

# **Massachusetts Comparative Projected Health Expenditure Model**

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*The findings and conclusions presented in this report do not represent in any way the policy of the Massachusetts Medical Society. The report is provided for informational purposes only.*

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## **I. INTRODUCTION**

The Lewin Group has developed a model of health spending in the Commonwealth of Massachusetts. This model was designed to estimate the potential impacts of a single-payer insurance coverage program on health expenditures in that state over the 1998 through 2005 period compared to the projected impacts of the current system during the same time period. The model presents estimates of total program costs, net changes in total state health spending, changes in spending by type of service, and changes in administrative costs.

The model includes Lewin Group “best” assumptions on the impact of a single payer program on health spending in Massachusetts. The model provides outputs that show the impact of the single-payer program on health care expenditures by type of service and type of spending.

In this report, we describe the major features of the model including:

- Baseline Projections
- Single Payer Assumptions
- Model Outputs

## II. BASELINE PROJECTIONS

The baseline in this analysis is a projection of the amount of health spending by type of service for each year between 1998 and 2005 under the existing health care system in Massachusetts. The Lewin Group first estimated 1996 data for health expenditure amounts. We inflated these cost estimates to future years based upon estimates of the rate of growth in health spending for Massachusetts.

The 1996 estimates were based upon health spending projections developed by the Congressional Budget Office (CBO) that were adjusted to reflect the historical relationship between the national rate of growth in health spending and the rate of growth in health spending for Massachusetts. The long-term historical rate of growth in health spending in Massachusetts (10.2 percent) has been about 0.1 percent lower than the national average long-term growth rate (10.3 percent).<sup>1</sup> Consequently, the growth rate that was used in the Massachusetts projections was 0.1 percent less than CBO's projection of the national rate of growth in health spending.

*Figure 1* presents CBO estimates of the growth in health spending annually for 1997 through 2005 and the estimates of the corresponding growth rates for Massachusetts using the methodology discussed above. These assumptions were used in the model to project spending under the baseline.

**Figure 1**  
**Baseline Health Expenditure Growth Assumptions**

	Average Annual Rate of Growth in Health Spending	
	CBO Nationwide Projections <sup>a/</sup>	Projections for Massachusetts <sup>b/</sup>
<b>1997</b>	4.8	4.8
<b>1998</b>	4.9	4.8
<b>1999</b>	5.3	5.2
<b>2000</b>	5.2	5.1
<b>2001</b>	5.8	5.7
<b>2002</b>	6.0	5.9
<b>2003</b>	6.4	6.3
<b>2004</b>	6.5	6.4
<b>2005</b>	6.5	6.4

a/ Congressional Budget Office (CBO), "CBO Projections of National Health Expenditures 1997 through 2008," Washington, DC, January 1998.

b/ Based upon CBO projected growth rates for the nation adjusted to reflect the historical relationship between health care cost growth in Massachusetts and the rate of growth in costs nationwide.

Source: Lewin Group estimates.

<sup>1</sup> The long-term average annual rate of growth in health care costs is computed over the 1980 through 1993 period.

### **III. SINGLE PAYER ASSUMPTIONS**

There is a wide range of possible variations in the design of a single-payer system. The overall parameters in the model assume that the single-payer system used in Massachusetts would be modeled on the Canadian health care system. Under this system, all Massachusetts residents would be covered under a single government-financed insurance program. The benefits package would cover nearly all health care costs except cosmetic surgery, non-prescription drugs, private hospital rooms and orthodontia.<sup>2</sup> Over time, the plan would have no patient cost (out-of-pocket expenses) such as deductibles and co-payments. Hospitals would be placed on annual budgets, which limit the rate of growth in hospital costs. Spending for other services also would be controlled through global budgets on health spending that cap health expenditure growth at a predetermined level. Although Canada is now moving towards managed care methods such as HMOs in some parts of the country, we assume that private-sector managed care would be eliminated except for basic utilization review, in a Massachusetts single-payer program and physicians having the option to be paid by capitation.

The model's assumptions about the impacts of a single-payer program on health expenditures include insurer and provider administrative costs as well as the utilization of health services. The global budget for the first year of the program (1999) would phase in some of the projected impacts of administrative costs and health service utilization (e.g., hospital budget).

In this section, we outline our recommendations for these various assumptions. We include the recommendations for the following types of assumptions:

- Administrative Cost and Health Services Utilization
- Global Budgeting

#### **A. Administrative Cost and Health Service Utilization Assumptions**

The single-payer model would have several impacts on statewide health spending. For example, there would be an increase in health services utilization as persons who are uninsured under the current system become insured and coverage is expanded to include long-term care. Utilization is also likely to increase due to the elimination of patient cost sharing and the elimination of most types of managed care. However, these increases in costs would be largely offset by reductions in administrative costs for insurers and providers. Costs will also fall due to the use of health spending budgets, which reduce the rate of growth in health spending.

**Figure 2** presents our estimates for the current system and our assumptions on the cost impacts of the various factors affecting utilization and expenditures under a single-payer system. These

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<sup>2</sup> Benefits provided vary by province. In this analysis, we assumed that all major services would be covered under the Massachusetts program.

**Figure 2**  
**Assumptions Concerning the Cost Impacts of a Single-Payer System in Massachusetts**

**Insurer Administrative Costs**

- ◆ Single-payer administrative costs as a percentage of benefits: 1.4 percent

**Provider Administrative Costs**

- ◆ Hospital administrative costs as a percentage of hospital net revenues: 33.4 percent
  - ◆ Percentage of hospital administrative costs saved under single-payer model: 14.0 percent
  - ◆ Net savings: 4.7 percent
- ◆ Physician administrative costs as a percentage of physician revenues: 32.0 percent
  - ◆ Percentage of physician administrative costs saved under single-payer model: 26.0 percent
  - ◆ Net savings: 8.3 percent

**Utilization for Newly Insured**

- ◆ Utilization increase as a percentage of current spending for uninsured: 70.1 percent

**Increased Utilization of Long-Term Care Services**

- ◆ Percentage increase in nursing home utilization: 10.3 percent
- ◆ Percentage increase in home health utilization: 15.0 percent

**Increased Utilization Due to Elimination of Cost Sharing (out-of-pocket expenses)**

- ◆ Percentage who already have first-dollar coverage: 36.4 percent
- ◆ Percentage increase in spending for physician and other professional services due to first-dollar coverage: 30.0 percent
- ◆ Percentage increase in spending for inpatient hospital services due to first-dollar coverage: 10.0 percent

**Increased Utilization Due to Elimination of Managed Care**

- ◆ Percentage of Massachusetts residents in HMOs: 44.7 percent
- ◆ Percentage increase in utilization: 4.0 percent

are based upon Lewin Group analyses of the impacts of converting the Massachusetts health care system from its current multi-payer system to a single-payer system.<sup>3</sup> These assumptions include:

### **Insurer Administration**

- **Single-Payer Administrative Costs as a Percentage of Benefits:** We estimated administrative costs under a Massachusetts single-payer system by extrapolating from the administrative costs for the US Medicare program after adjusting for key differences between Medicare and the Canadian approach, including the elimination of hospital claims filing (hospital claims are eliminated under the Canadian approach by placing hospitals on annual budgets). Based upon these assumptions, we estimate that administrative costs under the Massachusetts single-payer program will equal 1.41 percent of claims.

### **Provider Administration**

- **Hospital Administrative Cost Savings:** We estimate that currently, hospitals spend 33.4 percent of net revenues on administration, which includes all labor and overhead expenditures attributed to functions other than those directly related to patient care, such as accounting, credit and collections, and admitting. The single-payer proposal would all but eliminate hospital administrative costs associated with filing claims because under the single-payer model, hospitals are given an annual operating budget covering all services provided by the hospital. Based upon our analysis of the hospital data, we estimate that hospital administrative costs would be reduced by about 14 percent in 1998 under the single-payer model: 14 percent of 33.7 percent equals a net saving of 4.7 percent.
- **Physician Administrative Costs Savings:** Based upon Lewin Group analyses of physician practice expenses, we estimate that 32 percent of revenues for all physicians and other professionals are devoted to administrative functions such as practice management and insurer-related functions (this includes the cost of physician time devoted to administration). Based upon our earlier research on the single-payer system, we estimated that physician administrative costs would be reduced by about 26 percent under the single-payer mode: 26 percent of 32 percent equals a net savings of 8.3 percent.

### **Newly Insured**

- **Increase in Utilization for Newly Insured Persons.** Uninsured persons are expected to increase their utilization of health services once they become insured under the single-payer program. We estimate that the uninsured in Massachusetts spent about \$933 million on health care in 1996. We estimated the increase in health services utilization for this population by assuming that utilization for uninsured persons will increase to the levels reported by insured persons with similar age, sex and health status characteristics.<sup>4</sup> Based upon this analysis, we

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<sup>3</sup> Sheils, John F., Young, Gary J., "National Health Spending under a Single-Payer System: The Canadian Approach," Staff Working Paper, The Lewin Group, Inc., January 1992.

<sup>4</sup> "The Financial Impact of *The Health Security Act*," The Lewin Group, Inc., December 9, 1993.

estimate that health services utilization among those who are currently without insurance will increase by 70.1 percent.

## **Long-Term Care**

- **Increases in Utilization of Long-Term Care Services:** Using the “Lewin Group Long-Term Care Financing Model,” we estimated the increase in long-term care service under the broader coverage rules used in Canada. These analyses indicate that nursing home utilization would increase by about 10.3 percent and home health utilization would increase by 15.0 percent.

## **Patient Cost Sharing (Out-of-Pocket Expenses)**

- **Increased Utilization Due to Elimination of Patient Cost Sharing:** Studies show that persons in plans that do not have cost sharing use more health care. For example, the Rand study found that among persons in plans without patient cost sharing, utilization increased by about 30 percent for physician's care and about 10 percent for hospital inpatient care.<sup>5</sup> We assume that utilization of these services would increase by these amounts for all persons except those who already have first-dollar coverage. We estimate that about 36.4 percent of Massachusetts's residents already have the equivalent of first-dollar coverage.<sup>6</sup>

## **Managed Care**

- **Utilization Increase Due to Elimination of Managed Care:** The single-payer system that The Lewin Group uses in its model would be a fee-for-service insurance program. Health Maintenance Organizations (HMOs) and other forms of managed care would be eliminated. This would result in increased utilization as the utilization controls under these programs are lifted. About 44.7 percent of Massachusetts's residents are now covered under an HMO.<sup>7</sup> Studies have been conducted showing that HMOs reduce utilization by about four percent (much of the savings in HMOs is associated with price discounts).<sup>8</sup> In this analysis, we assume that the elimination of managed care would increase utilization for persons in HMOs by four percent. There is little evidence of utilization savings for PPOs and other types of managed care.

Savings accrue to this model to the extent that they result from changes in utilization, not price discounts. While preferred provider organizations (PPOs) can obtain savings through discounts.

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<sup>5</sup> Manning, W.G., et al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," *The American Economic Review*, Vol. 77. No. 3, June 1987, pp. 251-277.

<sup>6</sup> Persons with first-dollar coverage include: Medicaid recipients; Medicare recipients who also have Medigap and/or employer-based retiree coverage; persons in HMOs where there is little or no cost sharing; and enrollees in employer plans that do not require patient cost sharing. The KPMG Peat Marwick Employer Survey data indicate that about 15.4 percent of employer plans require no cost sharing.

<sup>7</sup> The Interstudy Competitive Edge: HMO Industry Report.

<sup>8</sup> Stapleton, David, "New Evidence on Savings from Managed Care," (A report to the Healthcare Leadership Council), Washington, DC, May 1994.

## **B. Global Budgeting Assumptions**

The model also includes our assumptions on the level of spending permitted under the single-payer global budgeting system. Under the single-payer global budgeting system, policymakers set the level of total spending for the Commonwealth of Massachusetts. In our analysis, we assume that the budget for spending in the first year of the program (1999) would be equal to the amount that would have been spent in that year under current policy. We also assume that the budget for that year will be adjusted to reflect the changes in utilization and the savings in administration that would occur under the system.

The initial parameters in the model assume that the rate of growth in total health spending would be limited not to exceed about 5.0 percent per year starting in 1999. This is equal to the projected rate of inflation in these years, estimated to be 3.0 percent per year, plus a 1.0 percent allowance for population growth and an additional 1.0 percent allowance for the aging of the population.

### **Assumed Annual Allowable Rate of Growth in Massachusetts Health Spending under the Global Budgeting System**

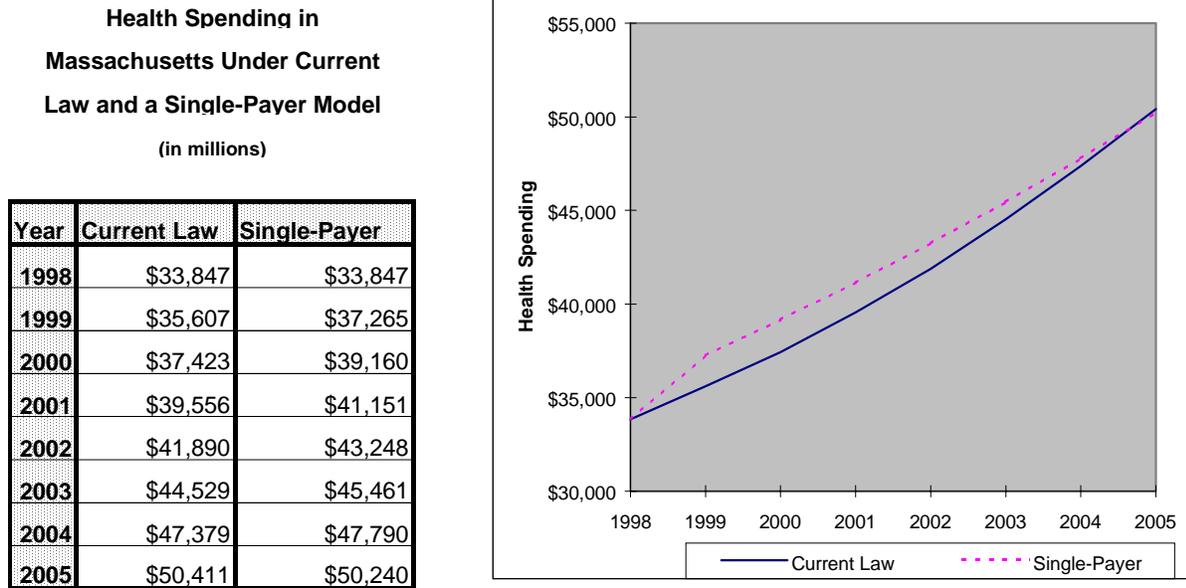
<b>1999</b>	5.0 percent
<b>2000</b>	5.0 percent
<b>2001</b>	5.0 percent
<b>2002</b>	5.0 percent
<b>2003</b>	5.0 percent
<b>2004</b>	5.0 percent
<b>2005</b>	5.0 percent

#### IV. MODEL OUTPUTS

The model provides several outputs showing the impact that a single-payer program could have in Massachusetts. These outputs focus on the net difference between spending under the single-payer model and spending under the baseline projections in each year between 1998 and 2005. The outputs are labeled Tables 1 through 4. The model outputs shown on this and subsequent pages are based upon the Lewin Group assumptions modeled on the Canadian health care system subject to the assumptions specified above.

**Table 1** of the model provides a graphic display of projected spending under the current law (“baseline”) and under the single-payer model previously specified, along with a table that summarizes health spending under both scenarios. **Table 2** shows the net change in total payments by type of service for different years under the single-payer model. **Table 3** provides estimates of the net change in spending per person in Massachusetts for three illustrative years under the single-payer model. The final model output, **Table 4**, shows the health spending changes broken down by selected model parameter assumptions.

**Table 1**  
**Illustrative Display of Health Expenditures by Year under Current Law and With the Single-Payer Program**



Source: The Lewin Group Massachusetts Health Expenditure Model sample output.

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**Table 2**  
**Change in Health Spending under the Baseline and a Single-Payer Model in Massachusetts in 1999, 2002, and 2005 (in millions)**

Change in Total Health Spending (in millions)	1999			2002			2005		
	Baseline	Single-Payer	Change	Baseline	Single-Payer	Change	Baseline	Single-Payer	Change
<b>Health Expenditures in Massachusetts</b>	\$35,607	\$37,265	\$1,658	\$41,890	\$43,248	\$1,359	\$50,411	\$50,240	-\$170
<b>Health Services and Supplies</b>	\$34,676	\$36,336	\$1,660	\$40,909	\$42,284	\$1,375	\$49,348	\$49,233	-\$115
<b>Personal Health Care</b>	\$31,079	\$33,970	\$2,891	\$36,833	\$39,674	\$2,842	\$44,621	\$46,357	\$1,737
<b>Hospital Care</b>	\$12,523	\$13,478	\$955	\$14,482	\$15,349	\$867	\$17,137	\$17,506	\$370
<b>Physician Services</b>	\$6,241	\$7,091	\$850	\$7,636	\$8,543	\$907	\$9,550	\$10,299	\$749
<b>Dental Services</b>	\$1,407	\$1,469	\$62	\$1,577	\$1,622	\$45	\$1,799	\$1,783	-\$16
<b>Other Professional Services</b>	\$2,274	\$2,601	\$327	\$2,843	\$3,203	\$359	\$3,625	\$3,935	\$310
<b>Home Health</b>	\$1,366	\$1,568	\$202	\$1,654	\$1,869	\$216	\$2,007	\$2,186	\$180
<b>Prescription Drugs</b>	\$1,874	\$1,935	\$61	\$2,197	\$2,234	\$37	\$2,644	\$2,591	-\$53
<b>Medical Durables</b>	\$334	\$345	\$11	\$361	\$367	\$6	\$398	\$390	-\$8
<b>Nursing Home</b>	\$3,990	\$4,393	\$403	\$4,748	\$5,148	\$400	\$5,761	\$6,021	\$260
<b>Other Personal Care</b>	\$1,071	\$1,091	\$20	\$1,334	\$1,339	\$5	\$1,701	\$1,645	-\$56
<b>Program Administration</b>	\$1,703	\$476	-\$1,228	\$1,986	\$555	-\$1,431	\$2,377	\$649	-\$1,728
<b>Public Health</b>	\$1,894	\$1,890	-\$3	\$2,089	\$2,054	-\$36	\$2,350	\$2,227	-\$123
<b>Research and Construction</b>	\$931	\$929	-\$2	\$981	\$964	-\$17	\$1,063	\$1,007	-\$56

Source: The Lewin Group Massachusetts Health Expenditure Model, using Lewin assumptions for modeling the Canadian health care system.

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**Table 3**  
**Average Health Care Spending Per Person under the Baseline and a Single-Payer Model in Massachusetts in 1999, 2002, 2005**

Change in Average Health Spending Per Person	1999			2002			2005		
	Baseline	Single-Payer	Change	Baseline	Single-Payer	Change	Baseline	Single-Payer	Change
<b>Health Expenditures in Massachusetts</b>	\$5,757	\$6,025	\$268	\$6,690	\$6,906	\$217	\$7,957	\$7,930	-\$27
<b>Health Services and Supplies</b>	\$5,607	\$5,875	\$268	\$6,533	\$6,752	\$220	\$7,789	\$7,771	-\$18
<b>Personal Health Care</b>	\$5,025	\$5,493	\$467	\$5,882	\$6,336	\$454	\$7,043	\$7,317	\$274
Hospital Care	\$2,025	\$2,179	\$154	\$2,313	\$2,451	\$138	\$2,705	\$2,763	\$58
Physician Services	\$1,009	\$1,147	\$137	\$1,219	\$1,364	\$145	\$1,507	\$1,626	\$118
Dental Services	\$227	\$238	\$10	\$252	\$259	\$7	\$284	\$281	-\$3
Other Professional Services	\$368	\$421	\$53	\$454	\$511	\$57	\$572	\$621	\$49
Home Health	\$221	\$253	\$33	\$264	\$299	\$34	\$317	\$345	\$28
Prescription Drugs	\$303	\$313	\$10	\$351	\$357	\$6	\$417	\$409	-\$8
Medical Durables	\$54	\$56	\$2	\$58	\$59	\$1	\$63	\$62	-\$1
Nursing Home	\$645	\$710	\$65	\$758	\$822	\$64	\$909	\$950	\$41
Other Personal Care	\$173	\$176	\$3	\$213	\$214	\$1	\$269	\$260	-\$9
Program Administration	\$275	\$77	-\$199	\$317	\$89	-\$228	\$375	\$102	-\$273
Public Health	\$306	\$306	-\$1	\$334	\$328	-\$6	\$371	\$351	-\$19
Research and Construction	\$151	\$150	-\$0	\$157	\$154	-\$3	\$168	\$159	-\$9

Source: The Lewin Group Massachusetts Health Expenditure Model, using Lewin assumptions for modeling the Canadian health care system.

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**Table 4**  
**Change in Health Spending in Massachusetts under a Single-Payer Plan for Selected Model Parameter Assumptions 1998 - 2005 (in millions)**

Change in Total Health Spending (in millions)	1998	1999	2000	2001	2002	2003	2004	2005	Total 1998 - 2005
<b>Spending under current law</b>	\$33,847	\$35,607	\$37,423	\$39,556	\$41,890	\$44,529	\$47,379	\$50,411	<b>\$330,640</b>
<b>Spending under the Single-Payer Plan</b>	\$33,847	\$37,265	\$39,160	\$41,151	\$43,248	\$45,461	\$47,790	\$50,240	<b>\$338,163</b>
<b>Change in spending under the Single-Payer Plan</b>	\$0	\$1,658	\$1,738	\$1,596	\$1,359	\$932	\$412	-\$170	<b>\$7,523</b>
<b>Change in spending under the Single-Payer Plan</b>	<b>\$0</b>	<b>\$4,179</b>	<b>\$4,382</b>	<b>\$4,396</b>	<b>\$4,329</b>	<b>\$4,094</b>	<b>\$3,781</b>	<b>\$3,419</b>	<b>\$28,580</b>
Insurer administrative savings	\$0	-\$1,227	-\$1,278	-\$1,346	-\$1,421	-\$1,506	-\$1,596	-\$1,692	<b>-\$10,065</b>
Provider administrative savings	\$0	-\$1,294	-\$1,367	-\$1,454	-\$1,549	-\$1,656	-\$1,773	-\$1,897	<b>-\$10,991</b>
Utilization increase for newly insured	\$0	\$750	\$786	\$829	\$876	\$929	\$986	\$1,047	<b>\$6,201</b>
Utilization increase for long-term care services	\$0	\$616	\$654	\$694	\$737	\$786	\$838	\$894	<b>\$5,220</b>
Increased utilization due to elimination of cost sharing	\$0	\$2,421	\$2,565	\$2,735	\$2,921	\$3,131	\$3,359	\$3,604	<b>\$20,735</b>
Increased utilization for elimination of managed care	\$0	\$460	\$484	\$513	\$544	\$580	\$618	\$659	<b>\$3,857</b>
Global budget savings	\$0	-\$68	-\$107	-\$374	-\$749	-\$1,331	-\$2,021	-\$2,785	<b>-\$7,433</b>

Source: The Lewin Group Massachusetts Health Expenditure Model, using Lewin assumptions for modeling the Canadian health care system.