Partners hospitals. The Partners excess was especially pronounced earlier in the period, but it is above the non-Partners rate of rise in all but one of the years for which reliable data are available.

**Exhibit 29**  
**Expense Growth at Partners Hospitals versus**  
**All Other Massachusetts Hospitals**

Year	Partners	Non-Partners	% rise from previous year		Difference
			Partners	Non-Partners	
2001	\$3,201,478,780	\$9,494,734,562			
2002	\$3,567,747,000	\$9,901,486,885	11.4%	4.3%	7.1%
2003	\$3,925,029,331	\$10,557,588,242	10.0%	6.6%	3.4%
2004	\$4,278,964,454	\$11,340,348,409	9.0%	7.4%	1.6%
2005	\$4,611,477,585	\$12,113,988,690	7.8%	6.8%	1.0%
2006	\$5,014,867,407	\$13,270,659,271	8.7%	9.5%	-0.8%
2007	\$5,419,981,478	\$14,059,905,704	8.1%	5.9%	2.2%
2001-07	\$2,218,502,698	\$4,565,171,142			
2001-07	69.3%	48.1%			

Source: Calculations from expenses reported by hospitals to the Massachusetts Division of Health Care Finance and Policy.

The Partners increase of 69.3 percent in expenses over six years is also substantially greater than the 55.1 percent increase for all major teaching hospitals in Massachusetts (Exhibit 30).

Exhibit 31 displays the percentage increase in each hospital's expenses from 2001 to 2007. The Partners hospitals are identified. For that 6-year period, five Partners hospitals are above the mean rise in expense for all Massachusetts hospitals, and one is below.

By contrast, as Exhibit 31 shows, among the six institutions in the state's second-largest hospital chain, Caritas, five hospitals had increases below the state mean and just one was above it.

**Third**, we compared expense increases at the 15 major Massachusetts teaching hospitals that were members of the Council of Teaching Hospitals (COTH) of the American Association of Medical Colleges in 2007 with expenses at the 52 other hospitals.<sup>67</sup> Please refer to Exhibit 30.

The 15 COTH hospitals' expenses grew by 55.1 percent from 2001 through 2007, compared with an increase of 50.8 percent for the state's 52 non-COTH hospitals. As a result, the COTH hospitals' share of hospital expenses statewide rose from 60.5 percent in 2001 to 61.2 percent in 2007—a visible shift but not a very large one.

Indeed, expenses at the four Partners COTH members (Brigham and Women's, Dana-Farber, Faulkner, and Massachusetts General) rose by 70.6 percent from 2001 to 2007—more than one and one-half times the rate at the eleven remaining COTH hospitals, whose expenses rose by 46.4 percent—less than the 50.8 percent rise for non-teaching hospitals.

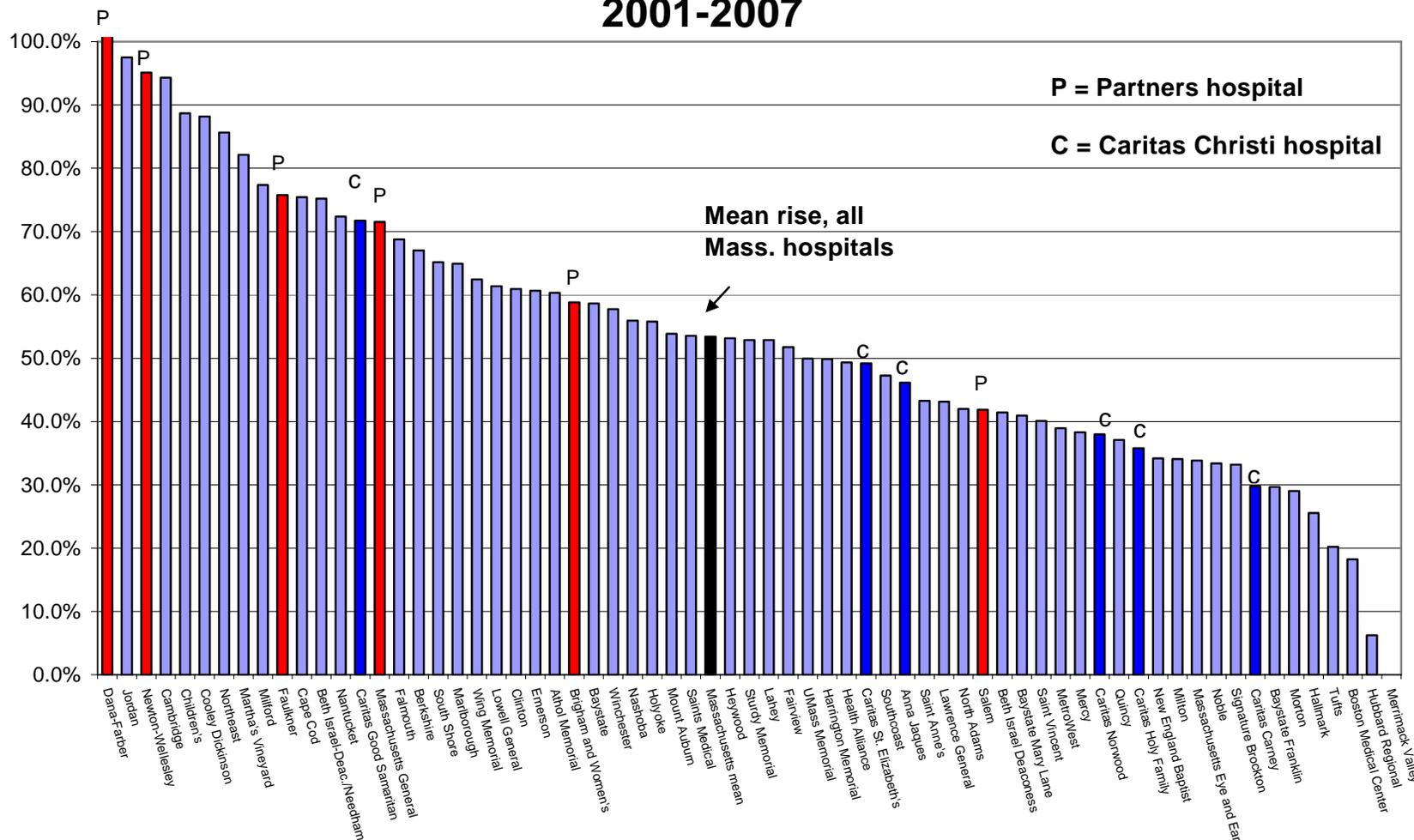
**Exhibit 30**  
**Expense Growth at COTH Hospitals versus**  
**All Other Massachusetts Hospitals**

	COTH	Non-COTH	%COTH
2001	\$7,683,838,617	\$5,012,374,725	60.5%
2002	\$8,093,240,551	\$5,375,993,334	60.1%
2003	\$8,667,498,243	\$5,815,119,330	59.8%
2004	\$9,428,749,746	\$6,190,563,117	60.4%
2005	\$10,221,809,972	\$6,503,656,303	61.1%
2006	\$11,224,986,496	\$7,060,540,182	61.4%
2007	\$11,920,386,074	\$7,559,501,108	61.2%
\$ rise, 2001-2007	\$4,236,547,457	\$2,547,126,383	62.5%
% rise, 2001-2007	55.1%	50.8%	

Source: Calculations from expenses reported by hospitals to the Massachusetts Division of Health Care Finance and Policy.

Exhibit 31

## Percentage Rise in Expenses, Massachusetts Hospitals, 2001-2007



Source: Calculations from expenses reported by hospitals to the Massachusetts Division of Health Care Finance and Policy

### ***3. What factors predicted differences in hospital costs per person across the 50 states in 2007?***

We have used multiple regression analysis to examine the predictors of 2007 hospital cost per person among the 50 states. In doing so, we have not considered characteristics that are tightly linked to costs, such as volume of admissions or ER visits per 1,000 people. Instead, as shown in Exhibit 32, we have focused on these factors:

- ✓ beds per 1,000 people in each state,
- ✓ types of hospitals (COTH share of the state's admissions),
- ✓ overall statewide hospital profitability (operating margin),
- ✓ putative measures of efficiency (occupancy rate, average length-of-stay),
- ✓ measures of mix of services (ER share of outpatient visits and inpatient surgeries per 100 admissions),
- ✓ a measure of mix of costs (payroll and benefits' share of expenses),
- ✓ cost of doing business in a region (payroll and benefits per FTE), and
- ✓ physician-to-population ratio.

Data used are for 2007 except for COTH share of admissions, which are for 2004.

#### ***Exhibit 32***

#### ***Characteristics Used to Predict Differences among the 50 States in Hospital Costs per Person, 2007, and Comparison with Massachusetts***

Characteristics	Mean of 50 states	Mass.
Beds/1,000 people	2.87	2.55
COTH share of admissions, 2004	18.5%	43.1%
Operating margin	4.5%	3.4%
Occupancy rate	64.7%	72.9%
Average length-of-stay	5.74	5.21
ER share of outpatient visits	20.3%	16.3%
Inpatient surgeries per 100 admissions	29.52	27.24
Payroll + benefits' share of expenses	51.9%	50.6%
Payroll + benefits per FTE	\$65,282	\$71,796
MD+DO practicing / 10,000 people	18.36	25.52

Four of the ten variables were significant in predicting hospital expenses per person across the 50 states. These are shown in Exhibit 33.

Everything else equal, these factors were calculated to predict higher hospital costs per person in a given state:

- ✓ a higher ratio of beds per 1,000 people,
- ✓ a greater number of physicians (counting both MDs and osteopathic physicians) per 10,000 residents,
- ✓ a greater teaching hospital (COTH) share of admissions; please recall that Exhibit 24 showed that 2004 hospital cost per person was highly correlated with COTH share of admissions across the states
- ✓ a *lower* ratio of ER visits to total outpatient visits (note the negative sign for beta and b).

Predictors in Exhibit 33 are ranked by their beta scores or elasticities. This ranking usually coincides, as it does here, with ranking by statistical significance (p-value). Beta scores measure the predicted effect of a 1 percent change in a given characteristic, such as hospital beds/1,000 people, on hospital cost per person. In this regression, for example, a 1 percent rise in beds/1,000 people is predicted to engender a 0.438 percent rise in hospital cost per person. Thus, the betas are standardized measures of the relative predictive power of each characteristic, controlling for all of the others.

The b-coefficients would be used to calculate the predicted cost of hospital care per person in a given state. Each coefficient would be multiplied by the actual value for that variable in a given state. The products would be summed and added to the intercept to obtain a predicted hospital expense per person in a given state. (Exhibit 35 compares predicted with actual expenses per person and assesses the accuracy of the prediction.)

**Exhibit 33**

***Regression Results: Predictors of Differences in Hospital Cost per Person among the 50 States, 2007***

Characteristic	beta	b	p-value
Intercept		641.39	0.07585
Beds/1,000	0.438	186.40	0.00001
MD+DO practicing / 10,000 people	0.372	49.31	0.00198
COTH % admissions, 2004	0.342	905.78	0.00228
ER percent of outpatient visits	-0.226	-1355.00	0.01503

The four-variable regression analysis had an adjusted  $R^2$  of 66.9 percent, meaning that the regression statistically explained just over two-thirds of the inter-state variation in hospital cost per person. The analysis was significant at  $p = 0.000000$ , meaning that this result would be found by chance less than one time in one million.

The data presented in Exhibit 34 further assess the four independent variables' individual usefulness in predicting differences among the states in hospital expenses per person.

A variable's tolerance indicates its separate predictive power. The higher the tolerance, the less redundant is the variable with other independent variables—the less it overlaps or correlates with other independent variables. All tolerances are above 0.50, indicating that each of the four variables makes a distinct contribution.

A variable's semi-partial correlation captures the correlation between each independent variable, such as beds/1,000 people, and hospital expense per capita, controlling for the effects of the other three independent variables.

The semi-partial-squared correlation measures the proportion of the variance in hospital expense per person across the states that is uniquely accounted for by each independent variable. The semi-partial-squared correlation is probably the best measure of the "'practical relevance' of a predictor, because it is scaled to . . . the total variability in the dependent . . . variable." <sup>68</sup>

By this measure, a state's acute hospital beds/1,000 people is the most powerful predictor of expenses per person, controlling for the other variables in the equation. Both the ratio of practicing physicians to population and the COTH hospitals' share of admissions are less than half as important, and the ER percent of outpatient visits is about one-quarter as important.

Since our state's ratio of beds to population is below the national average, it is not at all predictive of Massachusetts' high hospital expenses per person. Therefore, it is reasonable to suppose that the three remaining variables are more important here.

In particular, the major COTH teaching hospital share of admissions and the ratio of practicing patient care physicians to population are probably salient. Some characteristics of Massachusetts hospitals not included in the regression equation are probably also important. Some of these will be discussed later in this report.

### **Exhibit 34**

#### **Regression Results: Tolerances, Partial, and Semi-partial Correlations for Predictors of State Differences in 2007 Hospital Cost per Person**

	Tolerance	Semi-Partial	Semi-partial-squared
Beds/1,000	0.888	0.413	0.171
MD+DO practicing / 10,000 people	0.526	0.270	0.073
COTH % admissions, 2004	0.605	0.266	0.071
ER percent of outpatient visits	0.845	-0.208	0.043

As is shown in Exhibit 35, the regression equation is very inaccurate in predicting Massachusetts' hospital expense per person.

Exhibit 35 displays actual hospital expenses per person by state compared with the expenses per person predicted by the four-variable regression equation, and the dollar difference between the two (the residual). It also shows the percentage difference (residual divided by predicted) and the absolute value of the percentage difference. The states are ranked by the absolute value of the percentage difference between actual expenses and predicted expenses.

Overall, the regression equation calculated predicted expenses per capita within 10 percent of actual for 35 of the 50 states—and within 1.5 percent of actual for 10 states. For Oklahoma, the equation's prediction came within \$1 (0.1 percent) of actual.

The prediction for Massachusetts was worst (least accurate) in dollars, with actual expense per person of \$3,012 in 2007 versus a predicted expense of \$2,545, for a residual of \$467. Expressing the absolute value of the residual as a percentage of predicted expense per person, the equation was third-worst, with an 18.3 percent difference. Only Alaska and New Hampshire were predicted less accurately.

Had Massachusetts hospital expenses per person actually been the predicted value of \$2,545, they would have been only 31.4 percent above the national average, not the 55.4 percent excess actually experienced in 2007.

The regression equation was inaccurate in predicting this state's highest-in-the-nation hospital expenses per person in part because Massachusetts has markedly fewer beds per 1,000 people than the national average. Given the

importance of this variable, Massachusetts was predicted (by the regression equation) to have hospital expenses per person of only \$2,545, fully 18.3 percent lower than its actual expenses of \$3,012 per person.

As noted earlier, the regression equation predicts that states with more beds/1,000 people, more practicing doctors in relation to population, a greater COTH hospital share of admissions, and a *lower* ER share of outpatient visits will have higher costs. Massachusetts fits this pattern in three of the four respects.

- ✓ It is highest in the nation in practicing doctors in relation to population.
- ✓ It is fifth-highest in COTH hospital share of admissions.
- ✓ It is low (34<sup>th</sup>-highest) in ER share of outpatient visits .

But as noted earlier, Massachusetts is below the national average in beds/1,000 people—ranking only 29<sup>th</sup> among the states (see Appendix Table 1 and Exhibit 48)—on the variable that’s most powerful in predicting hospital expenses per person.

### **Exhibit 35**

#### ***Predicted Hospital Expenses per Person versus Actual Expenses per Person, by State, 2007***

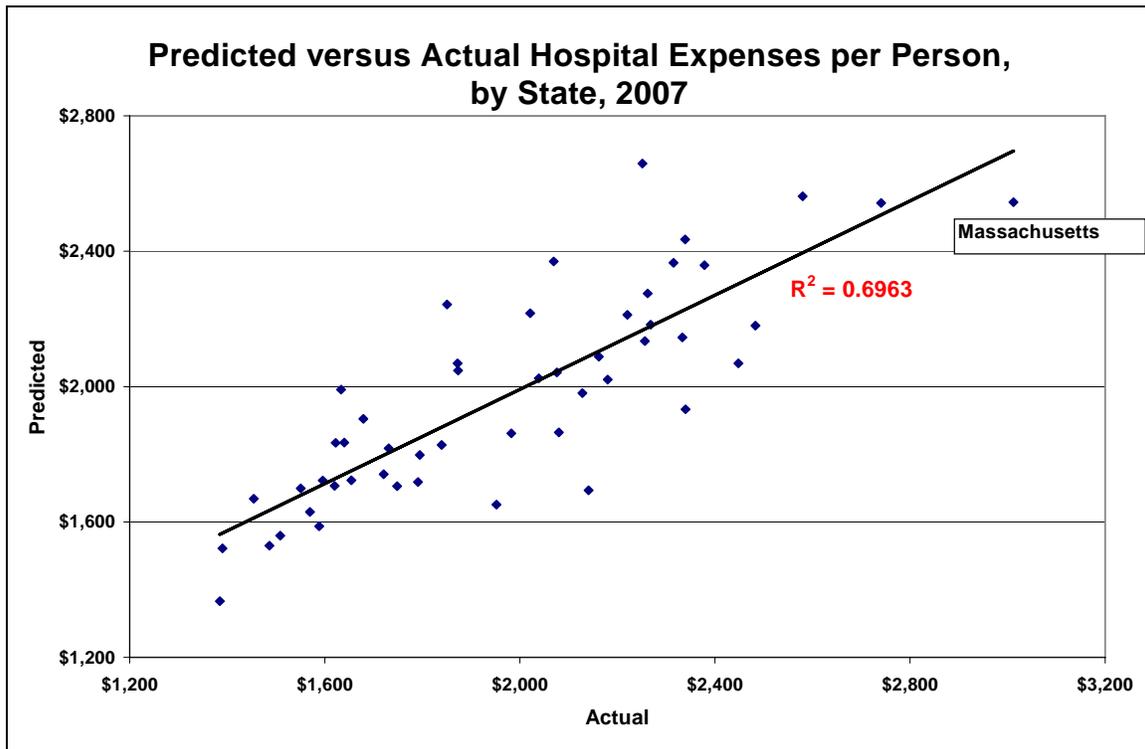
State	Observed	Predicted	Residual (difference)	Residual as % of predicted	Absolute value of residual as % of predicted
Alaska	\$2,141	\$1,693	\$448	26.4%	26.4%
New Hampshire	\$2,340	\$1,933	\$407	21.0%	21.0%
<b>Massachusetts</b>	<b>\$3,012</b>	<b>\$2,545</b>	<b>\$467</b>	<b>18.3%</b>	<b>18.3%</b>
Missouri	\$2,448	\$2,069	\$379	18.3%	18.3%
Mississippi	\$1,952	\$1,651	\$301	18.2%	18.2%
Kansas	\$1,633	\$1,991	-\$358	-18.0%	18.0%
New Jersey	\$1,851	\$2,243	-\$392	-17.5%	17.5%
South Dakota	\$2,251	\$2,659	-\$408	-15.3%	15.3%
Maine	\$2,483	\$2,180	\$303	13.9%	13.9%
New Mexico	\$1,454	\$1,669	-\$214	-12.8%	12.8%
Connecticut	\$2,069	\$2,369	-\$300	-12.7%	12.7%
Hawaii	\$1,679	\$1,905	-\$226	-11.9%	11.9%
Indiana	\$2,080	\$1,865	\$215	11.5%	11.5%
Wyoming	\$1,622	\$1,834	-\$212	-11.5%	11.5%
Virginia	\$1,640	\$1,835	-\$195	-10.6%	10.6%
Maryland	\$1,872	\$2,069	-\$197	-9.5%	9.5%
Montana	\$2,021	\$2,217	-\$196	-8.8%	8.8%
Ohio	\$2,333	\$2,145	\$188	8.8%	8.8%
Georgia	\$1,551	\$1,700	-\$149	-8.7%	8.7%

**Exhibit 35****(Continued)**

State	Observed	Predicted	Residual (difference)	Residual as % of predicted	Absolute value of residual as % of predicted
Utah	\$1,390	\$1,522	-\$131	-8.6%	8.6%
Louisiana	\$1,873	\$2,047	-\$174	-8.5%	8.5%
Tennessee	\$2,180	\$2,021	\$159	7.9%	7.9%
North Dakota	\$2,741	\$2,543	\$198	7.8%	7.8%
Wisconsin	\$2,128	\$1,981	\$148	7.5%	7.5%
California	\$1,596	\$1,722	-\$127	-7.4%	7.4%
Kentucky	\$1,983	\$1,861	\$121	6.5%	6.5%
Minnesota	\$2,256	\$2,134	\$122	5.7%	5.7%
Arkansas	\$1,620	\$1,707	-\$86	-5.1%	5.1%
Florida	\$1,731	\$1,818	-\$87	-4.8%	4.8%
South Carolina	\$1,791	\$1,718	\$73	4.3%	4.3%
Colorado	\$1,654	\$1,723	-\$69	-4.0%	4.0%
Vermont	\$2,339	\$2,434	-\$95	-3.9%	3.9%
Nebraska	\$2,268	\$2,183	\$85	3.9%	3.9%
Texas	\$1,570	\$1,630	-\$60	-3.7%	3.7%
Michigan	\$2,162	\$2,088	\$74	3.5%	3.5%
Arizona	\$1,509	\$1,559	-\$50	-3.2%	3.2%
Idaho	\$1,487	\$1,530	-\$43	-2.8%	2.8%
Washington	\$1,748	\$1,706	\$42	2.5%	2.5%
Pennsylvania	\$2,315	\$2,366	-\$51	-2.1%	2.1%
Illinois	\$2,076	\$2,042	\$34	1.6%	1.6%
Nevada	\$1,385	\$1,366	\$19	1.4%	1.4%
Alabama	\$1,721	\$1,741	-\$20	-1.2%	1.2%
Rhode Island	\$2,378	\$2,359	\$20	0.8%	0.8%
New York	\$2,580	\$2,562	\$18	0.7%	0.7%
Iowa	\$2,039	\$2,025	\$14	0.7%	0.7%
North Carolina	\$1,840	\$1,828	\$12	0.7%	0.7%
Delaware	\$2,262	\$2,275	-\$13	-0.6%	0.6%
West Virginia	\$2,221	\$2,212	\$8	0.4%	0.4%
Oregon	\$1,795	\$1,798	-\$3	-0.2%	0.2%
Oklahoma	\$1,588	\$1,588	\$1	0.1%	0.1%

Finally, Exhibit 36 displays the relation between predicted and actual hospital expenses per person by state in 2007. The  $R^2$  for the best-fit trendline is 69.6 percent, which is the unadjusted  $R^2$  for the four-variable regression equation just reported.

**Exhibit 36**



### Discussion

As noted earlier, the semi-partial correlation-squared (shown in Exhibit 34) is probably the best measure of the “practical relevance” of a predictor. “ The regression equation indicated that, by this measure, for predicting hospital cost per person across states, a state’s ratio of practicing physicians to population and the COTH hospitals’ share of admissions are comparably important.

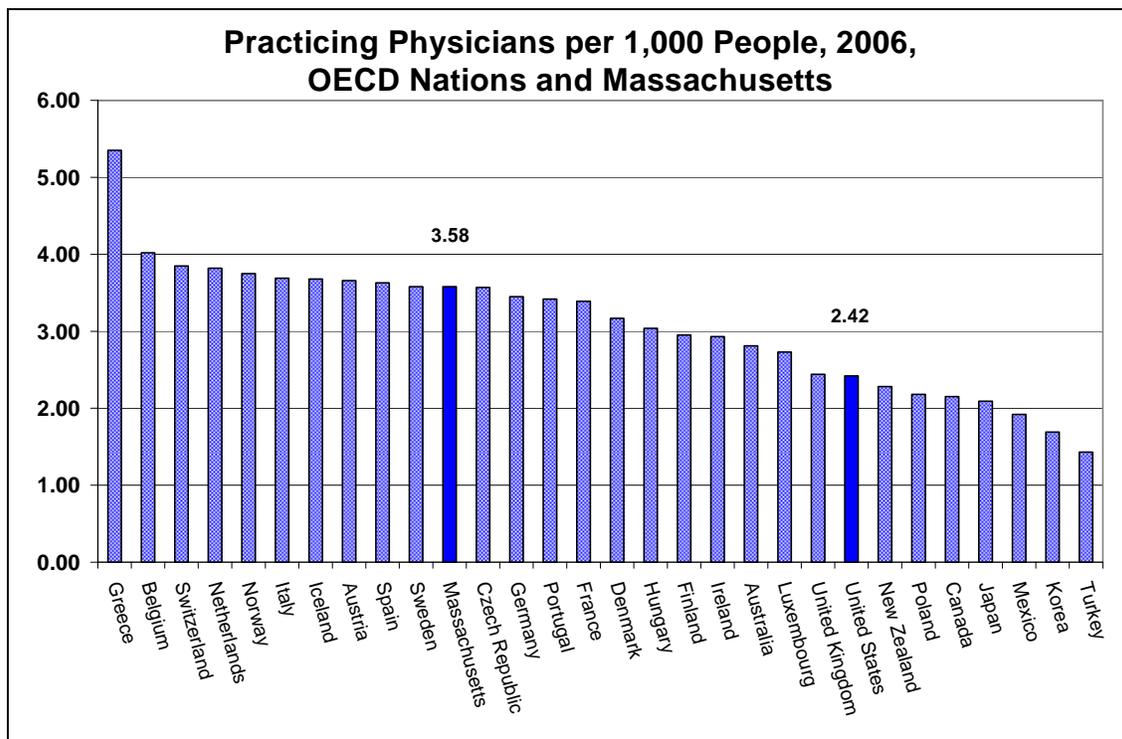
Since the state’s bed-to-population ratio doesn’t help to predict high hospital costs in Massachusetts, the teaching hospital share of admissions and the physician-to-population ratio are probably very important in explaining our high hospital cost per person. The teaching hospital factor is analyzed elsewhere in this report. A brief discussion of the physician factor now follows.

Physicians per resident. By every measure, Massachusetts has strikingly high physician-to-population ratios:

- This state’s supply of patient care doctors per 1,000 residents, for example, was 59 percent above the U.S. average in 2007, up from 54 above in 2002.<sup>69</sup>
- We have the highest physician-to-population ratio among the states, for all physicians and for patient care physicians (as reported by the AMA).
- Our physician supply has been growing farther above the national average over recent decades—rising from 36 percent above the national average in 1975.<sup>70</sup>
- Massachusetts is highest among the states in all categories of physicians per 1,000 people—primary care physicians and specialist physicians, all patient care physicians, and office-based physicians.

The U.S. physician to population ratio in 2006 was well below the median of the world’s wealthy nations belonging to the OECD (see Exhibit 37). It’s noteworthy, however, that even the high physician-to-population ratio in Massachusetts was below that of at least 10 other wealthy OECD nations—such as Belgium, Switzerland, Netherlands, Norway, Italy, Iceland, Austria, Spain, and Sweden—that cover all people and enjoy superior health outcomes.

**Exhibit 37**



Sources: OECD Health Data 2009: Frequently Requested Health Data, [http://www.oecd.org/document/16/0,3343,en\\_2649\\_34631\\_2085200\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html); and American Medical Association, *Physician Characteristics and Distribution in the U.S.*, 2009 edition, Chicago: The Association, 2009, Tables 3.1 and 3.7.

Why might a large supply of physicians in relation to the population contribute to high hospital costs, rather than lowering costs? One reason is that many work in hospitals—and we have shown earlier how far Massachusetts exceeds the USA average both in salaried hospital physicians and in hospitals' trainee physicians. The expenses of their compensation are one factor in hospital costs.

But perhaps most important is that the more physicians there are, the more that is likely to be done for and to patients, both in and out of hospital. This is true across the states and, some have informally asserted, it may be particularly true in Massachusetts. Their story goes like this:

- In the 1950s and 1960s, Massachusetts Blue Shield was the overwhelmingly dominant insurer of physicians' services in the state. Doctors could not be paid by Blue Shield unless they contracted to become participating physicians. Without contracts, their Blue Shield-insured patients might well seek care from another physician. One provision of the Blue Shield contract was that Blue Shield's payment—along with any patient co-payment—constituted payment-in-full. The doctor could not seek to recover the balance of his/her charge from the patient (balance billing was prohibited).
- Further, Blue Shield rates were set fairly low.
- Still further, Massachusetts (along with Maryland and New York) then had the three-highest doctor-to-population ratios in the nation.
- Massachusetts doctors were then presented with a combination of low fees and a relative shortage of patients. This meant that many doctors had time to see more patients but relatively few opportunities to garner higher incomes by identifying and caring for previously un-served or under-served patients. They therefore gradually put their time to use by evolving relatively elaborate and costly clinical practice patterns. These featured more frequently scheduled patient visits, more referrals to specialists, higher rates of laboratory and imaging studies, higher surgery rates, and generally, greater use of hospital care.
- In this view, the higher volume of in-hospital care does not substitute for non-hospital care; rather, the two are complements. More visits to doctors' offices engender more referrals to hospitals for outpatient and inpatient care. This is very different from the more recent instances of doctors and hospitals competing over individual patients for ambulatory surgery or MRI services.

We find this story generally convincing. It seems to fit the available evidence and is also logical. If it is true, we think that doctors evolved toward this pattern of relatively elaborate and costly care not out of conscious manipulation or greed,<sup>71</sup> but—for example—because they had time in their schedules and belief in the efficacy of their services. Even physicians based in the community contribute to hospital costs, both because they admit patients to and treat them in the community hospitals where they have privileges and because they refer patients to hospital-based physicians for consultations, tests, and admissions.

#### ***4. The Massachusetts Pattern: More Care in Hospitals and a Greater Share of It in Costly Teaching Hospitals***

**More Care in Hospitals.** In 2007, as described earlier, the rate of hospital admissions per 1,000 people in Massachusetts was 11 percent above the U.S. average. The surgery rate was 18 percent higher. The rate of ER visits was 23 percent higher. And the rate of non-emergency outpatient visits was 58 percent higher.

Markedly above-average amounts of inpatient and outpatient care were and are given in Massachusetts hospitals. The latter is surprising. As just discussed, Massachusetts had 59 percent more patient care physicians per 1,000 people in 2007 than the nation as a whole, and has long ranked first among the states in all physician-to-population ratios—primary care physicians and specialist physicians, all patient care physicians, and office-based physicians. With so many office-based physicians, why is so much ambulatory care provided in hospitals?

**Greater Amounts and Costs of Care in Hospitals Are Not Offset by Lower Amounts and Costs of Care Elsewhere.** Exhibits 3 and 4 showed that health care costs in each sector—hospital care, long-term care, physician services, prescription drugs, and dental care—exceed the national average. And Exhibit 6 showed that excess health costs per person here are rising relative to the national average.

**More Care in Costly Teaching Hospitals.** Across space and time, this state stands out in the high share of hospital admissions provided at COTH hospitals. Viewed across the states in 2004, Massachusetts nominally ranked fifth-highest (at 43.1 percent) in the share of hospital admissions at the major teaching hospitals that are members of the American Association of Medical College's Council on Teaching Hospitals (COTH). Please refer to Exhibit 38 (and Exhibit 24, above).

We use the word “nominally” because there are substantial differences in intensity of care and cost of care among COTH members.

Delaware ranked first, with 50.9 percent of admissions at one major teaching hospital. Connecticut ranked second, with 48.1 percent of admissions at eight major teaching hospitals. Rhode Island ranked third, with 47.6 percent of admissions at four major teaching hospitals. And New York ranked fourth, with 45.3 percent of admissions at 39 major teaching hospitals.

Among COTH members, there are differences in intensity of teaching. Intensity is probably positively correlated with the number of residents per 1,000 people in a state. Exhibit 38 also reports the number of resident physician FTEs per 1,000 people in each of these five states' hospitals. Delaware is essentially at the

national average of 0.307 resident physician FTEs/1,000 people. Connecticut is slightly higher at 0.386. Rhode Island, New York, and Massachusetts are tightly clustered between 0.739 and 0.786. It might therefore be reasonable to view these three states as the most heavily reliant on major teaching hospitals.

**Exhibit 38**

***COTH Members and Share of Admissions in 2004,  
with Resident FTEs/1,000 People in 2007***

State	COTH members	COTH members % of admissions	Resident FTEs/1,000 people
Delaware	1	50.9%	.307
Connecticut	8	48.1%	.386
Rhode Island	4	47.6%	.757
New York	39	45.3%	.786
<b>Massachusetts</b>	14	43.1%	.739
United States	207	20.7%	.306

Recall that, viewed over time, Massachusetts COTH hospitals' share of admissions has risen substantially—from 19.8 percent of admissions in 1970 to 44.5 percent of admissions in 2007 (Exhibit 25 and Exhibit 39).

**Some of this increasing concentration of admissions in teaching hospitals is attributable to closing of non-teaching hospitals.** Since 1960, one-half of Massachusetts hospitals have closed; not one of those has been a COTH member hospital. At the same time, many COTH hospitals have expanded, adding beds.

**Exhibit 39**

***COTH Members' Share of Massachusetts Hospital Admissions,  
1970 - 2007***

Year	COTH Share of Admission
1970	19.8%
1980	29.9%
1990	35.7%
2000	38.0%
2007	44.5%

To what extent do these changes reflect genuine patient choice, a growing preference—informed or otherwise—to obtain care in teaching hospitals? Or do they reflect other factors, such as physicians’ growing affiliations with teaching hospitals or the purchase of physician practices, disproportionately by teaching hospitals, combined with patients’ willingness to be admitted where their doctors practice?

Moses, Thier, and Matheson wrote in 2005 that “During the 1990s, predictions of the demise of the academic medical center (AMC) were common.”<sup>72</sup> AMCs feared price competition from lower-cost community hospitals. Clearly, AMCs have not survived through greater efficiency. Indeed, as Mechanic, Coleman, and Dobson wrote in 1998, “After adjustment for case mix, wage levels, and direct GME [graduate medical education] costs, AMCs were 44 percent more expensive . . . than nonteaching hospitals.”<sup>73</sup>

COTH hospitals’ share of admissions in Massachusetts has grown despite their higher costs. One technique has been to build their market power through mergers, and then to use that power to extract higher payments from insurers.<sup>74</sup> A second has been to purchase physician practices.

Another technique has been to use political power to extract higher Medicaid and other payments from state government. The 2006 Massachusetts health care law promised \$540 million in higher payments to caregivers over three years, about 90 percent to hospitals. In an earlier analysis, we found that across-the-board Massachusetts Medicaid rate hikes disproportionately benefited costly teaching hospitals.<sup>75</sup> The 2006 law also moved to pay hospitals for free care at Medicare rates, which boosts payments to teaching hospitals.

Urban teaching hospitals nationwide have been extremely likely to survive changing medical, financial, and demographic circumstances since the years before the Second World War. Large teaching hospitals almost never close, we found when tracking 1,200 hospitals in 52 cities decade-by-decade from 1936 to 2006. Perhaps more surprising, efficiency (measured by case mix-adjusted cost per discharge) has never predicted hospital survival.<sup>76</sup>

Finally, in 2004, COTH hospitals in Massachusetts housed 38 percent of the state’s acute hospital beds, admitted 43 percent of inpatients, and incurred fully 60 percent of expenses (Exhibit 40).

**Exhibit 40**  
**COTH Members' Share of**  
**Massachusetts Hospital Beds, Admissions, and Expenses, 2004**

	COTH hospitals' share of Mass. hospital total
Beds	38.1%
Admissions	43.1%
Expenses	60.4%

Cost and financial status differences among hospitals are noteworthy. COTH hospitals are clearly responsible for a much greater share of hospital expenses than their share of inpatient admissions would justify. Therefore, it seems reasonable to expect teaching hospitals to shoulder a heavier-than-average share of any reductions in expenses that are proposed to lower the Massachusetts hospital cost excess. At least three other factors support this view.

First, as noted and asserted elsewhere, one-half of Massachusetts acute hospitals and almost as great a share of emergency rooms have closed since 1960. With the state's bed-to-population ratio already below the national average, with reason to fear the state already is at risk of a shortfall in beds in a medical crisis, with looming needs for added staffed beds as the population ages, and with many emergency rooms facing unacceptably long waiting times, further hospital closings should not be advocated or tolerated without proof that they won't harm the health of the public.<sup>77</sup>

Second, teaching hospitals' financial margins are generally higher than those of community hospitals.<sup>78</sup> Since one way to reduce the Massachusetts hospital cost excess would be to squeeze hospitals' revenue, such squeezes could well have the effect of financially destabilizing some of the surviving community hospitals.

Third, non-teaching hospitals and some analysts have asserted that these institutions are efficient<sup>79</sup> and provide high-quality care.<sup>80</sup>

## ***D. FACTORS THAT MIGHT JUSTIFY OR EXPLAIN EXCESS HOSPITAL COSTS IN MASSACHUSETTS***

In 2007, hospital spending in Massachusetts was \$6.94 billion higher than it would have been had our costs been at the national average, as noted earlier, a 55.4 percent excess in spending per person.

Was that higher spending justified? In one sense, it certainly was, in that all of that extra money was actually used by hospitals to pay people and buy things.

But that is not particularly helpful. What matters is whether the extra spending was justified or explained by reasonable factors. For example, was the higher spending associated with added benefits in better outcomes for patients or in gains for the Massachusetts economy?

### ***1. The Durability of High Costs***

It is helpful to begin by noting the extraordinary durability of high hospital costs in Massachusetts. Since 1960 (calculating from the data reported to the AHA), hospital costs per person here never fell lower than 30 percent above the national average and have never risen higher than 60 percent above the national average.

**The actual reasons for Massachusetts hospitals' high costs—and the justifications, explanations, and rationalizations advanced for high costs—change over time. But the persistence of high costs here is remarkable.**

The importance of this point cannot be exaggerated. Consider the early years. Hospital costs per person in Massachusetts were 47.5 percent above the U.S. average in 1960, 40.8 percent above in 1965, and 51.9 percent above in 1970.

In 1970, though, how important, for example, was the concentration of care in teaching hospitals in driving up costs? In 1970, we calculate, only 19.8 percent of Massachusetts acute hospital admissions were in member institutions in the American Association of Medical College's Council of Teaching Hospitals (COTH).<sup>81</sup> It therefore seems unlikely that COTH hospitals could have been responsible in 1970 for as great a share of high costs as they were in 2007, when COTH hospitals admitted 44.5 percent of hospital inpatients.

## ***2. Roles of Specific Factors in 2006***

We selected 2006 for analysis because the Massachusetts cost excess rose substantially in that year<sup>82</sup> and because needed data are available.

In 2006, when costs jumped sharply, total actual hospital costs in Massachusetts, reported by hospitals to the AHA, were \$6.14 billion greater than they would have been had costs here been at the national per-person average. How much of this excess cost is apparently justified by legitimate and durably affordable factors? How much is not?

Nine factors have been widely offered to justify or explain (or rationalize) excess hospital costs in Massachusetts. This section's findings can be briefly summarized:

- Four of these factors are important and legitimate explanations of higher costs:
  - a. Exporting care
  - b. More research
  - c. Training more physicians
  - d. Higher cost of living
- Two others are neutral:
  - e. Superior outcomes
  - f. More older people
- And, as explained below, three are actually counter-predictive (meaning that the thrust of these factors in Massachusetts should make for lower costs here) :
  - g. Beds/1,000 people
  - h. Severity of illness
  - i. Profits

In this section, we begin with our original estimate of actual Massachusetts 2006 excess, rounded to \$6,149 million. (This is slightly—0.7 percent—below the revised estimate of \$6,190 million shown in Exhibit 9. No analyses are materially affected by this difference.)

We calculate that the first four factors listed above legitimately explain some \$2,473 million of that Massachusetts excess. Two other factors are neutral.

Then, we add back \$1,473 million in expenses that we calculate to be associated with three factors that would be expected to make for lower costs in this state. These three are the opposite of justifications. They don't explain high costs here, but are counter-predictive. These factors add costs back into the summary tally

of the excess below. They increase the size of the unexplained Massachusetts hospital cost excess. The findings for each of the nine factors are tallied in Exhibit 53, later in this report, and the overall results are summarized here in Exhibit 40. The net effect is to explain \$1,000 million (16.3 percent) of the Massachusetts excess. Some \$5,149 million (83.7 percent of the excess) remains unexplained by these nine factors.

That net unexplained, unjustified excess of \$5.1 billion in 2006 hospital costs was fully 28.5 percent of the \$18.1 billion in total hospital spending that year in Massachusetts.

**Exhibit 41**

**Summary: Actual Hospital Cost Excess, Explained Share, and Add-backs, 2006**

Actual Massachusetts hospital cost excess, 2006	<b>\$6,149 million</b>
Explained by (1) exports, (2) research, (3) training, and (4) living costs	<b>- \$2,473 million</b>
(5) Outcomes/quality and (6) elderly population share are neutral factors—neither explanatory or counter-predictive	—
Add-backs for counter-predictive factors: (7) hospital beds, (8) severity of illness, and (9) profits	<b>+ \$1,473 million</b>
Net excess cost explained by widely-cited factors	<b>\$1,000 million (16.3 % of excess cost)</b>
Net excess after explanations and add-backs	<b>= \$5,149 million</b>

## ***Important and legitimate explanations for higher costs***

### ***a. Exports of hospital care do help explain higher costs***

Introduction and overview. When Massachusetts hospitals and their defenders seek to explain or justify high hospital costs in the state, they often point to hospitals' economic value. Economic value has several elements. One pertains to the net export of care to people who live outside the state. Serving people who reside elsewhere brings dollars and jobs into the state. Other things equal, this would be good for the state's economy.

The same can be said for public research dollars from the National Institutes of Health and private research dollars from drug makers or medical device manufacturers. Other things equal, this money would contribute to building the state's economy.

Exporting care and performing research could bolster the state's economy by bringing in dollars from outside the state, just as sales of fish, ships, textiles, shoes, and computers once did.

Also tending to bolster the state's economy would be any disproportionate payments toward costs of Massachusetts hospitals from federal Medicare and Medicaid dollars, net of payments from Massachusetts to finance Medicare and the federal share of Medicaid.

Tending to offset any of these economic benefits would be the loss of existing jobs and investment, and failures to add jobs and investment, owing to high costs of hospital care specifically and health care generally. Massachusetts is widely seen as an expensive place in which to do business, and high health insurance premiums are one reason.

At the same time, the actual net incremental cost of care provided to people who live outside the state should be subtracted from estimates of excess costs of hospital care here. The same should be done for research funding that is financed from out-of-state. An analysis of the exporting of actual hospital care now follows.

Providing hospital care to patients from other states—exporting care—has been widely described as a cause and justification for some of the high costs of Massachusetts hospitals. But, as documented below, *net* exports (after subtracting costs of care for Massachusetts residents treated in other states) account for no more than 3.6 percent of costs of hospital care in Massachusetts.

Personal health care exports. It is helpful to first consider *net* exports of personal health care overall. Massachusetts was among 23 states that were net

exporters of personal health care in 2004, the most recent year for which data are available. (A net exporter is a state whose caregivers provided more personal health care to residents of other states than was provided to its own residents by caregivers located in other states.)

In 2004, Massachusetts ranked 9<sup>th</sup> among the states in the *net* percentage of its health spending that was exported—given to residents of other states (that is, net of personal health care that Massachusetts residents obtained in other states). In 2004, net exports of all types of personal health care were \$1.1 billion, or 2.5 percent of personal health spending in Massachusetts.<sup>83</sup>

Hospital care exports. Massachusetts was among 24 states that were net exporters of *hospital* care in 2004. Massachusetts ranked 8<sup>th</sup> among the states in the percentage of its hospital spending that was exported—given to residents of other states (again, net of hospital care that Massachusetts residents obtained in other states).

In 2004, net exports of hospital spending were \$635 million, or 3.6 percent of hospital spending within Massachusetts. This 2004 share, the most recent available, is a bit higher than the fourteen-year average net export share of 3.3 percent, but we will conservatively use the 3.6 percent share here. (Over the years, net exports as shares of hospital expenses have been remarkably stable, as shown in Exhibit 41).

How much would hospital costs have dropped if Massachusetts ceased being a net exporter of hospital care? The entire expense associated with exports would not disappear. That's because some costs associated with exporting hospital care to non-residents are fixed costs—costs that don't change when volume of care changes. The remaining costs—variable costs—are those reasonably associated with serving out-of-state patients.

Assuming that one-half of the net costs of exporting care are fixed costs and one-half are variable costs, then hospital spending would have fallen by 1.8 percent in 2004 (one-half of 3.6 percent).<sup>84</sup>

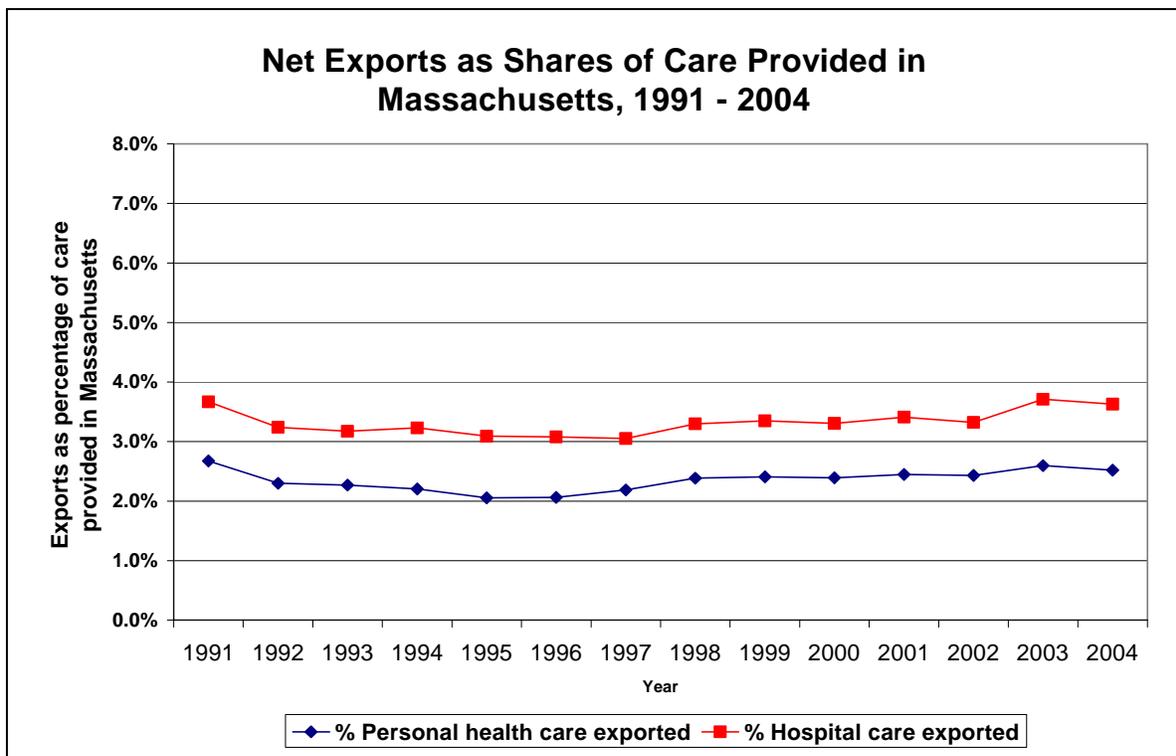
We apply the 1.8 percent share to 2006 Massachusetts hospital expenses. A 1.8 percentage drop in hospital costs in 2006 would have reduced costs by \$325.4 million (1.8 percent of \$18,075,916,295 total hospital expenses in 2006), if hospitals here had ceased to be net exporters of care to non-residents. (This figure is entered in Exhibit 53, below.) In other words, *projected exports in 2006 explain \$325.4 million of hospital costs. That's 5.3 percent of the state's excess of \$6,149 million in 2006.*

Stability of net exports. As shown in Exhibit 42, from 1991 to 2004, net exports have been remarkably stable as percentages of the care provided in Massachusetts. This holds true both for personal health spending in total, and for hospital care.

Interestingly, it appears that Massachusetts' ranking as a net exporter of health care historically has stemmed more from relatively strong retention of in-state patients than from relatively strong attraction of patients from out-of-state.

- While net exports of care amounted to 2.7 percent of 1991 personal health spending in Massachusetts, analysis of data presented by Basu<sup>85</sup> shows that the (gross) share of 1991 health spending here incurred for people from outside the state was just slightly above the average for all states, 5.12 percent as compared to 4.78 percent. Indeed, compared with the percentage in Massachusetts, the share of total personal health care expenditures incurred by out-of-state patients was larger in fully 27 states.
- At the same time, the share of personal health spending for Massachusetts residents that was incurred outside the state was below all but three other states (California, Hawaii, and Texas, each of which experiences geographic conditions that keep border-crossing in both directions below average!).

**Exhibit 42**



Source: Calculated from data on health spending by state of provider and state of residence compiled by the Office of the Actuary, CMS, and posted at [http://www.cms.hhs.gov/NationalHealthExpendData/05\\_NationalHealthAccountsStateHealthAccounts.asp#TopOfPage](http://www.cms.hhs.gov/NationalHealthExpendData/05_NationalHealthAccountsStateHealthAccounts.asp#TopOfPage).

Thus, if the same patterns have continued along with the stable rate of net exports, the net exports of care here exceed those of most states simply because so few Massachusetts residents seek care elsewhere—not because of any unusually large share of patients coming here from out-of-state.

Medicare and Medicaid share of personal health care expenses and hospital expenses. Another way to think about exports is to consider net inflows of Medicare and Medicaid dollars.

It is useful to begin by analyzing total Medicare and Medicaid spending as shares of expenses. If Medicare and Medicaid are paying above-average shares of expenses here in Massachusetts, these would constitute greater-than-average gross influxes of dollars from outside the state, influxes that would have a financial effect similar to that of exporting care to patients who reside outside the state. (Medicaid is somewhat more complicated to analyze than Medicare because states vary considerably in the share of program costs borne by the federal government while Medicare is a uniform national program. The analysis is further complicated by the desirability of considering the variations states' residents' federal tax burdens—that is, the variations in contributions to the federal revenues that finance Medicare and Medicaid. More on this shortly.)

**Exhibit 43**  
**Medicare and Medicaid Spending as**  
**Shares of Personal Health Spending**  
**and of Hospital Spending,**  
**Calendar Year 2004**  
**(millions of dollars)**

	<b>Total Personal health spending</b>	Medicare spending	Medicaid spending	Percent Medicare	Percent Medicaid	Percent Medicare + Medicaid
U.S.A.	\$1,560,242	\$299,569	\$271,042	19.2%	17.4%	36.6%
Mass.	\$45,331	\$8,040	\$8,262	17.7%	18.2%	36.0%
	<b>Total Hospital spending</b>					
U.S.A.	\$566,886	\$166,749	\$96,814	29.5%	17.1%	46.6%
Mass.	\$17,500	\$3,874	\$3,280	27.9%	18.7%	46.6%

Note: 2004 is the last year for which these data are available.

As Exhibit 43 indicates, the share of *overall* personal health costs in Massachusetts that is financed by Medicare and Medicaid combined—36.0 percent of personal health costs, is actually slightly below the national average of 36.6 percent. A lower Medicare share here is partly offset by a higher Medicaid share. This is worth keeping in mind.

This means that not only are health costs per person higher in Massachusetts (as noted earlier), but **in-state sources in Massachusetts must finance a greater-than-average share of those higher costs.**

Leonard and Walder found that, in 1999, total Medicare payments per person in Massachusetts were \$891, 17 percent above the national average of \$761. Payments here were sixth-highest among the states.<sup>86</sup> It is likely that this excess persisted through 2004.

But if Medicare pays so much per person in Massachusetts, how can its share of total hospital costs be below the national average? Probably Medicare payments may be a bigger absolute slice (more in dollar terms) in Massachusetts, but they are a smaller relative share of a much bigger health spending pie. This bigger pie is financed in large part by non-Medicare/Medicaid payers—that is, by all who live, work, or do business in Massachusetts, and who pay for health care through private insurance and out-of-pocket.

Medicare and Medicaid seem to pay the same combined 46.6 percent share of hospital costs in Massachusetts that they do nationally. Unfortunately, though, the net financial position of Massachusetts and its residents is substantially worse than these figures indicate—worse than the national average.

One reason is that in-state taxpayers finance almost one-half of Medicaid costs—a higher share than in most states. A second reason is that, because Massachusetts is a relatively high-income state, and its residents enjoy higher incomes than most states' residents do, Massachusetts residents and businesses pay higher shares (higher than our state's size would suggest) of the federal Medicare tax and income tax that finance the great bulk of the federal shares of Medicare and Medicaid. Generally, federal government payments to people, businesses, and governments in Massachusetts have been roughly at the national average, but payments to Washington from Massachusetts taxpayers were about 15 percent above the national average in 1999, the last year for which data are available.<sup>87</sup>

Unfortunately, the apparently above-average Medicaid share of costs actually exaggerates the share of in-state health costs financed from out-of-state. That's because Massachusetts, as a state with high per-capita incomes, typically finances almost 50 percent of Medicaid costs from state revenues, well above the 50-state average share of Medicaid costs of 40.4 percent in a typical pre-ARRA year.<sup>88 89</sup>

Further, examinations of the total flows of dollars between Massachusetts and the federal government (which includes Medicare and Medicaid flows), show that Massachusetts was a large net loser in fiscal year 1999, the last year for which data are available. The loss that year was some \$5.2 billion.<sup>90</sup> And the state's net loss had grown steadily during the 1990s.<sup>91</sup>

Among the states, Massachusetts had the ninth-worst balance of payments with the federal government overall in 1999, the last year for which data are available. Massachusetts suffered a deficit of \$895 per capita in revenue received from Washington minus tax payments made to Washington.<sup>92</sup>

Some might argue that, as a high-income state, Massachusetts should pay more to Washington than it receives back. But higher nominal dollar incomes may not translate into higher living standards in Massachusetts if the cost of living here is, on average, even higher than the nominal dollar income. (Higher nominal dollar incomes—in combination with the workings of the alternative minimum federal income tax—do put more people in Massachusetts into higher federal income tax brackets for reasons that seem to ignore such higher costs of living as state and local taxes.) All this raises the question of comparing real incomes across the states, a complicated and confusing job that Washington understandably is not enthusiastic about addressing.

Net impacts of exports on the state's economy. For many years, hospitals and their supporters have claimed that health care jobs are vital to the state's economy, that exports of health care generate jobs, and that the resulting dollar inflows have multiplier effects that create still more jobs.<sup>93</sup>

Health care employment *is* particularly important in Massachusetts. One study found that:

Between 2000 and 2006, the state lost 104,000 manufacturing jobs, and the number of manufacturing jobs shrank from 13% to 9% of the state's payroll jobs. At the same time, the state's economy has become even more dependent on health care. Health care accounts for 12% of the state's jobs. . . .<sup>94</sup>

We are concerned that a rising share of jobs in health care, other things equal, is a burden. It means fewer people working outside health care to finance more people working inside health care. With exports a relatively minor share of health care spending, it is likely that the economic gains from exports are partly, wholly, or more than offset by the economic losses associated with high health costs.

Nationally, high health care costs have been cited as a reason why U.S.-manufactured products are increasingly uncompetitive internationally.<sup>95</sup> If that is true among nations, it is also true among states. It is reasonable to suspect that

the high costs of health care and health insurance coverage in Massachusetts have deterred manufacturers and other employers from entering Massachusetts or expanding here.

As health and hospital jobs and spending grow, other industries' shares of the economy decline. This may not be good for the state's economy,<sup>96</sup> but it certainly does enhance the political power of hospital CEOs.<sup>97</sup> Hospitals' political power may exceed their economic value; indeed, perceptions of hospitals' economic value may be distorted by their political power.

For all these reasons, we will count net exports of hospital care, at incremental cost, as a way to reasonably explain a share of excess hospital costs in Massachusetts, but we are not prepared to use putative economic gains or multiplier effects to explain or justify excess costs.

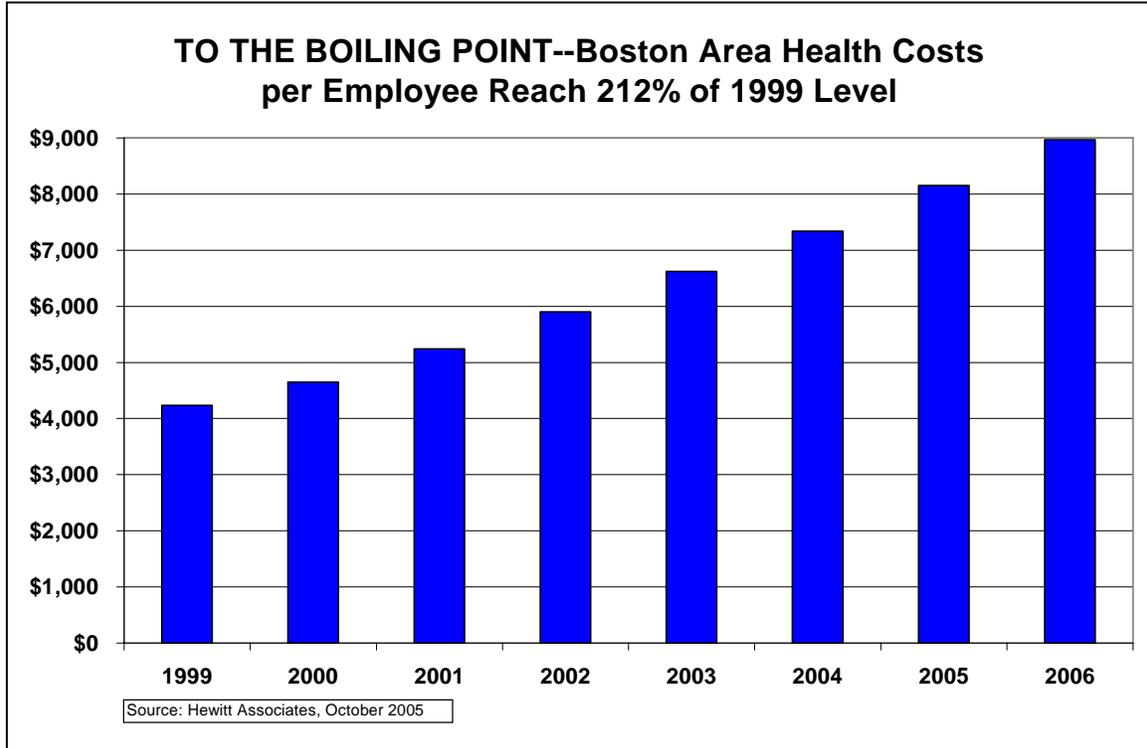
Bent out of shape: Care that attracts patients and research dollars from out-of-state may be too costly for many people who live, work, and do business in Massachusetts

Some Massachusetts health caregivers hope to attract patients, research grants, and other revenue from out-of-state. They succeed, to a large degree, in attracting research funds from the National Institutes of Health, drug makers, and other sources. As just noted, they do less well in actually exporting health care to non-residents.

But in seeking to push back the frontiers of research and clinical services, and in shaping our state's health care to try to export care, Massachusetts health services seem to have evolved in directions that are elaborate and expensive. Our state's high share of patients served in costly teaching hospitals and our primacy in physicians per 1,000 residents point to a health care system that is too costly for many of us to afford.

This problem shows up in health insurance premiums in greater Boston that are highest among 14 metropolitan areas studied by Hewitt and Associates. And it shows up in the rate of rise of health insurance costs per employee in Greater Boston itself. Costs per employee more than doubled in only seven years—in 2006, costs per employee were estimated at 212 percent of those prevailing in 1999 in Boston, as the following Exhibit 44 displays.

**Exhibit 44**



***b. Research is very helpful in explaining higher costs***

Research and teaching are intertwined in important ways and tend to take place at the same hospitals. Analytically, we will consider them here as separate functions. Elsewhere, we consider their joint effects on costs. Research costs included in total hospital costs do appear to explain a share of the high costs of Massachusetts hospitals. Higher costs of teaching present a more mixed picture.

A share of the high costs of hospital care in Massachusetts is explained by the inclusion of much higher than average levels of research financing in hospitals' reports of their revenues and spending. Boston leads all cities in National Institutes of Health research awards, with roughly \$1.6 billion in grants in each year from 2003 through 2007. Boston is unusual also in the high share of NIH grants given to hospitals rather than medical schools or universities. In 2006, for example, some 62 percent of NIH research grants to institutions in Boston went to hospitals.<sup>98</sup>

In parallel with early reflections on exporting care, is it possible that ordinary care patterns to Massachusetts residents have been distorted by the pursuit of research dollars by Massachusetts teaching hospitals and their physicians?

Efficient routinization of clinical excellence may give way before pressures to push back frontiers of medical uncertainty or ignorance. Associated costs might be considered indirect costs of research.

It is possible to identify direct costs of research with reasonable accuracy. Statewide, according to hospital reports to the American Hospital Association, other operating revenue (the category including research grants) averaged 13.1 percent of Massachusetts hospitals' total hospital revenue between 2002 and 2007. (Please refer back to Exhibit 19) It ranged from a low of 11.5 percent of total revenue in 2005 to a high of 16.9 percent in 2003. Over these five years, other operating revenue rose by 42.8 percent.

For comparison, net (actual) revenue from patients averaged 84.9 percent of total hospital revenue between 2002 and 2007. It rose by 57.0 percent over these five years.

In 2006, other operating revenues comprised 12.5 percent of hospitals' revenues in Massachusetts, compared with 5.8 percent nationally.

In Exhibit 53, which addresses expenses, not costs, we estimate that *those extra costs of research which are included in hospitals' costs would amount to some \$1,207 million of the \$6,149 million in excess Massachusetts hospital costs in 2006. That's 20.0 percent of the excess.*

This 20.0 percent reflects both Massachusetts' unusually large amount of externally-financed research overall and the large proportion of research grants awarded to hospitals, and whose costs therefore appear on hospitals' books. (In most other states, as just noted, medical schools or their universities are more commonly NIH grantees than are hospitals.)

As a cross-bearing, to allow \$1,207 million in excess Massachusetts hospital cost in 2006 to be legitimately explained by research costs seems reasonable in light of the estimate that hospitals in Boston alone received some \$1 billion in NIH awards in 2007.<sup>99</sup> Boston hospitals appear to have received the overwhelming share of NIH dollars awarded directly to Massachusetts hospitals.

Reducing total statewide hospital expenses by 6.8 percent (\$1,207 million) leaves \$16,847 million in non-research expenses. Dividing this by the 2006 population of Massachusetts yields an estimated non-research cost per person of \$2,618.

The resulting hospital expense per person in Massachusetts of \$2,618, net of extra Massachusetts research costs, is 41.7 percent in excess of the U.S. average expense per person of \$1,850 in 2006.

The dollar value of NIH awards to Boston hospitals did not change appreciably from 2003 to 2007.<sup>100</sup> These research projects, therefore, could not have accounted for the unusually large 2006 jump in hospital costs per person statewide or the consolidation of costs at even higher levels in 2007 and 2008.

***c. Training more physicians is somewhat helpful in explaining higher costs***

Excess medical residents. In 2006, Massachusetts teaching hospitals employed 4,319 full-time equivalent (FTE) medical and dental residents, or 0.67 per 1,000 people living in the state. This was the second-highest ratio in the nation (after New York State) and two and one-third times the national ratio of 0.29 residents per 1,000 people.<sup>101</sup> (The reported number of medical and dental residents in Massachusetts hospitals rose to 4,781 for 2007.)

If Massachusetts trained medical residents at the national average per 1,000 people who live in the state, we would have had only 1,838 residents in 2006. What is the cost of training the extra 2,481 medical residents?

We calculate that in HFY2006, the average annual salary per medical resident in Massachusetts was \$48,904.<sup>102</sup> We used the regional average ratio of fringe benefits to salary to estimate fringe benefit costs. This yields an average benefit cost of \$17,116,<sup>103</sup> for a total cost per FTE resident of \$66,021. This sum, multiplied by the extra 2,481 Massachusetts medical and dental residents, equals \$163.8 million.

*This \$163.8 million equals 0.9 percent of 2006 hospital costs in Massachusetts, and 2.7 percent of excess costs here.*

Additional *direct* medical education costs include salaries and benefits of medical school faculty and other physicians who supervise residents at teaching hospitals. As already noted, Massachusetts hospitals tend to employ salaried physicians far more than hospitals do nationwide, doubtless a result of the prevalence of teaching hospitals here.

Also to be considered are the *indirect* costs of medical education—the added tests, hospital days, and other inefficiencies that follow inevitably from training so many physicians.

Medicare makes substantial extra payments toward the costs of direct and indirect costs of medical education in all states. Medicare's indirect medical education payments are made in proportion to a hospital's ratio of medical residents per bed. Medicare's indirect medical education payments have been steadily scaled back over the past 25 years.<sup>104</sup>

The aims of these payments have been widely debated: are they really intended to cover added costs of medical education, or to subsidize costly teaching hospitals' vital care to uninsured and under-insured patients, and to patients lacking physicians of their own? MedPAC asserts that teaching hospitals are very substantially over-paid for their actual indirect medical education costs.<sup>105</sup>

Even though teaching hospitals, at best, are no more efficient than non-teaching hospitals (as measured by cost per discharge, adjusted for case mix), our analyses have found teaching hospitals to have been disproportionately likely to survive. This has held true over the decades since 1936 in a study of 1,200 hospitals in 52 large and mid-size U.S. cities.<sup>106</sup> It has also held true in our analyses of hospital configuration in Massachusetts.<sup>107</sup>

Put most bluntly, Massachusetts has more physicians per 1,000 people than any other state and three-fifths more than the national average. The great majority of medical residents newly trained in Massachusetts teaching hospitals are therefore unable or unwilling to practice in Massachusetts post-residency. It's thus **questionable how much benefit there is to the state from training so many physicians here.**

In this view, the added costs of paying residents' salaries and fringe benefits are certainly associated with a share of the excess cost of hospital care in Massachusetts. But is this a legitimate and durably affordable explanation? As this issue was framed at the beginning of this section, all excess costs are accounted for in some way, or they would not exist. Are the extra costs of training so many resident physicians affordable, desirable, and sustainable?

For the purpose of this report, we count the \$163.8 million direct cost of training the 2,481 extra medical residents as an offset against the 2006 Massachusetts hospital cost excess, but we doubt that this is a legitimate or durably affordable explanation.

#### ***d. A higher cost of living does help explain higher costs***

Massachusetts is generally believed to be a state with a high cost-of-living. Some therefore assert that hospital costs per person are high here, in part, because the overall cost of living is high. Hospitals must generally pay people more money to persuade them to work here. Indeed, the sums that hospitals actually pay their employees is what matter here, not the overall cost of living. In one sense, that is a good thing, since state-wide data on cost of living are difficult to obtain.

We focus on the salary plus fringe cost *per employee* rather than total statewide salary plus fringe benefit costs because the cost of hiring one person is unavoidable while the latter reflects choices about how many people to hire.

We were surprised, therefore, to learn that over the ten years from 1997 through 2006, the average Massachusetts hospital's expense for payroll plus fringe benefits per hospital FTE was only 6.5 percent above the U.S. average.<sup>108</sup> This variable has its ups and downs, so we think that the ten-year average is a realistic measure. (For all years from 1980 to 2006, it averages a 7.8 percent excess in Massachusetts.) As noted earlier, the new data for 2007, the most recent year available, show the state's excess in pay and benefits per worker dropping to 11.2 percent (from 15.4 percent in 2006).

It is important to note that this average is unweighted by skill level. If the mix of people who work for Massachusetts hospitals is skewed for some reason in a less-skilled direction than the average in hospitals nationally, that would artificially depress the Massachusetts excess.

But the more likely possibility is that the mix of hospital workers here is more skilled—considering the many skilled workers required to provide the types of care delivered in the state's many teaching hospitals in particular.

If that is true, then the estimated 10-year average 6.5 percent Massachusetts excess actually exaggerates the excess payroll plus fringe benefits per hospital worker here. We therefore suggest using two-thirds of the excess, or 4.3 percent excess, as the reasonable offset against the 52.1 percent overall 2006 excess hospital cost per person here, to take account of this state's relatively high cost of living.

We apply the 4.3 percent excess to all hospital costs, not labor costs only, to allow for effects of locally higher costs of energy, construction, supplies, and other non-labor expenses in Massachusetts.

In 2006, 4.3 percent of total Massachusetts hospital costs of \$18,076,000,000 equaled \$777 million. We subtract this from the Massachusetts excess of \$6,149 million. *We estimate that the state's higher cost of living explains 12.6 percent of the \$6,149 million hospital cost excess.*

***e. Outcomes are a neutral factor: they neither explain higher costs or add to costs***<sup>109</sup>

Does our state's excess health care spending buy better health status and quality of care for the people of the Commonwealth? We examine an array of measures here, most of which are not hospital-specific but rather pertain to overall performance of health care services.

The health status of Massachusetts residents is good, but not as much better than levels that prevail nationally as might be expected from our extraordinarily high health care spending.

Evidence from other nations makes this clear. It is demonstrably possible to live longer than Americans do, on average, while spending much less—half as much as the U.S. spends, or less. Other wealthy nations have proven this. Seven wealthy nations that spent, on average, just 46.2 percent as much on health care per person in 2003 as did the U.S.A., enjoyed average life expectancy at birth of 79.7, or 2.5 years above the U.S. level.<sup>110</sup>

Evidence from other states (discussed shortly) reinforces the view that very good health and quality of care can be bought at much lower costs. For example, Hahn and others compared excess mortality rates from chronic disease among the states. They found that Massachusetts ranked near the U.S. median, so many other states where health spending is lower did better.<sup>111</sup>

To the extent that health status is better in Massachusetts, is the cause better quality of medical care or greater quantities of medical care? Alternatively, is the cause a healthier environment, healthier behaviors, and superior public health programs? What are the roles of higher incomes and better education?

A public health report card prepared by the American Public Health Association ranked Massachusetts 4<sup>th</sup> in the nation in the health of its environment, 2<sup>nd</sup> on healthy behaviors, and also 2<sup>nd</sup> on public health services.<sup>112</sup>

One study comparing Medicare quality indicators by state found that Massachusetts ranked 5<sup>th</sup> among the states overall, but was surpassed by states with much lower personal health spending per person.<sup>113</sup>

### Death rates and longevity

The National Center for Health Statistics no longer reports longevity by state, but the most recent published data, for 1979-1991, indicate that Massachusetts ranked 13<sup>th</sup>-best in the nation, with average longevity about one year above the national average.<sup>114</sup> In recent Census Bureau calculations of states' average life expectancy rates at birth for 2000, Massachusetts ranked 9<sup>th</sup> best in the nation.<sup>115</sup>

Massachusetts' age-adjusted death rate in 2003 was 778.7 per 100,000 people, 6.5 percent below the national average of 832.7.<sup>116</sup>

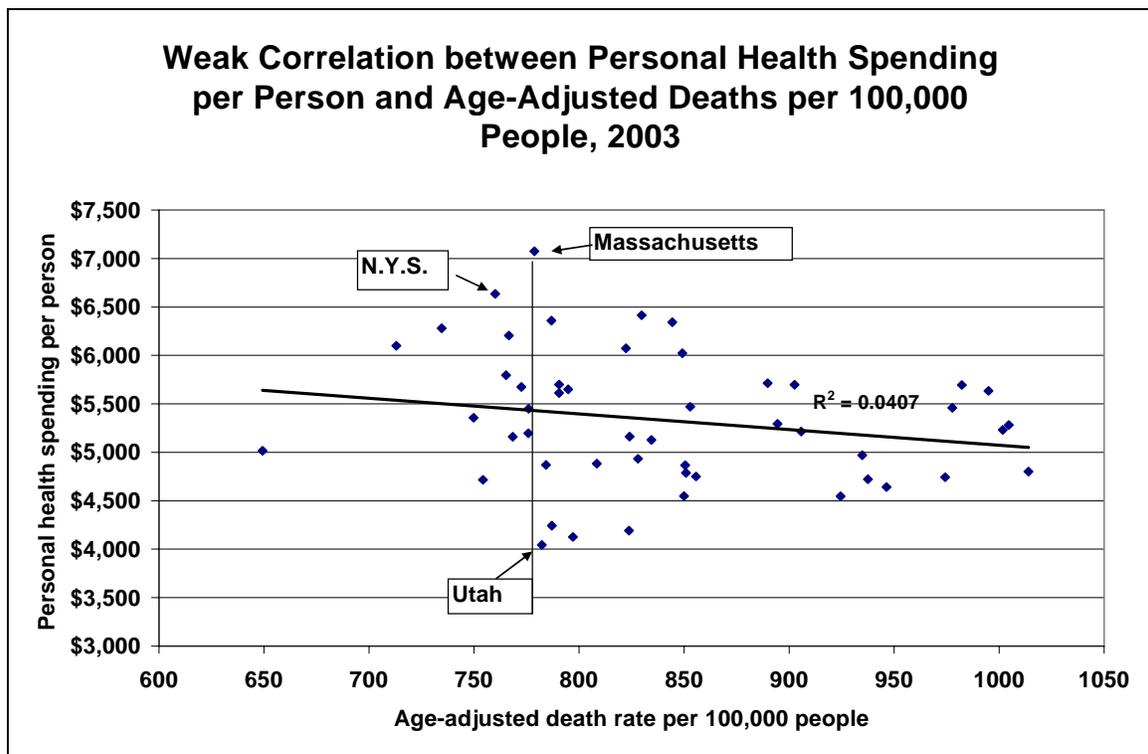
Massachusetts ranked 13<sup>th</sup>-best among the states in age-adjusted death rate per 100,000 people in 2003, behind Hawaii (with the nation's lowest death rate),

Minnesota, Connecticut, New Hampshire, California, New York, Vermont, North Dakota, Iowa, Wisconsin, Washington, and Florida.

Interestingly, personal health spending per person in Massachusetts in 2004, \$7,075, was fully 25.6 percent higher than the average spending per person (\$5,632) in these 12 states with lower death rates, we have calculated.

Further, Utah's age-adjusted death rate ranked 14<sup>th</sup>-best, just behind this state, though it was the lowest state in personal health spending per person. Personal health spending per person here was 75 percent higher than Utah's in 2004.

**Exhibit 45**



Deaths and dollars—a weak relation. States differ in the ability of their citizens to survive, to delay death. But those differences are not well explained by differences in health care spending. Across states, the correlation between personal health care spending per person and age-adjusted death rates was negative (meaning that higher spending was associated with lower death rates), we have found, but only -0.2016, statistically significant at only  $p = 0.16$ . This means that health care spending differences explain only about four percent of the difference in age-adjusted death rates across the states (See Exhibit 45 ).

## Regional health spending and health status

For more than two decades, work by Wennberg and his colleagues has shown, in various ways, that high spending is not essential to improved mortality rates.

For example, he and others compared the cost of hospital care for Boston residents with that for residents of New Haven and found no difference in mortality rates—but Boston’s hospital care cost twice as much per resident as New Haven’s.<sup>117</sup>

Wennberg, Fisher, and Skinner have asserted that

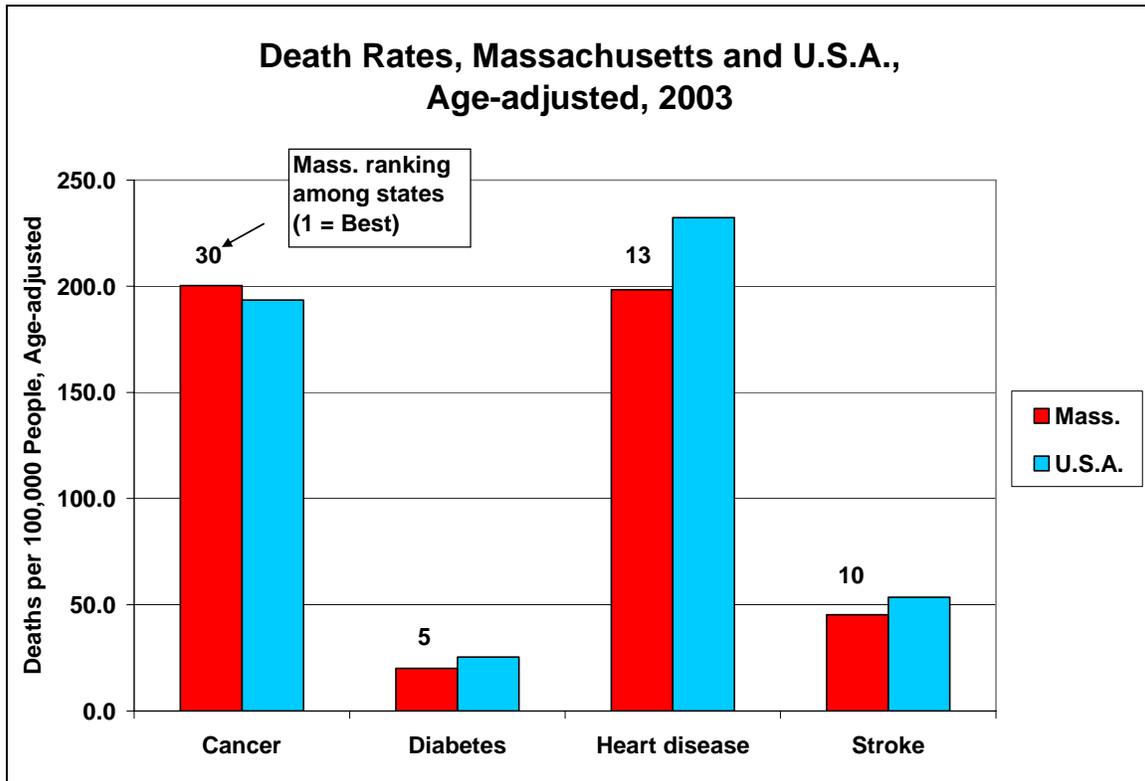
Medicare spending varies more than twofold among regions, and the variations persist even after differences in health are corrected for. Higher levels of Medicare spending [regionally] are due largely to increased use of “supply-sensitive” services—physician visits, specialist consultations, and hospitalizations, particularly for those with chronic illnesses or in their last six months of life. Also, higher spending does not result in more effective care, elevated rates of elective surgery, or better health outcomes. . . . [For example,] age-, sex- and race-adjusted spending for traditional, fee-for-service (FFS) Medicare in the Miami hospital referral region in 1996 was \$8,414 [per Medicare beneficiary]—nearly two and a half times the \$3,341 spent that year in the Minneapolis region....[Yet use] rates for effective care and preference-sensitive care are slightly lower in Miami than in Minneapolis. [Emphasis added]<sup>118</sup>

Particularly important to the present Massachusetts discussion is Wennberg’s and colleagues’ conclusion that greater use of supply-sensitive services does not result in better health outcomes.

Spending and rates of death from four diseases. Exhibit 46 compares the age-adjusted death rates for Massachusetts and the nation in 2003 for four diseases. The Massachusetts death rate was higher than the nation’s for cancer (Massachusetts ranked 30<sup>th</sup>-best among the states) but lower than the nation’s for diabetes (ranking 5<sup>th</sup>-best), heart disease (13<sup>th</sup>-best), and stroke (10<sup>th</sup>-best). While these are good results overall, and while other factors (health behavior, income, education, and others) influence death rates, these results don’t seem commensurate with the nation’s highest personal health care spending.

(The cancer death rate is especially disconcerting given that Massachusetts, even 20 years ago, was in the one-third of states with the smallest share of smokers.<sup>119</sup>)

### Exhibit 46



### Hospital readmissions for Medicare patients

As Buyse has noted, hospital readmission rates for Medicare patients here are somewhat higher than the national average,<sup>120</sup> according to data prepared by Anderson and Jones and compiled by the Commonwealth Fund.<sup>121</sup> In 2003, 19.8 percent of Medicare patients discharged from Massachusetts hospitals were readmitted within 30 days of discharge. This was 7.6 percent above the national rate of 18.4 percent, which itself is seen as worrisome and costly. Massachusetts ranked 10th-highest among the 50 states in readmission rates.

Higher-than-average rates of readmission could conceivably stem from more severe problems or less stable clinical problems than prevail nationally, or from premature discharge, errors during the hospital stay, poor communication or coordination between hospitals and physicians post-discharge, inadequate preparation or delivery of in-home or institutional post-acute care, lack of essential supports at home, lack of safe living circumstances, and other factors. For whatever reason, high hospital costs in Massachusetts (and high overall health costs as well) are not associated with superior quality by this measure. Overall, hospital stays were shortened in the 1990s here much faster than nationally, but by 2003 (the year in graph above), the difference was small.]

Buying progress? Some have asserted that, over time, higher health spending as a share of the economy is worth the money because it finances technological change that substantially improves health outcomes.<sup>122</sup>

We are not remotely reassured by this line of argument.

- First, this argument tends to be used to rationalize health cost increases that we consider unaffordable in themselves and the enemy of both extending coverage to people who lack it and retaining coverage for people who have it.
- Second, as noted above, other wealthy nations have shown it is possible to live longer than Americans do, on average, while spending half as much as the U.S. spends, or less. Seven wealthy nations with per person 2003 health care spending, on average, just 46.2 percent of this nation's enjoyed average life expectancy at birth of 79.7, or 2.5 years above the U.S. level.<sup>123</sup>
- Third, even if more costly technology meant better outcomes over time, it could not explain—or explain away—differences in health care spending per person across the states.

Cutler has asserted that “even though the amount of money spent on healthcare in the state [Massachusetts] may pose hardships for some, and likely includes considerable waste, the overall benefits of buying more medical goods and services are worth it.”<sup>124</sup>

Cutler continued, “`Really, what's happening is we're buying more stuff and on average that stuff is good for our health.’” Further, “Problems associated with the cost of healthcare `are more than offset by the benefits of living longer, healthier lives,’ he said.”

Cutler seems to rest this assertion on his analyses that, over time, higher spending is necessary to buy better outcomes. But, even if that were true over time—and we doubt that it is true—Wennberg's and his colleagues' analyses suggest that it does not hold true across space.

We therefore ask, can it be demonstrated that our state's health care outcomes are one-third better than the national average, in keeping with our spending one-third more per person than the national average on personal health care? The outcomes evidence cited above is not reassuring.

More generally, are our state's moderately better health outcomes attributable to our state's extraordinarily high health care spending, or to other causes?

***f. The Massachusetts population is slightly older than average, but this factor doesn't help to explain higher costs***

Although the share of Massachusetts residents aged 65 and older is slightly above the national average, Medicare's shares of health costs and hospital costs are very close to the national average. Therefore, an older population does not seem to help explain the state's high hospital costs per person.

U.S. Census estimates for 1 July 2007 have Massachusetts ranked 19<sup>th</sup>-highest among the states in share of population aged 65 and above. Some 13.3 percent of people here were age 65 and above, compared with 12.6 percent nationally. That makes seniors' share of our state's population about one-sixteenth (six percent) higher than the U.S. average.<sup>125</sup>

Further, the same estimates showed that a greater share of people in Massachusetts than nationwide are among the "older old" – an estimated 2.2 percent here in 2007 as compared with 1.8 percent for the U.S. as a whole. Though small fractions of the total, this may be a costly population that uses a lot of hospital care, and its share is nearly one-fifth larger in Massachusetts than nationally.

These age differences are probably one reason why Massachusetts did rank 17<sup>th</sup> among the states in Medicare hospital discharges per 1,000 Medicare Part A enrollees in 2006. But this placed us only 3.1 percent above the national average in such hospitalizations.<sup>126</sup> Yet the excess in overall admissions per 1,000 people in Massachusetts was three times as great, rising to 9.8 percent above the national average in 2006, as seen earlier. (Appendix Table 2.)

At the same time, Medicare's share of all personal health costs in Massachusetts is substantially below the national average. As shown in Exhibit 47, Medicare's 2004 share of all personal health costs here was 17.7 percent, fully 1.5 percentage points below the national average of 19.2 percent. Massachusetts ranked only 28<sup>th</sup> among the 50 states in Medicare's share of all personal health costs.

The same pattern holds for hospital costs. In 2004, Medicare dollars covered 27.9 percent of all hospital costs in Massachusetts, compared with 29.4 percent nationally. Massachusetts also ranked only 28<sup>th</sup> in Medicare share of hospital costs. This strongly suggests that a disproportionately large elderly population is not genuinely responsible for a visible share of excess hospital costs here.

**Exhibit 47**  
**Medicare Spending Shares of Personal Health Spending**  
**And Hospital Spending, Calendar Year 2004**  
*(millions of dollars)*

	Total Personal health spending	Medicare personal health spending	Personal health percent Medicare	Total spending on hospitals	Medicare spending on hospitals	Hospital percent Medicare
U.S.A.	\$1,560,242	\$299,569	19.2%	\$566,886	\$166,749	29.4%
Mass.	\$45,331	\$8,040	17.7%	\$17,500	\$4,874	27.9%

***g. Massachusetts has a lower-than-average bed-to-population ratio, and this should make for lower costs***

High hospital costs have sometimes been blamed in part on excess beds. Massachusetts' bed-to-population ratio, though, was 5.9 percent below the national average in 2006. Indeed, as mentioned previously and shown in Appendix Table 1, the ratio here has been at or below the national average in every year since 1989.

(This was not always true. In 1960, for example, this state had 17 percent more acute care beds per 1,000 people than did the nation as a whole, so excess beds may have been a factor in our high hospital costs in earlier years.)

Stepping back, what is the evidence that higher hospital costs per person are associated with more beds per 1,000 people? If we look at bed-to-population ratios in two different ways—across states and over time—we come to opposite conclusions.

Looking across the states in 2006, we find a mild positive correlation between beds per 1,000 people and hospital costs per person. As one rises, the other tends to rise. As shown in Exhibit 48, each of these factors statistically explains 13.8 percent of the difference in the other. That is, the  $R^2$  is 13.79 percent. The  $R_p$  is .371; it is significant at  $p = 0.008$ . This is a simple two-variable relationship, not controlled for other factors.

Massachusetts is clearly an outlier state that departs from the typical relationship between beds per 1,000 people and costs per person. It has the nation's highest

hospital cost per person even though it has substantially fewer beds per 1,000 people than the national average.

What is the practical meaning of the 2006 Massachusetts – U.S. difference in beds per 1,000 people?

To reach the U.S. bed-to-population ratio, Massachusetts would have had to have added 965 acute care beds in 2006, going from 16,344 to 17,309.

- That's the equivalent of adding a hospital larger than Berkshire Medical Center in Pittsfield plus Baystate Medical Center in Springfield.
- Alternatively, it is the equivalent of adding a hospital larger than Massachusetts General, the state's biggest.

Massachusetts hospital costs per person would have predictably been even greater, other things equal, had our state's bed-to-population ratio been at the national average. If we had more beds here, the observed Massachusetts excess of \$6,149 million in 2006 would have been higher. In other words, our state's relatively low bed-to-population ratio has depressed our hospital costs per person below predicted levels.

How much greater would hospital cost per person in 2006 have been in Massachusetts if beds per 1,000 had equaled the national average?

To determine this, recall that earlier in this report, we discussed the four main highly significant predictors of differences in hospital cost per person across the 50 states in 2007. Hospital beds per 1,000 people is one of those four (Exhibit 33). In a multivariate analysis, beds per 1,000 people is the most important predictor of inter-state differences in hospital cost per person, with a beta of 0.438, significant at 0.00001.

What does this mean? The beta of 0.438 means that a 1 percent rise in beds per 1,000 people in a state would be predicted ordinarily to translate into a 0.438 percent rise in hospital costs per person in that state. This relationship would occur by chance no more often than one time in one hundred thousand. (And a 2 percent rise in beds per 1,000 would mean a 0.876 percent rise in costs.)

We can use this information to estimate how much higher hospital costs per person here would have been had the Massachusetts bed-to-population ratio equaled the national average in 2006.

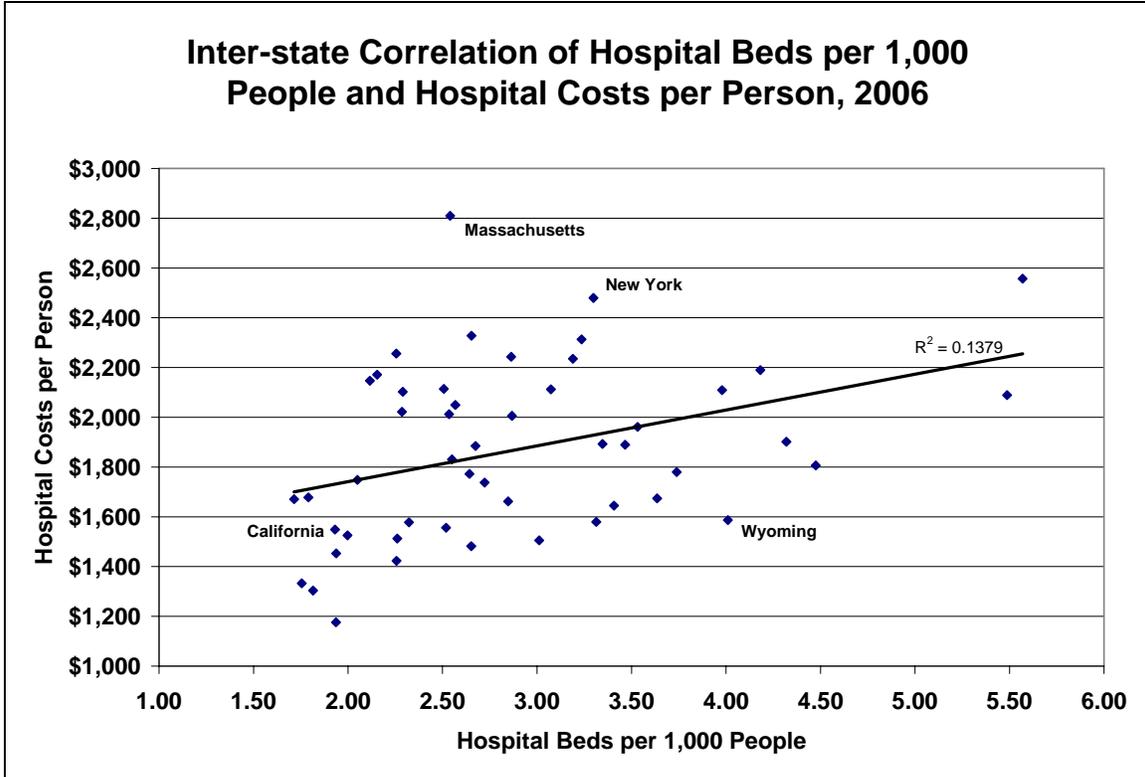
The Massachusetts beds/1,000 people ratio was 2.5406, which was 0.1525 beds below the U.S. ratio of 2.6931. (Appendix Table 1 shows rounded figures.) Raising the Massachusetts ratio to the national ratio would have required a 6.0025 percent increase in beds per 1,000 people (the shortfall of 0.1525 beds/1,000 divided by the actual Massachusetts ratio of 2.5406 beds/1,000).

Now, a 6.0025 percent rise in beds per 1,000 predictably would raise hospital cost per person here by the beta of 0.438 multiplied by 6.0025, meaning a rise of 2.629 percent in hospital cost per person.

Actual 2006 hospital costs per person in Massachusetts were \$2,805, so a 2.629 percent rise in cost (if bed supply were at the U.S. average) would mean a rise of \$73.75 per person. Across 6,433,000 people in Massachusetts, *that translates into a statewide rise of \$474 million in 2006 hospital costs if bed supply here were at the U.S. average. This would add 7.7 percent to the \$6,149 million Massachusetts hospital cost excess.* This is noted as an add-on to the excess in Exhibit 53, below. Because Massachusetts hospitals' relatively low bed-to-population ratio reduces hospital costs here, the effect of bed supply is not to explain part of the state's excess costs, but to increase the unexplained excess.

The effect of having fewer hospital beds per 1,000 people is reinforced by the finding that statewide hospital occupancy rates in Massachusetts averaged 74.3 percent in 2006, almost 11 percent above the national average of 67.0 percent. (See Appendix Table 4.) Empty beds don't raise operating costs very much, since no hospital can afford to staff empty beds, but Massachusetts' higher occupancy rates should at least translate into lower fixed costs per occupied bed.

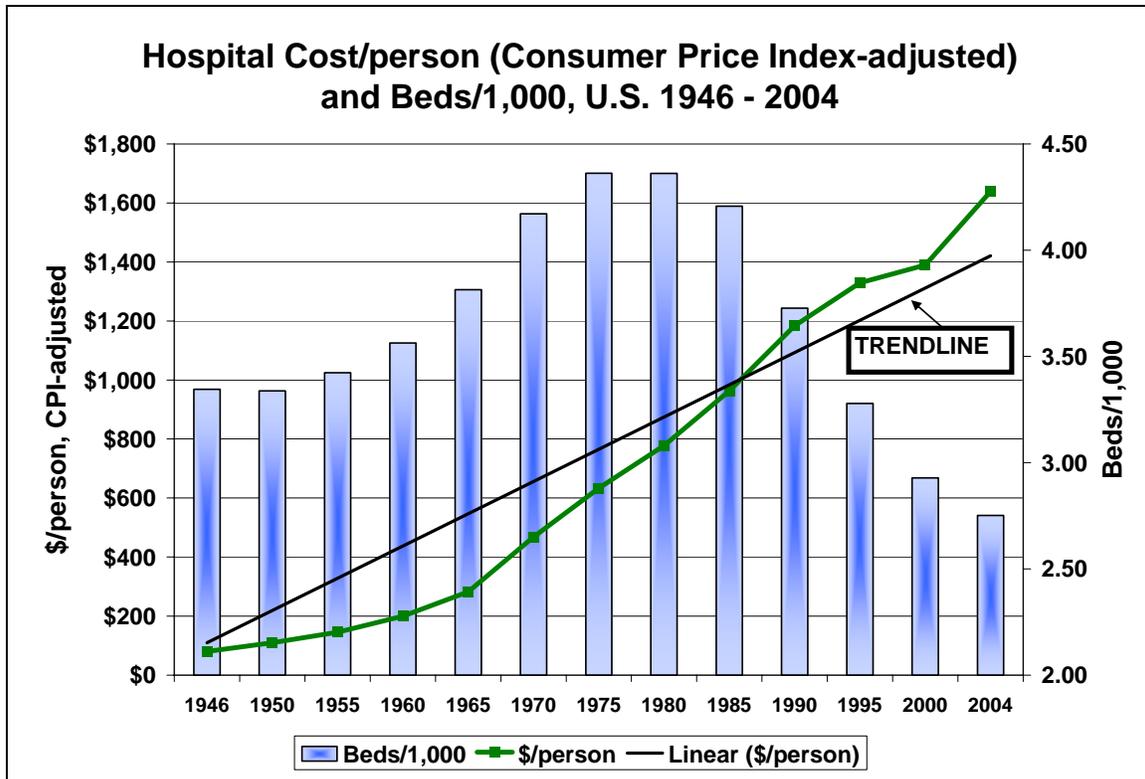
**Exhibit 48**



Incidentally, a look at national bed-to-population ratios over time fails to support the cross-sectional finding. Indeed, it indicates a slight negative—though non-significant—association over time between hospital costs per person and hospital beds per thousand people.

Exhibit 49 shows no regular association between inflation-adjusted hospital cost per person and beds per 1,000 people over the years from 1946 to 2004.<sup>127</sup>

**Exhibit 49**



Beds per 1,000 Americans rise rapidly and then fall rapidly over time. But cost per person rises fairly steadily.

Importantly, cost per person rises particularly rapidly during the years after 1985, when beds per 1,000 people falls substantially.

In Exhibit 49, this is captured by the actual rise in spending per person—the heavy green line—rising above the trendline after 1985. The trendline reflects the increase in spending per person over the full 58 years from 1946 to 2004.

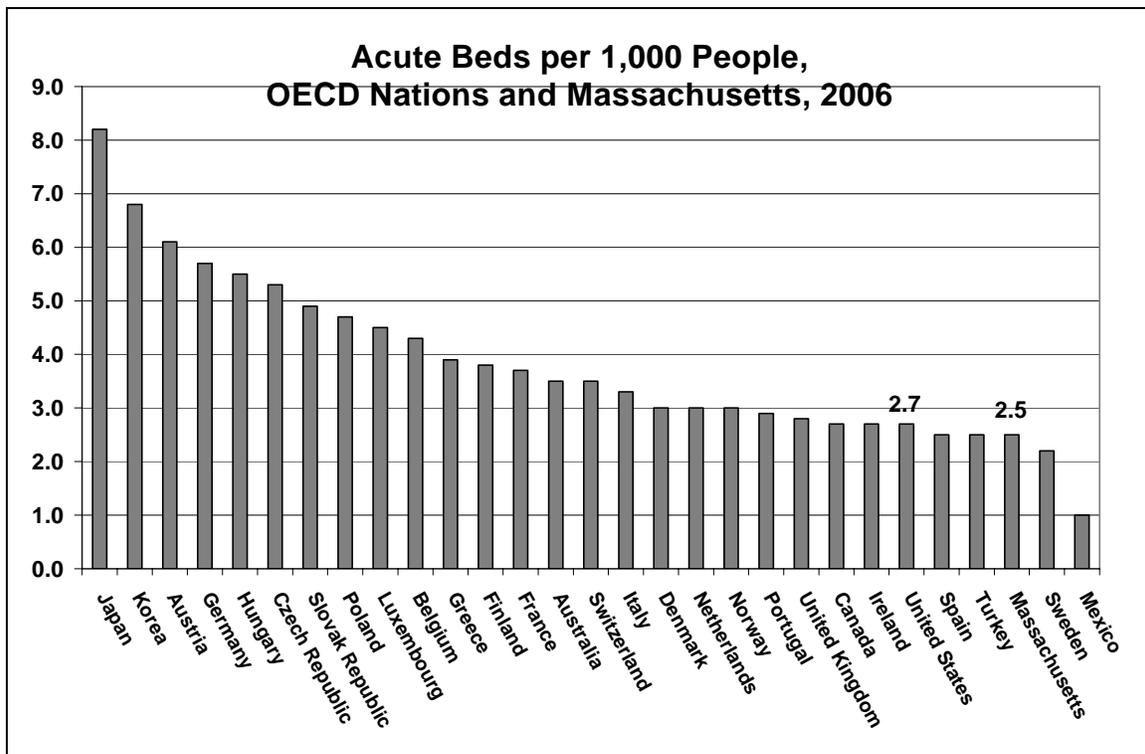
The correlation between inflation-adjusted hospital cost per person and beds per 1,000 people over time is  $R_p = -0.2973$ ,  $R^2 = 8.8\%$ , significant at  $p = 0.324$ . Change in one variable over time predicts only about 9 percent of the change in the other. What is salient here is not the statistical significance but the inverse or

**negative relationship between beds and costs over time:** Over time, in the nation as a whole, more beds per thousand people are associated with lower costs per person. In the years since 1980, when bed-to-population ratios have fallen nationally, inflation-adjusted hospital costs per person have risen particularly steeply.

Why might this be? Greater shares of patients are being served in costly teaching hospitals. Also, it's possible that hospitals are able to impose higher charges on payers as the bed supply falls? Also, patients remaining in hospitals as admission rates and lengths-of-stay have fallen nationally may make for higher average cost per patient-day (and per occupied bed), helping to offset the fall in beds per 1,000 people.

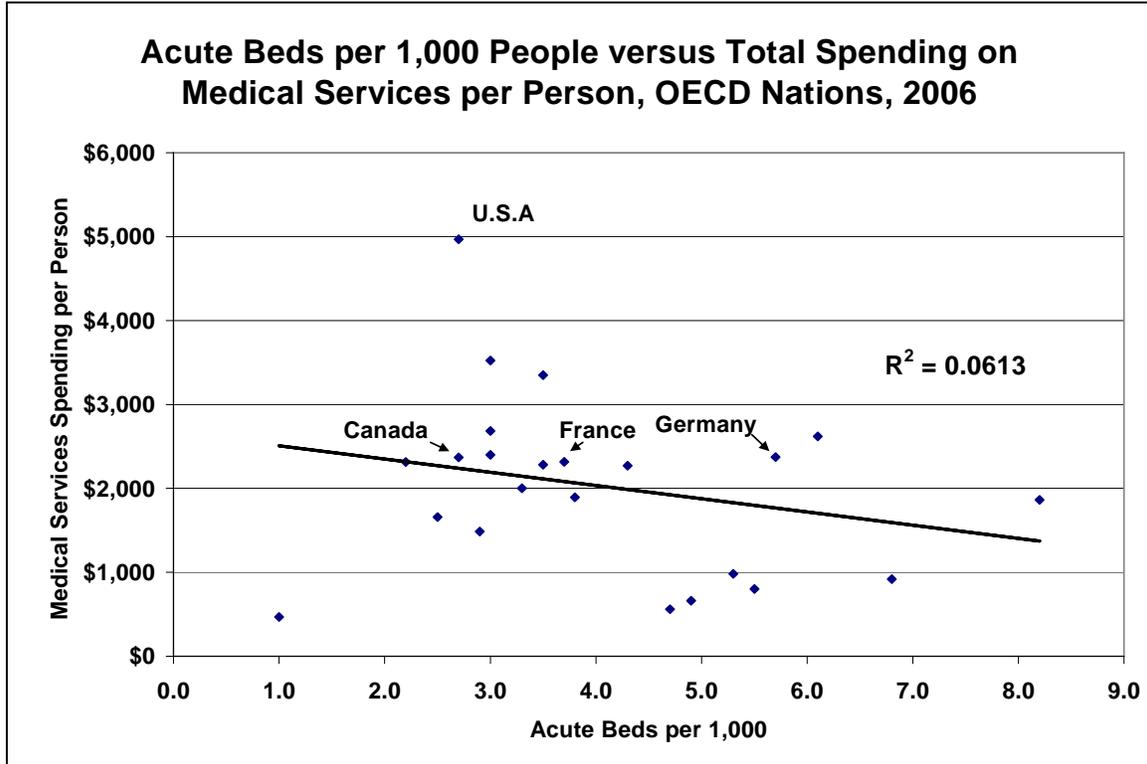
Among the world's wealthy nations, the United States falls near the bottom in acute hospital beds per 1,000 people, according to data from the OECD (Exhibit 50). Massachusetts is slightly below the U.S. as a whole in beds per 1,000.

**Exhibit 50**



Moreover, internationally, the ratio of hospital beds per 1,000 people is negatively correlated with personal health expenditures per person, as shown in Exhibit 51. This is very different from the U.S. inter-state pattern just reported in Exhibit 48. Other wealthy nations appear much less concerned about hospital bed supply, perhaps because they rely mainly on strategies other than bed supply restrictions or hospital closings to slow the growth in health care costs.

Exhibit 51



Source: OECD Health Data, 2009

Note: Spending is converted to dollars using purchasing power parities.

***h. Severity of illness is lower in Massachusetts, and this should make for lower costs***

Hospital expenses in Massachusetts are not being raised by any greater severity of illness. Indeed, average severity of illness of hospital patients served here seems to be slightly below the national average.

We have compared (Exhibit 52) the average case mix index in hospital fiscal year 2006 for Medicare patients served in Massachusetts hospitals with the average case mix index for Medicare patients nationally. Surprisingly--given, for example, our concentration of teaching hospitals and the reputation for attracting complex patients from out of state—the average Medicare case mix index in this state's hospitals is 4.0 percent lower, 1.43 versus 1.49 nationally.<sup>128 129</sup>

The case mix index is intended to be roughly proportional to expected cost of care, other things equal. Also, we have found, Medicare case mix indices tend to be very highly correlated with all-patient case mix indices. One reason this is logical is that fully 38 percent of hospital inpatients were aged 65 nationally and above in 2006, and therefore overwhelmingly covered by Medicare.<sup>130</sup> This

constitutes a minimum estimate of the Medicare share of inpatients, as it excludes disabled Medicare-sponsored patients aged under 65.

The difference in average case mix index noted above means that severity of illness for Medicare patients in 2006 in Massachusetts was 4.0 percent below the national average. This lower severity of illness should have worked to proportionately reduce the Massachusetts hospital cost excess. Thus, hospital costs per person here should have been 4.0 percent lower than the U.S. average, if all other factors were equal here and nationally. Since costs here were higher than expected, our tally will note that 4.0 percent (\$723 million) is added to hospital costs here to account for this case mix factor.

**Exhibit 52**

**Medicare Case Mix Index, U.S.A. and Massachusetts,  
Hospital Fiscal Year 2006**

	Average case mix index for Medicare patients	Number of Medicare discharges	Number of hospitals
U.S.A.	1.49	11,885,842	4,110
Massachusetts	1.43	276,354	65

Note: We calculated the average case mix indices for the U.S.A. and for Massachusetts. CMS provides the necessary data for all hospitals individually. According to CMS, “A hospital’s CMI represents the average diagnosis-related group (DRG) relative weight for that hospital. It is calculated by summing the DRG weights for all Medicare discharges and dividing by the number of discharges.” We summed case weights and discharges for all hospitals nationally, and divided the summed case weights by the summed discharges. We did the same for all Massachusetts hospitals.

Our calculated U.S. CMI of 1.49 on 11.9 million Medicare discharges is very close to the federally-reported 1.48 CMI on 12.3 million discharges.<sup>131</sup>

Source: Centers for Medicare and Medicare Services, Acute Inpatient PPS Data, “Fiscal Year 2006 Case Mix Index by Hospital,”

<http://www.cms.hhs.gov/AcuteInpatientPPS/FFD/itemdetail.asp?filterType=none&filterByDID=-99&sortByDID=2&sortOrder=ascending&itemID=CMS022523&intNumPerPage=10>,

Access confirmed 2 July 2009.

It is noteworthy that both the hospital admission rate and the outpatient visit use rate were higher in Massachusetts than nationally. This suggests that hospitals may have sometimes been used here when they would not have been used elsewhere. This marginal use in Massachusetts is likely to be associated with less-than-average severity of illness. We therefore apply the 4.0 percent lower severity to both inpatient and outpatient care.

Because hospitalized patients here were slightly less severely ill than the national average, it’s necessary to add to the estimated excess in hospital costs here.

(As with beds, this adds to the observed excess; by contrast, expenses for

research explain some of the observed excess.) *As noted in Exhibit 53, the added \$723 million equals 11.8 percent of the 2006 Massachusetts hospital cost excess of \$6,149 million.*

***i. Hospital profits are lower here, and this should make for lower costs***

As was shown earlier, in Exhibit 21, hospital profit margins in Massachusetts were below the national average in almost all years examined. This seems to be attributable more to high costs than to low revenues here.

Between 1997 and 2006, hospital total margins averaged 5.2 percent nationally but only 1.9 percent in Massachusetts.

It is useful to appreciate, however, that the gap between hospital profits in Massachusetts and hospital profits nationally narrowed considerably in the years since 2003. Indeed, in 2007, they were virtually identical. Unfortunately, Massachusetts total margins plummeted statewide in 2008—dropping to 2.8 percent according to hospital data reported to the Massachusetts Division of Health Care Finance and Policy.<sup>132</sup>

We focus here on the gap in total margins in 2006, between the 6.0 percent total margin of hospitals nationally and the 4.6 percent total margin of Massachusetts hospitals. Lower profit margins here should lower, not raise, our costs, so hospital profit margins here cannot contribute to explaining our excess costs.

To achieve the 6.0 percent total margin experienced by hospitals nationally, costs of care in Massachusetts hospitals would have to have fallen by \$276 million (1.5 percent), or roughly from \$18,076,000,000 to \$17,800,000,000.<sup>133</sup>

We treat this as an add-on to the unexplained Massachusetts hospital cost excess, as shown in summary Exhibit 53, because the \$276 million of actual Massachusetts hospital expenses would not have been made if Massachusetts hospitals had equaled the national average total margin. *The \$276 million equals 4.5 percent of the Massachusetts excess of \$6,149 million in 2006.*

***j. Other possible factors, briefly noted***

*High insured rate does not necessitate high hospital costs*

Even before the 2006 Massachusetts health care legislation began working to extend coverage more widely, a higher share of people here have been insured than in most other states. Indeed, that fact helped encourage state action on coverage because efforts to fill the gaps were thought to be easier than elsewhere. But some observers might also suggest that the long-standing high levels of health and hospital expenditures—and high health expenditures overall—in Massachusetts are linked to the long-standing above-average reach

of health coverage here. Are high hospital costs an inevitable result of widespread health coverage?

To address this question in a simple way, consider the level of hospital expenses for other states where relatively high shares of the population are insured.

In 2005, just before passage of this state's law expanding coverage, Census Bureau estimates put Massachusetts at fourth best among the states, with an estimated 9.2 percent uninsured. In 2004, strikingly—as this state lagged in emerging from the previous recession—Massachusetts ranked just seventeenth best, with 11.3 percent of residents uninsured.<sup>134</sup>

Because the federal government's most recent state-by-state data on hospital costs are for 2004, it's useful to look at costs for states with low uninsured rates at around that time. For residents of the three states with smaller 2005 uninsured shares than Massachusetts, spending on hospital care per resident in 2004 was estimated at \$2,092 in Iowa (8.3 percent uninsured), \$1,965 in Minnesota (7.9 percent uninsured), and just \$1,834 in Hawaii (8.6 percent uninsured), as compared with \$2,620 in the costliest state, Massachusetts. And among the 16 states which had more insured and fewer uninsured people in 2004 than Massachusetts, again we see that some had far lower hospital expenses per resident—along with Minnesota and Hawaii were Kansas (\$1,883) and neighboring New Hampshire (\$1,941).<sup>135</sup> Clearly, the high rates of insurance coverage need not mean high hospital costs.

Section E of this report, below, further addresses the relationship of expanded coverage to hospital costs in Massachusetts.

*Mandated benefits do not seem a large factor in high costs here*

Another factor sometimes blamed for high premiums is inclusion of state-mandated benefits in health insurance policies (though not in employers' self-insured plans). But a recent review estimated mandated benefit costs in Massachusetts.

It noted that some state-mandated benefits are also federally-mandated. So, for example, although maternity benefits represent the largest single cost for a service mandated by the state, that state mandate—among others--does not increase costs here because maternity benefits are also a federal mandate. The review provided evidence that many mandated services would be offered in the absence of the mandate. It concludes, "The true net cost impact of mandated benefits is likely...in the range of 3-4% of premiums..."<sup>136</sup> (Because comparable national estimates are lacking, and because a great share of patients are not affected by state mandates since their employers self-insure, no allowance is made for mandates in our summary tally of factors contributing to the hospital costs excess.)

**Summary**

Exhibit 53 summarizes the approximate degree of responsibility associated with each suggested justification or explanation for higher hospital costs in this state.

**Exhibit 53**

**9 Factors that Might Justify or Explain Excess 2006 Mass. Hospital Costs**

Factor	Share of the \$6,149 million hospital cost <u>excess</u> explained by this factor	Share of the \$18,076 M in hospital <u>total</u> costs explained by factor	Summary of evidence
a. Net exports of hospital care to people out-of-state	<b>Explains</b> \$325 million of excess explains 5.3 % of excess	explains 1.8% of costs statewide	Share of net exports (after subtracting Mass. residents' care received out of state) at marginal cost = 50% of average cost. The other 1/2 of costs are fixed. (The effect on hospitals' revenue is considerably greater, but we don't focus on revenue.)
b. More research	<b>Explains</b> \$1,207 million of excess explains 20.0 % of excess	explains 6.7% of costs statewide	Calculated in proportion to the drop in Massachusetts hospitals' other (non-patient) operating revenue that is required to reach national average
c. Training more doctors	<b>Explains</b> \$164 million of excess explains 2.7 % of excess	explains 0.9 % of costs statewide	Calculated at salary and fringe benefit cost of 2,481 extra medical residents trained in Massachusetts. Doubts about whether this is a legitimate and durably affordable explanation.
d. Higher cost of living	<b>Explains</b> \$777 million of excess explains 12.6 % of excess	explains 4.3 % of costs statewide	Payroll + benefit costs per FTE are higher here, somewhat offset by greater skill mix.
e. Superior outcomes	--no effect		Mixed evidence on superior outcomes, and little apparent association between hospital cost per person and outcomes.

Factor	Share of the \$6,149 million hospital cost <u>excess</u> explained by this factor	Share of the \$18,076 million in hospital <u>total costs</u> explained by factor	Summary of evidence
f. More older people	-- no effect		Slightly more older people but lower Medicare share of hospital costs.
g. More beds/1,000 people	<b>Adds</b> \$474 million to unexplained excess  adds to excess – accounts for 7.7% of excess	adds 2.6 % to costs statewide	Adds to excess because bed-to-population ratio is lower here. Hospital costs per person should be lower owing to this factor, in accord with inter-state correlation.
h. Severity of illness	<b>Adds</b> \$723 million to unexplained excess  adds to excess – accounts for 11.8% of excess	adds 4.0 % to costs statewide	Severity of illness (case mix index) was lower in Massachusetts. So, actual hospital costs per person are higher than expected.
i. Profit margins	<b>Adds</b> \$276 million to unexplained excess  adds to excess— accounts for 4.5% of excess	adds 1.5 % to costs statewide	As with severity of illness, hospital total margins are lower than average here despite high revenues. A fall of \$276 million in expenses would allow Massachusetts hospitals to equal the national total margins.

In summary, we find that, though four factors tallied here (exports, research, training, and cost of living) account for \$2,473 million of the state's excess 2006 hospital costs, three factors (beds, severity of illness, and profit margins) are counter-predictive. Those three factors raise the unexplained/ unjustified share of the cost excess because data on those factors indicate that this state's costs should be below the U.S. average). Two factors (age and outcomes) are neutral.

**Thus, of the state's cost excess of \$6,149 million (\$6.1 billion), only about one-sixth, an estimated \$1,000 million (\$1 billion), was justified by reasonable factors.**

Five-sixths of the excess remained unjustified—a net excess of \$5.1 billion. That \$5.1 billion in excess 2006 hospital costs was fully 28.5 percent of the \$18.1 billion in total hospital spending that year in Massachusetts. This short summary recapitulates the effects of the various factors.

***Summary: Actual Hospital Cost Excess, Explained Share, and Add-backs, 2006***

Actual Massachusetts hospital cost excess, 2006	\$6.1 billion
Explained by exports, research, training, and living costs	- \$2.5 billion
Outcomes/quality and elderly population share are neutral factors—neither explanatory or counter-predictive	—
Add-backs for counter-predictive factors: hospital beds, severity of illness, and profits	+ \$1.5 billion
<b>Net excess cost explained by widely-cited factors</b>	<b>\$1 billion (16.3% of excess)</b>
<b>Net excess after explanations and add-backs</b>	<b>= \$5.1 billion</b>

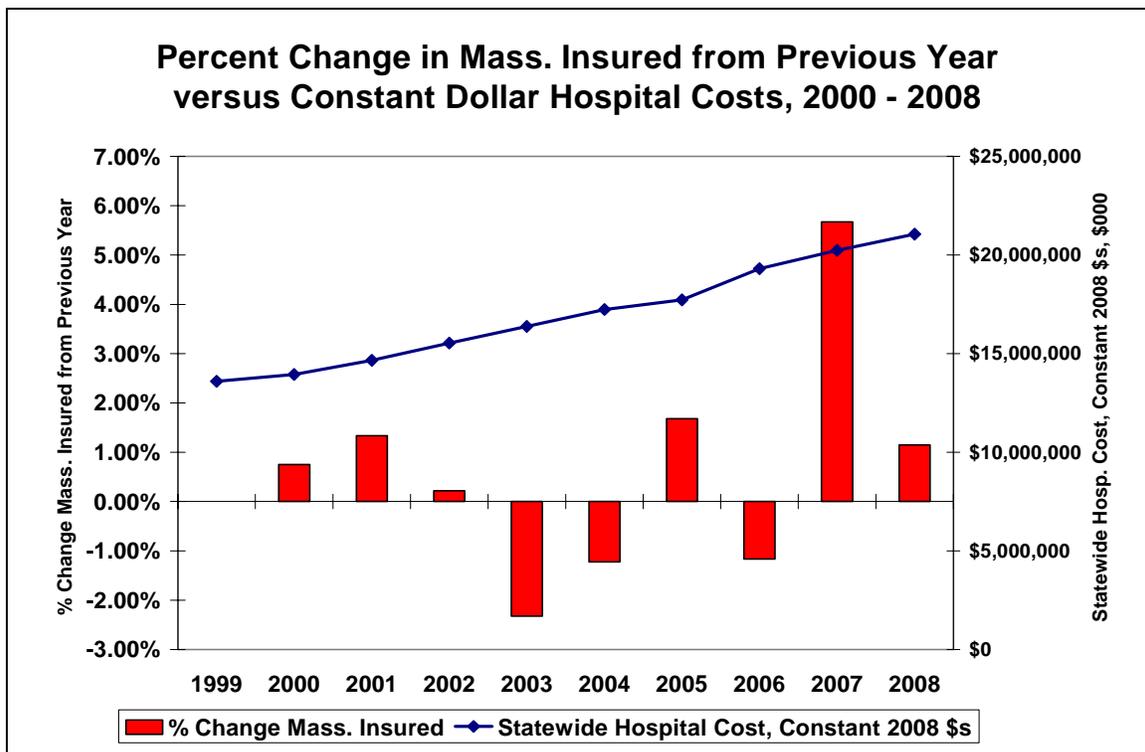
## ***E. DISCUSSION: MEANINGS FOR HEALTH REFORM AND FOR ACTION TO CONTAIN COST***

### ***1. Meanings for health care reform***

The rapid rise in excess hospital costs in Massachusetts overlapped with passage and early implementation of the state's health reform law, Chapter 58 of the Acts of 2006. This law was signed in April 2006, roughly in the middle of hospital fiscal year 2006. (Most hospitals' fiscal years run from 1 October to 30 September.)

**But improved coverage does not seem to have been responsible for more than a very small share of the rise in excess hospital costs in Massachusetts.** Exhibit 54 depicts the year-by-year percent changes in the number of this state's insured residents (vertical bars) compared with the change in statewide hospital costs in constant dollars (line). Clearly, there is little correlation.

***Exhibit 54***

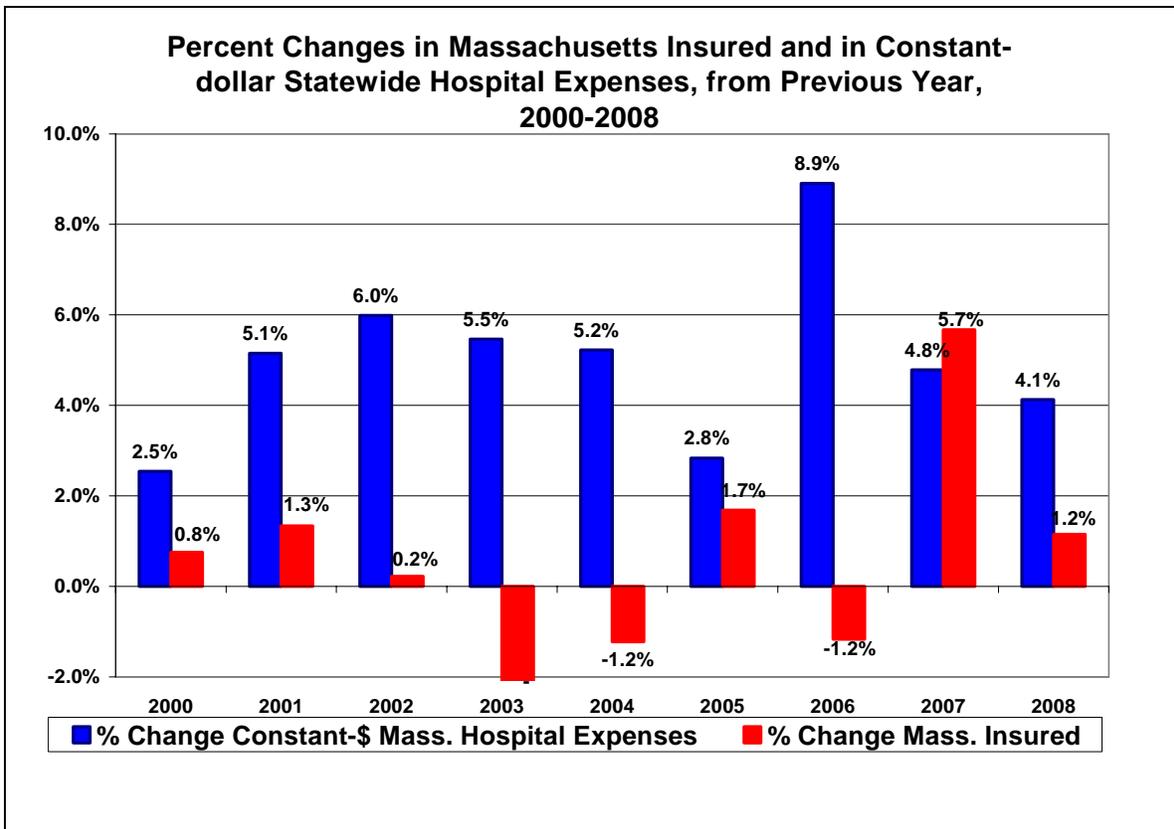


Sources: Insured People: U.S. Census Bureau, Current Population Survey, Historical Health Insurance Tables, Table HIA-4. Health Insurance Coverage Status and Type of Coverage by State All People: 1999 to 2008, <http://www.census.gov/hhes/www/hlthins/historic/hihist4.xls>. Statewide hospital costs: American Hospital Association, *Hospital Statistics*, Table 6, various years. The change in expenses is calculated from 2008 constant dollars, using urban area consumer price index for all items, annual index.

This view is reinforced in Exhibit 55, which compares annual percentage changes in the number of insured residents with the *percentage changes* in (rather than the dollar amount of) inflation-adjusted hospital expenses. The average change in the number of insured residents during these nine years was 0.7 percent. The average change in inflation-adjusted statewide hospital expenses was 5.0 percent.

Clearly, there is little link between changes in the two from year to year. Indeed, the large rise in hospital expenses in 2006 was associated with a slight drop in the number of insured people. And in 2007, as the Chapter 58 reform law began to engender a substantial rise in the number of insured people, the rate of rise in hospital spending dropped to 4.8 percent, close to one-half of the 2006 rate.

**Exhibit 55**



Sources: Insured People: U.S. Census Bureau, Current Population Survey, Historical Health Insurance Tables, Table HIA-4. Health Insurance Coverage Status and Type of Coverage by State All People: 1999 to 2008, <http://www.census.gov/hhes/www/hlthins/historic/hihist4.xls>. Statewide hospital costs: American Hospital Association, *Hospital Statistics*, Table 6, various years. The change in expenses is calculated from 2008 constant dollars, using urban area consumer price index for all items, annual index.

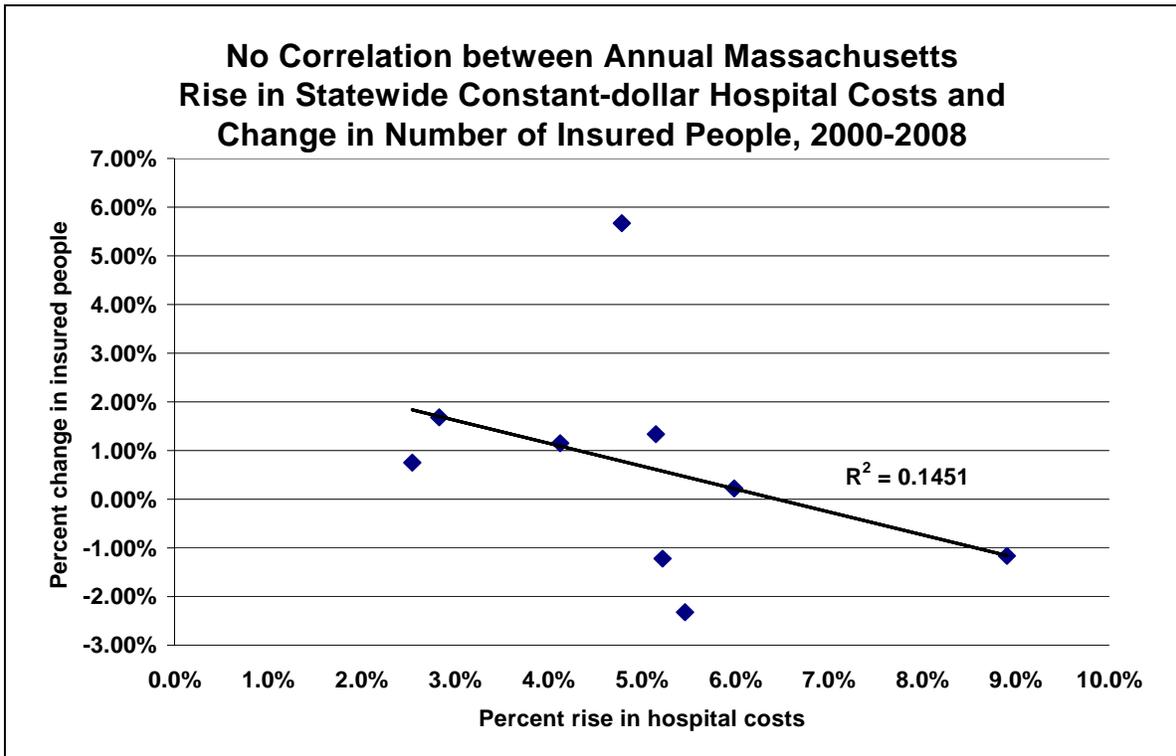
Further, as shown in Exhibit 56, there has actually been a mild negative relation between the percentage rise in constant-dollar (inflation-adjusted) statewide

hospital costs (horizontal axis) and the percentage change in the number of insured people (vertical axis), during the years from 2000 to 2008.

That is, years with a greater rise in the share of insured people were somewhat more likely to be years with lower average increases in statewide hospital costs, and the reverse. The  $R_p$  is -0.3809 and the  $R^2$  is 14.5 percent.

While no causation is implied, this mild negative relationship does suggest that, as might be expected, factors other than changes in the number of insured people influence changes in hospital costs. (Not surprisingly, this is also true for overall health care costs. For example, consider that, as we previously reported, health care costs' share of the state's economy rose 38 percent from 1987 to 2004, while the uninsured share of Massachusetts residents rose 78 percent.<sup>137</sup>)

**Exhibit 56**



Sources: As Exhibit 55.

There are other reasons to doubt that Chapter 58's expansion of coverage is to blame for the sharp 2006 and 2007 increases in excess hospital costs.

- MassHealth (Medicaid) did add almost 30,000 people between June 30 and September 30 of 2006, the last quarter of hospital fiscal year 2006, after the law was enacted. Fully half of those were children.<sup>138</sup> Children are generally a low-cost population to cover—but more importantly, many, probably most, of the children added to MassHealth had previously been covered by the Children's Medical Security Plan, which provided access to the state's hospital free care pool. So there should not have been an enormous backlog of unmet need for children's hospital care.<sup>139</sup> From June 2006 to March 2008, MassHealth enrollment grew by 110,740 people, but again, nearly half of those were non-disabled children.
- For people with incomes below three times the federal poverty standard but ineligible for MassHealth, Commonwealth Care is the major new coverage program, one whose costs are borne mainly by state subsidies. Launched midway through state fiscal year 2007, which it ended with some 79,000 members, Commonwealth Care reportedly spent \$132 million on members' health care that year.<sup>140</sup> Contrast that to the \$1.4 billion rise in 2007 Massachusetts hospital spending alone (following the \$2 billion rise in 2006). Further, a substantial portion of its state funding had been reallocated from the hospital free care pool, so it had already been going to hospitals.

Even though the rise in the Massachusetts hospital cost excess preceded efforts to cover more people under the 2006 Chapter 58 reform legislation, **sustaining that improved coverage will be more difficult if hospital costs are not brought under control.**

Since so small a share of the Massachusetts hospital cost excess is explained or justified by reasonable and legitimate factors (just \$1 billion in 2006, or one-sixth of the excess, as summarized in the previous section), it is reasonable to work harder to reduce excess hospital costs here.

## ***2. Meanings for Action to Contain Hospital Cost***

There are powerful reasons to act to shrink the Massachusetts hospital cost excess. But translating these reasons to actual motivation and translating motivation into effective efforts will require learning from

- a. reasons for the failures of most past cost controls, nationally and in this state;
- b. the reasons for the shrinkage of the Massachusetts excess from 52 percent in 1975 to 30 percent in 1996;
- c. the causes of the excess's resurgence since 1996; and

- d. the durable sources of the special factors that make Massachusetts hospital care and health care so costly.

Approaches that might work nationally, while often worth undertaking, probably can't be expected to work more powerfully in Massachusetts. And all these efforts must be designed to be safe for vulnerable patients.

**(1) *Three reasons to act***

Since the size of the Massachusetts excess in hospital costs has soared since 1996, and since the great bulk of that excess (an estimated five-sixths of the total) is not justified by reasonable explanations, it should be reduced.

Reducing the excess is both warranted and urgent.

- Doing so will help slow health insurance premium growth generally.
- Specifically, it will lower the cost of subsidizing expanded health insurance coverage under Massachusetts's 2006 health reform law.

But shrinkage of this state's excess hospital costs must be undertaken carefully and it must be informed by more than a little humility.

First, few efforts to contain hospital costs or other health costs have durably succeeded nationally.

Second, as discussed above, while the Massachusetts hospital cost excess from 1975 to 1996 was indeed squeezed, it may have been squeezed in ways that caused two types of harm. It seems to have been associated with the rise in the Massachusetts excess in other aspects of health care costs—probably partly through shifting care and costs to other health care sectors. Further, as community hospitals closed, it meant future hospital care would have to be more concentrated in costlier teaching facilities, raising cost of care and impairing access at the same time.

And the non-financial consequences are worrisome: the declining excess seems to have been associated with hospital closings that disproportionately affected communities where patients were already vulnerable to deprivation of needed care.

Third, while it will be hard to slow spending increases again, and even harder do so safely, a further challenge will be to shed costs durably, and without exciting backlashes that delegitimize cost control and open the door to resurgent cost increases.

Over the past year, many individuals responsible for passing or implementing the 2006 law have frequently said that preserving it—both for the long haul and especially during the present crisis in state revenues and in the economy broadly—depends on containing costs of health care. Despite this rhetoric, most recent activity has focused on boosting revenues and cutting benefits. Until now, those have been easier, both financially and politically.

- Yet cutting benefits is likely to further undermine access to care that is still far from adequate despite important gains under the 2006 law. A September 2009 report, for example, documented the problems faced by many people who are still forced to go without needed care and/or to accumulate medical debt in Massachusetts. Some are low-income people offered unaffordable employer-sponsored coverage—and therefore ineligible for the new state-subsidized coverage. Others are middle-income people, also ineligible for state subsidies, who—especially if they have substantial medical problems—still face great difficulty affording needed care because of high required out-of-pocket payments in addition to high premium costs.<sup>141</sup>
- And health insurance premiums are indeed high here. Recent evidence includes an August 2009 report indicating that Massachusetts had the highest average 2008 health insurance premiums of any state.<sup>142</sup>

Early signs of more serious talk about cost control are visible, though it is not clear whether this talk will translate into the substantial or fundamental changes that could lead to successful cost control.

- In July 2009, the state's Special Commission on the Health Care Payment System evidenced worry about high costs and recommended risk-adjusted global payments to accountable organizations, along with increased reliance on primary care and other reforms.<sup>143</sup>

But to what degree would such efforts resemble the managed care of the 1980s and 1990s? Would those efforts be informed by the lessons from those recent decades? Will high-cost caregivers, particularly Partners, go along?

Some early signs are encouraging. Blue Cross, Tufts, and perhaps other payers are working with groups of physicians to build capacity to manage capitated budgets.

Will there be enough time and patience to continue to build this capacity from the bottom up? Would capacity-building do enough to improve primary care delivery? Will these arrangements spread widely and become accepted by patients? And will enough physicians go along in the absence of a comprehensive peace treaty that markedly improves their professional lives?

We have asserted elsewhere that, since both market competition and government regulation have failed to contain health costs, and since physicians' decisions essentially control almost 87 percent of personal health care spending, cost control will be very difficult—even impossible—to achieve without the active involvement and agreement of physicians.<sup>144</sup>

Negotiating a peace treaty with physicians would address income, paperwork, malpractice, and other concerns of doctors—and doctors, in return, would take on the job of serving patients well with the huge sums already available. This means going beyond the mechanics of bundling units of payment or financial incentives to consider doctors' overall job satisfaction and motivation.

- In August of 2009, analysts from the RAND Corporation, working under contract to the state's Division of Health Care Finance and Policy, reported on 21 potential cost control options and sought to model savings associated with twelve of these, many of which are mechanical approaches. These include bundled payments, all payer rate setting, rate regulation targeted at major teaching hospitals, ceasing to pay for adverse events, and decreasing end-of-life resource use.<sup>145</sup> We call these approaches “mechanical” because they pursue changes in units of payment or payment methods but don't seem to include serious efforts to win political support generally or caregiver buy-in specifically.

We are concerned that the modeling itself is, inevitably, somewhat mechanical and that winning political acceptance of many, most, and perhaps even all of the options will be difficult or even impossible in the current climate. In particular, we are concerned that, absent a political agreement about whether and how to lower the Massachusetts hospital cost excess, application of mechanical solutions will engender not progress but rather years of game-playing and public theater, including finger-pointing and shouts of rationing. Further, since doctors make the decisions that expend the overwhelming share of the state's health care dollar, it will be essential to include legitimate representatives of the state's physicians in any discussion of costs control mechanisms.

Shrinking the Massachusetts hospital cost excess is possible. As shown earlier, cost increases were substantially slowed in Massachusetts from the mid-1970s to the mid-1990s. In these years, excess costs here dropped from over 50 percent above the national per-person average to as low as 30 percent above. While winning another reduction in the pace of spending increases will not be easy, it clearly can be done. A challenge will be to shed costs durably, and without exciting or spurring backlashes that delegitimize cost control and open the door to resurgent cost increases.

It is important to appreciate some of the political and other lessons from the success in shrinking the excess from the mid-1970s to the mid-1990s. In particular, a substantial though evolving political consensus on the importance of hospital cost control seemed to prevail in Massachusetts during those years. This resembles, in some ways, the consensus supporting passage, implementation, and retention of the state's 2006 health reform statute. But rebuilding a politically and financially effective consensus to support renewed cost control will be much harder to achieve than was agreeing to improve coverage. It will not succeed without support from physicians and without support—or, at least, acceptance—from hospitals.

## ***(2) Action should be informed by the failures of most past cost control efforts***

New efforts to slow hospital cost increases in Massachusetts should be informed by the failures of strategy, tactics, and understanding—and the undesirable side effects—that plagued past cost control efforts.

***a. Failures of strategy.*** Since about 1972, Americans have employed government regulation and market competition to try to slow the growth in hospital and other health care costs. Both have usually failed.

Competition. Market competition has failed partly because none of the six requirements for genuine free markets and fair competition are—or, we believe, can be—remotely satisfied in health care.

Those requirements are having many small buyers and sellers, none powerful enough to set or influence prices; absence of artificial influences on supply, demand, or price; easy entry to and exit from the market; widely-shared information on the prices and value of products that are homogeneous or comparable; prices that track costs; and adherence to constant mistrust of all by all.

Some of the main competitive efforts involved getting hospitals to compete by price and quality; using managed care to capitate patients and induce hospitals, physicians, and other caregivers to bid down their prices in exchange for greater volumes of patients; and increasing patients' out-of-pocket costs in hopes they will act as more careful consumers.

Hospital competition has been advocated as a way to cut costs because it was supposed to attract insurers to contract with, and patients to use, lower priced facilities, or ones offering better quality for the same price. If other hospitals faced

shrinking patient volume, their managers would presumably try to make them more efficient, thus more competitive—or they would eventually have to close.

Managed care was promoted as a way to leverage purchasers' buying power to steer patients towards efficient facilities, as well as to reduce use of the hospital (for example, by shortening hospital stays) and to pay lower prices for the use that persisted.

Some hospitals were closed because payments were not adequate—but as noted earlier, we find no evidence that inefficient facilities have been more likely to close. Indeed, partly because many lower-cost hospitals here have closed, patient volume in Massachusetts has certainly been shifting over the years into higher cost hospitals.

Meanwhile, managed care plans' market clout was offset as many of the **surviving hospitals merged** to strengthen their own selling power—without having to improve their efficiency. Despite initial claims that mergers would promote economies of scale and boost efficiency, little in the way of such savings was seen in most cases. In the case of one prominent hospital merger, we repeatedly requested evidence of savings, were promised that the evidence would be sent, but nothing ever arrived.

Instead, hospitals sought mergers both to eliminate a competitor and to become larger facilities with a greater share of local doctors, beds, and particular services—and thus more essential for managed care plans to contract with. In this way they were able to win back higher prices (as discussed elsewhere). Hospitals responded to competitive pressures not by seeking to increase their efficiency but rather by seeking to increase their market power, through consolidation—thus reducing competition. In the inevitably un-free health care market, competition has proven short-lived.

Managed care apparently helped to slow the national rate of hospital cost increases temporarily (and also to help lower the Massachusetts excess briefly). But it was resented by doctors and patients because it restricted clinical freedom and also seemed to enrich insurers and caregivers when patients received fewer services. The backlash against managed care seems to have been associated with rapid recoupment of hospital volumes and prices. In this, managed care resembles a crash diet that succeeds for a time but shortly fails, demoralizing the user about even sensible weight control regimens and leading to even greater weight gains.

This is not a problem in Massachusetts alone. Berenson and colleagues have recently described ways in which hospitals and physicians in California have joined together to win higher revenues.<sup>146</sup>

Finally, the strategy of promoting hospital price competition to contain costs—here and nationally—has relied in part on **reducing coverage and increasing insured patients' out-of-pocket costs**, with the aim of making all but the wealthiest among us “sensitive” to the cost of care. There are continuing efforts to boost deductibles, co-pays, and coinsurance (as well as workers' share of premiums)—which are partly doubtless simply to shift costs, but also are advocated by some in hopes of encouraging individual patients and families to analyze and refuse costly health services.<sup>147</sup> In this vein, the hospital association leadership in Massachusetts recently has echoed others' calls that “Patients ...need to have more ‘skin in the game.’”<sup>148</sup> Indeed, some argue that, apart from uninsured people, “the vast majority of the remaining Americans actually have too much insurance coverage....”<sup>149</sup>

But requirements that patients pay high out-of-pocket costs are doomed to fail as a cost-control policy, for a multitude of reasons:

- Very few patients have or can obtain the knowledge needed to weed out unnecessary care or to assess its cost-effectiveness. Few families combine the expertise of a doctor and an accountant, as in the “professional family, just like a lot of other families in America” that President Bush highlighted when promoting high-deductible insurance.<sup>150</sup>
- Evidence from past efforts along these lines indicates that patients are about as likely to refrain from seeking or accepting needed care as they are in refusing futile or marginal care.
- Some patients might be prone to over-using well-insured health care services because they believe that health care is more valuable than it really is. Higher out-of-pocket costs would probably reduce their use rates. But higher out-of-pocket costs would also reduce the use rates of stoics who believe that health care is less valuable than it really is. It is impossible to craft one set of out-of-pocket costs to address the circumstances and beliefs of both groups. That job gets much harder once ability to pay is added to the mix.
- Even if one believes that, in the future, costs could be contained by linking consumer cost incentives to physician performance, that isn't yet feasible, because many kinds of essential data and measurement tools do not exist.<sup>151</sup>
- Boosting patient cost-sharing to contain health spending, is not only a sick tax, but regressive, as people with ill health tend to have lower incomes. Starkly, Berwick commented, “It will result in a shifting of care away from the people who need it the most.”<sup>152</sup>
- Requiring higher patient payments aims at the wrong target—decisions made by patients rather than by doctors.<sup>153</sup> The sickest people account for the vast majority of health spending—for example, 64 percent of 2003 health care costs were for just 10 percent of non-institutionalized Americans.<sup>154</sup> Health care costs for seriously ill people largely reflect doctors' complex treatment decisions (the type of stent to use, how many ICU days are needed, and the like), and these

are typically little affected by patients' deductibles, co-payments and co-insurance.

Regulation and planning. Government regulation and planning have failed largely because political support for cost control has usually been great enough to enact controls but not strong enough to design, implement, or enforce them effectively.

Political support for regulatory cost controls has been broad but shallow, while opposition has been focused and effective. Few Americans saw any *direct* benefits from controlling cost. At best, if slower cost increases result, their benefits are in the future. Benefits are neither concrete nor immediate. But the pain of cost controls to hospitals or other caregivers appear immediate and certain.

Cost controls have often been watered down before passage or successfully gamed by caregivers. Perhaps most important, cost controls' effectiveness has been sharply reduced because they have generally squeezed, manipulated, or ignored the group of professionals whose decisions control almost 90 percent of personal health care spending—physicians. And doctors have often found ways to game or evade controls. For example, many doctors dissatisfied with their fees or their total incomes can see more patients. Some can build or buy their own ambulatory surgical centers, MRI facilities, or entire hospitals and profit from ownership shares.

Rising health costs are a problem everywhere, so success should be gauged by slower cost increases coupled with good access and outcomes. Other wealthy nations have effectively contained costs largely through national political negotiations among employers, unions, private insurers or public programs, hospitals, doctors, and other concerned parties. The parties settle on the size of acceptable cost increases. Payers provide revenue and negotiate with caregivers about mechanisms to hold costs to those levels.<sup>155</sup>

In the absence of such top-down political agreements, U.S. cost controls have generally relied on design and manipulation of formulas—Medicare DRGs and RBRVS are examples. These attempts at technical solutions fail because they don't replace durable and acceptable political deals.

Because of the difficulty of negotiating effective political deals to contain U.S. health costs, new technical or formulaic efforts are promoted as substitutes. Some experts hope that electronic health records, better case management for patients with chronic health problems, and pay-for-performance might save money. Added payments for good performance—efforts to promote competence, adherence to evidence, kindness, and energy—are hard to argue with in principle. But they are hard to administer in practice. It is worth noting

that all other wealthy democracies have contained costs without much reliance—usually without any reliance—on pay-for-performance.

In the absence of over-arching top-down negotiations in the United States, payers try to shift costs to one another, caregivers try to manipulate price and volume to their advantage, and no party is accountable for universal coverage, containing costs, improving appropriateness and quality of care, or securing the right hospitals, physicians and other caregivers in the right places.

More broadly, in the absence of effective markets or government action, Americans suffer health care cost anarchy, allowing powerful caregivers and insurers to impose higher prices. Another feature of this anarchy is that, with very few exceptions, no one is accountable or responsible for spending money carefully or for assuring that patients receive needed care. The exceptions—the Kaiser-type HMOs, the Veterans Administration hospitals, and emergency rooms governed by EMTALA—are striking.

To contain costs, we suggest that formula-driven payments should be abandoned as the main U.S. alternative to high-level effective political negotiations among doctors, hospitals, payers, employers, unions, and others. Instead, we suggest that the main alternative may well be found at the other extreme of U.S. health care—decisions by individual doctors about how to diagnose and treat individual patients. It may well be that U.S. health costs will need to be contained one blood test, one MRI, one specialist consult, one surgery, and one prescription at a time. Bringing physicians and hospitals on board to this job will be essential.

***b. Failures of tactics.*** The cleverest tactics can't substitute for strategic weaknesses or failures.

Hopes of containing costs by wholesale closing acute care beds or entire hospitals have usually been disappointed. Often, less costly hospitals were the ones that closed; survivors disproportionately were the larger teaching hospitals, and after some closings they often found it easier to raise prices. As mentioned earlier, we found that hospitals have been more likely to close in lower income areas of Massachusetts, and, in a separate study, more likely to close in African-American neighborhoods of 52 U.S. cities, probably exacerbating access problems. Inefficiency has never predicted closings.

Hopes of containing costs by moving care out of the hospital have often failed. The pressure on hospitals—from managed care and Medicare payment policies, especially—to cut length-of-stay, for example, meant chopping the inexpensive pre-surgery diagnostic days or reducing the allowed recuperative days after medical problems or surgery. But the costly treatment days and the bulk of the costs remained—and because hospitals had to spread their fixed costs over

fewer inpatient days, the cost per day rose. Rising per day charges further spurred payors to seek to cut days for their own patients, and to duck paying their fair share of fixed costs.<sup>156</sup>

When patients are removed from the hospital, sometimes they are served in other settings, in physician offices, sub-acute facilities, or with home care. Because hospitals often priced services—such as recuperative days—above actual cost of care, and because of the pricing methods negotiated with many payors, hospital care appeared so costly to payors that their top priority was to reduce hospital use. Yet the actual cost of specific services may be the same or greater when shifted to non-hospital settings—for example, if several home care staff are needed for a patient who, if recuperating in hospital, would need a low-to-moderate level of care.

While there may be good medical and psychological reasons to get many patients home quickly after hospitalization, the financial arguments for shorter stays have often been false. Sending patients home earlier may be very costly if they need infusions, specialized equipment and wound care, or multiple other home care staff. (And if patients lack adequate family and professional supports at home, this dehospitalization of care may be unsafe as well.)

Similarly, moving surgery from the hospital to other settings may have lowered costs of some care (although much of the savings may stem from better anesthesia chemicals and techniques, and superior imaging studies), but construction of ambulatory surgery centers greatly increased capacity to perform surgery, possibly resulting in increases in unnecessary but costly surgery.

When Medicare replaced cost reimbursement with prospective payment of hospitals by the diagnosis (DRG), some hospitals worked to become more efficient. But others unbundled services that had formerly been part of inpatient care by submitting separate bills for outpatient diagnostic services, and for hospital-owned skilled nursing facility recuperative care and home health services.

Politics, not gimmicks. Successful cost controls will rest on successfully-negotiated political and financial arrangements, not on market or regulatory efforts to evade, sidestep, or finesse political and financial conflicts.

Success will depend on building political support, and acceptance broadly in the health care field. It can't be achieved through a formulaic end-run around hospitals, which would ultimately be gamed by hospitals.

Comprehensive, Cost controls must be encompassing, not just addressing the unit of payment—because that is a formulaic gimmick, open to gaming if hospitals and doctors aim to do so.

**c. Failures of understanding.** Looking beyond strategy and tactics, past cost controls have suffered from three types of failure of understanding.

They did not identify wasted health care and its costs, and did not design efforts to squeeze out waste, capture the resulting savings, and recycle those savings to cover previously uninsured, under-insured, and underserved people. If hospitals retain savings won by cutting waste, their financially-motivated opposition to cost control should plummet.

They did not appreciate physicians' central role in controlling health care costs, so they did not work with physicians to negotiate durable arrangements that encourage doctors to spend money carefully, and thereby to overcome the Massachusetts pattern of relatively elaborate and costly care.

They did not seek ways to shift care from costly teaching hospitals to less costly community hospitals, while providing reassurance to those teaching hospitals that might be vulnerable to harm from that shift.

### **(3) Reasons for optimism**

We are optimistic. Viewing Massachusetts and U.S. health care overall, we have concluded in 2005 that roughly one-half of health care spending is wasted.<sup>157</sup> Others increasingly say that as well.<sup>158</sup> Squeezing out waste, capturing the savings, and recycling those savings to finance care for previously under-served people is the best way to contain cost while improving coverage and appropriateness of care—and while protecting needed hospitals and other caregivers.

In diminishing order of importance, the four types of waste are clinical waste, administrative waste, excess prices, and theft/fraud. The distribution of hospitals—by degree of specialization (teaching versus non-teaching) and by location—contributes to both clinical waste and excess prices. Each type of waste has specific causes and remedies. For example—

Clinical waste alone amounts to one-third of health care spending, according to a widely-cited estimate.<sup>159</sup> Clinical waste stems mainly from financial incentives to provide more care than is needed, overly aggressive care associated with the defensive medicine that derives from doctors' fear of being sued, lack of enough evidence about what care is needed to effectively diagnose and treat patients, failure to use existing evidence, failures to coordinate care, and imbalances in the distribution of hospitals and doctors—both by specialty and geographically.

There is also massive waste in the administration of our nation's and state's health care financing. This administrative waste stems partly from the complexity of determining whether a patient is financially covered, what services are covered, and what rules restrict care delivery in the nation's thousands of different insurance plans. Also wasteful are the inherently unproductive medical underwriting that enables insurers to avoid sicker patients, and the process of billing and paying individual claims for billions of individual services. But, we believe, even more administrative waste stems from the high levels of mistrust that—largely because of today's unaccountable payment methods—prevail between insurers and hospitals, and between insurers and doctors.

Excess prices are a widespread problem. They range from pharmaceuticals to CEO salaries to medical supplies and equipment and to rates of pay for many people working inside health care. The many causes of excess prices include long-standing failures of both market competition and government regulation in health care, unwarranted market power enjoyed by some caregivers, failures to negotiate caps on revenue available to pay for health care, and beliefs that higher prices are associated with better quality of care.

Theft and fraud stem partly from a belief that health care financing is open-ended, so stealing money results only in higher taxes, premiums, or out-of-pocket payments, not in denial of care, premature death and avoidable pain or disability. Failure to incarcerate people who steal dozens or even hundreds of millions of health care dollars is probably another cause. Market and regulatory failures in health care make for financial anarchy, which both invites and enables theft.

#### ***(4) Actions to lower the Massachusetts excess need to address the specific causes of that excess***

Cost controls that might work nationally--such as improved managerial efficiency<sup>160</sup>--cannot be adequate to address the Massachusetts excess. That's because there is no reason to believe that Massachusetts hospitals are markedly less efficiently managed than those in other states.

Actions to lower the Massachusetts excess must address both its durable causes and those responsible for its recent rises. Some causes are visible while others are off-stage.

***a. Causes of high hospital costs in Massachusetts—long-standing and recent.*** Some long-standing causes involve the shape of hospital care itself. Others center on physicians.

Hospitals. First, we conclude that the configuration of hospital care in Massachusetts—particularly the growing reliance on major COH teaching hospitals for inpatient care—does much to explain high costs here. How beds are used is much more important than the number of beds per 1,000 people.

It will be hard to slow the rate of rise in Massachusetts hospital costs without doing something about the growing drift of care toward major teaching hospitals. Here are three possible choices; there are others.

- One option is to try to retain more patients in lower-cost non-teaching hospitals when they don't require teaching hospitals' level of care.
- Another is to change the ways in which teaching hospitals themselves deliver services. Can they and their physicians learn to care for patients in markedly less costly ways—in ways that are durably affordable for the state's patients, employers, and taxpayers?
- A third would be to allow one or more teaching hospitals to close when they suffer financial distress.

With about one-half of Massachusetts hospitals closed since 1960, with about one-half of acute care beds closed since 1980, and with a bed-to-population ratio that is already below the national average, we generally support the first two choices and oppose the third. The burden of proof should fall on any person who actively advocates or passively accepts another hospital closing. And, in the absence of either a functioning free market or competent government action, financial distress does not legitimize a decision to close a hospital.

This makes sense for both today and tomorrow. If beds are properly identified as unneeded today, it probably makes sense to bank or mothball them for future use. The cost of doing so is far below the cost of \$1 billion per 1,000 beds for new construction.

Slowing the rate of rise in hospital costs in this state will require a serious financial and political conversation among all stakeholders, one that balances all patients' needs for appropriate and high-quality care with affordability.

Physicians. Second, we conclude that high physician-to-population ratios in Massachusetts do much to explain high health costs and high hospital costs here. As discussed earlier, by any measure, physician-to-population ratios in Massachusetts are higher than in any other state. And our physicians are disproportionately specialized.

This large and specialized supply of physicians is part of an explanation for high hospital costs and other health costs in Massachusetts that combines multiple

factors over several decades. In the 1950s and 1960s, Massachusetts physicians' fees were held down by Blue Shield, which commanded the private insurance market and contractually required participating physicians to accept Blue Shield payments as payment in full. No balance billing of patients was permitted. Blue Shield's dominance as a payer in Massachusetts meant that almost all physicians signed contracts with it, accepting the ban on balance billing and, thus, reduced incomes.

Massachusetts already had a large supply of MDs—and therefore, in a sense, had a relative shortage of patients. It was easy for an MD to do more for each patient, to fit in more frequent appointments for patients, or perform more surgery than they might have done elsewhere. And with many Massachusetts physicians having practiced in or trained in major teaching hospitals, they had already learned a relatively intensive and elaborate style of medical practice.

A state with fewer residents per physician and with low fees is a state in which physicians would logically give more services per patient in order to fill their time and earn incomes they considered reasonable. In this way, clinical services here may have evolved toward a more elaborate and expensive pattern of clinical care. Doctors' average incomes remain below the national average, we have calculated, but costs of care given or ordered by doctors is very high.<sup>161</sup>

Third, despite the high ratios of physicians to population in Massachusetts, the state relies very heavily on hospital outpatient departments as sites of relatively costly non-emergency physician visits.

These factors are long-standing and do more to explain durably high hospital costs per person here than they do to explain the recent increase in costs.

Efforts to slow cost increases while delivering needed and effective care to all patients will require increases in the number of primary physicians and other primary caregivers in Massachusetts. This, in turn, will almost require raising incomes of primary care physicians toward a market-clearing price that attracts the number of doctors needed. The money to finance these increases in number of primary care doctors and payment per doctor will require a front-end investment, one that would be re-paid from savings won by improving access to primary care physicians, and by cutting both paperwork waste and clinical waste. Clinical savings could be won through better coordination of care, greater reliance on physical examinations and patient histories to diagnose problems, and reduced reliance on costly imaging studies and the like.

More generally, as we wrote several years ago:

The Massachusetts Medical Society has long asserted that [doctors'] incomes are below the national average while their costs of living are higher. We believe that both of these things are true. The evidence on the income side is certainly unambiguous, and we believe that the evidence on the cost side is credible.

We fear, though, that it will be impossible for Massachusetts physicians to improve their lot by seeking still higher fees, in the absence of substantial reforms. That is because higher fees will persuade still more physicians trained in Massachusetts to remain here, and even induce physicians trained elsewhere to move here in greater numbers.

When that happens, either doctors' market positions will weaken further, driving incomes back down to today's levels, or public outcry against the high costs of paying more doctors more money to provide still more care will certainly galvanize cost controls. The only uncertainty is whether those cost controls will be carefully thought out or will be result from the customary policy-by-spasm.

We suggest that Massachusetts physicians' incomes can only be raised toward national levels in two complementary ways—cutting doctors' practice expenses and negotiating a comprehensive peace treaty between physicians and all who receive care or pay for it.<sup>162</sup>

***b. The fall and subsequent rise of the Massachusetts excess could be broadly explained along these lines:***

- In the early years examined, 1960 to 1975, hospital costs per person were typically some 47 to 52 percent above the national average.
- A number of pressures during the economic oil shock and stagflation years of the 1970s led hospitals to hold down their growth in expenses. These pressures included widespread worry about hospital and health costs in Massachusetts beginning in the early 1970s, early state legislation capping hospital charges in the 1970s, persisting demands from large employers that hospitals restrain prices, certificate of need and health planning efforts, and the Massachusetts all payer hospital rate setting policies which were modeled crudely on the Maryland method in the early and mid-1980s.
- In the years since 1960, one-half of Massachusetts hospitals have been closed, often with the acquiescence or encouragement of other hospitals, payers, and even government. The observed pattern of closings may have sometimes won occasional savings but, if so, these were clearly short-lived. Over time, more and more care has been shifted gradually into surviving hospitals that are often more costly than those that closed. Many surviving hospitals merged. It would be a mistake to try to save money by continuing to throw financially weaker hospitals out of the lifeboat.
- Gradually, many survivors asserted their claims that they needed to spend more money to deliver first-class care, and that this required higher revenues. One cluster of hospitals, Partners, acquired so much market and political power that it won high prices from Blue Cross, and then other payers. At the same time, managed care generally relaxed its financial incentives and

regulatory restrictions to contain costs. The Massachusetts excess soared again.

- This happened, in part, because employers' pressure to contain costs weakened. This happened for a number of reasons. Consider the manufacturing sector, source of much of the original pressure—perhaps partly because manufacturers were relatively likely to offer good benefits to somewhat older workers, raising premiums, and partly because manufacturers located in Massachusetts needed to compete against firms doing businesses in areas with lower health costs.

Manufacturing employment in the state plummeted. Some locally-owned firms were sold to large national or international businesses. Some, such as Digital Equipment Corporation, essentially disappeared. Statewide, manufacturing employment fell from 466,000 in 1990 to 267,000 in 2009, a drop of almost 200,000 jobs, 43 percent of the 1990 total. Manufacturing jobs fell from 16 percent to 8 percent of statewide non-farm total employment. That's a drop from roughly one in six jobs to one in twelve.<sup>163</sup> And some business groups opened membership to hospitals and health insurers as major employers.<sup>164</sup> This has tended to neutralize those groups' pressure to hold down hospital costs.

This view, while incomplete, is probably substantially accurate.

The relaxation of political, financial, and managed care pressures to squeeze out some of the Massachusetts excess appears to have resulted in more extensive and intensive use of hospital services. Admissions and non-emergency outpatient visits rose again. Surgery rates and non-labor costs remained high. Staffing levels rose faster than use rates, probably suggesting an increase in intensity of care.

Given the absence of dramatic smoking guns to explain excess costs in Massachusetts and their recent rise, and given failure of most types of cost controls over the years—both those relying on market competition and those relying on government regulation, and both in Massachusetts and nationally—it will be useful to develop new types of cost control. Several complementary methods are worth considering.

***(5) Cost control can't proceed in a vacuum; it requires reforms in paying and configuring hospitals' and doctors' care—reforms that win hospitals' and doctors' political support***

As described below, this state needs cost controls that (1) have concrete and immediate benefits; (2) buffer hospitals from harm, for example preserving their revenue flow by insuring the uninsured; (3) accompany commitments to pay all

needed, efficient hospitals enough; (4) accompany plans to identify all needed hospitals and ERs; (5) fairly measure cost; (6) accompany measures to reduce avoidable clinical and financial burdens on hospitals.

Some people say that the way to tell whether cost controls are really working is to squeeze hospitals, doctors, nursing homes, and drug makers until they scream with pain.

We urge that this is dangerously wrong-headed for at least two reasons.

- Complaints from caregivers might be one way to gauge tightness of cost control efforts. But they are not very sensitive gauges because caregivers sometimes complain even when cost controls are not working.
- Just as bad, some hospital administrators and trustees don't complain very loudly even when they are being hurt badly. (Hospital administrators who stay silent as their hospital slides toward closing may be embarrassed that they "can't compete," or worried about scaring away potential patients, staff, or suppliers.)

More important, we firmly believe that cost controls must and can be shaped to protect all needed caregivers and thereby to win at least their political acquiescence and at most their political support.

Hospital cost controls should rest on a wide consensus that they are necessary. Controls should be designed to reflect and reinforce that consensus.

First, cost controls will enjoy much greater political support if their benefits are concrete and immediate. One such linkage would pledge savings from cost control to retain or increase subsidies for more affordable coverage for previously uninsured people and improved coverage for under-insured people. The savings are then returned to caregivers as they serve newly-covered patients.

Second, cost controls will face much lower political opposition if hospitals are buffered from harm. One of the best ways to do this is to use a substantial share of the savings to finance care for growing numbers of newly-insured patients.

Third, this reassurance should be bolstered by unbreakable commitments, from all payers together, to pay all needed hospitals enough money to finance the costs of effective care that's provided efficiently.

Fourth, such commitments should begin by identifying all needed hospitals and emergency rooms, a job that only one state (Maryland) regularly undertakes. With one-half of Massachusetts hospitals lost—along with their emergency rooms, with bed-to-population ratios here below the national average, and with sporadic and even persistent bed shortfalls already occurring here,<sup>165</sup> the burden

of proof that further closings are both safe and money-saving must be on those who would advocate or tolerate additional closings.<sup>166</sup>

Such identification of needed hospitals is a function that can be accomplished only through careful needs assessment and planning. It should be done with an eye toward:

- a. satisfying total need for inpatient and outpatient capacity, both routine and emergency, and both today and tomorrow—with analysis of specific services (e.g. pediatrics, intensive care, and psychiatry), and not merely total beds
- b. minimizing travel times by retaining the right care in the right places;
- c. assuring economic, geographic, racial, and ethnic equity by retaining needed care in fair proportion to the residential locations of patients who rely more heavily on hospitals and who are more vulnerable to deprivation of needed care;
- d. promoting efficiency (and also lowering patients' and ambulances' travel times) by slowing or reversing the drift to delivering greater share of hospital care in costlier teaching hospitals; and
- e. helping to retain and restore needed primary and specialty care physician services in reasonable proximity to the places where patients live and work.

Fifth, again, such commitments should continue by ensuring that each needed hospital is guaranteed enough money to cover the cost of efficient delivery of high-quality care. This requires fair measures of that cost.

All-payer rate setting is probably the best and most available vehicle to accomplish these things. It is a mechanism that is compatible with a variety of methods of both raising money to finance health care and of covering uninsured people. Maryland has shown that all-payer rate setting can be designed, sustained, and administered with reasonable adequacy, fairness, and political support over decades of changing circumstances.

Enough money includes dollars to finance inpatient, outpatient, and emergency care in the hospital. It could also include dollars to retain or recruit primary care and specialists to deliver office-based physician services in the region surrounding the hospital.

All payers would pay each hospital essentially the same price, reinforcing payers' collective accountability to the hospital, and eliminating wasteful, distracting, and

ineffective cost-shifting among payers. Hospitals would not face any pressure to discriminate among patients by their payer status. Clinical need would trump financial expediency.

All patients' care would be equally profitable; there would be no cost-shifting among patients by diagnosis, and therefore no financial incentive for hospitals to prefer some diagnoses over others. Again, clinical need would trump financial expediency.

Sixth, it is essential to reduce avoidable clinical and financial burdens on hospitals. This entails greater reliance on genuine primary care, a subject that has long been discussed, but about which very little has actually been done. Better primary care, provided by well-trained, smart, kind, experienced, and self-confident physicians, would reduce need for ER visits, costly imaging studies, lab testing, specialist consultations, and hospitalizations.

This is especially important in Massachusetts, where, for reasons noted above, it is likely that physicians have evolved toward relatively elaborate and expensive patterns of clinical practice.

Massachusetts suffers a shortage of primary care physicians. Physicians may rely excessively on diagnostic imaging studies, laboratory tests, specialist consultations, and referrals to the ER. This excess will be hard to address in isolation. So will the relatively elaborate and expensive practice patterns of Massachusetts physicians generally.

We have therefore urged negotiation of a dramatic peace treaty with physicians, one that gives them thoroughgoing relief from fear of being sued and also from payment-related paperwork. This peace treaty should very substantially boost primary care physicians' before-tax income without lowering specialists' before-tax incomes. These three things will help to change doctors' view of health reform, cost control, and their role in both.

In exchange, physicians would take on the jobs of serving all residents of the Commonwealth, and of managing risk-adjusted capitated budgets by weeding out care of no or very low clinical value.<sup>167</sup>

Some will complain that cost controls that require such comprehensive reforms in the organization and delivery of hospitals' and physicians' services attempt everything and must result in nothing. We reply that past incremental efforts to contain costs and formula-driven substitutes for political consensus have failed badly. We harken back to the consensus-grounded successes in squeezing the Massachusetts hospital cost excess from the mid-1970s to the mid-1990s, and to the successes in building a consensus in support of the 2006 Chapter 58 Massachusetts health reform law as examples of what might work. We had long

hoped that movement in this direction could precede—not follow—a steadily weakening economy and growing financial shortfalls in Massachusetts health care.

Further, once something approaching a genuine political consensus on the central importance of again reducing the state’s hospital cost excess is won, it will be possible to design and implement individual components of that reduction separately.

## **(6) Design principles for cost containment**

a. Cost controls should be safe for patients and should absolutely not impose adverse and disproportionate impacts on patients who are already vulnerable to denial of needed care. This is vital in itself. It is also likely to reduce backlash against cost control.

b. Efforts to shrink the Massachusetts hospital cost excess are more likely to succeed if they target important causes of that excess, not problems that make for high hospital costs across the nation.

- Addressing high reliance on costly teaching hospitals is one obvious factor. It will be helpful to identify which hospital capacity is needed—how much, and in which locations. It will be essential to sustain high-quality, lower-cost hospitals and restrict growth of higher-cost hospitals.
- Working from upstream to reduce the downstream flow of non-emergency patients to hospitals is a second obvious factor. Ask physicians to do more to diagnose and treat patients without such heavily reliance on in-hospital services. This would require initiating quick, serious, and sustained action to rebuild the state’s primary care capacity.

c. Retail, patient-by-patient cost controls will be superior to most wholesale cost controls because waste in health care is widely diffused. Costs should be contained one laboratory test, one imaging study, one prescription, one surgery, and one specialist consultation at a time. Doing this requires putting the health care dollar into the hands of physicians under arrangements that allow us to trust them to spend the money carefully. Negotiating a clinical, legal, political, and financial peace treaty with Massachusetts physicians will help to liberate them (and ourselves) from the pattern of elaborate and costly clinical practices that developed and has persisted here in the years since the Second World War.

The first step should be making stronger efforts to capitate organized and responsible physician groups. This will probably begin with groups of primary care physicians. The primary care physicians would develop links to specialists

and the groups would shoulder their shares of the burden of financing each needed hospital's flexible budget.

By contrast, cost controls that address only nation-wide causes of high hospital costs are not likely to solve the problem of excess hospital costs in Massachusetts. Such cost controls include:

- better management to find ways to more efficiently provide the services now being given;
- aggregating the unit of payment to hospitals (such as greater bundling of hospital revenues);
- electronic health records;
- payment of hospitals for improved clinical performance; and
- tighter regulation of hospitals' requests for capital (buildings and equipment), in hopes that constraining capacity will constrain use

Some of these measures may be useful here and nationally, to address cost or quality, and others are greatly oversold, but none would affect the cost excess in Massachusetts hospitals—an excess that burdens all who pay for care here. Worse, by themselves, they resemble the sorts of mechanical formulas and financial or regulatory gimmicks that have already failed in past years and decades.

## **APPENDIX TABLES**

The appendix tables that follow compare Massachusetts and U.S. hospitals on various characteristics. In most tables, the first two columns of data are from American Hospital Association annual *Guide Issue of J.A.H.A Hospitals* for earlier years and *Hospital Statistics* for later years.

Other columns were calculated from those figures and from U.S. Census Bureau population estimates. In six tables, as noted, all data were calculated from data in other tables here. The AHA reports on all non-federal, short-term general and other special hospitals (obstetric, eye, children's, and other facilities).

All years reported are hospital fiscal years, 1 October to 30 September. So, for example, hospital fiscal year 2006 ran from 1 October 2005 to 30 September 2006. The great majority of hospitals are on 1 October fiscal years, but a small number report 1 July fiscal years. Unless otherwise noted, each year mentioned in the text is a hospital fiscal year.

## a. Hospital Beds

**Appendix Table 1**

	Hospital Beds <i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA./1,000	Percent change from previous year listed	
	USA	Mass	USA	Mass		USA	Mass.
1960	639,057	21,405	3.6	4.2	116.7%		
1965	741,292	23,359	3.8	4.3	110.7%	7.9%	2.4%
1970	848,232	26,137	4.1	4.6	112.3%	5.7%	7.2%
1975	941,844	26,416	4.3	4.6	106.6%	5.7%	0.4%
1980	988,387	25,521	4.3	4.5	103.8%	0.3%	-2.3%
1981	1,003,435	25,635	4.3	4.5	103.3%	0.5%	-0.1%
1982	1,012,191	25,807	4.3	4.5	103.9%	-0.1%	0.4%
1983	1,018,482	25,920	4.3	4.5	104.2%	-0.3%	0.0%
1984	1,017,057	26,053	4.3	4.5	105.0%	-1.1%	-0.3%
1985	1,000,678	25,892	4.2	4.4	106.2%	-2.5%	-1.4%
1986	978,375	24,836	4.0	4.2	104.6%	-3.2%	-4.6%
1987	958,312	23,729	3.9	4.0	102.4%	-3.0%	-5.0%
1988	946,697	23,224	3.8	3.9	101.5%	-2.1%	-2.9%
1989	933,318	22,217	3.7	3.7	98.8%	-2.4%	-5.0%
1990	927,360	21,875	3.7	3.6	97.5%	-0.1%	-1.4%
1991	924,049	21,649	3.7	3.6	98.2%	-1.4%	-0.8%
1992	920,943	21,725	3.6	3.6	100.1%	-1.4%	0.5%
1993	918,786	21,142	3.6	3.5	98.2%	-1.5%	-3.4%
1994	902,061	19,918	3.5	3.3	94.7%	-3.1%	-6.5%
1995	872,736	18,860	3.3	3.1	93.2%	-4.5%	-6.0%
1996	862,352	17,990	3.2	2.9	90.5%	-2.4%	-5.3%
1997	853,287	17,431	3.1	2.8	89.1%	-2.3%	-3.8%
1998	839,988	16,493	3.1	2.6	86.1%	-2.8%	-6.1%
1999	829,575	16,309	3.0	2.6	86.7%	-2.5%	-1.8%
2000	823,560	16,586	2.9	2.6	89.3%	-2.0%	1.0%
2001	825,966	16,504	2.9	2.6	88.8%	-0.7%	-1.2%
2002	820,653	16,033	2.9	2.5	87.2%	-1.6%	-3.4%
2003	813,307	16,001	2.8	2.5	88.4%	-1.8%	-0.3%
2004	808,127	16,215	2.8	2.5	91.1%	-1.5%	1.4%
2005	802,311	16,213	2.7	2.5	92.6%	-1.6%	0.0%
2006	802,658	16,344	2.7	2.5	94.1%	-0.9%	0.7%
2007	800,892	16,496	2.7	2.6	95.8%	-1.2%	0.6%

Note: Owing to rounding errors, some data may seem incongruous.

## b. Inpatient Care

### Hospital admissions

**Appendix Table 2**

	<i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA/1,000	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1960	22,970,146	708,631	128.1	137.6	107.4%		
1965	26,462,878	790,113	137.2	144.0	104.9%	7.1%	4.6%
1970	29,251,655	851,172	140.1	148.6	106.0%	2.1%	3.2%
1975	33,434,659	895,636	152.5	155.3	101.8%	8.9%	4.5%
1980	36,143,445	867,975	157.6	152.2	96.6%	3.3%	-2.0%
1981	36,438,232	866,802	157.2	151.2	96.2%	-0.2%	-0.7%
1982	36,379,446	872,792	155.4	151.9	97.7%	-1.2%	0.5%
1983	36,151,780	876,278	153.0	151.8	99.2%	-1.6%	-0.1%
1984	35,155,462	862,486	147.4	148.2	100.6%	-3.6%	-2.3%
1985	33,448,631	823,968	138.9	140.5	101.1%	-5.7%	-5.2%
1986	32,378,796	813,565	133.2	137.9	103.5%	-4.1%	-1.8%
1987	31,600,817	792,706	128.8	133.6	103.7%	-3.3%	-3.2%
1988	31,452,835	792,723	127.0	132.5	104.3%	-1.4%	-0.8%
1989	31,116,048	800,379	124.4	132.8	106.7%	-2.0%	0.2%
1990	31,181,046	810,991	125.3	134.8	107.6%	0.7%	1.5%
1991	31,064,283	821,135	123.5	136.8	110.8%	-1.4%	1.5%
1992	31,033,557	835,982	122.0	139.5	114.3%	-1.2%	1.9%
1993	30,748,051	817,255	119.4	135.4	113.4%	-2.2%	-2.9%
1994	30,718,136	781,542	117.8	128.5	109.1%	-1.4%	-5.1%
1995	30,945,357	750,807	117.1	122.6	104.6%	-0.5%	-4.6%
1996	31,098,959	729,703	116.2	118.3	101.7%	-0.8%	-3.5%
1997	31,576,960	764,322	116.6	123.0	105.5%	0.3%	4.0%
1998	31,811,673	738,018	115.9	117.9	101.7%	-0.5%	-4.1%
1999	32,359,042	739,375	116.5	117.3	100.7%	0.4%	-0.5%
2000	33,089,467	740,286	117.6	116.6	99.2%	1.0%	-0.6%
2001	33,813,589	766,708	118.6	119.9	101.1%	0.9%	2.8%
2002	34,478,280	765,820	119.7	119.1	99.5%	0.9%	-0.7%
2003	34,782,742	784,618	115.7	121.4	104.9%	-3.3%	2.0%
2004	35,086,061	801,137	116.7	124.0	106.2%	0.9%	2.1%
2005	35,238,673	799,653	117.2	123.8	105.5%	0.4%	-0.2%
2006	35,377,659	834,895	117.7	129.2	109.8%	0.4%	4.4%
2007	35,345,986	842,417	117.6	130.4	110.9%	-0.1%	0.9%

Inpatient days

**Appendix Table 3**

	<i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA/1,000	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass		USA	Mass.
1960	174,573,110	5,952,500	974	1,156	118.8%		
1965	206,410,448	6,636,949	1,070	1,209	113.0%	9.9%	4.6%
1970	239,863,571	7,490,314	1,149	1,307	113.8%	7.4%	8.1%
1975	257,593,729	7,609,433	1,175	1,320	112.3%	2.3%	0.9%
1980	273,085,130	7,649,308	1,191	1,341	112.6%	1.3%	1.7%
1981	278,405,882	7,702,742	1,201	1,344	111.8%	0.9%	0.2%
1982	278,043,093	7,792,666	1,188	1,356	114.2%	-1.1%	0.9%
1983	273,196,906	7,607,605	1,156	1,317	114.0%	-2.7%	-2.8%
1984	256,603,081	7,398,161	1,076	1,271	118.2%	-6.9%	-3.5%
1985	236,619,446	6,960,658	983	1,187	120.7%	-8.6%	-6.7%
1986	229,447,826	6,225,482	944	1,055	111.8%	-4.0%	-11.1%
1987	227,014,903	6,098,382	925	1,028	111.1%	-2.0%	-2.6%
1988	226,875,042	6,221,528	916	1,040	113.5%	-1.0%	1.2%
1989	225,436,505	6,122,727	901	1,016	112.7%	-1.6%	-2.3%
1990	225,971,653	5,921,378	908	984	108.4%	0.8%	-3.1%
1991	222,858,470	5,771,582	886	962	108.5%	-2.4%	-2.3%
1992	221,047,104	5,769,990	869	963	110.7%	-1.9%	0.1%
1993	215,888,741	5,502,284	838	911	108.7%	-3.6%	-5.3%
1994	207,180,278	4,961,224	794	816	102.7%	-5.2%	-10.5%
1995	199,876,367	4,754,666	757	776	102.6%	-4.7%	-4.8%
1996	193,747,004	4,427,909	724	718	99.1%	-4.3%	-7.5%
1997	192,504,015	4,283,021	711	689	97.0%	-1.9%	-4.0%
1998	191,430,450	4,186,012	698	669	95.9%	-1.8%	-3.0%
1999	191,824,270	4,210,454	690	668	96.8%	-1.1%	-0.1%
2000	192,420,368	4,289,840	684	676	98.8%	-1.0%	1.2%
2001	194,106,316	4,382,048	683	685	100.4%	-0.2%	1.4%
2002	196,690,099	4,348,099	685	676	98.6%	0.4%	-1.4%
2003	196,649,769	4,372,515	679	679	100.0%	-0.9%	0.4%
2004	197,564,172	4,428,800	676	688	101.7%	-0.4%	1.3%
2005	197,073,770	4,386,690	668	682	102.0%	-1.2%	-0.9%
2006	196,366,512	4,432,313	660	688	104.3%	-1.3%	0.9%
2007	194,549,348	4,391,528	647	680	105.0%	-1.9%	-1.2%

Occupancy rate

**Appendix Table 4**

	<i>Calculated from data reported by AHA</i>		Mass as % of USA	Percent change from previous year listed	
	USA	Mass.		USA	Mass.
1960	74.7	75.8	101.5%		
1965	76.0	78.3	103.0%	1.7%	3.3%
1970	78.0	79.7	102.2%	2.6%	1.8%
1975	75.0	78.9	105.2%	-3.8%	-1.0%
1980	75.6	81.9	108.3%	0.8%	3.8%
1981	76.0	82.4	108.4%	0.5%	0.6%
1982	75.3	82.8	110.0%	-0.9%	0.5%
1983	73.5	80.4	109.4%	-2.4%	-2.9%
1984	69.0	77.6	112.5%	-6.1%	-3.5%
1985	64.8	73.7	113.7%	-6.1%	-5.0%
1986	64.3	68.7	106.8%	-0.8%	-6.8%
1987	64.9	70.4	108.5%	0.9%	2.5%
1988	65.5	73.2	111.8%	0.9%	4.0%
1989	66.2	75.5	114.0%	1.1%	3.1%
1990	66.8	74.2	111.1%	0.9%	-1.7%
1991	66.1	73.1	110.6%	-1.0%	-1.5%
1992	65.6	72.6	110.7%	-0.8%	-0.7%
1993	64.4	71.3	110.7%	-1.8%	-1.8%
1994	62.9	68.3	108.6%	-2.3%	-4.2%
1995	62.8	69.1	109.9%	-0.1%	1.1%
1996	61.6	67.4	109.6%	-2.0%	-2.4%
1997	61.8	67.3	108.9%	0.4%	-0.2%
1998	62.4	69.5	111.4%	1.0%	3.3%
1999	63.4	70.7	111.6%	1.5%	1.7%
2000	64.0	70.9	110.7%	1.0%	0.2%
2001	64.4	72.7	113.0%	0.6%	2.7%
2002	65.7	74.3	113.2%	2.0%	2.1%
2003	66.2	74.9	113.0%	0.9%	0.8%
2004	67.0	74.8	111.7%	1.1%	0.0%
2005	67.3	74.1	110.2%	0.5%	-0.9%
2006	67.0	74.3	110.8%	-0.4%	0.2%
2007	66.6	72.9	109.6%	-0.7%	-1.8%

Average length-of-stay (days)

**Appendix Table 5**

	<i>As reported by AHA</i>		Mass as % of USA	Percent change from previous year listed	
	USA	Mass.		USA	Mass.
1960	7.6	8.4	110.5%		
1965	7.8	8.4	107.7%	2.6%	0.0%
1970	8.2	8.8	107.3%	5.1%	4.8%
1975	7.7	8.5	110.4%	-6.1%	-3.4%
1980	7.6	8.8	115.8%	-1.3%	3.5%
1981	7.6	8.9	117.1%	0.0%	1.1%
1982	7.6	8.9	117.1%	0.0%	0.0%
1983	7.6	8.7	114.5%	0.0%	-2.2%
1984	7.3	8.6	117.8%	-3.9%	-1.1%
1985	7.1	8.4	118.3%	-2.7%	-2.3%
1986	7.1	7.7	108.5%	0.0%	-8.3%
1987	7.2	7.7	106.9%	1.4%	0.0%
1988	7.2	7.8	108.3%	0.0%	1.3%
1989	7.2	7.6	105.6%	0.0%	-2.6%
1990	7.2	7.3	101.4%	0.0%	-3.9%
1991	7.2	7.0	97.2%	0.0%	-4.1%
1992	7.1	6.9	97.2%	-1.4%	-1.4%
1993	7.0	6.7	95.7%	-1.4%	-2.9%
1994	6.7	6.3	94.0%	-4.3%	-6.0%
1995	6.5	6.3	96.9%	-3.0%	0.0%
1996	6.2	6.1	98.4%	-4.6%	-3.2%
1997	6.1	5.6	91.8%	-1.6%	-8.2%
1998	6.0	5.7	95.0%	-1.6%	1.8%
1999	5.9	5.7	96.6%	-1.7%	0.0%
2000	5.8	5.8	100.0%	-1.7%	1.8%
2001	5.8	5.8	100.0%	0.0%	0.0%
2002	5.7	5.7	100.0%	-1.7%	-1.7%
2003	5.7	5.6	98.2%	0.0%	-1.8%
2004	5.6	5.5	98.2%	-1.8%	-1.8%
2005	5.6	5.5	98.2%	0.0%	0.0%
2006	5.6	5.3	94.6%	0.0%	-3.6%
2007	5.5	5.2	94.5%	-1.8%	-1.9%

### c. Surgical operations

**Appendix Table 6**

	<i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA/1,000	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1975	16,663,846	485,616	76.0	84.2	110.8%		
1980	18,767,666	535,889	81.8	94.0	114.8%	7.7%	11.6%
1981	19,236,206	544,249	83.0	94.9	114.4%	1.4%	1.0%
1982	19,593,639	546,422	83.7	95.1	113.6%	0.8%	0.2%
1983	19,844,908	557,252	84.0	96.5	114.9%	0.3%	1.5%
1984	19,908,241	571,298	83.5	98.2	117.6%	-0.6%	1.7%
1985	20,113,350	583,119	83.6	99.4	119.0%	0.1%	1.3%
1986	20,469,134	595,900	84.2	101.0	119.9%	0.8%	1.6%
1987	20,817,629	569,496	84.9	96.0	113.1%	0.8%	-5.0%
1988	21,411,138	578,661	86.5	96.7	111.9%	1.9%	0.8%
1989	21,340,280	607,445	85.3	100.8	118.1%	-1.3%	4.2%
1990	21,914,868	614,734	88.1	102.2	116.0%	3.2%	1.4%
1991	22,405,051	640,598	89.1	106.7	119.8%	1.1%	4.4%
1992	22,859,972	668,838	89.9	111.6	124.1%	0.9%	4.5%
1993	22,805,995	643,255	88.5	106.5	120.3%	-1.5%	-4.5%
1994	22,988,776	626,757	88.1	103.1	116.9%	-0.5%	-3.3%
1995	23,162,917	632,884	87.7	103.3	117.8%	-0.5%	0.3%
1996	23,569,263	603,588	88.1	97.8	111.0%	0.5%	-5.3%
1997	24,187,371	601,436	89.3	96.8	108.4%	1.3%	-1.1%
1998	25,329,319	643,088	92.3	102.8	111.3%	3.4%	6.2%
1999	25,385,085	654,967	91.4	103.9	113.7%	-1.0%	1.1%
2000	26,112,710	676,193	94.0	107.3	114.2%	2.9%	3.2%
2001	26,464,309	680,456	93.1	106.4	114.3%	-1.0%	-0.8%
2002	27,466,186	691,220	95.7	107.4	112.3%	2.8%	1.0%
2003	27,106,538	696,404	93.6	108.1	115.5%	-2.2%	0.6%
2004	27,401,836	752,668	93.8	116.9	124.7%	0.2%	8.1%
2005	27,542,858	729,347	93.4	113.3	121.3%	-0.4%	-3.0%
2006	27,330,824	716,754	91.8	111.3	121.2%	-1.7%	-1.8%
2007	27,335,964	691,545	91.0	107.0	117.7%	-0.9%	-3.8%

#### d. Use of outpatient care

##### Emergency room visits

**Appendix Table 7**

	Emergency room visits <i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA/1,000	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1975	68,936,557	2,609,387	315	452	143.9%		
1980	77,245,450	3,070,817	337	538	159.8%	7.1%	19.0%
1981	77,492,569	2,947,717	334	514	153.8%	-0.7%	-4.5%
1982	75,981,004	2,859,047	325	497	153.3%	-2.9%	-3.2%
1983	72,721,575	2,902,123	308	503	163.3%	-5.2%	1.0%
1984	72,980,188	2,744,533	306	472	154.1%	-0.6%	-6.2%
1985	74,546,904	2,656,732	310	453	146.3%	1.2%	-4.0%
1986	76,601,412	2,795,948	315	474	150.4%	1.8%	4.7%
1987	78,287,282	2,766,215	319	466	146.1%	1.2%	-1.7%
1988	81,259,787	2,801,175	328	468	142.7%	2.8%	0.4%
1989	84,305,300	2,819,339	337	468	138.8%	2.7%	-0.1%
1990	86,692,503	2,764,029	348	459	131.9%	3.4%	-1.8%
1991	88,533,073	2,809,570	352	468	133.0%	1.0%	1.9%
1992	90,768,575	2,897,305	357	483	135.4%	1.4%	3.2%
1993	92,554,898	2,752,814	359	456	126.9%	0.7%	-5.7%
1994	90,497,301	2,729,238	347	449	129.3%	-3.5%	-1.6%
1995	94,745,938	2,717,648	359	444	123.7%	3.4%	-1.1%
1996	93,111,592	2,581,076	348	418	120.2%	-3.0%	-5.7%
1997	92,819,892	2,559,125	343	412	120.2%	-1.6%	-1.6%
1998	94,771,405	2,473,668	345	395	114.4%	0.8%	-4.0%
1999	99,484,462	2,726,113	358	432	120.8%	3.7%	9.4%
2000	103,144,030	2,715,812	371	431	116.1%	3.7%	-0.4%
2001	105,957,778	2,717,815	373	425	114.0%	0.4%	-1.4%
2002	109,951,738	2,882,602	383	448	117.0%	2.8%	5.4%
2003	111,069,871	2,929,681	384	455	118.6%	0.1%	1.5%
2004	112,603,969	2,874,936	385	447	115.9%	0.5%	-1.8%
2005	114,750,874	2,866,187	389	445	114.5%	1.0%	-0.3%
2006	118,374,029	3,139,255	398	487	122.6%	2.2%	9.4%
2007	120,811,299	3,187,172	402	493	122.7%	1.1%	1.2%

Other (non-emergency) outpatient visits

**Appendix Table 8**

	<i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA/1,000	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1975	121,735,880	4,555,474	555	790	142.2%		
1980	125,064,519	5,321,974	545	933	171.1%	-1.8%	18.1%
1981	125,275,079	5,747,998	541	1,003	185.5%	-0.9%	7.4%
1982	131,298,761	5,575,777	561	970	173.0%	3.8%	-3.2%
1983	137,322,442	5,403,555	581	936	161.1%	3.6%	-3.6%
1984	138,981,124	5,616,767	583	965	165.7%	0.3%	3.1%
1985	144,169,498	5,644,201	599	962	160.7%	2.8%	-0.3%
1986	155,310,537	5,830,465	639	988	154.7%	6.7%	2.7%
1987	167,236,629	6,207,402	682	1,046	153.4%	6.7%	5.8%
1988	187,869,535	6,634,633	759	1,109	146.2%	11.3%	6.0%
1989	201,406,285	7,321,619	805	1,215	150.8%	6.2%	9.5%
1990	214,636,259	7,136,865	863	1,186	137.5%	7.1%	-2.3%
1991	233,514,802	7,838,040	929	1,306	140.6%	7.6%	10.1%
1992	257,753,077	9,744,797	1,014	1,626	160.4%	9.2%	24.5%
1993	274,330,048	9,601,429	1,065	1,590	149.3%	5.1%	-2.2%
1994	292,426,265	9,687,062	1,121	1,593	142.1%	5.3%	0.2%
1995	319,598,899	10,759,652	1,210	1,757	145.2%	7.9%	10.3%
1996	346,751,515	11,150,663	1,296	1,807	139.4%	7.1%	2.9%
1997	357,320,118	11,065,537	1,319	1,781	135.0%	1.8%	-1.5%
1998	379,422,063	12,952,045	1,383	2,070	149.7%	4.8%	16.2%
1999	395,861,824	12,982,756	1,425	2,060	144.6%	3.0%	-0.5%
2000	418,260,946	13,994,541	1,505	2,220	147.5%	5.7%	7.8%
2001	432,552,600	16,060,322	1,521	2,511	165.1%	1.1%	13.1%
2002	446,452,474	16,141,885	1,555	2,509	161.3%	2.2%	-0.1%
2003	452,116,175	16,703,465	1,561	2,593	166.1%	0.4%	3.4%
2004	458,965,365	16,161,749	1,571	2,510	159.8%	0.6%	-3.2%
2005	469,677,862	15,998,978	1,593	2,486	156.1%	1.4%	-1.0%
2006	481,178,996	16,404,673	1,617	2,547	157.6%	1.5%	2.4%
2007	482,489,075	16,393,033	1,605	2,537	158.0%	-0.7%	-0.4%

Total outpatient visits

**Appendix Table 9**

Total outpatient visits	<i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA/1,000	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1975	190,672,437	7,164,861	870	1,242	142.8%		
1980	202,309,969	8,392,791	882	1,472	166.8%	1.4%	18.5%
1981	202,767,648	8,695,715	875	1,517	173.3%	-0.8%	3.1%
1982	206,405,833	8,500,697	882	1,479	167.8%	0.8%	-2.5%
1983	210,044,017	8,305,678	889	1,438	161.8%	0.8%	-2.8%
1984	211,961,312	8,361,300	889	1,437	161.7%	0.0%	-0.1%
1985	218,716,402	8,300,933	909	1,415	155.8%	2.2%	-1.5%
1986	231,911,949	8,626,413	954	1,462	153.3%	5.0%	3.3%
1987	245,523,911	8,973,617	1,001	1,512	151.1%	4.9%	3.4%
1988	269,129,322	9,435,808	1,087	1,577	145.1%	8.6%	4.3%
1989	285,711,585	10,140,958	1,142	1,683	147.3%	5.1%	6.7%
1990	301,328,762	9,900,894	1,211	1,646	135.9%	6.0%	-2.2%
1991	322,047,875	10,647,610	1,281	1,774	138.5%	5.7%	7.8%
1992	348,521,652	12,642,102	1,370	2,109	153.9%	7.0%	18.9%
1993	366,884,946	12,354,243	1,425	2,046	143.6%	3.9%	-3.0%
1994	382,923,566	12,416,300	1,468	2,042	139.1%	3.1%	-0.2%
1995	414,344,837	13,477,300	1,569	2,200	140.3%	6.8%	7.8%
1996	439,863,107	13,731,739	1,644	2,226	135.4%	4.8%	1.2%
1997	450,140,010	13,624,662	1,661	2,193	132.0%	1.0%	-1.5%
1998	474,193,468	15,425,713	1,728	2,465	142.6%	4.0%	12.4%
1999	495,346,286	15,708,869	1,783	2,492	139.8%	3.1%	1.1%
2000	521,404,976	16,710,353	1,876	2,651	141.3%	5.3%	6.4%
2001	538,480,378	18,778,137	1,894	2,936	155.0%	0.9%	10.7%
2002	556,404,212	19,024,487	1,938	2,957	152.5%	2.3%	0.7%
2003	563,186,046	19,633,146	1,945	3,048	156.7%	0.3%	3.1%
2004	571,569,334	19,036,685	1,956	2,957	151.2%	0.6%	-3.0%
2005	584,428,736	18,865,165	1,982	2,932	147.9%	1.3%	-0.9%
2006	599,553,025	19,543,928	2,014	3,034	150.6%	1.6%	3.5%
2007	603,300,374	19,580,205	2,007	3,030	151.0%	-0.3%	-0.1%

## e. Number of hospital employees

### Full-time equivalent physicians and dentists

**Appendix Table 10**

	FTE physicians + dentists employed by hospitals <i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA/1,000	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1975	29,234	2,699	0.13	0.47	350.9%		
1980	31,524	2,321	0.14	0.41	296.0%	3.1%	-13.0%
1981	31,506	2,608	0.14	0.45	334.6%	-1.1%	11.8%
1982	27,542	2,826	0.12	0.49	417.9%	-13.5%	8.1%
1983	25,947	2,007	0.11	0.35	316.6%	-6.7%	-29.3%
1984	27,494	2,413	0.12	0.41	359.7%	5.0%	19.3%
1985	27,627	2,509	0.11	0.43	372.7%	-0.4%	3.2%
1986	30,000	2,550	0.12	0.43	350.2%	7.6%	1.1%
1987	32,678	2,659	0.13	0.45	336.4%	7.9%	3.6%
1988	33,379	2,981	0.13	0.50	369.7%	1.2%	11.2%
1989	34,359	3,559	0.14	0.59	429.8%	1.9%	18.5%
1990	37,262	3,205	0.15	0.53	355.7%	9.0%	-9.8%
1991	37,586	3,079	0.15	0.51	343.2%	-0.2%	-3.7%
1992	38,556	3,678	0.15	0.61	404.7%	1.4%	19.6%
1993	44,682	4,073	0.17	0.67	388.8%	14.4%	9.9%
1994	52,250	4,122	0.20	0.68	338.4%	15.5%	0.5%
1995	61,785	4,729	0.23	0.77	330.1%	16.8%	13.9%
1996	64,329	5,382	0.24	0.87	362.8%	2.8%	13.0%
1997	71,368	5,521	0.26	0.89	337.3%	9.5%	1.8%
1998	70,074	4,697	0.26	0.75	293.9%	-3.0%	-15.5%
1999	71,302	5,879	0.26	0.93	363.5%	0.5%	24.3%
2000	70,987	5,577	0.26	0.88	346.3%	-0.4%	-5.1%
2001	70,153	6,418	0.25	1.00	406.7%	-3.4%	13.4%
2002	72,823	6,032	0.25	0.94	369.5%	2.8%	-6.6%
2003	71,335	5,031	0.25	0.78	317.0%	-2.9%	-16.7%
2004	74,148	4,330	0.25	0.67	265.0%	3.0%	-13.9%
2005	78,096	4,828	0.26	0.75	283.3%	4.4%	11.6%
2006	82,249	5,028	0.28	0.78	282.5%	4.3%	4.0%
2007	88,681	6,391	0.30	0.99	335.2%	6.8%	26.7%

Full-time equivalent registered nurses

**Appendix Table 11**

FTE RNs	<i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA/1,000	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1975	445,934	18,511	2.03	3.21	157.8%		
1980	622,052	23,039	2.71	4.04	148.9%	33.3%	25.9%
1981	629,463	22,414	2.72	3.91	143.9%	0.1%	-3.2%
1982	671,902	23,991	2.87	4.17	145.4%	5.7%	6.8%
1983	698,162	24,052	2.95	4.17	141.0%	2.9%	-0.2%
1984	697,814	23,748	2.93	4.08	139.5%	-1.0%	-2.0%
1985	709,510	23,535	2.95	4.01	136.1%	0.7%	-1.7%
1986	736,266	23,509	3.03	3.99	131.6%	2.8%	-0.7%
1987	758,973	23,007	3.09	3.88	125.3%	2.1%	-2.7%
1988	770,619	22,956	3.11	3.84	123.3%	0.6%	-1.0%
1989	791,537	23,913	3.17	3.97	125.4%	1.7%	3.4%
1990	809,927	23,189	3.26	3.85	118.4%	2.9%	-2.9%
1991	840,509	23,784	3.34	3.96	118.6%	2.7%	2.8%
1992	858,909	23,480	3.38	3.92	116.0%	1.1%	-1.2%
1993	874,127	23,596	3.39	3.91	115.1%	0.5%	-0.2%
1994	890,910	23,597	3.42	3.88	113.6%	0.6%	-0.7%
1995	893,735	23,414	3.38	3.82	113.0%	-0.9%	-1.5%
1996	895,075	23,500	3.35	3.81	113.8%	-1.1%	-0.4%
1997	901,198	23,600	3.33	3.80	114.2%	-0.6%	-0.3%
1998	929,657	23,700	3.39	3.79	111.8%	1.9%	-0.3%
1999	938,051	23,826	3.38	3.78	112.0%	-0.4%	-0.2%
2000	957,550	25,656	3.45	4.07	118.1%	2.1%	7.7%
2001	956,577	26,504	3.36	4.14	123.2%	-2.4%	1.8%
2002	988,139	24,725	3.44	3.84	111.6%	2.3%	-7.3%
2003	1,021,346	25,474	3.53	3.95	112.1%	2.5%	2.9%
2004	1,053,077	26,968	3.60	4.19	116.2%	2.2%	5.9%
2005	1,094,240	27,239	3.71	4.23	114.1%	3.0%	1.1%
2006	1,138,633	28,035	3.83	4.35	113.8%	3.1%	2.8%
2007	1,191,196	31,165	3.96	4.82	121.7%	3.6%	10.8%

Total personnel

**Appendix Table 12**

	<i>As reported by AHA</i>		Per 1,000 people		Mass/1,000 as % of USA/1,000	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1960	1,080,255	40,840	6.0	7.9	131.7%		
1965	1,386,215	53,779	7.2	9.8	136.3%	19.3%	23.5%
1970	1,928,720	72,329	9.2	12.6	136.6%	28.6%	28.8%
1975	2,391,656	87,522	10.9	15.2	139.1%	18.1%	20.2%
1980	2,873,064	98,535	12.5	17.3	137.9%	14.8%	13.8%
1981	3,033,272	102,612	13.1	17.9	136.7%	4.5%	3.6%
1982	3,103,000	105,352	13.3	18.3	138.3%	1.3%	2.4%
1983	3,095,638	103,039	13.1	17.8	136.2%	-1.2%	-2.7%
1984	3,016,850	102,104	12.6	17.5	138.7%	-3.4%	-1.7%
1985	2,997,095	101,096	12.5	17.2	138.4%	-1.6%	-1.8%
1986	3,024,853	98,407	12.4	16.7	134.0%	0.0%	-3.2%
1987	3,113,607	101,794	12.7	17.2	135.2%	2.0%	2.8%
1988	3,205,112	104,739	12.9	17.5	135.3%	2.0%	2.1%
1989	3,303,286	105,217	13.2	17.5	132.2%	2.1%	-0.3%
1990	3,419,519	100,945	13.7	16.8	122.1%	4.1%	-3.9%
1991	3,535,294	101,993	14.1	17.0	120.9%	2.3%	1.3%
1992	3,619,849	104,960	14.2	17.5	123.0%	1.3%	3.0%
1993	3,676,642	107,813	14.3	17.9	125.1%	0.3%	2.0%
1994	3,692,316	108,396	14.2	17.8	125.9%	-0.8%	-0.2%
1995	3,713,887	106,363	14.1	17.4	123.5%	-0.7%	-2.6%
1996	3,724,843	108,104	13.9	17.5	125.9%	-1.0%	0.9%
1997	3,789,752	109,845	14.0	17.7	126.4%	0.5%	0.9%
1998	3,831,068	109,576	14.0	17.5	125.4%	-0.2%	-1.0%
1999	3,837,964	110,218	13.8	17.5	126.6%	-1.1%	-0.1%
2000	3,911,412	117,852	13.9	18.6	133.6%	0.6%	6.2%
2001	3,980,999	123,538	14.0	19.3	137.9%	0.7%	4.1%
2002	4,069,495	120,088	14.2	18.7	131.7%	1.3%	-3.4%
2003	4,108,628	120,396	14.2	18.7	131.7%	0.1%	0.1%
2004	4,147,941	118,052	14.2	18.3	129.2%	0.0%	-1.9%
2005	4,256,899	115,362	14.4	17.9	124.2%	1.7%	-2.2%
2006	4,343,480	121,450	14.6	18.9	129.2%	1.1%	5.2%
2007	4,465,028	132,559	14.9	20.5	138.1%	1.8%	8.8%

**f. Payroll and benefit costs per person**

Payroll costs per resident

**Appendix Table 13**

	Total payroll costs in \$000 <i>As reported by AHA</i>		Per resident[s]		Mass \$ / resident as % of USA \$ / resident	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1960	\$3,499,472	\$154,541	\$19.51	\$30.01	153.8%		
1965	\$5,643,645	\$233,056	\$29.26	\$42.46	145.1%	49.9%	41.5%
1970	\$11,420,906	\$493,571	\$54.72	\$86.15	157.5%	87.0%	102.9%
1975	\$20,652,510	\$859,582	\$94.23	\$149.06	158.2%	72.2%	73.0%
1980	\$37,378,600	\$1,380,697	\$163.01	\$242.11	148.5%	73.0%	62.4%
1981	\$44,041,980	\$1,584,266	\$190.05	\$276.33	145.4%	16.6%	14.1%
1982	\$50,637,530	\$1,787,485	\$216.32	\$311.04	143.8%	13.8%	12.6%
1983	\$55,525,387	\$1,961,774	\$234.93	\$339.73	144.6%	8.6%	9.2%
1984	\$58,188,416	\$2,035,000	\$243.95	\$349.71	143.4%	3.8%	2.9%
1985	\$60,361,047	\$2,160,167	\$250.74	\$368.27	146.9%	2.8%	5.3%
1986	\$63,772,719	\$2,188,281	\$262.40	\$370.98	141.4%	4.6%	0.7%
1987	\$68,305,773	\$2,356,400	\$278.42	\$397.07	142.6%	6.1%	7.0%
1988	\$75,233,854	\$2,693,294	\$303.78	\$450.18	148.2%	9.1%	13.4%
1989	\$81,975,238	\$2,952,711	\$327.80	\$489.93	149.5%	7.9%	8.8%
1990	\$90,925,393	\$3,108,408	\$365.47	\$516.69	141.4%	11.5%	5.5%
1991	\$100,066,935	\$3,438,300	\$397.91	\$572.85	144.0%	8.9%	10.9%
1992	\$108,413,526	\$3,638,271	\$426.30	\$606.91	142.4%	7.1%	5.9%
1993	\$114,455,174	\$3,799,350	\$444.40	\$629.25	141.6%	4.2%	3.7%
1994	\$121,598,822	\$3,981,132	\$466.20	\$654.64	140.4%	4.9%	4.0%
1995	\$125,297,465	\$4,000,588	\$474.33	\$653.14	137.7%	1.7%	-0.2%
1996	\$128,236,999	\$3,909,523	\$479.35	\$633.71	132.2%	1.1%	-3.0%
1997	\$132,259,288	\$4,052,991	\$488.17	\$652.27	133.6%	1.8%	2.9%
1998	\$137,389,685	\$4,337,250	\$500.73	\$693.02	138.4%	2.6%	6.2%
1999	\$142,502,147	\$4,449,190	\$512.83	\$705.83	137.6%	2.4%	1.8%
2000	\$151,438,223	\$4,776,714	\$538.12	\$752.35	139.8%	4.9%	6.6%
2001	\$161,734,716	\$5,028,545	\$568.83	\$786.19	138.2%	5.7%	4.5%
2002	\$175,961,479	\$5,323,769	\$612.99	\$827.43	135.0%	7.8%	5.2%
2003	\$187,822,974	\$5,762,958	\$648.58	\$894.61	137.9%	5.8%	8.1%
2004	\$198,302,516	\$6,327,239	\$678.60	\$982.73	144.8%	4.6%	9.8%
2005	\$211,481,580	\$6,666,264	\$717.15	\$1,035.92	144.5%	5.7%	5.4%
2006	\$225,892,043	\$7,431,186	\$758.89	\$1,153.70	152.0%	5.8%	11.4%
2007	\$238,341,728	\$7,981,174	\$793.00	\$1,235.13	155.8%	4.5%	7.1%

Benefit costs per person

**Appendix Table 14**

	Benefit costs in \$000 <i>As reported by AHA</i>		Per resident[s]		Mass \$ / person as % of USA \$ / person	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1980	\$5,904,562	\$213,401	\$25.75	\$37.42	145.3%		
1981	\$7,253,390	\$253,807	\$31.30	\$44.27	141.4%	21.6%	18.3%
1982	\$8,803,625	\$308,177	\$37.61	\$53.63	142.6%	20.2%	21.1%
1983	\$10,198,773	\$350,023	\$43.15	\$60.62	140.5%	14.7%	13.0%
1984	\$11,015,917	\$367,532	\$46.18	\$63.16	136.8%	7.0%	4.2%
1985	\$11,640,214	\$388,540	\$48.35	\$66.24	137.0%	4.7%	4.9%
1986	\$11,998,185	\$408,472	\$49.37	\$69.25	140.3%	2.1%	4.5%
1987	\$12,686,536	\$428,760	\$51.71	\$72.25	139.7%	4.7%	4.3%
1988	\$14,068,065	\$448,492	\$56.80	\$74.96	132.0%	9.8%	3.8%
1989	\$16,068,539	\$530,912	\$64.25	\$88.09	137.1%	13.1%	17.5%
1990	\$18,186,698	\$601,122	\$73.10	\$99.92	136.7%	13.8%	13.4%
1991	\$21,021,489	\$724,003	\$83.59	\$120.62	144.3%	14.4%	20.7%
1992	\$23,612,813	\$778,783	\$92.85	\$129.91	139.9%	11.1%	7.7%
1993	\$25,886,444	\$835,528	\$100.51	\$138.38	137.7%	8.2%	6.5%
1994	\$27,139,581	\$847,494	\$104.05	\$139.36	133.9%	3.5%	0.7%
1995	\$27,765,528	\$803,105	\$105.11	\$131.12	124.7%	1.0%	-5.9%
1996	\$27,547,713	\$778,697	\$102.97	\$126.22	122.6%	-2.0%	-3.7%
1997	\$28,032,852	\$818,319	\$103.47	\$131.70	127.3%	0.5%	4.3%
1998	\$28,847,754	\$863,569	\$105.14	\$137.98	131.2%	1.6%	4.8%
1999	\$29,858,634	\$903,222	\$107.45	\$143.29	133.3%	2.2%	3.8%
2000	\$31,685,539	\$913,876	\$112.59	\$143.94	127.8%	4.8%	0.5%
2001	\$34,640,089	\$947,892	\$121.83	\$148.20	121.6%	8.2%	3.0%
2002	\$40,049,573	\$1,075,878	\$139.52	\$167.22	119.9%	14.5%	12.8%
2003	\$45,438,505	\$1,230,224	\$156.91	\$190.97	121.7%	12.5%	14.2%
2004	\$50,316,894	\$1,427,715	\$172.19	\$221.75	128.8%	9.7%	16.1%
2005	\$53,930,283	\$1,497,482	\$182.88	\$232.70	127.2%	6.2%	4.9%
2006	\$57,781,527	\$1,718,608	\$194.12	\$266.82	137.5%	6.1%	14.7%
2007	\$60,392,340	\$1,879,257	\$200.93	\$290.83	144.7%	3.5%	9.0%

Payroll and benefit costs (total labor costs) per person

**Appendix Table 15**

	Payroll plus benefit costs in \$000 <i>As reported by AHA</i>		Per resident[s]		Mass \$ / resident as % of USA \$ / resident	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1980	\$43,283,162	\$1,594,098	\$188.76	\$279.53	148.1%		
1981	\$51,295,370	\$1,838,073	\$221.35	\$320.61	144.8%	17.3%	14.7%
1982	\$59,441,155	\$2,095,663	\$253.93	\$364.66	143.6%	14.7%	13.7%
1983	\$65,724,160	\$2,311,797	\$278.08	\$400.35	144.0%	9.5%	9.8%
1984	\$69,204,333	\$2,402,532	\$290.14	\$412.87	142.3%	4.3%	3.1%
1985	\$72,001,261	\$2,548,707	\$299.10	\$434.51	145.3%	3.1%	5.2%
1986	\$75,770,904	\$2,596,754	\$311.77	\$440.23	141.2%	4.2%	1.3%
1987	\$80,992,310	\$2,785,160	\$330.14	\$469.32	142.2%	5.9%	6.6%
1988	\$89,301,919	\$3,141,786	\$360.59	\$525.14	145.6%	9.2%	11.9%
1989	\$98,043,776	\$3,483,623	\$392.05	\$578.02	147.4%	8.7%	10.1%
1990	\$109,112,090	\$3,709,529	\$438.57	\$616.61	140.6%	11.9%	6.7%
1991	\$121,088,424	\$4,162,303	\$481.50	\$693.47	144.0%	9.8%	12.5%
1992	\$132,026,339	\$4,417,054	\$519.15	\$736.82	141.9%	7.8%	6.3%
1993	\$140,341,617	\$4,634,878	\$544.91	\$767.63	140.9%	5.0%	4.2%
1994	\$148,738,403	\$4,828,626	\$570.25	\$794.00	139.2%	4.6%	3.4%
1995	\$153,062,994	\$4,803,693	\$579.44	\$784.25	135.3%	1.6%	-1.2%
1996	\$155,784,712	\$4,688,225	\$582.33	\$759.93	130.5%	0.5%	-3.1%
1997	\$160,292,140	\$4,871,307	\$591.64	\$783.96	132.5%	1.6%	3.2%
1998	\$166,237,438	\$5,300,817	\$605.87	\$846.99	139.8%	2.4%	8.0%
1999	\$172,360,788	\$5,252,410	\$620.28	\$833.25	134.3%	2.4%	-1.6%
2000	\$183,123,762	\$5,690,593	\$650.71	\$896.28	137.7%	4.9%	7.6%
2001	\$196,374,805	\$5,976,437	\$690.66	\$934.39	135.3%	6.1%	4.3%
2002	\$216,011,052	\$6,399,647	\$752.51	\$994.65	132.2%	9.0%	6.4%
2003	\$233,261,479	\$6,993,182	\$805.49	\$1,085.59	134.8%	7.0%	9.1%
2004	\$248,619,410	\$7,754,954	\$850.79	\$1,204.48	141.6%	5.6%	11.0%
2005	\$265,411,863	\$8,163,746	\$900.03	\$1,268.63	141.0%	5.8%	5.3%
2006	\$283,673,570	\$9,149,794	\$953.00	\$1,420.52	149.1%	5.9%	12.0%
2007	\$298,734,068	\$9,860,431	\$993.93	\$1,525.96	153.5%	4.3%	7.4%

Non-labor costs

**Appendix Table 16**

	Non-labor costs (in \$000) <i>Calculated from data reported by AHA</i>		Per resident[s]		Mass \$ / person as % of USA \$ / person	Percent change from previous year listed	
	USA	Mass	U.S.A.	Mass.		USA	Mass.
1980	\$33,567,984	\$1,139,242	\$144.86	\$198.71	137.2%		
1981	\$39,277,052	\$1,321,700	\$169.49	\$230.54	136.0%	17.0%	16.0%
1982	\$45,434,469	\$1,486,964	\$194.10	\$258.74	133.3%	14.5%	12.2%
1983	\$50,713,515	\$1,609,914	\$214.57	\$278.80	129.9%	10.5%	7.8%
1984	\$54,132,087	\$1,757,188	\$226.95	\$301.97	133.1%	5.8%	8.3%
1985	\$58,497,805	\$1,909,852	\$243.00	\$325.59	134.0%	7.1%	7.8%
1986	\$64,883,271	\$2,002,159	\$266.97	\$339.43	127.1%	9.9%	4.3%
1987	\$71,592,232	\$2,158,980	\$291.82	\$363.80	124.7%	9.3%	7.2%
1988	\$79,420,620	\$2,494,920	\$320.69	\$417.02	130.0%	9.9%	14.6%
1989	\$86,853,728	\$2,676,985	\$347.30	\$444.18	127.9%	8.3%	6.5%
1990	\$94,580,501	\$2,833,493	\$380.16	\$470.99	123.9%	9.5%	6.0%
1991	\$103,934,964	\$3,122,543	\$413.29	\$520.24	125.9%	8.7%	10.5%
1992	\$116,068,527	\$3,428,832	\$456.40	\$571.97	125.3%	10.4%	9.9%
1993	\$125,747,468	\$3,873,034	\$488.24	\$641.45	131.4%	7.0%	12.1%
1994	\$127,040,367	\$3,844,166	\$487.06	\$632.12	129.8%	-0.2%	-1.5%
1995	\$132,525,384	\$4,020,233	\$501.70	\$656.34	130.8%	3.0%	3.8%
1996	\$137,970,539	\$4,130,821	\$515.74	\$669.58	129.8%	2.8%	2.0%
1997	\$145,471,347	\$4,667,802	\$536.94	\$751.21	139.9%	4.1%	12.2%
1998	\$152,596,433	\$5,014,621	\$556.15	\$801.26	144.1%	3.6%	6.7%
1999	\$162,885,480	\$5,265,751	\$586.18	\$835.37	142.5%	5.4%	4.3%
2000	\$173,440,028	\$5,457,587	\$616.30	\$859.58	139.5%	5.1%	2.9%
2001	\$187,359,952	\$6,079,360	\$674.26	\$964.44	143.0%	9.4%	12.2%
2002	\$200,580,007	\$6,580,158	\$721.83	\$1,043.89	144.6%	7.1%	8.2%
2003	\$216,862,778	\$7,007,598	\$780.43	\$1,111.70	142.4%	8.1%	6.5%
2004	\$232,627,177	\$7,369,223	\$837.16	\$1,169.07	139.6%	7.3%	5.2%
2005	\$250,328,463	\$7,915,503	\$900.87	\$1,255.73	139.4%	7.6%	7.4%
2006	\$268,161,758	\$8,926,122	\$965.04	\$1,416.06	146.7%	7.1%	12.8%
2007	\$284,518,220	\$9,619,919	\$946.63	\$1,488.74	157.3%	-1.9%	5.1%

**g. Payroll and benefits (average payments) per worker**

Payroll per worker (average pay per FTE worker)

**Appendix Table 17**

	<i>Calculated from data reported by AHA</i>		Mass/FTE as % of USA/FTE	Percent change from previous year listed	
	USA	Mass		USA	Mass.
1960	\$3,239	\$3,784	116.8%		
1965	\$4,071	\$4,334	106.4%	25.7%	14.5%
1970	\$5,921	\$6,824	115.2%	45.4%	57.5%
1975	\$8,635	\$9,821	113.7%	45.8%	43.9%
1980	\$13,010	\$14,012	107.7%	50.7%	42.7%
1981	\$14,520	\$15,439	106.3%	11.6%	10.2%
1982	\$16,319	\$16,967	104.0%	12.4%	9.9%
1983	\$17,937	\$19,039	106.1%	9.9%	12.2%
1984	\$19,288	\$19,931	103.3%	7.5%	4.7%
1985	\$20,140	\$21,367	106.1%	4.4%	7.2%
1986	\$21,083	\$22,237	105.5%	4.7%	4.1%
1987	\$21,938	\$23,149	105.5%	4.1%	4.1%
1988	\$23,473	\$25,714	109.5%	7.0%	11.1%
1989	\$24,816	\$28,063	113.1%	5.7%	9.1%
1990	\$26,590	\$30,793	115.8%	7.1%	9.7%
1991	\$28,305	\$33,711	119.1%	6.4%	9.5%
1992	\$29,950	\$34,663	115.7%	5.8%	2.8%
1993	\$31,130	\$35,240	113.2%	3.9%	1.7%
1994	\$32,933	\$36,728	111.5%	5.8%	4.2%
1995	\$33,738	\$37,613	111.5%	2.4%	2.4%
1996	\$34,427	\$36,164	105.0%	2.0%	-3.9%
1997	\$34,899	\$36,897	105.7%	1.4%	2.0%
1998	\$35,862	\$39,582	110.4%	2.8%	7.3%
1999	\$37,130	\$40,367	108.7%	3.5%	2.0%
2000	\$38,717	\$40,531	104.7%	4.3%	0.4%
2001	\$40,627	\$40,704	100.2%	4.9%	0.4%
2002	\$43,239	\$44,332	102.5%	6.4%	8.9%
2003	\$45,714	\$47,867	104.7%	5.7%	8.0%
2004	\$47,807	\$53,597	112.1%	4.6%	12.0%
2005	\$49,680	\$57,786	116.3%	3.9%	7.8%
2006	\$52,007	\$61,187	117.7%	4.7%	5.9%
2007	\$53,380	\$60,208	112.8%	2.6%	-1.6%

Benefits per FTE worker

**Appendix Table 18**

	<i>Calculated from data reported by AHA</i>		Mass/FTE as % of USA/FTE	Percent change from previous year listed	
	USA	Mass		USA	Mass.
1980	\$2,055	\$2,166	105.4%		
1981	\$2,391	\$2,473	103.4%	16.4%	14.2%
1982	\$2,837	\$2,925	103.1%	18.6%	18.3%
1983	\$3,295	\$3,397	103.1%	16.1%	16.1%
1984	\$3,651	\$3,600	98.6%	10.8%	6.0%
1985	\$3,884	\$3,843	99.0%	6.4%	6.8%
1986	\$3,967	\$4,151	104.6%	2.1%	8.0%
1987	\$4,075	\$4,212	103.4%	2.7%	1.5%
1988	\$4,389	\$4,282	97.6%	7.7%	1.7%
1989	\$4,864	\$5,046	103.7%	10.8%	17.8%
1990	\$5,318	\$5,955	112.0%	9.3%	18.0%
1991	\$5,946	\$7,099	119.4%	11.8%	19.2%
1992	\$6,523	\$7,420	113.7%	9.7%	4.5%
1993	\$7,041	\$7,750	110.1%	7.9%	4.4%
1994	\$7,350	\$7,818	106.4%	4.4%	0.9%
1995	\$7,476	\$7,551	101.0%	1.7%	-3.4%
1996	\$7,396	\$7,203	97.4%	-1.1%	-4.6%
1997	\$7,397	\$7,450	100.7%	0.0%	3.4%
1998	\$7,530	\$7,881	104.7%	1.8%	5.8%
1999	\$7,780	\$8,195	105.3%	3.3%	4.0%
2000	\$8,101	\$7,754	95.7%	4.1%	-5.4%
2001	\$8,701	\$7,673	88.2%	7.4%	-1.1%
2002	\$9,841	\$8,959	91.0%	13.1%	16.8%
2003	\$11,059	\$10,218	92.4%	12.4%	14.1%
2004	\$12,131	\$12,094	99.7%	9.7%	18.4%
2005	\$12,669	\$12,981	102.5%	4.4%	7.3%
2006	\$13,303	\$14,151	106.4%	5.0%	9.0%
2007	\$13,526	\$14,177	104.8%	1.7%	0.2%

Payroll plus benefits per FTE worker

**Appendix Table 19**

	<i>Calculated from data reported by AHA</i>		Mass/FTE as % of USA/FTE	Percent change from previous year listed	
	USA	Mass		USA	Mass.
1980	\$15,065	\$16,178	107.4%		
1981	\$16,911	\$17,913	105.9%	12.3%	10.7%
1982	\$19,156	\$19,892	103.8%	13.3%	11.0%
1983	\$21,231	\$22,436	105.7%	10.8%	12.8%
1984	\$22,939	\$23,530	102.6%	8.0%	4.9%
1985	\$24,024	\$25,211	104.9%	4.7%	7.1%
1986	\$25,049	\$26,388	105.3%	4.3%	4.7%
1987	\$26,012	\$27,361	105.2%	3.8%	3.7%
1988	\$27,862	\$29,996	107.7%	7.1%	9.6%
1989	\$29,681	\$33,109	111.6%	6.5%	10.4%
1990	\$31,909	\$36,748	115.2%	7.5%	11.0%
1991	\$34,251	\$40,810	119.1%	7.3%	11.1%
1992	\$36,473	\$42,083	115.4%	6.5%	3.1%
1993	\$38,171	\$42,990	112.6%	4.7%	2.2%
1994	\$40,283	\$44,546	110.6%	5.5%	3.6%
1995	\$41,214	\$45,163	109.6%	2.3%	1.4%
1996	\$41,823	\$43,368	103.7%	1.5%	-4.0%
1997	\$42,296	\$44,347	104.8%	1.1%	2.3%
1998	\$43,392	\$48,376	111.5%	2.6%	9.1%
1999	\$44,909	\$47,655	106.1%	3.5%	-1.5%
2000	\$46,818	\$48,286	103.1%	4.2%	1.3%
2001	\$49,328	\$48,377	98.1%	5.4%	0.2%
2002	\$53,081	\$53,291	100.4%	7.6%	10.2%
2003	\$56,774	\$58,085	102.3%	7.0%	9.0%
2004	\$59,938	\$65,691	109.6%	5.6%	13.1%
2005	\$62,349	\$70,766	113.5%	4.0%	7.7%
2006	\$65,310	\$75,338	115.4%	4.8%	6.5%
2007	\$66,905	\$74,385	111.2%	2.4%	-1.3%

## h. Total spending, and labor/non-labor breakdowns

### Total hospital spending

**Appendix Table 20**

	Total hospital spending <i>As reported by AHA</i>		Per 1,000 people		Mass/ 1,000 people as % of USA/ 1,000 people	Percent change from previous year listed	
	USA  (in \$ 000)	Mass  (in \$ 000)	U.S.A.  (in \$ 000)	Mass.  (in \$ 000)		USA	Mass.
1960	\$5,616,940	\$237,857	\$31	\$46	147.5%		
1965	\$9,147,158	\$366,559	\$47	\$67	140.8%	51.4%	44.6%
1970	\$19,559,675	\$815,344	\$94	\$142	151.9%	97.6%	113.1%
1975	\$38,961,563	\$1,562,277	\$178	\$271	152.4%	89.7%	90.4%
1980	\$76,851,146	\$2,733,340	\$335	\$479	143.0%	88.5%	76.9%
1981	\$90,572,422	\$3,159,773	\$391	\$551	141.0%	16.6%	15.0%
1982	\$104,875,624	\$3,582,627	\$448	\$623	139.1%	14.6%	13.1%
1983	\$116,437,675	\$3,921,711	\$493	\$679	137.9%	10.0%	8.9%
1984	\$123,336,420	\$4,159,720	\$517	\$715	138.2%	5.0%	5.3%
1985	\$130,499,066	\$4,458,559	\$542	\$760	140.2%	4.8%	6.3%
1986	\$140,654,175	\$4,598,913	\$579	\$780	134.7%	6.8%	2.6%
1987	\$152,584,542	\$4,944,140	\$622	\$833	134.0%	7.5%	6.9%
1988	\$168,722,539	\$5,636,706	\$681	\$942	138.3%	9.5%	13.1%
1989	\$184,897,504	\$6,160,608	\$739	\$1,022	138.3%	8.5%	8.5%
1990	\$203,692,591	\$6,543,022	\$819	\$1,088	132.8%	10.7%	6.4%
1991	\$225,023,388	\$7,284,846	\$895	\$1,214	135.6%	9.3%	11.6%
1992	\$248,094,866	\$7,845,886	\$976	\$1,309	134.2%	9.0%	7.8%
1993	\$266,089,085	\$8,507,912	\$1,033	\$1,409	136.4%	5.9%	7.7%
1994	\$275,778,770	\$8,672,792	\$1,057	\$1,426	134.9%	2.3%	1.2%
1995	\$285,588,378	\$8,823,926	\$1,081	\$1,441	133.2%	2.3%	1.0%
1996	\$293,755,251	\$8,819,046	\$1,098	\$1,430	130.2%	1.6%	-0.8%
1997	\$305,763,487	\$9,539,109	\$1,129	\$1,535	136.0%	2.8%	7.4%
1998	\$318,833,871	\$10,315,438	\$1,162	\$1,648	141.8%	3.0%	7.4%
1999	\$335,246,268	\$10,518,161	\$1,206	\$1,669	138.3%	3.8%	1.2%
2000	\$356,563,790	\$11,148,180	\$1,267	\$1,756	138.6%	5.0%	5.2%
2001	\$383,734,757	\$12,055,797	\$1,346	\$1,882	139.8%	6.3%	7.2%
2002	\$416,591,059	\$12,979,805	\$1,448	\$2,015	139.1%	7.5%	7.1%
2003	\$450,124,257	\$14,000,780	\$1,551	\$2,174	140.1%	7.1%	7.9%
2004	\$481,246,587	\$15,124,177	\$1,643	\$2,349	143.0%	5.9%	8.1%
2005	\$515,740,326	\$16,079,249	\$1,745	\$2,499	143.2%	6.2%	6.4%
2006	\$551,835,328	\$18,075,916	\$1,850	\$2,805	151.7%	6.0%	12.3%
2007	\$583,252,288	\$19,480,350	\$1,941	\$3,015	155.4%	4.9%	7.5%

Labor share of total spending

**Appendix Table 21**

	Labor share of total spending <i>As reported by AHA</i>		Massachusetts share of total spending as % of USA share	Percent change from previous year listed	
	USA	Mass		USA	Mass.
1980	56.3%	58.3%	103.6%		
1981	56.6%	58.2%	102.7%	0.6%	-0.3%
1982	56.7%	58.5%	103.2%	0.1%	0.6%
1983	56.4%	58.9%	104.4%	-0.4%	0.8%
1984	56.1%	57.8%	102.9%	-0.6%	-2.1%
1985	55.2%	57.2%	103.6%	-1.7%	-1.0%
1986	53.9%	56.5%	104.8%	-2.4%	-1.2%
1987	53.1%	56.3%	106.1%	-1.5%	-0.2%
1988	52.9%	55.7%	105.3%	-0.3%	-1.1%
1989	53.0%	56.5%	106.6%	0.2%	1.4%
1990	53.6%	56.7%	105.8%	1.0%	0.3%
1991	53.8%	57.1%	106.2%	0.5%	0.8%
1992	53.2%	56.3%	105.8%	-1.1%	-1.5%
1993	52.7%	54.5%	103.3%	-0.9%	-3.3%
1994	53.9%	55.7%	103.2%	2.2%	2.2%
1995	53.6%	54.4%	101.6%	-0.6%	-2.3%
1996	53.0%	53.2%	100.2%	-1.1%	-2.4%
1997	52.4%	51.1%	97.4%	-1.2%	-4.1%
1998	52.1%	51.4%	98.6%	-0.5%	0.6%
1999	51.4%	49.9%	97.1%	-1.4%	-2.9%
2000	51.4%	51.0%	99.4%	-0.1%	2.2%
2001	51.2%	49.6%	96.9%	-0.4%	-3.0%
2002	51.9%	49.3%	95.1%	1.3%	-0.5%
2003	51.8%	49.9%	96.4%	-0.1%	1.3%
2004	51.7%	51.3%	99.3%	-0.3%	2.6%
2005	51.5%	50.8%	98.7%	-0.4%	-1.0%
2006	51.4%	50.6%	98.5%	-0.1%	-0.3%
2007	51.2%	50.6%	98.8%	-0.4%	0.0%

Payroll share of total spending

**Appendix Table 22**

	Payroll share of total spending <i>Calculated from data reported by AHA</i>		Massachusetts share of total spending as % of USA share	Percent change from previous year listed	
	USA	Mass		USA	Mass.
1960	62.3%	65.0%	104.3%		
1965	61.7%	63.6%	103.0%	-1.0%	-2.1%
1970	58.4%	60.5%	103.7%	-5.4%	-4.8%
1975	53.0%	55.0%	103.8%	-9.2%	-9.1%
1980	48.6%	50.5%	103.9%	-8.2%	-8.2%
1981	48.6%	50.1%	103.1%	0.0%	-0.7%
1982	48.3%	49.9%	103.3%	-0.7%	-0.5%
1983	47.7%	50.0%	104.9%	-1.2%	0.3%
1984	47.2%	48.9%	103.7%	-1.1%	-2.2%
1985	46.3%	48.4%	104.7%	-2.0%	-1.0%
1986	45.3%	47.6%	104.9%	-2.0%	-1.8%
1987	44.8%	47.7%	106.5%	-1.3%	0.2%
1988	44.6%	47.8%	107.2%	-0.4%	0.3%
1989	44.3%	47.9%	108.1%	-0.6%	0.3%
1990	44.6%	47.5%	106.4%	0.7%	-0.9%
1991	44.5%	47.2%	106.1%	-0.4%	-0.7%
1992	43.7%	46.4%	106.1%	-1.7%	-1.8%
1993	43.0%	44.7%	103.8%	-1.6%	-3.7%
1994	44.1%	45.9%	104.1%	2.5%	2.8%
1995	43.9%	45.3%	103.3%	-0.5%	-1.2%
1996	43.7%	44.3%	101.5%	-0.5%	-2.2%
1997	43.3%	42.5%	98.2%	-0.9%	-4.2%
1998	43.1%	42.0%	97.6%	-0.4%	-1.0%
1999	42.5%	42.3%	99.5%	-1.4%	0.6%
2000	42.5%	42.8%	100.9%	-0.1%	1.3%
2001	42.1%	41.7%	99.0%	-0.8%	-2.7%
2002	42.2%	41.0%	97.1%	0.2%	-1.7%
2003	41.7%	41.2%	98.6%	-1.2%	0.4%
2004	41.2%	41.8%	101.5%	-1.2%	1.6%
2005	41.0%	41.5%	101.1%	-0.5%	-0.9%
2006	40.9%	41.1%	100.4%	-0.2%	-0.8%
2007	40.9%	41.0%	100.3%	-0.2%	-0.3%

## ENDNOTES

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<sup>1</sup> Throughout, we rely heavily on the annual American Hospital Association report, *Hospital Statistics*, for comparative Massachusetts – U.S.A. data. Hospital fiscal year 2007 is the most recent year for which these comparative multi-state data are available.

<sup>2</sup> This is attributed in various forms to Albert Einstein.

<sup>3</sup> Throughout, we use consumer price index data because the more appropriate producer price index data are available only from the early 1990s.

<sup>4</sup> Unless noted otherwise, all years are hospital fiscal years (HFY). The great majority of Massachusetts hospitals report fiscal years from 1 October to 30 September. A few report 1 July to 30 June fiscal years.

<sup>5</sup> Data on individual hospitals' expenses and revenues between 2001 and 2008 were provided by the Massachusetts Division of Health Care Finance and Policy. We are very grateful to the Division for its extremely professional, effective, and timely help.

<sup>6</sup> The gap between the two sets of data on expenditures before 2007 point to the possibility that the AHA data may have gradually become more complete or accurate over time. The same may apply to possible explanations for higher spending, such as volumes of care or number of employees.

<sup>7</sup> Council of Teaching Hospitals of the American Association of Medical Colleges.

<sup>8</sup> Recommendations of the Special Commission on the Health Care Payment System, 16 July 2009, [http://www.mass.gov/Eeohhs2/docs/dhcfp/pc/Final\\_Report/Final\\_Report.pdf](http://www.mass.gov/Eeohhs2/docs/dhcfp/pc/Final_Report/Final_Report.pdf).

<sup>9</sup> Christine E. Eibner, Peter S. Hussey, M. Susan Ridgely, and Elizabeth A. McGlynn, *Controlling Health Care Spending in Massachusetts: An Analysis of Options*, RAND Health, August 2009, [http://www.mass.gov/Eeohhs2/docs/dhcfp/r/pubs/09/control\\_health\\_care\\_spending\\_rand\\_08-07-09.pdf](http://www.mass.gov/Eeohhs2/docs/dhcfp/r/pubs/09/control_health_care_spending_rand_08-07-09.pdf).

<sup>10</sup> See, for example, William A. Glaser, "The United States Needs a Health System Like Other Countries," *JAMA*, Vol. 270, No. 8 (25 August 1993), pp. 980-984, <http://jama.ama-assn.org.ezproxy.bu.edu/cgi/reprint/270/8/980>; William A. Glaser, "How Other Nations Do It," <http://www.healthpaconline.net/rekindling/Articles/Glaser.htm>.

<sup>11</sup> Alan Sager and Deborah Socolar, *The World's Most Expensive Health Care: Massachusetts Health Care Costs, 1980 to 1998*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health: 2 October 2000, [www.healthreformprogram.org](http://www.healthreformprogram.org)

<sup>12</sup> Milton I. Roemer, "Bed Supply and Hospital Utilization: A Natural Experiment," *Hospitals*, Vol. 35 (1 November 1961), pp. 36-42.

<sup>13</sup> Walter McClure, *Reducing Excess Hospital Capacity*, Excelsior, Minnesota: InterStudy, 15 October 1976.

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<sup>14</sup> For a fine example of an improvement in managerial efficiency, through the work of Prof. Eugene Litvak, see Scot Allen, “A Simple Prescription that Could Dramatically Improve Hospitals—and American Health Care,” *Boston Globe*, 30 August 2009, [http://www.boston.com/bostonglobe/ideas/articles/2009/08/30/a\\_simple\\_change\\_could\\_dramatically\\_improve\\_hospitals\\_and\\_american\\_health\\_care?mode=PF](http://www.boston.com/bostonglobe/ideas/articles/2009/08/30/a_simple_change_could_dramatically_improve_hospitals_and_american_health_care?mode=PF).

<sup>15</sup> Alan Sager and Deborah Socolar, *Before It's Too Late: Why Hospital Closings Are Becoming a Problem, Not a Solution-- Early Findings from the Massachusetts Hospital Reconfiguration Study*, 2<sup>nd</sup> edition, 2 June 1997; Alan Sager and Deborah Socolar, *Massachusetts Should Identify and Stabilize All the Hospitals Needed to Protect the Health of the Public*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 20 May 1999, submitted as testimony on H. 781, Health Care Committee, Massachusetts General Court; Alan Sager and Deborah Socolar, *Many Massachusetts Hospitals Have Financial Problems, and These Must Be Addressed, but an Across-the-board Medicaid Rate Increase Is Not an Effective Solution*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 18 December 2000, [www.healthreformprogram.org](http://www.healthreformprogram.org); Alan Sager and Deborah Socolar, “Too Many Local Hospitals on Life Support: With Number of Beds Halved since 1980, State Should Alter Its Closings Policy,” *Boston Globe Focus*, 3 March 2002; Alan Sager and Deborah Socolar, *Closing Hospitals in New York State Won't Save Money but Will Harm Access to Health Care*, Boston: Health Reform Program, 20 November 2006, <http://dcc2.bumc.bu.edu/hs/ushealthreform.htm>.

<sup>16</sup> Alan Sager and Deborah Socolar, *This Year's \$72 Billion in Health Spending in Massachusetts Is Enough to Finance the Care that Works: Proposals to Simply Bundle Payments to Hospitals and Doctors for Individual Episodes of Care, While Reasonable and Well-intentioned, Are Not Likely to Contain Costs*, Report Prepared for the Special Commission on the Health Care Payment System, Commonwealth of Massachusetts, 11 February 2009 written statement, incorporating responses to commissioners' questions; Alan Sager and Deborah Socolar, “Make Doctors Agents of Health Care Cost Controls,” op-ed, *Boston Globe*, 21 July 2008; and Alan Sager and Deborah Socolar, “Cutting Health Care Costs and Covering Everyone by Negotiating a Political, Financial, Clinical, and Legal Peace Treaty with Doctors,” *American Public Health Association*, Washington, D.C., 5 November 2007.

<sup>17</sup> American Hospital Association, *Hospitals, J.A.H.A., Annual Guide Issue and Hospital Statistics*, various years. See also Alan Sager and Deborah Socolar, *Before It's Too Late: Why Hospital Closings Are a Problem, Not a Solution*, 2<sup>nd</sup> Edition, Access and Affordability Monitoring Project, Boston University School of Public Health, 2 June 1997, [www.healthreformprogram.org](http://www.healthreformprogram.org).

<sup>18</sup> Alan Sager and Deborah Socolar, *Before It's Too Late: Why Hospital Closings Are a Problem, Not a Solution*, 2<sup>nd</sup> Edition, Access and Affordability Monitoring Project, Boston University School of Public Health, 2 June 1997, [www.healthreformprogram.org](http://www.healthreformprogram.org).

<sup>19</sup> Donald S. Shepard, “Estimating the Effect of Hospital Closure on Areawide Inpatient Hospital Costs: A Preliminary Model and Application,” *Health Services Research*, Vol. 18, No. 4 (Winter 1983), pp. 513-549.

<sup>20</sup> National Center for Health Statistics, *Health United States, 2008*, Table 94, [http://www.cdc.gov/nchs/data/08.pdf](http://www.cdc.gov/nchs/data/hus/08.pdf).

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<sup>21</sup> Margaret O'Malley, "We Deserve More," *Gloucester Daily Times*, 29 April 1998.

<sup>22</sup> Andrew Bindman, Dennis Keane, and Nicole Lurie, "A Public Hospital Closes: Impact on Patients' Access to Care and Health Status," *Journal of the American Medical Association*, Vol. 264, No. 22 (12 December 1990), pp. 2899-2904.

<sup>23</sup> For example, the 1990 case mix-adjusted inpatient cost per discharge for hospitals closing by 1997 was \$4,832, actually 1.2 percent below the \$4,891 for hospitals remaining open (significant at 0.880). Some 630 hospitals were studied in the 52 cities.

<sup>24</sup> See, for example, "New Report Finds Hospital Beds Could Run Out in Massachusetts if 35 Percent of Americans Get H1N1," media release, Trust for America's Health, October 2009, <http://healthyamericans.org/reports/h1n1/?stateid=MA>, and the related report, *H1N1 Challenges Ahead*, p. 6, <http://healthyamericans.org/reports/h1n1/TFAH2009challengesahead.pdf>. This analysis estimates that at the peak of even a mild flu pandemic, this state could face a bed shortfall—because 110 percent of Massachusetts hospital beds could be needed for flu patients sick enough to be hospitalized. See also Alan Sager and Deborah Socolar, *Before It's Too Late: Why Hospital Closings Are Becoming a Problem, Not a Solution-- Early Findings from the Massachusetts Hospital Reconfiguration Study*, 2<sup>nd</sup> edition, 2 June 1997.

<sup>25</sup> Steven A.R. Webb and others, "Critical Care Services and 2009 H1N1 Influenza in Australia and New Zealand," *NEJM*, Vol. 361 (8 October 2009), web first; Guillermo Dominguez-Cherit and others, "Critically Ill Patients with 2009 Influenza A (H1N1) in Mexico," *JAMA*, Vol. 302, No. 17 (12 October 2009), web first; and Anand Kumar and Others, "Critically Ill Patients with 2009 Influenza A (H1N1) Infection in Canada," *JAMA*, Vol. 302, No. 17 (12 October 2009), web first.

<sup>26</sup> An Act Establishing a Temporary System for the Review of Charges for the Purchase of Hospital Care in the Commonwealth, chapter 495 of the Acts of 1975, <http://archives.lib.state.ma.us/actsResolves/1975/1975acts0424.pdf>.

<sup>27</sup> Alan Sager and Deborah Socolar, *Durable Health Care for All Will Require Cost Control: Health Cost's Share of Economy Up 38% Since 1987, While Uninsured Share of Residents Rose 78%*, Boston: Health Reform Program, Boston University School of Public Health, 3 March 2006, page 12, [www.healthreformprogram.org](http://www.healthreformprogram.org)

<sup>28</sup> Throughout, we use consumer price index data because the more appropriate producer price index data are available only from the early 1990s.

<sup>29</sup> Unless noted otherwise, all years are hospital fiscal years (HFY). The great majority of Massachusetts hospitals report fiscal years from 1 October to 30 September. A few report 1 July to 30 June fiscal years.

<sup>30</sup> Alan Sager, Deborah Socolar, and Peter Hiam, *The World's Most Expensive Hospitals: One-fifth of Massachusetts Hospital Costs Appear Unjustified*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 1 February 1991.

<sup>31</sup> The OECD's definition of hospital care, used for international comparisons, is broader than that employed in subsequent tables for domestic interstate comparisons within the U.S. This is why,

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for example, the United States hospital spending here in Exhibit 1, \$1,930 per person in 2004, exceeds the \$1,639 figure reported for the same year in Exhibit 5.

<sup>32</sup> Calculated from American Hospital Association, *Hospital Statistics, 2009 Edition*, Chicago: The Association, 2009, Table 1.

<sup>33</sup> Please note: (1) “Personal health care spending” refers to spending from all sources—individuals, insurers, government programs, and others—for health care services and products to care for individuals, as opposed to spending on medical research (non-commercial), public health programs, construction, insurance administration and profit. (2) Prescription drug costs in these National Health Expenditures data exclude the costs of prescription drugs used in hospitals and nursing homes, which are tallied as part of the overall costs in those sectors.

<sup>34</sup> We calculated hospital costs as a share of personal health care expenditures for each year from 1980 to 2004. The data are found at Office of the Actuary, Centers for Medicare and Medicaid Services, Health Expenditures Data by State, 1980 – 2004, [http://www.cms.hhs.gov/NationalHealthExpendData/05a\\_NationalHealthAccountsStateHealthAccountsProvider.asp#TopOfPage](http://www.cms.hhs.gov/NationalHealthExpendData/05a_NationalHealthAccountsStateHealthAccountsProvider.asp#TopOfPage).

<sup>35</sup> Office of the Actuary, Centers for Medicare and Medicaid Services, Health Expenditures Data by State, 1980 – 2004, [http://www.cms.hhs.gov/NationalHealthExpendData/05a\\_NationalHealthAccountsStateHealthAccountsProvider.asp#TopOfPage](http://www.cms.hhs.gov/NationalHealthExpendData/05a_NationalHealthAccountsStateHealthAccountsProvider.asp#TopOfPage).

<sup>36</sup> As explained below, total health care spending includes not only spending on personal health care, but also expenses for research, government public health activities, insurance administration and profit, and more.

<sup>37</sup> Alan Sager and Deborah Socolar, *Massachusetts Health Spending Soars to \$62.1 Billion in 2006: Spending Here Is World’s Highest—33% per Person Above U.S.A. Average, an Unprecedented Excess*, Boston: Health Reform Program, 28 June 2006, <http://dccwww.bumc.bu.edu/hs/accessandaffordability.htm>.

<sup>38</sup> Office of the Actuary, Centers for Medicare and Medicaid Services, Health Expenditures Data by State, 1980 – 2004, [http://www.cms.hhs.gov/NationalHealthExpendData/05\\_NationalHealthAccountsStateHealthAccounts.asp#TopOfPage](http://www.cms.hhs.gov/NationalHealthExpendData/05_NationalHealthAccountsStateHealthAccounts.asp#TopOfPage).

<sup>39</sup> Alan Sager and Deborah Socolar, *Massachusetts Health Spending Soars to \$62.1 Billion in 2006: Spending Here Is World’s Highest—33% per Person Above U.S.A. Average, an Unprecedented Excess*, Boston: Health Reform Program, 28 June 2006, <http://dccwww.bumc.bu.edu/hs/accessandaffordability.htm>.

<sup>40</sup> Alan Sager and Deborah Socolar, *Massachusetts Health Spending Soars to \$62.1 Billion in 2006: Spending Here Is World’s Highest—33% per Person Above U.S.A. Average, an Unprecedented Excess*, Boston: Health Reform Program, 28 June 2006, <http://dccwww.bumc.bu.edu/hs/accessandaffordability.htm>.

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<sup>41</sup> See, for example, Exhibits 9, 11, 12, and 13, for Alan Sager and Deborah Socolar, *The World's Most Expensive Health Care: Massachusetts Health Care Costs, 1980 to 1998*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, posted 17 October 2000, at [www.healthreformprogram.org](http://www.healthreformprogram.org).

<sup>42</sup> Alan Sager and Deborah Socolar, *The World's Most Expensive Health Care: Massachusetts Health Care Costs, 1980 to 1998*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 2 October 2000, p. 6, [www.healthreformprogram.org](http://www.healthreformprogram.org).

<sup>43</sup> American Hospital Association, annual *Guide Issues, Guides*, and annual editions of *Hospital Statistics*, 1961 – 2009. (In the early years of the period studied, the American Hospital Association reported statistical tabulations in a special issue of its annual Guide Issue of its journal, *Hospitals*. Subsequently, statistics were presented in a separate publication, *Hospital Statistics*.)

<sup>44</sup> Again, these data are drawn from American Hospital Association, annual *Guide Issues, Guides*, and annual editions of *Hospital Statistics*, 1961 – 2009.

<sup>45</sup> Please refer to American Hospital Association, *Hospital Statistics*, Chicago: AHA, various years.

<sup>46</sup> The all-items consumer price index, all urban consumers, all-city annual averages was used. U.S. Bureau of Labor Statistics, Consumer Price Index, Most-requested Statistics, <http://data.bls.gov/cgi-bin/surveymost?cu>.

<sup>47</sup> See U.S. Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov), producer price index data for “General medical and surgical hospitals,” **Series Id:** PCU622110622110.

<sup>48</sup> AHA *Hospital Statistics, 2010*, Chicago: The Association, 2009.

<sup>49</sup> See U.S. Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov), producer price index data for “General medical and surgical hospitals,” **Series Id:** PCU622110622110.

<sup>50</sup> Center for Medicare and Medicaid Services, “State Health Expenditure Accounts by Provider Location, 2004 Highlights,” May 2006, p. 2, [http://www.cms.hhs.gov/NationalHealthExpendData/05\\_NationalHealthAccountsStateHealthAccounts.asp#TopOfPage](http://www.cms.hhs.gov/NationalHealthExpendData/05_NationalHealthAccountsStateHealthAccounts.asp#TopOfPage)

<sup>51</sup> See, for example, Alan Sager, Deborah Socolar, and Peter Hiam, *The World's Most Expensive Hospitals: One-fifth of Massachusetts Hospital Costs Appear Unjustified*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 1 February 1991, [www.healthreformprogram.org](http://www.healthreformprogram.org); Alan Sager and Deborah Socolar, *The World's Most Expensive Health Care: Massachusetts Health Care Costs, 1980 to 1998*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 2 October 2000; Alan Sager and Deborah Socolar, *Massachusetts Health Spending Soars to \$62.1 Billion in 2006: Spending Here Is World's Highest—33% per Person Above U.S.A. Average, an Unprecedented Excess*, Boston: Health Reform Program, 28 June 2006, <http://dccwww.bumc.bu.edu/hs/accessandaffordability.htm>.

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<sup>52</sup> It is probably not appropriate to make much of occupancy rates, for that matter. While occupancy rates are supposed to be expressed as a percentage of beds set up and staffed, it appears that most hospitals inappropriately report licensed beds as their denominator. This artificially deflates occupancy rates. In practice, hospitals seem to staff only the beds that are used, which means that each hospital runs very close to a 100 percent occupancy rate—as a percentage of beds set up and staffed—each day of the year. If nursing availability constrained staffed beds in 2005, then a cut in LOS in 2006 might have been necessary to fit in a greater number of admissions. But lower LOS means greater average acuity of patient need, other things equal, which should have meant that the increased admissions in 2006 would have required a rise in nursing FTEs per occupied bed. Even so, as mentioned in the section on hospital beds per 1,000 people, a higher occupancy rate should be associated with lower fixed costs (especially capital costs) per bed.

<sup>53</sup> See, for example, Liz Kowalczyk, “85 percent of hospital units met their nurse staffing goals,” *Boston Globe*, 14 February 2007, [http://www.boston.com/yourlife/health/blog/2007/02/85\\_percent\\_of\\_h.html](http://www.boston.com/yourlife/health/blog/2007/02/85_percent_of_h.html)

<sup>54</sup> We disaggregated the total variance in hospital employees’ wage and fringe benefit cost per resident between the U.S. and Massachusetts into a price variance (dollars per employee) and a quantity variance (employees per resident).

The price variance was \$152 per Massachusetts resident and the quantity variance was \$375 per Massachusetts resident. These summed to a total variance of \$527 per resident, 0.9 percent less than the actual total variance of \$532 per resident.

<sup>55</sup> See, for example, Mark Hollmer, “Suburban hospitals go on building tear,” *Boston Business Journal*, 25 February 2005, <http://boston.bizjournals.com/boston/stories/2005/02/28/story2.html>, which described “a capital-spending boom on a scale not seen in years.”

<sup>56</sup> Median operating margins rose from 0.7 percent in HFY 2008 to 1.7 percent in the first three quarters of HFY 2009. See Massachusetts Division of Health Care Finance and Policy, *Health Care in Massachusetts: Key Indicators*, November 2009, [http://www.mass.gov/Eeohhs2/docs/dhcfp/r/pubs/09/key\\_indicators\\_nov\\_09.pdf](http://www.mass.gov/Eeohhs2/docs/dhcfp/r/pubs/09/key_indicators_nov_09.pdf).

<sup>57</sup> We exclude 1949 as an extreme outlier.

<sup>58</sup> Bruce C. Vladeck, “Why Non-profits Go Broke.” *The Public Interest*, Vol. 42 (Winter 1976), pp. 86-101.

<sup>59</sup> Admissions from American Hospital Association, *Hospitals, J.A.H.A., Guide Issue, 1971*; COTH hospitals identified in *American Hospital Association Guide to the Health Care Field, 1974 Edition*, Chicago: The Association, 1975.

<sup>60</sup> “The AAMC’s Council of Teaching Hospitals and Health Systems (COTH) is composed of approximately 400 major teaching hospitals and health systems, including 64 Veterans Affairs Medical Centers,” according to COTH. See <http://www.aamc.org/members/coth/>, access confirmed 7 August 2008. At the same time, COTH identifies 270 acute care non-federal hospitals in the U.S. COTH, personal communication, October 2006.

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<sup>61</sup> COTH, “Member Teaching Hospitals and Institutions,” [http://services.aamc.org/memberlistings/index.cfm?fuseaction=home.search&search\\_type=TH&state\\_criteria=ALL](http://services.aamc.org/memberlistings/index.cfm?fuseaction=home.search&search_type=TH&state_criteria=ALL), access confirmed 7 August 2008.

<sup>62</sup> The Massachusetts Division of Health Care Finance and Policy kindly provided annual spreadsheets summarizing hospital-reported data on expenses, revenues, and assets for hospital fiscal years 2001 through 2008.

<sup>63</sup> Boston Globe Spotlight Team, “A Handshake that Made History,” *Boston Globe*, 28 December 2009.

<sup>64</sup> Office of Attorney General Martha Coakley, *Investigation of Health Care Cost Trends and Cost Drivers: Preliminary Report*, 29 January 2010, p. 12.

<sup>65</sup> Between 2001 and 2003, Union Hospital reported its expenses separate. Subsequently, its expenses were reported with Salem Hospital/North Shore Medical Center. To avoid artificially inflating the rise in expenses at Salem/North Shore, we included Union with Salem/North Shore throughout the seven years examined.

<sup>66</sup> Partners Healthcare, Our Hospitals and Affiliates, [http://www.partners.org/ourhosp/ourhosp\\_description.html](http://www.partners.org/ourhosp/ourhosp_description.html), access confirmed 19 June 2009.

<sup>67</sup> We relied on the AHA’s 2009 *Guide* (with 2007 data) to identify the fifteen COTH hospitals in 2007. COTH membership was very stable between 1970 and 2009, we found by examining both *Guide* data for various years and the COTH’s current membership roster, COTH, Member Hospitals and Health Systems, [http://services.aamc.org/memberlistings/index.cfm?fuseaction=home.search&search\\_type=TH&state\\_criteria=ALL](http://services.aamc.org/memberlistings/index.cfm?fuseaction=home.search&search_type=TH&state_criteria=ALL), access confirmed 19 June 2009.

<sup>68</sup> See “Semi-Partial or Part Correlation,” *Statistica Electronic Manual*, StatSoft, Inc. (2009). STATISTICA version 9.0. [www.statsoft.com](http://www.statsoft.com).

<sup>69</sup> American Medical Association, *Physician Characteristics and Distribution in the U.S.*, 2004 and 2009 editions, Chicago: The Association, 2004 and 2009, Tables 3.1 and 3.7.

<sup>70</sup> Calculated from American Medical Association data as reported in National Center for Health Statistics, *Health, United States, 2008*. Hyattsville, Maryland: 2009, Table 109, <http://www.cdc.gov/nchs/data/hus/hus08.pdf#109>

<sup>71</sup> Massachusetts doctors are not known for their high median incomes; our analyses of available evidence indicates that median incomes here are below national medians.

<sup>72</sup> Hamilton Moses, Samuel O. Their, and David H.M. Matheson, “Why Have Academic Medical Centers Survived?” *J.A.M.A.*, vol. 293, No. 12 (23/30 March 2005), pp. 1495-1500.

<sup>73</sup> Robert Mechanic, Kevin Coleman, and Allen Dobson, “Teaching Hospital Costs: Implications for Academic Missions in a Competitive Market,” *J.A.M.A.*, Vol. 280, No. 11 (16 September 1998), pp. 1015-1019.

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<sup>74</sup> *Boston Globe* Spotlight Team (written by Scott Allen and Marcella Bombardieri, “A Handshake that Made Healthcare History,” *Boston Globe*, 28 December 2008.

<sup>75</sup> Alan Sager and Deborah Socolar, *Many Massachusetts Hospitals Have Financial Problems, and These Must Be Addressed, but an Across-the-board Medicaid Rate Increase Is Not an Effective Solution*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 18 December 2000, [www.healthreformprogram.org](http://www.healthreformprogram.org).

<sup>76</sup> Alan Sager, “Why Urban Voluntary Hospitals Close,” *Health Service Research*, Vol. 18, No. 3 (Fall 1983), pp. 451-481; and Alan Sager, “Urban Hospital Closings—Causes, Consequences, and Responses,” National Health Law Program annual meeting, Washington, 6 December 2004, [www.healthreformprogram.org](http://www.healthreformprogram.org).

<sup>77</sup> See, for example, Alan Sager and Deborah Socolar, *Before It's Too Late: Why Hospital Closings Are Becoming a Problem, Not a Solution-- Early Findings from the Massachusetts Hospital Reconfiguration Study*, 2<sup>nd</sup> edition, 2 June 1997; Alan Sager and Deborah Socolar, *Massachusetts Should Identify and Stabilize All the Hospitals Needed to Protect the Health of the Public*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 20 May 1999, submitted as testimony on H. 781, Health Care Committee, Massachusetts General Court, [www.healthreformprogram.org](http://www.healthreformprogram.org)

<sup>78</sup> See the regular reports on hospital financial condition from the Massachusetts Division of Health Care Finance and Policy, [http://www.mass.gov/?pageID=eohhs2terminal&L=4&L0=Home&L1=Researcher&L2=Physical+Health+and+Treatment&L3=Health+Care+Delivery+System&sid=Eeohhs2&b=terminalcontent&f=dhcfp\\_researcher\\_all\\_dhcfp\\_publications&csid=Eeohhs2/#hosp\\_fin](http://www.mass.gov/?pageID=eohhs2terminal&L=4&L0=Home&L1=Researcher&L2=Physical+Health+and+Treatment&L3=Health+Care+Delivery+System&sid=Eeohhs2&b=terminalcontent&f=dhcfp_researcher_all_dhcfp_publications&csid=Eeohhs2/#hosp_fin).

<sup>79</sup> See, for example, Edward Moscovitch, *Massachusetts Community Hospitals – A Comparative Analysis: Rising Demand vs. Falling Profitability*, Prepared for the Massachusetts Council of Community Hospitals, October, 2005, [http://www.mcchweb.org/research\\_econimicreport\\_10\\_05.pdf](http://www.mcchweb.org/research_econimicreport_10_05.pdf); and John Cai and Maria Schiff, *Variation in Use of Hospital Inpatient Resources in End-of-life Care in Massachusetts*, Massachusetts Division of Health Care Finance and Policy, October 2006, [http://www.mcchweb.org/research\\_mcch\\_end\\_of\\_life\\_10\\_06.pdf](http://www.mcchweb.org/research_mcch_end_of_life_10_06.pdf).

<sup>80</sup> Nancy M. Kane, Jack Needleman, and Liza Rudell, *Comparing the Clinical Quality and Cost of Secondary Care in Academic Health Centers and in Community Hospitals*, Research Brief No. 2, Pioneer Institute, November 2004, [http://www.mcchweb.org/research\\_11\\_04\\_pioneer.pdf](http://www.mcchweb.org/research_11_04_pioneer.pdf).

<sup>81</sup> Admissions from American Hospital Association, *Hospitals, J.A.H.A., Guide Issue, 1971*; COTH hospitals identified in *American Hospital Association Guide to the Health Care Field, 1974 Edition*, Chicago: The Association, 1975.

<sup>82</sup> This is true by both AHA data alone or by a combination of AHA and DHCFP data.

<sup>83</sup> We calculated net exports by comparing health spending by state of provider with health spending by state of residence. Data were compiled by the Office of the Actuary, CMS, and are posted at [http://www.cms.hhs.gov/NationalHealthExpendData/05\\_NationalHealthAccountsStateHealthAccounts.asp#TopOfPage](http://www.cms.hhs.gov/NationalHealthExpendData/05_NationalHealthAccountsStateHealthAccounts.asp#TopOfPage).

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<sup>84</sup> In Maryland's all-payer prospective payment method for hospitals, variable costs were considered to be 50-70 percent of hospital costs; in New Jersey, 72 percent; in Rochester, New York, 40 percent; and in New York's statewide system, 20 percent. This averages to 48 percent, close to the 50 percent share supposed here. By definition, of course, if enough time passes, all costs become variable.

<sup>85</sup> Joy Basu, "Border-crossing Adjustment and Personal Health Care Spending by State," *Health Care Financing Review*, Vol. 18, No. 1 (Fall 1996), tables 8 and 9.

<sup>86</sup> Herman B. Leonard and Jay H. Walder, *The Federal Budget and the States, Fiscal Year 1999*, Cambridge, Massachusetts: Taubman Center for State and Local Government, Kennedy School of Government, 24<sup>th</sup> edition, 15 December 2000, p. 79, [http://www.hks.harvard.edu/taubmancenter/pdfs/fisc/complete\\_99.pdf](http://www.hks.harvard.edu/taubmancenter/pdfs/fisc/complete_99.pdf), access confirmed 26 June 2009.

<sup>87</sup> Herman B. Leonard and Jay H. Walder, *The Federal Budget and the States, Fiscal Year 1999*, Cambridge, Massachusetts: Taubman Center for State and Local Government, Kennedy School of Government, 24<sup>th</sup> edition, 15 December 2000, p. 79, [http://www.hks.harvard.edu/taubmancenter/pdfs/fisc/complete\\_99.pdf](http://www.hks.harvard.edu/taubmancenter/pdfs/fisc/complete_99.pdf), access confirmed 26 June 2009.

<sup>88</sup> Federal government shares of Medicaid are higher for lower-income states. Massachusetts is one of 13 states to which the federal government pays its lowest share—50 percent—of Medicaid costs. In low-income Mississippi, the federal government pays over three-fourths of Medicaid costs. See Kaiser Family Foundation, *State Health Facts*, Federal Matching Rate (FMAP) for Medicaid, <http://www.statehealthfacts.org/comparetable.jsp?ind=184&cat=4>, access confirmed 26 June 2009.

<sup>89</sup> The American Recovery and Reinvestment Act (ARRA) provides for a baseline 6.2 percent rise in each state's FMAP, raising the minimum FMAP from about 50 percent to about 56.2 percent. See, for example, Kaiser Family Foundation, "American Recovery and Reinvestment Act (ARRA): Medicaid and Health Care Provisions, March 2009, <http://www.kff.org/medicaid/upload/7872.pdf>. This provision was designed to offer federal support for state Medicaid programs strained by reduced state revenues and higher Medicaid costs, both stemming from the grave 2008-2010 recession.

<sup>90</sup> Herman B. Leonard and Jay H. Walder, *The Federal Budget and the States, Fiscal Year 1999*, Cambridge, Massachusetts: Taubman Center for State and Local Government, Kennedy School of Government, 24<sup>th</sup> edition, 15 December 2000, Table 3, [http://www.hks.harvard.edu/taubmancenter/pdfs/fisc/complete\\_99.pdf](http://www.hks.harvard.edu/taubmancenter/pdfs/fisc/complete_99.pdf), access confirmed 26 June 2009.

<sup>91</sup> Calculated from United States Census, "Federal Balance of Payments per Capita, by State," Table 545, from Jay H. Walder and Herman B. Leonard, *The Federal Budget and the States*, annual. <http://www.ksg.harvard.edu/taubmancenter/F98.pdf>, [http://www.allcountries.org/uscensus/545\\_federal\\_balance\\_of\\_payments\\_per\\_capita.html](http://www.allcountries.org/uscensus/545_federal_balance_of_payments_per_capita.html), access confirmed 11 August 2008.

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<sup>92</sup> Herman B. Leonard and Jay H. Walder, *The Federal Budget and the States, Fiscal Year 1999*, Cambridge, Massachusetts: Taubman Center for State and Local Government, Kennedy School of Government, 24<sup>th</sup> edition, 15 December 2000, p. 4, [http://www.hks.harvard.edu/taubmancenter/pdfs/fisc/complete\\_99.pdf](http://www.hks.harvard.edu/taubmancenter/pdfs/fisc/complete_99.pdf), access confirmed 26 June 2009.

<sup>93</sup> See, for example, Boston Redevelopment Authority, *Building the New Economy: Health Care Projects for Boston, 1992*, Boston: The Authority, 1992; The Howell Group, *The Economic Impact of Medicare and Medicaid Cuts on Massachusetts*, Prepared for the Coalition for Responsible Medicare and Medicaid Reform, Boston, 8 August 1995; and American Hospital Association, *Beyond Health Care: The Economic Contributions of Hospitals*, Washington: The Association, April 2008.

<sup>94</sup> Andrew Sum, Ishwar Katiwada, Joseph McLaughlin, and others, *Mass Jobs: Meeting the Challenges of a Shifting Economy*, Boston: Mass INC and Center for Labor Market Studies, November 2007, p. 7.

<sup>95</sup> See, for example, Danny Hakim, "This Year, Ontario May Pass Michigan in Making Vehicles," *New York Times*, 27 November 2004; and Len M. Nichols and Sarah Axeen, *Employer Health Costs in a Global Economy: A Competitive Disadvantage for U.S. Firms*, Washington: New America Foundation, May 2008.

<sup>96</sup> On this point, see Robert Keough, "Why the Bay State's Growing Health Care Industry May be Bad for the Economy," *Boston Globe*, op-ed, 20 June 2004.

<sup>97</sup> Christopher Rowland, "Health Executives Emerge as State's New Power Players," *Boston Globe*, 13 March 2006.

<sup>98</sup> Research Division, Boston Redevelopment Authority, "Boston Continues to Lead the Nation in NIH Award Funding," May 2008.

<sup>99</sup> Research Division, Boston Redevelopment Authority, "Boston Continues to Lead the Nation in NIH Award Funding," May 2008.

<sup>100</sup> Research Division, Boston Redevelopment Authority, "Boston Continues to Lead the Nation in NIH Award Funding," May 2008.

<sup>101</sup> American Hospital Association, *Hospital Statistics, 2008 edition*, Chicago: The Association, Table 8.

<sup>102</sup> We took one-quarter of the 2005 mean annual salary for third-year residents in the northeast region and three-quarters of the 2006 salary. For salaries, see American Association of Medical Colleges, *2006 AAMC Survey of Housestaff Stipends, Benefits, and Funding*, Washington: AAMC Division of Health Care Affairs, Autumn 2006 Report (Updated January, 2007), Table 2, <http://www.aamc.org/data/housestaff/hss2006report.pdf>, access confirmed 26 August 2008. Third-year residents' salaries are a useful shorthand for the weighted mean of all residents' salaries, according to Sandy Shea, Senior Area Director, Committee of Interns and Residents/SEIU, Boston., personal communication 25 August 2008.

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<sup>103</sup> The northeast region's ratio of benefits to stipend averaged 35 percent. American Association of Medical Colleges, *2006 AAMC Survey of Housestaff Stipends, Benefits, and Funding*, Washington: AAMC Division of Health Care Affairs, Autumn 2006 Report (Updated January, 2007), Table 31, <http://www.aamc.org/data/housestaff/hss2006report.pdf>, access confirmed 26 August 2008.

<sup>104</sup> For one discussion of these issues, see Alan Sager and Deborah Socolar, *Graduate Medical Education Financing in the U.S.A.*, 7 December 2002, [www.healthreformprogram.org](http://www.healthreformprogram.org), especially pp. 9 ff.

<sup>105</sup> Medicare Payment Advisory Commission, *Medicare Payment Policy: Report to the Congress*, Washington: MedPAC, March 2008, pp. 69 ff.

<sup>106</sup> Alan Sager, "Why Urban Voluntary Hospitals Close," *Health Service Research*, Vol. 18, No. 3 (Fall 1983), pp. 451-481; and Alan Sager, "Urban Hospital Closings—Causes, Consequences, and Responses," National Health Law Program annual meeting, Washington, 6 December 2004, [www.healthreformprogram.org](http://www.healthreformprogram.org).

<sup>107</sup> Alan Sager and Deborah Socolar, *Before It's Too Late: Why Hospital Closings Are a Problem, Not a Solution*, 2<sup>nd</sup> edition, Boston: Access and Affordability Monitoring Project, 2 June 1997.

<sup>108</sup> Calculated from data in Appendix Table 19.

<sup>109</sup> This section rests heavily on Alan Sager and Deborah Socolar, *Massachusetts Health Spending Soars to \$62.1 Billion in 2006: Spending Here Is World's Highest—33% per Person Above U.S.A. Average, an Unprecedented Excess*, Boston: Health Reform Program, 28 June 2006, <http://dccwww.bumc.bu.edu/hs/accessandaffordability.htm>.

<sup>110</sup> See Organization for Economic Cooperation and Development, "OECD Health Data 2005—Frequently Requested Data," [http://www.oecd.org/document/16/0,2340,en\\_2649\\_34631\\_2085200\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/16/0,2340,en_2649_34631_2085200_1_1_1_1,00.html), access confirmed 16 June 2006.

<sup>111</sup> Robert A. Hahn, Steven M. Teutsch, Richard B. Rothenberg, and James S. Marks, "Excess Deaths from Nine Chronic Diseases in the United States," *Journal of the American Medical Association*, Vol. 264, No. 20 (28 November 1990), pp. 2654-2659.

<sup>112</sup> American Public Health Association, *America's Public Health Report Card*, Washington: American Public Health Association, November 1992.

<sup>113</sup> Stephen F. Jencks, Timothy Cuerdon, Dale R. Burwen, and others, "Quality of Medical Care Delivered to Medicare Beneficiaries," *Journal of the American Medical Association*, Vol. 284, No. 13 (4 October 2000), pp. 1670-1676.

<sup>114</sup> U.S. Census Bureau, *Statistical Abstract of the United States, 1990*, Washington: The Bureau, 1990, Table 105.

<sup>115</sup> U.S. Census Bureau, Population Projections Branch, "Interim Population Projections for States by Age and Sex: 2004 to 2030," Methodology Table 2, 21 April 2005,

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<http://www.census.gov/population/projections/MethTab2.xls>

<sup>116</sup> The Centers for Disease Control and Prevention (CDC), National Center for Health Statistics, Division of Vital Statistics, National Vital Statistics Report Volume 54, Number 13, Table 29, April 19, 2006. Available at [http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54\\_13.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_13.pdf), reported by Kaiser Family Foundation, State Health Facts, <http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi?action=compare&category=Health+Status&subcategory=Deaths&topic=Death+Rate+per+100%2c000>.

<sup>117</sup> John E. Wennberg, Jean L. Freeman, and William J. Culp, “Are Hospital Services Rationed in New Haven or Over-utilised in Boston?” *The Lancet*, 23 May 1987, pp. 1185-1189; and John E. Wennberg, Jean L. Freeman, Roxanne M. Shelton, and Thomas A. Bubolz, “Hospital Use and Mortality among Medicare Beneficiaries in Boston and New Haven,” *New England Journal of Medicine*, Vol. 321, NO. 17 (26 October 1989), pp. 1168-1173.

<sup>118</sup> John E. Wennberg, Elliott S. Fisher, and Jonathan S. Skinner, “Geography and the Debate over Medicare Reform,” *Health Affairs*, 13 February 2002, Web Exclusive, <http://content.healthaffairs.org/cgi/content/abstract/hlthaff.w2.96v1>.

<sup>119</sup> In 1990, Massachusetts was 14<sup>th</sup> best among the states in the share of the population who smoked, and has improved its rank in more recent years, according to U.S. CDC Behavioral Risk Factor Surveillance System Survey data cited in United Health Foundation, *America’s Health Rankings 2008*, December 3, 2008, <http://www.americashealthrankings.org/2008/pdfs/ma.pdf>

<sup>120</sup> Marylou Buyse, “Safer Health Care is the Key to Unlocking Savings,” Commonhealth Blog, [www.wbur.org/weblogs/commonhealth/?p=561](http://www.wbur.org/weblogs/commonhealth/?p=561), access confirmed 15 August 2008.

<sup>121</sup> G. Anderson and R. Herbert, analysis of 2003 Medicare Standard Analytical File, 5% Inpatient Data, in Commission on a High Performance Health System, “State Scorecard Data Tables: Supplement to *Aiming Higher: Results from a State Scorecard on Health System Performance*, New York: The Fund, June 2007, Table 4.5, p. 16, [http://www.commonwealthfund.org/usr\\_doc/State\\_data\\_tables.pdf?section=4039](http://www.commonwealthfund.org/usr_doc/State_data_tables.pdf?section=4039), access confirmed 15 August 2008.

<sup>122</sup> See, for example, David M. Cutler and Mark McClellan, “Is Technological Change in Medicine Worth It?” *Health Affairs*, vol. 20, No5 (September – October 2001), pp. 11-29.

<sup>123</sup> See Organization for Economic Cooperation and Development, “OECD Health Data 2005—Frequently Requested Data,” [http://www.oecd.org/document/16/0,2340,en\\_2649\\_34631\\_2085200\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/16/0,2340,en_2649_34631_2085200_1_1_1_1,00.html), access confirmed 16 June 2006.

<sup>124</sup> As paraphrased in Christopher Rowland, “State’s Per-Person Health Cost Leads World, Study Says,” *Boston Globe*, 22 June 2006.

<sup>125</sup> Population Division, U.S. Census Bureau, “Estimates of the Population by Selected Age Groups for the United States, States, and Puerto Rico: July 1, 2007” (SC-EST2007-01), Release Date: May 1, 2008, <http://www.census.gov/popest/states/asrh/SC-EST2007-01.html>.

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<sup>126</sup> Calculated from “Kaiser Family Foundation, “Discharges and Total Days of Care for Medicare Beneficiaries Discharged from Short-stay Hospitals, 2006,” <http://www.statehealthfacts.org/comparetable.jsp?ind=335&cat=6>, access confirmed 5 August 2008.

<sup>127</sup> Consumer Price Index data are the annual figure for all items, U.S. city average, Series ID CUUR0000SA0, <http://data.bls.gov/PDQ/servlet/SurveyOutputServlet>, access confirmed 21 October 2006.

<sup>128</sup> The difference of 0.6 points on the case mix index divided by the national case mix index of 1.49 equals 4.0 percent.

<sup>129</sup> This is a comparison between the mean case mix index for 276,354 Medicare patients at 65 Massachusetts hospitals versus the mean case mix index for 11,885,842 Medicare patients at 4,110 hospitals elsewhere in the nation. Our calculation from Centers for Medicare and Medicaid Services, FY06 Final Notice [Case Mix Index] Data, <http://www.cms.hhs.gov/AcuteInpatientPPS/FFD/itemdetail.asp?filterType=none&filterByDID=99&sortByDID=2&sortOrder=ascending&itemID=CMS022523&intNumPerPage=10>, access confirmed 2 July 2009.

<sup>130</sup> National Center for Health Statistics, Centers for Disease Control, “Americans Made over 1 Billion Hospital and Doctor Visits in 2006,” 6 August 2008 (press release).

<sup>131</sup> See “Short-stay Hospital Discharges and Case-mix Index, by Location and Bedsize of Hospital, and Procedure Status: Calendar Year 2006,” *Health Care Financing Review*, 2007 Statistical Summary, Table 5.12, p. 443.

<sup>132</sup> Massachusetts Division of Health Care Finance and Policy, Acute hospital financial data reported in the INET series.

<sup>133</sup> If expenses had dropped by \$276 million to \$17,800,000,000, the statewide surplus would have risen to \$1,138,000,000. On total revenue of \$18,938,000,000 (unchanged), this would have yielded a total margin of 6.1 percent.

<sup>134</sup> U.S. Census Bureau, Table HIA-4. “Health Insurance Coverage Status and Type of Coverage by State All People: 1999 to 2008,” September 2009, <http://www.census.gov/hhes/www/hlthins/historic/index.html>. (This time series reflects Census Bureau revisions made for earlier years in 2007.)

<sup>135</sup> As the focus here is the impact of whether residents of the state are insured or uninsured, the cost data used here are on the patient’s state of residence, rather than on hospital location. Center for Medicare and Medicaid Services, “Health Expenditures by State of Residence: Summary Tables, 1991-2004,” September 2007, <http://www.cms.hhs.gov/NationalHealthExpendData/downloads/res-us.pdf>

<sup>136</sup> Massachusetts Department of Health Care Finance and Policy, *Comprehensive Review of Mandated Benefits in Massachusetts—Report to the Legislature*, 7 July 2008, pages 4-5.

<sup>137</sup> Alan Sager and Deborah Socolar, *Durable Health Care for All Will Require Cost Control: Health Cost’s Share of Economy Up 38% Since 1987, While Uninsured Share of Residents Rose*

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78%, Boston: Health Reform Program, Boston University School of Public Health, 3 March 2006, page 12, [www.healthreformprogram.org](http://www.healthreformprogram.org). (Calculations from the AHA data released in late 2005 showed a 44 percent hospital cost excess for 2004, which is revised to 43 percent based the latest release.)

<sup>138</sup> MassHealth Members Snapshot, March 2008, posted at [http://www.hcfama.org/data/n\\_0001/resources/live/MassHealth%20Enrollment%20Snapshot%20As%20of%20March%202008.xls](http://www.hcfama.org/data/n_0001/resources/live/MassHealth%20Enrollment%20Snapshot%20As%20of%20March%202008.xls)

<sup>139</sup> See Massachusetts Executive Office of Health and Human Services, Expansion of MassHealth Family Assistance operations memo, 15 July 2006, and related EOHHS notices, posted at <http://www.mass.gov/Eoehhs2/docs/masshealth/eom2006/eom06-10.pdf>

<sup>140</sup> Massachusetts Health Connector, *Report to the Massachusetts Legislature – Implementation of Health Care Reform, Fiscal Year 2009*, 23 October 2009, posted at <https://www.mahealthconnector.org/portal/binary/com.epicentric.contentmanagement.servlet.ContentDeliveryServlet/About%2520Us/Executive%2520Director%2520Message/Connector%2520Annual%2520Report%25202009.pdf>.

<sup>141</sup> Carol Pryor and Andrew Cohen, The Access Project, *Consumers' Experience in Massachusetts: Lessons for National Health Reform*, Henry J. Kaiser Family Foundation, September 2009, <http://www.kff.org/healthreform/upload/7976.pdf>.

<sup>142</sup> Cathy Schoen, Jennifer L. Nicholson, and Sheila Rustgi, *The Commonwealth Fund, Paying the Price: How Health Insurance Premiums are Eating Up Middle-Class Incomes*, August 2009, [http://www.commonwealthfund.org/~media/Files/Publications/Data%20Brief/2009/Aug/1313\\_Schoen\\_paying\\_the\\_price\\_db\\_v3\\_resorted\\_tables.pdf](http://www.commonwealthfund.org/~media/Files/Publications/Data%20Brief/2009/Aug/1313_Schoen_paying_the_price_db_v3_resorted_tables.pdf)

<sup>143</sup> Recommendations of the Special Commission on the Health Care Payment System, 16 July 2009, [http://www.mass.gov/Eoehhs2/docs/dhcfp/pc/Final\\_Report/Final\\_Report.pdf](http://www.mass.gov/Eoehhs2/docs/dhcfp/pc/Final_Report/Final_Report.pdf).

<sup>144</sup> Alan Sager and Deborah Socolar, Health Costs Absorb One-Quarter of Economic Growth, 2000 – 2005: Recent Federal Report Unintentionally Obscures Massive Rise; Physicians' Decisions Key to Controlling Cost, Data Brief No. 8, Boston: Health Reform Program, Boston University School of Public Health, 9 February 2005, [www.healthreformprogram.org](http://www.healthreformprogram.org); Alan Sager and Deborah Socolar, "Why Are Massachusetts Health Care Costs Soaring? And Can Anything Be Done About It?" *Municipal Advocate*, Vol. 22, No. 1 (Summer 2005), pp. 11-15, 34; Alan Sager and Deborah Socolar, "Make Doctors Agents of Health Care Cost Controls," op-ed, *Boston Globe*, 21 July 2008; and Alan Sager and Deborah Socolar, "Cutting Health Care Costs and Covering Everyone by Negotiating a Political, Financial, Clinical, and Legal Peace Treaty with Doctors," *American Public Health Association*, Washington, D.C., 5 November 2007.

<sup>145</sup> Christine E. Eibner, Peter S. Hussey, M. Susan Ridgely, and Elizabeth A. McGlynn, *Controlling Health Care Spending in Massachusetts: An Analysis of Options*, RAND Health, August 2009, [http://www.mass.gov/Eoehhs2/docs/dhcfp/r/pubs/09/control\\_health\\_care\\_spending\\_rand\\_08-07-09.pdf](http://www.mass.gov/Eoehhs2/docs/dhcfp/r/pubs/09/control_health_care_spending_rand_08-07-09.pdf).

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<sup>146</sup> Robert A. Berenson, Paul B. Ginsburg, and Nicole Kemper, “Unchecked Provider Clout in California Foreshadows Challenges to Health Care Reform,” *Health Affairs*, Vol. 29, No. 4 (April 2010) web first, <http://content.healthaffairs.org/cgi/reprint/hlthaff.2009.0715v1>.

<sup>147</sup> See, for example, a recent op.ed. article by U.S. Reps. John Shadegg and Pete Hoekstra, “How to Insure Every American,” *The Wall Street Journal*, 4 September 2009, <http://online.wsj.com/article/SB10001424052970204731804574390683768374864.html>. They comment, “...third-party payment...has divorced the consumer—the patient—from the real cost of services. It encourages excess spending...” Article cited in Josh Marshall, “On Offense,” *Talking Points Memo—TPM Editors Blog*, 8 September 2009, [http://www.talkingpointsmemo.com/archives/2009/09/on\\_offense\\_2.php](http://www.talkingpointsmemo.com/archives/2009/09/on_offense_2.php). See also, for example, John Mackey, “The Whole Foods alternative to ObamaCare,” *The Wall Street Journal*, 11 August 2009, <http://s.wsj.net/article/SB10001424052970204251404574342170072865070.html>

<sup>148</sup> Lynn Nicholas and Ellen M. Zane, “All need to step up,” op.ed., *Boston Globe*, 15 August 2009, [http://www.boston.com/bostonglobe/editorial\\_opinion/oped/articles/2009/08/15/all\\_need\\_to\\_step\\_up/](http://www.boston.com/bostonglobe/editorial_opinion/oped/articles/2009/08/15/all_need_to_step_up/); and Lynn Nicholas and Ellen M. Zane, “Global Payments Will Take Global Participation,” *Worcester Business Journal*, 14 September 2009, [http://www.wbjournal.com/article.php?RF\\_ITEM\[\]=Article\\$0@44483](http://www.wbjournal.com/article.php?RF_ITEM[]=Article$0@44483)

<sup>149</sup> Jonathan Gruber, “The Case for a Two-Tier Health System,” *Pathways*, Winter 2009, [http://www.stanford.edu/group/scspi/pdfs/pathways/winter\\_2009/Gruber.pdf](http://www.stanford.edu/group/scspi/pdfs/pathways/winter_2009/Gruber.pdf)

<sup>150</sup> In discussing that family’s “innovative approach to buying health care,” the president emphasized their Health Savings Account, but that rested on their little-noted purchase of a high-deductible, catastrophic insurance policy. Bush commented, “...there's nothing like having your own -- managing your own system, is there? I mean, there's just something inherently American about controlling your own destiny, and that's what these HSAs do. The Sameses are with us. ... Krista is ....an accountant. Ted is a doc. They're a professional family, just like a lot of other families in America. They purchased an HSA. They're using HSAs. They found that an HSA makes their life --their desire to make sure their family is insured so much more affordable and reasonable.” See “President Bush Discusses Quality, Affordable Health Care—Remarks by the President on Access to Health Care,” White House media release, 28 January 2004, archived at <http://web.archive.org/web/20040507232852/www.whitehouse.gov/news/releases/2004/01/print/20040128-2.html>. (Access confirmed 9 September 2009.)

<sup>151</sup> The Comptroller General’s forum “agreed that as a practical matter, the lack of adequate comparable data today limits the ability to link incentives to patients' decisions.” Further, participants noted that this could not be done

- “until tools are available to assess the quality of providers' care”;
- it would necessitate “efficiency measures that have not yet been developed”;
- “these measures would require medical experts to arrive at a consensus about whether a given treatment was necessary or elective”;
- “a good efficiency measure needs to adjust for hospitals or physicians that take high-risk patients”;
- “such measures also would require systematic collection of clinical outcome data”;
- an independent entity would be needed to do such assessments;

- “cost incentives would need to be modified for low-income, uninsured, and chronically ill populations”; and
- they would have “limited effect” on the “high-cost patients who exceed their maximum for covered out-of-pocket costs.”

(U.S. General Accounting Office, *Comptroller General's Forum on Health Care: Unsustainable Trends Necessitate Comprehensive and Fundamental Reforms to Control Spending and Improve Value*, GAO-04-793SP, 1 May 2004, <http://www.gao.gov/htext/d04793sp.html>.) This discussion apparently did not address the enormous complexity that would face patients in any attempt to incorporate all of the above sorts of measures.

<sup>152</sup> Donald Berwick, quoted in Robert Galvin, “‘A Deficiency Of Will And Ambition’: A Conversation with Donald Berwick,” *Health Affairs*, Web Exclusive, 12 January 2005, <http://content.healthaffairs.org/cgi/content/full/hlthaff.w5.1/DC1>. He stated,

“I do not believe that making the individual American patient more “cost-sensitive” has any rationale in science, ethics, or evidence. It will fail, and it will fail miserably. It will result in a shifting of care away from the people who need it the most. It is a displacement of responsibility for changing the system. You know, if CalPERS or Xerox or GE can’t change care through using its purchasing power, then I absolutely promise you that Mrs. Jones can’t.”

<sup>153</sup> Alan Sager and Deborah Socolar, *Health Costs Absorb One-Quarter of Economic Growth, 2000 – 2005: Recent Federal Report Unintentionally Obscures Massive Rise; Physicians’ Decisions Key to Controlling Cost*, Data Brief No. 8, Boston: Health Reform Program, Boston University School of Public Health, 9 February 2005, [www.healthreformprogram.org](http://www.healthreformprogram.org).

<sup>154</sup> Samuel H. Zuvekas and Joel W. Cohen, “Prescription Drugs and the Changing Concentration of Health Care Expenditures,” *Health Affairs*, January-February 2007, pp. 249-257, Exhibit 2. See also M.L. Berk and A.C. Monheit, “The Concentration of Health Care Expenditures Revisited,” *Health Affairs*, March-April 2001, pp. 204-213, Exhibit 1.

<sup>155</sup> See, for example, William A. Glaser, “The United States Needs a Health System Like Other Countries,” *JAMA*, Vol. 270, No. 8 (25 August 1993), pp. 980-984, <http://jama.ama-assn.org/cgi/reprint/270/8/980>; William A. Glaser, “How Other Nations Do It,” <http://www.healthpaconline.net/rekindling/Articles/Glaser.htm>.

<sup>156</sup> See, for example, Uwe Reinhardt, “Spending More through ‘Cost Control’: Our Obsessive Quest to Gut the Hospital,” *Health Affairs*, Vol. 15, No. 2 (Summer 1996), pp. 145-154; Robert M. Williams, “The Cost of Visits to Emergency Rooms,” *New England Journal of Medicine*, Vol. 334, No. 10 (7 March 1996), pp. 642-646.

<sup>157</sup> Alan Sager and Deborah Socolar, *Health Costs Absorb One-Quarter of Economic Growth, 2000 – 2005: Recent Federal Report Unintentionally Obscures Massive Rise; Physicians’ Decisions Key to Controlling Cost*, Data Brief No. 8, Boston: Health Reform Program, Boston University School of Public Health, 9 February 2005, [www.healthreformprogram.org](http://www.healthreformprogram.org).

<sup>158</sup> For example, more than half of all health spending in the U.S. is wasted, concludes a 2008 report by PricewaterhouseCoopers Health Research Institute, *The Price of Excess—Identifying waste in healthcare spending*, [http://www.pwc.com/en\\_CZ/cz/verejna-sprava-](http://www.pwc.com/en_CZ/cz/verejna-sprava-)

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[zdravotnictvi/prices-of-excess-healthcare-spending.pdf](#). Donald Berwick also suggests that “the waste level in American medicine approaches 50 percent...” See Robert Galvin, “‘A Deficiency Of Will And Ambition’: A Conversation With Donald Berwick,” *Health Affairs*, 12 January 2005, <http://content.healthaffairs.org/cgi/content/full/hlthaff.w5.1/DC1>.

<sup>159</sup> Increasingly widely cited is the estimate by John Wennberg and colleagues that one-third of health care spending is for inappropriate, ineffective care, or medical products priced higher than equally or more effective alternatives. See, for example, Maggie Mahar, “The State of the Nation’s Health,” *Dartmouth Medicine*, Spring 2007, p. 32, <http://dartmed.dartmouth.edu/spring07/pdf/atlas.pdf>.

<sup>160</sup> For a fine example, see Scot Allen, “A Simple Prescription that Could Dramatically Improve Hospitals—and American Health Care,” *Boston Globe*, 30 August 2009, [http://www.boston.com/bostonglobe/ideas/articles/2009/08/30/a\\_simple\\_change\\_could\\_dramatically\\_improve\\_hospitals\\_and\\_american\\_health\\_care?mode=PF](http://www.boston.com/bostonglobe/ideas/articles/2009/08/30/a_simple_change_could_dramatically_improve_hospitals_and_american_health_care?mode=PF).

<sup>161</sup> Alan Sager and Deborah Socolar, *Massachusetts Health Spending Soars to \$62.1 Billion in 2006: Spending Here Is World’s Highest—33% per Person Above U.S.A. Average, an Unprecedented Excess*, Boston: Health Reform Program, 28 June 2006, Especially The Physician Cost and Income Paradox, pp. 57-63. <http://dccwww.bumc.bu.edu/hs/accessandaffordability.htm>,

<sup>162</sup> Alan Sager and Deborah Socolar, *Massachusetts Health Spending Soars to \$62.1 Billion in 2006: Spending Here Is World’s Highest—33% per Person Above U.S.A. Average, an Unprecedented Excess*, Boston: Health Reform Program, 28 June 2006, Especially The Physician Cost and Income Paradox, pp. 57-63. <http://dccwww.bumc.bu.edu/hs/accessandaffordability.htm>,

<sup>163</sup> U.S. Bureau of Labor Statistics, State and Area Employment Series for Massachusetts, National Series. Massachusetts data are for December of each year, with 2009 preliminary. The denominator is total non-farm employment. See [http://www.bls.gov/sae/sm\\_mrs.htm](http://www.bls.gov/sae/sm_mrs.htm) for state data.

<sup>164</sup> For a useful assessment of the rising power of the health care industry among employers, see Chris Rowland, “Health Executives Emerge as State’s New Power Players,” *Boston Globe*, 13 March 2006, [http://www.boston.com/business/healthcare/articles/2006/03/13/health\\_executives\\_emerge\\_as\\_states\\_new\\_power\\_players/](http://www.boston.com/business/healthcare/articles/2006/03/13/health_executives_emerge_as_states_new_power_players/).

<sup>165</sup> See, for example, Ted Griffith, “Hospital Beds in Short Supply,” *Boston Business Journal*, 26 March 1999;

<sup>166</sup> Alan Sager and Deborah Socolar, *Before It's Too Late: Why Hospital Closings Are Becoming a Problem, Not a Solution-- Early Findings from the Massachusetts Hospital Reconfiguration Study*, 2<sup>nd</sup> edition, 2 June 1997; Alan Sager and Deborah Socolar, *Massachusetts Should Identify and Stabilize All the Hospitals Needed to Protect the Health of the Public*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 20 May 1999, submitted as testimony on H. 781, Health Care Committee, Massachusetts General Court; Alan Sager and Deborah Socolar, *Many Massachusetts Hospitals Have Financial Problems, and These Must Be Addressed, but an Across-the-board Medicaid Rate Increase Is Not an Effective*

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*Solution*, Boston: Access and Affordability Monitoring Project, Boston University School of Public Health, 18 December 2000, [www.healthreformprogram.org](http://www.healthreformprogram.org); Alan Sager and Deborah Socolar, "Too Many Local Hospitals on Life Support: With Number of Beds Halved since 1980, State Should Alter Its Closings Policy," *Boston Globe Focus*, 3 March 2002; Alan Sager and Deborah Socolar, *Closing Hospitals in New York State Won't Save Money but Will Harm Access to Health Care*, Boston: Health Reform Program, 20 November 2006, <http://dcc2.bumc.bu.edu/hs/ushealthreform.htm>.

<sup>167</sup> Alan Sager and Deborah Socolar, *This Year's \$72 Billion in Health Spending in Massachusetts Is Enough to Finance the Care that Works: Proposals to Simply Bundle Payments to Hospitals and Doctors for Individual Episodes of Care, While Reasonable and Well-intentioned, Are Not Likely to Contain Costs*, Report Prepared for the Special Commission on the Health Care Payment System, Commonwealth of Massachusetts, 11 February 2009 written statement, incorporating responses to commissioners' questions; Alan Sager and Deborah Socolar, "Make Doctors Agents of Health Care Cost Controls," op-ed, *Boston Globe*, 21 July 2008; and Alan Sager and Deborah Socolar, "Cutting Health Care Costs and Covering Everyone by Negotiating a Political, Financial, Clinical, and Legal Peace Treaty with Doctors," American Public Health Association, Washington, D.C., 5 November 2007.