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**Figure A.1: Drivers of growth in claims-based medical expenditures in Massachusetts**

Percent annual growth in claims-based medical expenditures*, 2010-2012

<table>
<thead>
<tr>
<th>Changes in price index</th>
<th>Changes in utilization</th>
<th>Changes in health status</th>
<th>Overall spending growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5.2%</td>
<td>-2.1%</td>
<td>~0%</td>
<td>+2.9%</td>
</tr>
<tr>
<td>Increase in prices paid (may reflect unit prices and changes in provider mix)</td>
<td>Decrease in spending at standardized prices</td>
<td>No notable change in average risk scores from 2010 to 2012</td>
<td>Increase in per member per month claims-based medical expenditures</td>
</tr>
</tbody>
</table>

* Analysis is based on a sample that consists of claims submitted by the three largest commercial payers – Blue Cross Blue Shield of Massachusetts (BCBS), Harvard Pilgrim Health Care (HPHC), and Tufts Health Plan (THP) – representing 66 percent of commercially insured lives. Claims-based medical expenditure measure excludes pharmacy spending and payments made outside the claims system (such as shared savings, pay-for-performance, and capitation payments).

**SOURCE:** HPC analysis of the All-Payer Claims Database
### Figure A.2: Growth in claims-based medical expenditures by category of service

Percent annual growth rate and percent of total growth in claims-based medical expenditures*, 2010-2012

<table>
<thead>
<tr>
<th>Categories of service†</th>
<th>PMPM by category</th>
<th>Compound annual growth rate</th>
<th>Percent of total growth, 2010-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>Inpatient</td>
<td>$330</td>
<td>$350</td>
<td>2.9%</td>
</tr>
<tr>
<td></td>
<td>$85</td>
<td>$90</td>
<td>3.1%</td>
</tr>
<tr>
<td>Outpatient</td>
<td>$55</td>
<td>$64</td>
<td>7.7%</td>
</tr>
<tr>
<td>Other Institutional</td>
<td>$5</td>
<td>$5</td>
<td>4.2%</td>
</tr>
<tr>
<td>Professional</td>
<td>$131</td>
<td>$137</td>
<td>2.3%</td>
</tr>
<tr>
<td>Lab/X-Ray</td>
<td>$54</td>
<td>$53</td>
<td>-1.0%</td>
</tr>
</tbody>
</table>

* Analysis is based on a sample that consists of claims submitted by the three largest commercial payers – Blue Cross Blue Shield of Massachusetts (BCBS), Harvard Pilgrim Health Care (HPHC), and Tufts Health Plan (THP) – representing 66 percent of commercially insured lives. Claims-based medical expenditure measure excludes pharmacy spending and payments made outside the claims system (such as shared savings, pay-for-performance, and capitation payments).

† For detailed definitions of categories of service, see CHIA and HPC publication “Massachusetts Commercial Medical Care Spending: Findings from the All-Payer Claims Database.” Lab/x-ray category includes professional services associated with laboratory and imaging.

SOURCE: All-Payers Claims Database; HPC and CHIA analysis
Figure A.3: Member cost sharing, 2010-2012

Out-of-pocket spending on cost sharing* as percent of total claims-based medical expenditures†

Includes co-pay, co-insurance, and deductible

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>6.9%</td>
</tr>
<tr>
<td>2011</td>
<td>7.2%</td>
</tr>
<tr>
<td>2012</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

* Out-of-pocket spending includes cost-sharing (co-payments, co-insurance, and deductibles) for medical services covered by commercial insurance. Pharmacy spending and services paid for outside of the insurance claims system are not included.

† Analysis is based on a sample that consists of claims submitted by the three largest commercial payers – Blue Cross Blue Shield of Massachusetts (BCBS), Harvard Pilgrim Health Care (HPHC), and Tufts Health Plan (THP) – representing 66 percent of commercially insured lives. Claims-based medical expenditure measure excludes pharmacy spending and payments made outside the claims system (such as shared savings, pay-for-performance, and capitation payments).

SOURCE: All-Payers Claims Database; HPC and CHIA analysis
**Figure A.4: Members with cost sharing above $500, 2010-2012**

Percent of total members with cost sharing above $500, $1000, and $2000 thresholds*

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥$2,000</td>
<td>13.4%</td>
<td>14.6%</td>
<td>16.4%</td>
</tr>
<tr>
<td>$1,000 – $1,999</td>
<td>1.3%</td>
<td>1.7%</td>
<td>2.0%</td>
</tr>
<tr>
<td>$500 – $999</td>
<td>4.4%</td>
<td>4.9%</td>
<td>5.4%</td>
</tr>
<tr>
<td>$100 – $299</td>
<td>7.7%</td>
<td>8.0%</td>
<td>9.0%</td>
</tr>
</tbody>
</table>

* Out-of-pocket spending includes cost-sharing (co-payments, co-insurance, and deductibles) for medical services covered by commercial insurance. Pharmacy spending and services paid for outside of the insurance claims system are not included.

**NOTE**: Analysis is based on a sample that consists of claims submitted by the three largest commercial payers – Blue Cross Blue Shield of Massachusetts (BCBS), Harvard Pilgrim Health Care (HPHC), and Tufts Health Plan (THP) – representing 66 percent of commercially insured lives. Claims-based medical expenditure measure excludes pharmacy spending and payments made outside the claims system (such as shared savings, pay-for-performance, and capitation payments).

**SOURCE**: All-Payers Claims Database; HPC and CHIA analysis
Figure A.5: Percent difference between Massachusetts and U.S. Medicaid spending per enrollee, 2010

- Massachusetts has a higher proportion of aged and blind/disabled enrollees than average Medicaid program
- Average spending per enrollee in these complex needs groups is 2.4-3.0x overall average spending per enrollee
- Massachusetts has higher spending per enrollee than US average within each eligibility group:
  - Aged: +31%
  - Disabled: +4%
  - Adults: +13%
  - Children: +59%

SOURCE: Centers for Medicare & Medicaid Services; HPC analysis
Figure A.6: Difference in spending per Medicaid enrollee by eligibility group

Dollars per enrollee, 2010

SOURCE: Centers for Medicare & Medicaid Services; HPC analysis
Figure A.7: Breakdown of difference between Massachusetts and U.S. spending per aged enrollee

Dollars per enrollee, FFY 2010

Institutional long-term care and home health services account for 73 percent of the higher spending per capita for the aged population.

SOURCE: Centers for Medicare & Medicaid Services; HPC analysis
Figure A.8: Total spending per capita on long-term care and home health

Dollars per capita, 2009

- **Total long-term care and home health**
  - **US**: $1,069
  - **MA**: $1,840

- **Nursing home**
  - **US**: $447
  - **MA**: $777
  - Increase: +74%

- **Home health**
  - **US**: $223
  - **MA**: $395
  - Increase: +77%

- **Other health, residential, personal**
  - **US**: $400
  - **MA**: $669
  - Increase: +67%

**SOURCE**: Centers for Medicare & Medicaid Services; HPC analysis
Figure A.9: Medicare spending per beneficiary on long-term care and home health

Dollars per beneficiary, 2009

**Total long-term care and home health**

- **US**: $1,373
- **MA**: $1,854

**Nursing home**

- **US**: $615
- **MA**: $1,005

- **Change**: +63%

**Home health**

- **US**: $656
- **MA**: $680

- **Change**: +4%

**Other health, residential, personal**

- **US**: $100
- **MA**: $169

- **Change**: +69%

**Source:** Centers for Medicare & Medicaid Services; HPC analysis
Figure A.10: Medicaid spending per beneficiary on long-term care and home health

Dollars per beneficiary, 2009

**SOURCE:** Centers for Medicare & Medicaid Services; HPC analysis
Figure A.11: Relative likelihood of discharge to post-acute care by hospital

Adjusted rate of discharge to nursing facilities and home health*, 2012

* Rates for each hospital were estimated using a logistic regression model that adjusted for the following: age, sex, payer group, income, admit source of the patient, length of stay, and DRG. Our sample included patients who were at least 18 years of age and had a routine discharge, a discharge to a skilled nursing facility, or a discharge to a home healthcare provider. Specialty hospitals are excluded from figure and from displayed state average. Rates are normalized with the statewide average equal to 1.0.

SOURCE: Center for Health Information and Analysis; HPC analysis
Figure A.12: Relative likelihood of discharge to a nursing facility for post-acute care by hospital

Adjusted rate of selecting nursing facility as setting for post-acute care*,†, 2012

* Rates for each hospital were estimated using a logistic regression model that adjusted for the following: age, sex, payer group, income, admit source of the patient, length of stay, and DRG. Our sample included patients who were at least 18 years of age and had a routine discharge, a discharge to a skilled nursing facility, or a discharge to a home healthcare provider. Specialty hospitals are excluded from figure and from displayed state average. Rates are normalized with the statewide average equal to 1.0.

† Discharge to nursing facility as a proportion of total discharges to either nursing facility or home health.

SOURCE: Center for Health Information and Analysis; HPC analysis
**Figure A.13: Adjusted rates of discharge* to post-acute care and excess readmission ratios† by hospital**

Adjusted rate of discharge to post-acute care*

Excess readmission ratio†

$r^2: 0.03$

<table>
<thead>
<tr>
<th>Adjusted rate of discharge to post-acute care</th>
<th>Excess readmission ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.94</td>
<td>1.10</td>
</tr>
<tr>
<td>1.00</td>
<td>1.08</td>
</tr>
<tr>
<td>1.04</td>
<td>1.06</td>
</tr>
<tr>
<td>1.02</td>
<td>1.04</td>
</tr>
<tr>
<td>1.00</td>
<td>1.02</td>
</tr>
<tr>
<td>0.92</td>
<td>0.98</td>
</tr>
<tr>
<td>0.92</td>
<td>0.96</td>
</tr>
<tr>
<td>0.92</td>
<td>0.94</td>
</tr>
<tr>
<td>0.92</td>
<td>0.92</td>
</tr>
</tbody>
</table>

* Rates for each hospital were estimated using a logistic regression model that adjusted for the following: age, sex, payer group, income, admit source of the patient, length of stay, and DRG. Our sample included patients who were at least 18 years of age and had a routine discharge, a discharge to a skilled nursing facility, or a discharge to a home healthcare provider. Specialty hospitals are excluded from figure and from displayed state average. Rates are normalized with the statewide average equal to 1.0.

† Composite of risk-standardized 30-day Medicare excess readmission ratios for acute myocardial infarction, heart failure, and pneumonia (2009-2011). The composite rate is a weighted average of the three condition-specific rates. 1.0 represents national average.

SOURCE: Center for Health Information and Analysis; Centers for Medicare & Medicaid Services; HPC analysis.
Figure A.14: Adjusted rates of discharge* to post-acute care and average length-of-stay by hospital

Adjusted rate of discharge to post-acute care*

Average length of stay

$r^2 < 0.01$

Rates for each hospital were estimated using a logistic regression model that adjusted for the following: age, sex, payer group, income, admit source of the patient, length of stay, and DRG. Our sample included patients who were at least 18 years of age and had a routine discharge, a discharge to a skilled nursing facility, or a discharge to a home healthcare provider. Specialty hospitals are excluded from figure and from displayed state average. Rates are normalized with the statewide average equal to 1.0.

SOURCE: Center for Health Information and Analysis; Centers for Medicare & Medicaid Services; HPC analysis
Figure A.15: Complexity of behavioral health conditions and treatment options

Diverse set of conditions each with different set of risk factors and disease trajectory

Complex continuum of care that varies for each type of condition and according to condition severity

### Intensity of treatment

**Low intensity**

**High intensity**

#### Example of a continuum of care for schizophrenia

**Psychotherapeutic**
- Outpatient clinic
- Intensive outpatient
- Crisis/family stabilization
- Partial hospitalization
- Residential care
- Inpatient care
- Emergency department

**Psychosocial**
- Supported employment
- Supported housing
- Club houses
- Recovery learning centers
- Family support
- Peer support

**Pharmacological**
- Thorazine
- Trilafon
- Zyprexa
- Abilify
- Geodon
- Invega

List changes as new evidence emerges about currently used and novel compounds

#### Example of a continuum of care for alcohol dependence

**Psychotherapeutic**
- Outpatient counseling
- Intensive outpatient
- Partial hospitalization
- TSS/CSS
- Inpatient/detoxification
- Emergency department

**Psychosocial**
- Supported employment
- Supported housing
- Club houses
- Family support
- Alcoholics Anonymous

**Pharmacological**
- Naltrexone
- Acamprosate
- Disulfiram
- Topiramate

List changes as new evidence emerges about currently used and novel compounds

High rate of comorbidity (medical and other BH) can complicate treatment of BH conditions.

Examples focus on treatment for adults

Intensive vs. low intensity care:
- Intensive: high intensity care
- Low intensity: low intensity care
Figure A.16: Spending by category of service for people with and without behavioral health conditions

Claims-based medical expenditures* by category of service†, for people with and without behavioral health (BH) conditions‡, 2011

<table>
<thead>
<tr>
<th>Category of Service</th>
<th>COMMERCIAL</th>
<th>MEDICARE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spending per person</td>
<td>Spending per person</td>
</tr>
<tr>
<td></td>
<td>per category</td>
<td>per category</td>
</tr>
<tr>
<td></td>
<td>% difference between</td>
<td>% difference between</td>
</tr>
<tr>
<td></td>
<td>people with and</td>
<td>people with and</td>
</tr>
<tr>
<td></td>
<td>without BH conditions</td>
<td>without BH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>conditions</td>
</tr>
<tr>
<td>ED</td>
<td>$291 $122</td>
<td>$419 $131</td>
</tr>
<tr>
<td></td>
<td>+140%</td>
<td>+220%</td>
</tr>
<tr>
<td>Inpatient</td>
<td>$2,245 $1,000</td>
<td>$8,496 $2,100</td>
</tr>
<tr>
<td></td>
<td>+125%</td>
<td>+202%</td>
</tr>
<tr>
<td>Outpatient</td>
<td>$926 $515</td>
<td>$1,635 $1,086</td>
</tr>
<tr>
<td></td>
<td>+80%</td>
<td>+51%</td>
</tr>
<tr>
<td>Long-Term Care and Home Health</td>
<td>$66 $17</td>
<td>$4,715 $1,191</td>
</tr>
<tr>
<td></td>
<td>+279%</td>
<td>+296%</td>
</tr>
<tr>
<td>Lab and X-ray</td>
<td>$782 $524</td>
<td>$828 $668</td>
</tr>
<tr>
<td></td>
<td>+49%</td>
<td>+24%</td>
</tr>
<tr>
<td>Professional†</td>
<td>$3,003 $1,444</td>
<td>$3,516 $2,045</td>
</tr>
<tr>
<td></td>
<td>+108%</td>
<td>+72%</td>
</tr>
</tbody>
</table>

* Analysis is based on a sample that consists of claims submitted by the three largest commercial payers – Blue Cross Blue Shield of Massachusetts (BCBS), Harvard Pilgrim Health Care (HPHC), and Tufts Health Plan (THP) – representing 66 percent of commercially insured lives. Claims-based medical expenditure measure excludes pharmacy spending and payments made outside the claims system (such as shared savings, pay-for-performance, and capitation payments).

† For detailed definitions of categories of service, see CHIA and HPC publication, “Massachusetts Commercial Medical Care Spending: Findings from the All-Payer Claims Database.” Lab/x-ray category includes professional services associated with laboratory and imaging.

‡ Presence of behavioral health condition identified based on diagnostic codes in claims using Optum ERG software.

SOURCE: HPC analysis of the All-Payer Claims Database
Figure A.17: Impact of behavioral health comorbidity on expenditures for non-behavioral conditions

Per person claims-based medical expenditures* on non-behavioral health conditions based on presence of behavioral health (BH) comorbidity†, 2012 (Commercial) and 2011 (Medicare)

<table>
<thead>
<tr>
<th></th>
<th>COMMERCIAL</th>
<th>MEDICARE, UNDER 65</th>
<th>MEDICARE, OVER 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>No chronic medical conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No BH conditions (Baseline)  = $2,336</td>
<td>Spending compared to baseline</td>
<td>No BH conditions (Baseline)  = $2,632</td>
<td>Spending compared to baseline</td>
</tr>
<tr>
<td>With any BH condition</td>
<td>+$804, 1.3x</td>
<td>+$205, 1.1x</td>
<td>+$4,744, 2.6x</td>
</tr>
<tr>
<td>With both MH and SUD</td>
<td>+$1,722, 1.7x</td>
<td>+$1,297, 1.5x</td>
<td>+$6,290, 3.1x</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One or more chronic medical conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No BH conditions (Baseline)  = $6,045</td>
<td>Spending compared to baseline</td>
<td>No BH conditions (Baseline)  = $8,812</td>
<td>Spending compared to baseline</td>
</tr>
<tr>
<td>With any BH condition</td>
<td>+$4,792, 1.8x</td>
<td>+$3,907, 1.4x</td>
<td>+$15,575, 2.9x</td>
</tr>
<tr>
<td>With both MH and SUD</td>
<td>+$10,143, 2.7x</td>
<td>+$6,183, 1.7x</td>
<td>+$22,002, 3.7x</td>
</tr>
</tbody>
</table>

* Analysis is based on a sample that consists of claims submitted by the three largest commercial payers – Blue Cross Blue Shield of Massachusetts (BCBS), Harvard Pilgrim Health Care (HPHC), and Tufts Health Plan (THP) – representing 66 percent of commercially insured lives. Claims-based medical expenditure measure excludes pharmacy spending and payments made outside the claims system (such as shared savings, pay-for-performance, and capitation payments).

† Presence of behavioral health condition identified based on diagnostic codes in claims using Optum ERG software. Expenditures for non-behavioral health conditions were identified using Optum ETG episode grouper. Additional detail is available in a technical appendix.

SOURCE: HPC analysis of the All-Payer Claims Database
Figure A.18: ED visits and boarding by diagnosis type

Percent of visits, 2012

All ED visits

- Behavioral health related diagnoses: 47%
- All other diagnoses: 53%

Visits resulting in "ED boarding"

- All ED visits: 94%
- 6% of visits result in boarding

SOURCE: Center for Health Information and Analysis; Department of Public Health; HPC Analysis
Figure B.1: Discharges by payer type for inpatient service categories

Percent of discharges in each service category, 2012

- **Deliveries** (17% of inpatient discharges): 1% Commercial, 62% MassHealth, 37% Medicare
- **Medical** (52% of inpatient discharges): 17% Commercial, 59% MassHealth, 24% Medicare
- **Mental Health** (7% of inpatient discharges): 33% Commercial, 33% MassHealth, 34% Medicare
- **Surgical** (23% of inpatient discharges): 14% Commercial, 44% MassHealth, 42% Medicare

* Discharges in general acute care hospitals. Excludes discharges in psychiatric, specialty non-acute, and chronic care hospitals.
† Payer mix for discharges in general acute hospitals. Psychiatric hospitals do not report number of discharges by payer type, although in 2012 their mix of charges (gross patient service revenue) was 39 percent commercial, 30 percent MassHealth, and 32 percent Medicare.

**SOURCE:** Massachusetts Health Data Consortium; HPC analysis
Figure B.2: Breakdown of difference in inpatient discharges between Massachusetts and U.S. by inpatient service category

Inpatient discharges* per 1,000 persons, 2011

Massachusetts residents use more inpatient care for ambulatory care-sensitive conditions than the national average

* Discharges in general acute care hospitals. Excludes discharges in psychiatric, specialty non-acute, and chronic care hospitals.

**SOURCE:** Healthcare Cost and Utilization Project, Kaiser Family Foundation, HPC analysis
Figure B.3: Hospital admissions for ambulatory care-sensitive conditions among Medicare beneficiaries, age 65-74

Admissions per 1,000 persons

<table>
<thead>
<tr>
<th>Year</th>
<th>MA</th>
<th>Median state</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>39</td>
<td>34</td>
</tr>
<tr>
<td>2012</td>
<td>30</td>
<td>27</td>
</tr>
</tbody>
</table>

MA state rank: 37

MA state rank: 34

SOURCE: Commonwealth Fund Health System Data Center
Figure B.4: Inflow and outflow of inpatient discharges across regions in Massachusetts

Number of inpatient discharges for non-transfer, non-emergency volume, 2012

* Discharges at hospitals in region for patients who reside outside of region
† Discharges at hospitals outside of region for patients who reside in region

SOURCE: Center for Health Information and Analysis; HPC analysis
Figure B.5: Inpatient care received outside of home region by payer type

Percent of non-emergency, non-transfer inpatient discharges for payer type, 2012

NOTE: Rates are adjusted for age, sex, payer group, distance from hospitals, distance from Metro Boston, and major diagnostic category. Analysis excluded individuals below 18 years of age, residents of Metro Boston, discharges with an ED visit in their record, and transfers from other acute hospitals.

SOURCE: Center for Health Information and Analysis; HPC analysis
Figure B.6: Inpatient care received outside of home region by income group

Percent of non-emergency, non-transfer inpatient discharges for community income group*, 2012

- Less than $35,000: 24%
- $35,000 to $50,000: 30%
- $50,000 to $75,000: 40%
- $75,000 to $100,000: 47%
- More than $100,000: 52%

* Community income is estimated as the median household income for the patient’s zip code

NOTE: Rates are adjusted for age, sex, payer group, distance from hospitals, distance from Metro Boston, and major diagnostic category. Analysis excluded individuals below 18 years of age, residents of Metro Boston, discharges with an ED visit in their record, and transfers from other acute hospitals.

SOURCE: Center for Health Information and Analysis; Census Bureau; HPC analysis
Figure B.7: Concentration of inpatient care in Massachusetts

Share of total inpatient discharges held by five highest-volume systems, 2009-2012

- **2009**
  - 17%
  - 8%
  - 8%
  - 5%
  - 5%

- **2012**
  - 18%
  - 10%
  - 7%
  - 5%
  - 5%

- **2014 estimate**
  - 19%
  - 10%
  - 7%
  - 7%
  - 7%

- **2014 estimate (after PHS transactions)**
  - 24%
  - 10%
  - 7%
  - 7%
  - 7%

**Lahey Health (beginning 2014)**
**Baystate Health (2009, 2012)**
**Beth Israel Deaconess**
**UMass Memorial Health Care**
**Caritas Christi / Steward Health Care System**
**Partners HealthCare System**

* 2014 data not yet available. Based on applying systems established by 2014 (including 2013 Partners HealthCare acquisition of Cooley Dickinson and 2014 Lahey Health acquisition of Winchester hospital) to 2012 inpatient discharge data
† Includes South Shore Hospital and Hallmark Health hospitals within Partners HealthCare System

**SOURCE:** Center for Health Information and Analysis; HPC analysis
Figure B.8: Concentration of commercial inpatient care in Massachusetts

Share of commercial inpatient discharges held by five highest-volume systems, 2009-2012

* 2014 data not yet available. Based on applying systems established by 2014 (including 2013 Partners HealthCare acquisition of Cooley Dickinson and 2014 Lahey Health acquisition of Winchester hospital) to 2012 inpatient discharge data
† Includes South Shore Hospital and Hallmark Health hospitals within Partners HealthCare System
SOURCE: Center for Health Information and Analysis; HPC analysis
### Figure B.9: Concentration of commercial inpatient discharges by diagnostic area

Percent of commercial inpatient discharges at 5 highest-volume hospital systems in each diagnostic area*, 2012

<table>
<thead>
<tr>
<th>Diagnostic Area</th>
<th>Medical discharges</th>
<th>Surgical and delivery discharges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Share of system with highest volume</td>
<td>Total share of systems with 2nd- to 5th-highest volume</td>
</tr>
<tr>
<td>Pregnancy, Childbirth</td>
<td>19%</td>
<td>48%</td>
</tr>
<tr>
<td>Digestive System</td>
<td>19%</td>
<td>48%</td>
</tr>
<tr>
<td>Musculoskeletal System</td>
<td>-†</td>
<td>-†</td>
</tr>
<tr>
<td>Circulatory System</td>
<td>19%</td>
<td>48%</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>16%</td>
<td>47%</td>
</tr>
<tr>
<td>Nervous System</td>
<td>22%</td>
<td>52%</td>
</tr>
<tr>
<td>Myeloproliferative (Cancer)</td>
<td>41%</td>
<td>78%</td>
</tr>
</tbody>
</table>

* Diagnostic areas shown were selected as high-volume and/or high-expenditure service lines
† Not shown because of low volume of discharges of this type

**SOURCE:** Massachusetts Health Data Consortium; HPC analysis
Figure B.10: APM coverage by payer type

Percent of members/beneficiaries covered by APMs*, 2012

<table>
<thead>
<tr>
<th>Payer Type</th>
<th>Commercial†</th>
<th>Medicare</th>
<th>MassHealth</th>
</tr>
</thead>
<tbody>
<tr>
<td>62% of total lives</td>
<td>76%</td>
<td>81%</td>
<td></td>
</tr>
<tr>
<td>FFS</td>
<td>66%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APMs</td>
<td>34%</td>
<td>24%</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>22% of total lives</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* For the purpose of these estimates, we consider APMs based on the definition used in CHIA’s 2013 report on Alternative Payment Methods in the Massachusetts Commercial Market. This definition includes global budget, limited budget, bundled payment, and other non-fee-for-service models. Pay-for-performance incentives accompanying fee-for-service payments are not included in this estimate.

† Includes Commonwealth Care

SOURCE: Center for Health Information and Analysis; Centers for Medicare & Medicaid Services
Figure C.1: Overall rates of preventable hospitalization by income quartile

Preventable admissions per 100,000 residents, 2012

* Income was estimated using the median household income for the patient's zip code. Preventable hospitalizations were calculated using AHRQ's prevention quality indicator (PQI) measures. All figures are age- and sex-adjusted.

SOURCE: Center for Health Information and Analysis; HPC analysis
Figure C.2: Rates of preventable hospitalization for acute and chronic conditions by income quartile*

Preventable admissions per 100,000 residents, 2012

* Income was estimated using the median household income for the patient’s zip code. Preventable hospitalizations were calculated using AHRQ’s prevention quality indicator (PQI) measures. All figures are age- and sex-adjusted.

† Composite of PQI 5 (COPD or asthma in older adults) and PQI 15 (asthma in younger adults)
‡ Composite of PQI 1 (short-term complications for diabetes), PQI 3 (long-term complications for diabetes), PQI 14 (uncontrolled diabetes), and PQI 16 (amputation among diabetes)

SOURCE: Center for Health Information and Analysis; HPC analysis