

List of figures in 2013 cost trends report by the Health Policy Commission

Figure A: State budgets for health care coverage and other priorities – FY01 vs. FY14

Figure 1.1: Personal health care expenditures relative to size of economy

Figure 1.2: Per capita personal health care expenditures compared to U.S. and other states

Figure 1.3: Per capita personal health care expenditures by category of service compared to U.S.

Figure 1.4: Per beneficiary personal health care expenditures by payer type compared to U.S.

Figure 1.5: Personal health care expenditures relative to size of economy

Figure 1.6: U.S. growth in personal health care expenditures in excess of economic growth

Figure 1.7: Discharges in Massachusetts hospital systems, 2002-2012

Figure 1.8: Prevalence of diabetes by region among Medicare beneficiaries

Figure 1.9: Prevalence of diabetes by region among commercial members

Figure 2.1: Inpatient operating expenses per discharge for all Massachusetts acute hospitals

Figure 2.2: Inpatient operating expenses per discharge for major teaching hospitals in Massachusetts

Figure 2.3: Quality performance relative to inpatient operating expenses per admission: excess readmission ratio

Figure 2.4: Quality performance relative to inpatient operating expenses per admission: mortality rate

Figure 2.5: Quality performance relative to inpatient operating expenses per admission: process-of-care measures

Figure 2.6: Aggregate U.S. hospital payment-to-cost ratios for commercial payers, Medicare, and Medicaid

Figure 2.7: Illustrative examples of margin differences driven by prices and operating expenses

Figure 2.8: Operating margins by payer type for hospitals at different operating expense levels

Figure 2.9: Breakdown of hospital operating expenses

Figure 3.1: Readmissions within 30 days for acute myocardial infarction for Massachusetts acute hospitals

Figure 3.2: Readmissions within 30 days for heart failure for Massachusetts acute hospitals

Figure 3.3: Readmissions within 30 days for pneumonia for Massachusetts acute hospitals

Figure 4.1: Persistence among high-cost Medicare and commercial patients in Massachusetts

Figure 4.2: Prevalence of multiple conditions among Medicare and commercial populations

Figure 4.3: Average spending per patient based on behavioral health and chronic condition comorbidities

Figure 4.4: Concentration of commercial high-cost patients

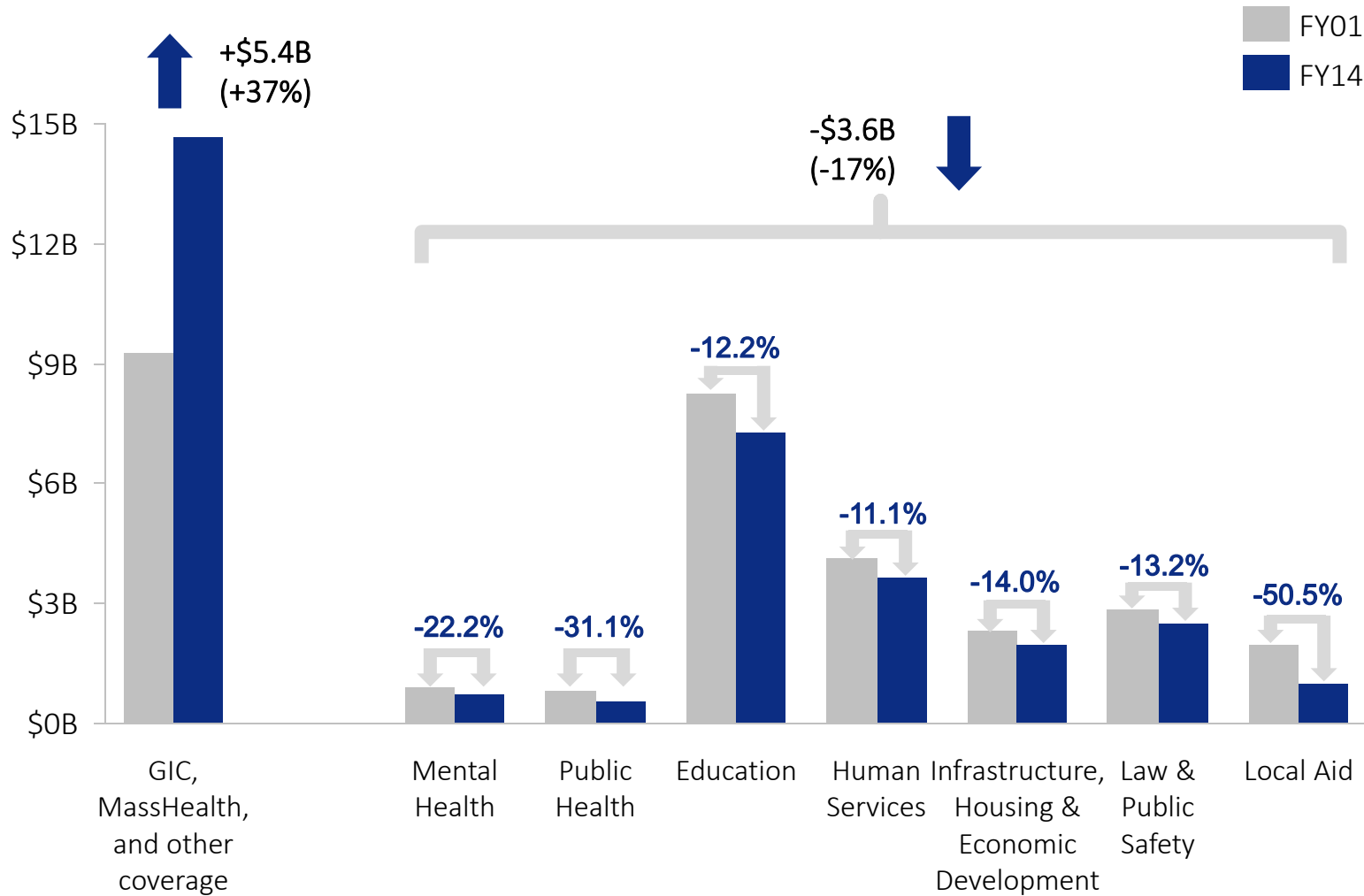
Figure 4.5: Concentration of Medicare high-cost patients

Figure 4.6: Concentration of commercial persistent high-cost patients

Figure 4.7: Concentration of Medicare persistent high-cost patients

Figure A: State budgets for health care coverage and other priorities - FY01 vs. FY14

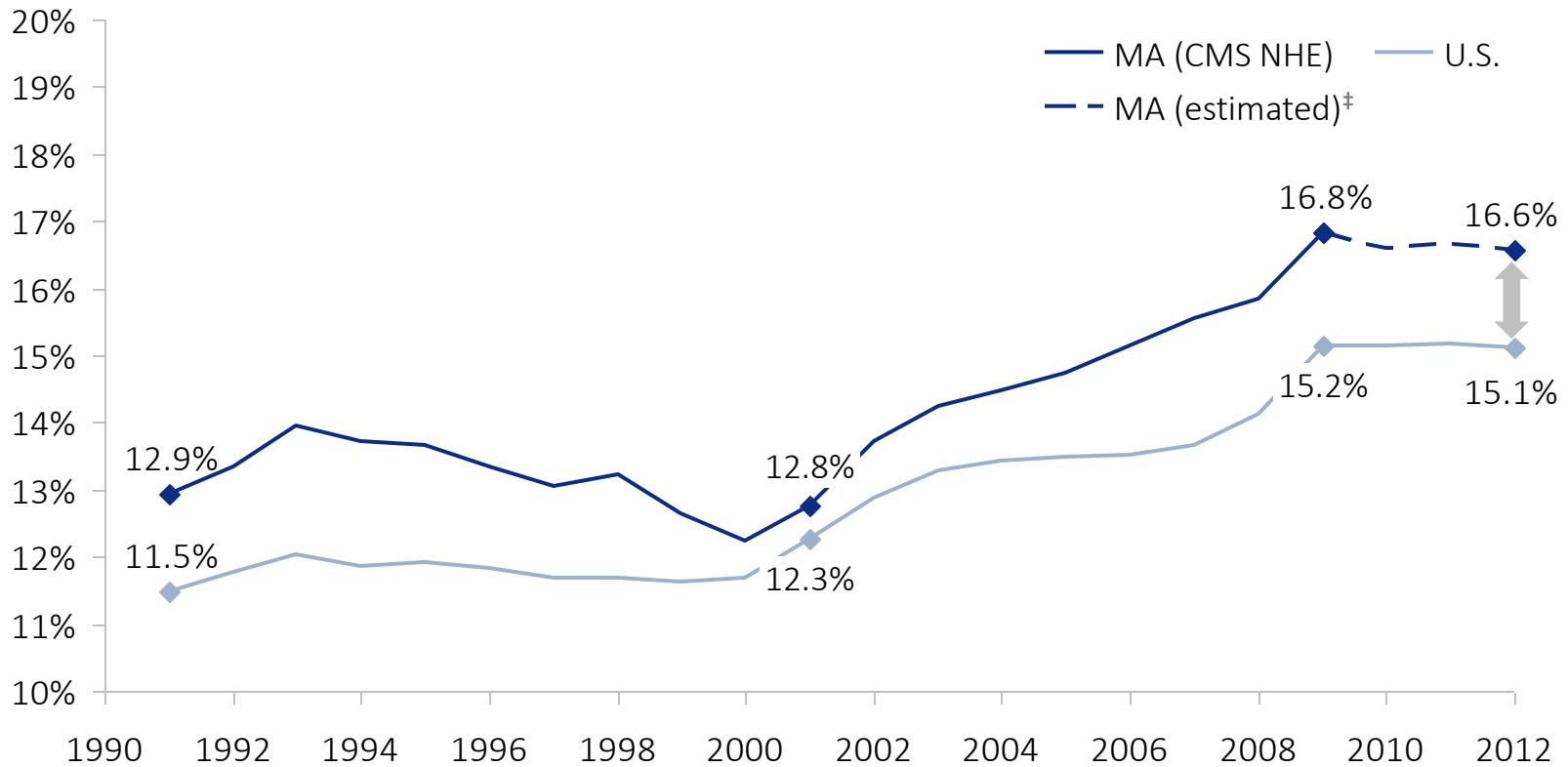
Billions of dollars



Note: Figures all adjusted for GDP growth
Source: Massachusetts Budget and Policy Center

Figure 1.1: Personal health care expenditures* relative to size of economy

Percent of respective economy†



* Personal health care expenditures (PHC) are a subset of national health expenditures. PHC excludes administration and the net cost of private insurance, public health activity, and investment in research, structures and equipment.

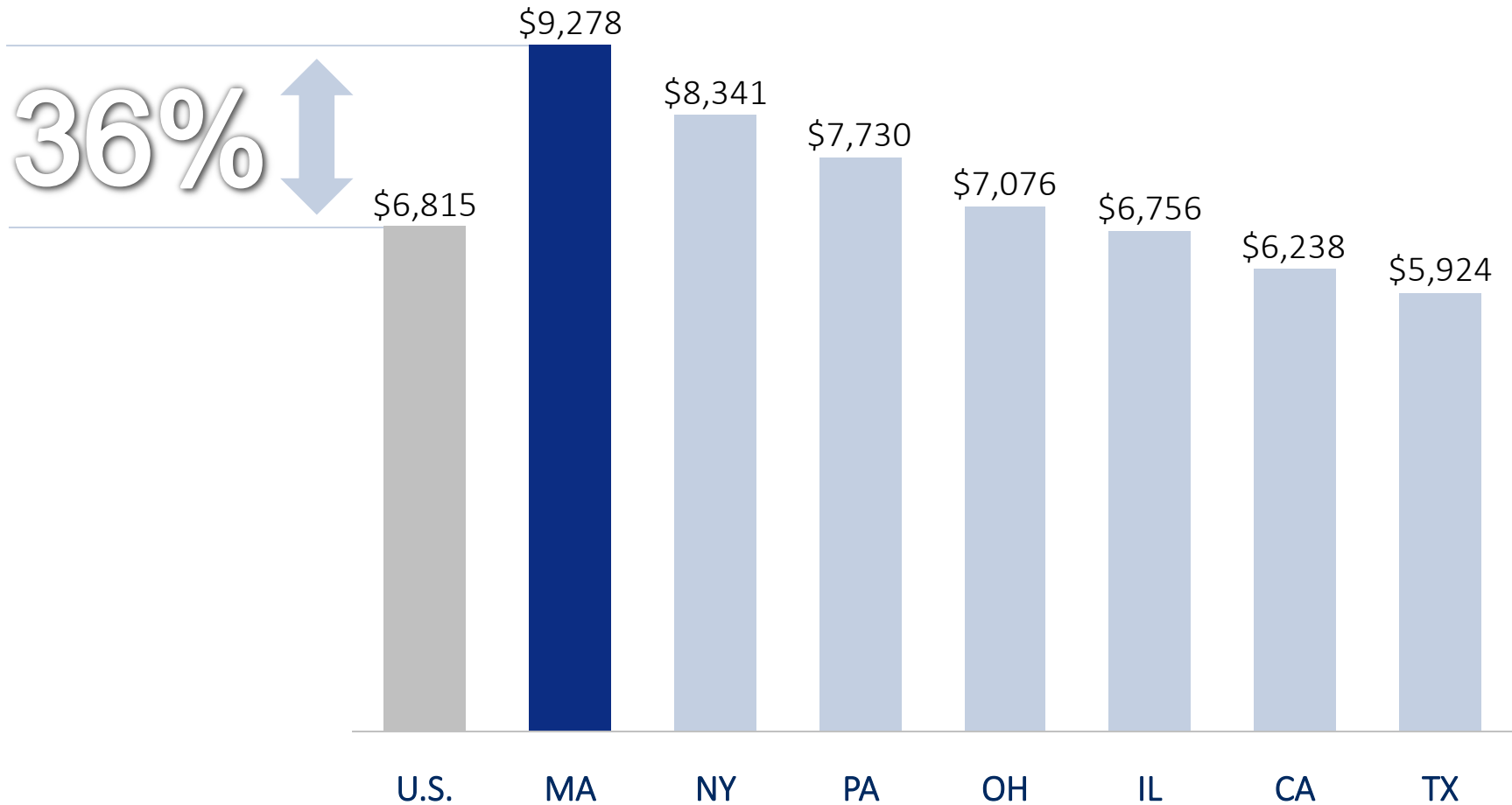
† Measured as gross domestic product (GDP) for the U.S. and gross state product (GSP) for Massachusetts.

‡ CMS state-level personal health care expenditure data have only been published through 2009. 2010-2012 MA figures were estimated based on 2009-2012 expenditure data provided by CMS for Medicare, ANF budget information statements and expenditure data from MassHealth, and CHIA TME reports for commercial payers.

Source: Centers for Medicare & Medicaid Services; Bureau of Economic Analysis; Center for Health Information and Analysis; MassHealth; Census Bureau; HPC analysis

Figure 1.2: Per capita personal health care expenditures* compared to U.S. and other states

Dollars, 2009

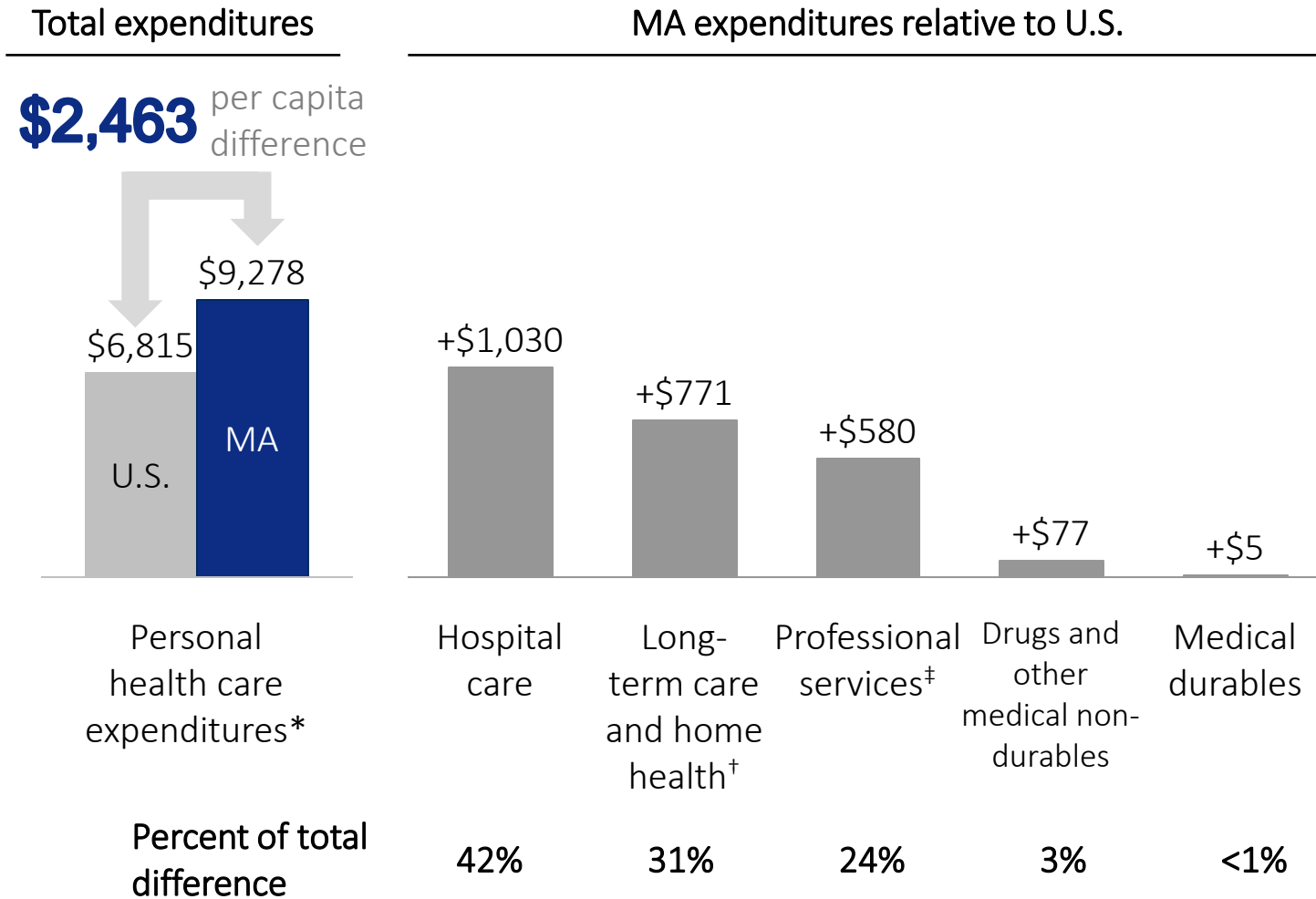


* Personal health care expenditures (PHC) are a subset of national health expenditures. PHC excludes administration and the net cost of private insurance, public health activity, and investment in research, structures and equipment.

Source: Centers for Medicare & Medicaid Services; Bureau of Economic Analysis; HPC analysis

Figure 1.3: Per capita personal health care expenditures* by category of service compared to U.S.

Dollars, 2009



* Personal health care expenditures (PHC) are a subset of national health expenditures. PHC excludes administration and the net cost of private insurance, public health activity, and investment in research, structures and equipment.

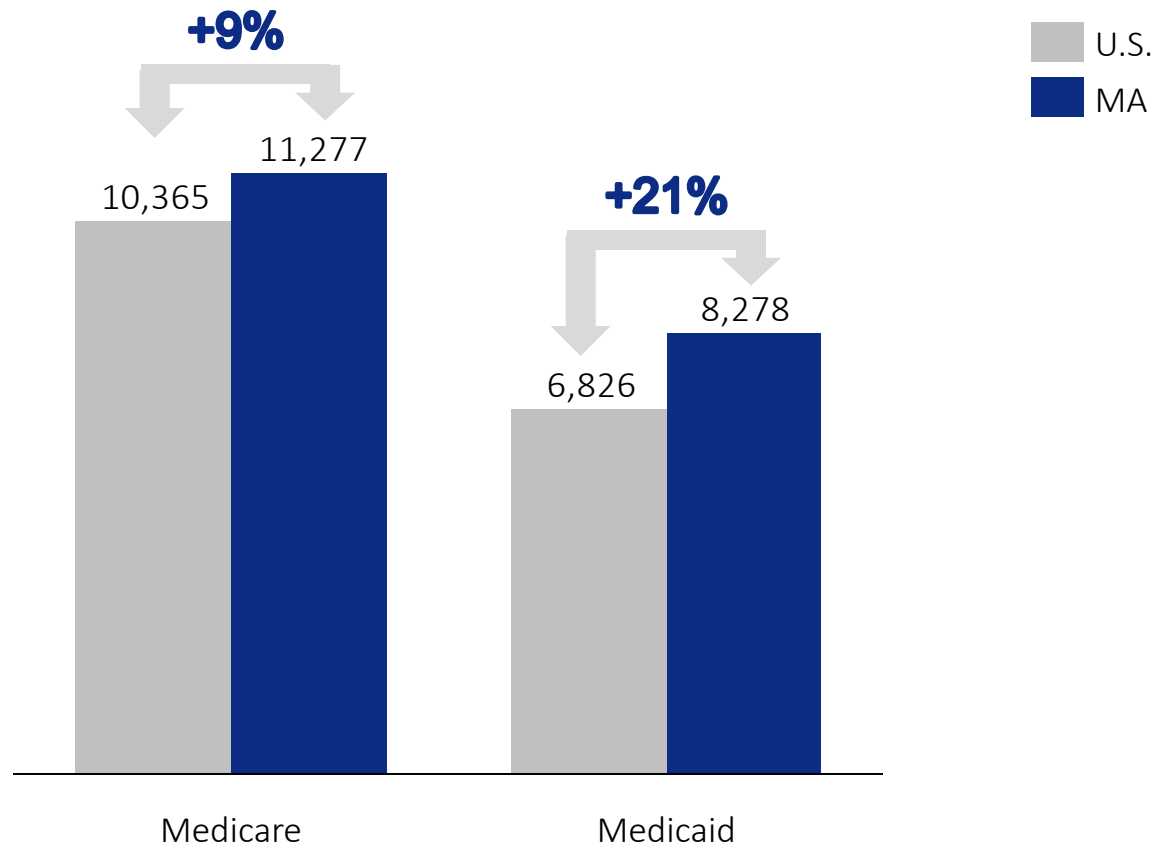
[†] Includes nursing home care, home health care, and other health, residential, and professional care

[‡] Includes physician and clinical services, dental services, and other professional services

Source: Centers for Medicare & Medicaid Services; HPC analysis

Figure 1.4: Per beneficiary personal health care expenditures* by payer type compared to U.S.

Dollars, 2009

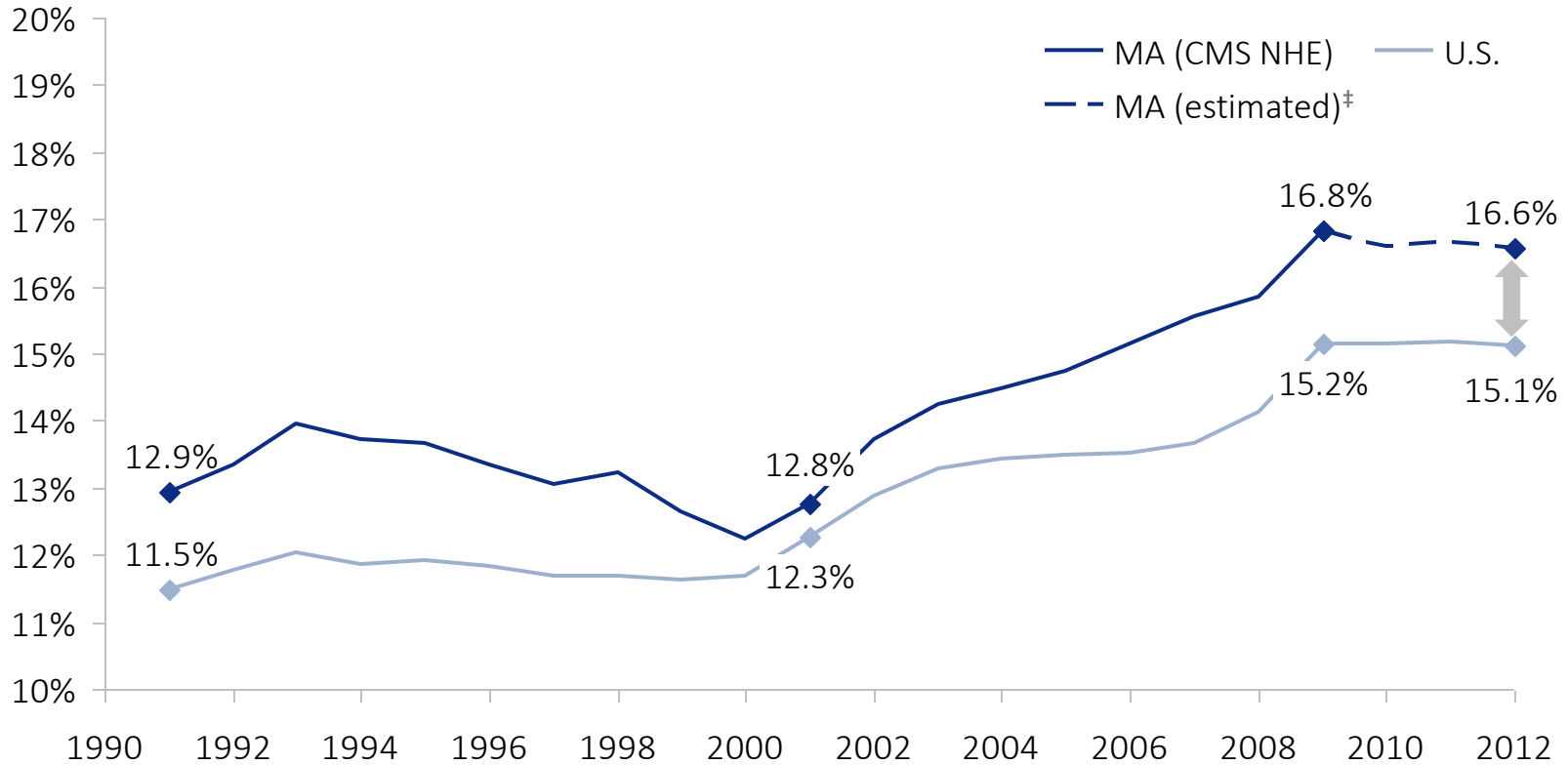


* Personal health care expenditures (PHC) are a subset of national health expenditures. PHC excludes administration and the net cost of private insurance, public health activity, and investment in research, structures and equipment.

Source: Centers for Medicare & Medicaid Services; HPC analysis

Figure 1.5: Personal health care expenditures* relative to size of economy

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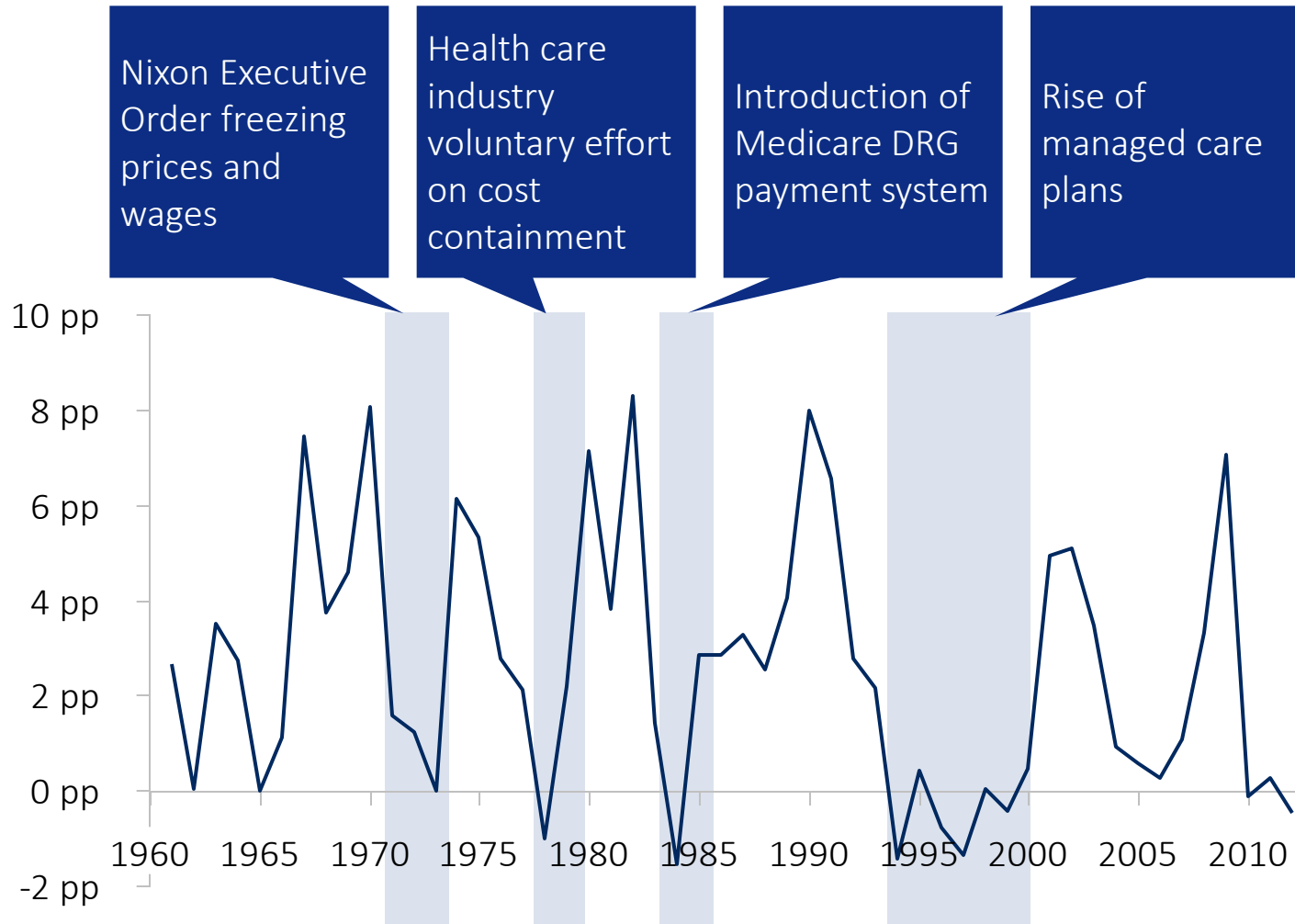
† Measured as gross domestic product (GDP) for the U.S. and gross state product (GSP) for Massachusetts.

‡ CMS state-level personal health care expenditure data have only been published through 2009. 2010-2012 MA figures were estimated based on 2009-2012 expenditure data provided by CMS for Medicare, ANF budget information statements and expenditure data from MassHealth, and CHIA TME reports for commercial payers.

Source: Centers for Medicare & Medicaid Services; Bureau of Economic Analysis; Center for Health Information and Analysis; MassHealth; Census Bureau; HPC analysis

Figure 1.6: U.S. growth in personal health care expenditures* in excess of economic growth

Percentage points of health care expenditure growth minus GDP growth



* Personal health care expenditures (PHC) are a subset of national health expenditures. PHC excludes administration and the net cost of private insurance, public health activity, and investment in research, structures and equipment.

Source: Centers for Medicare & Medicaid Services; Bureau of Economic Analysis; HPC analysis

Figure 1.7: Discharges in Massachusetts hospital systems, 2002-2012

Percent of discharges

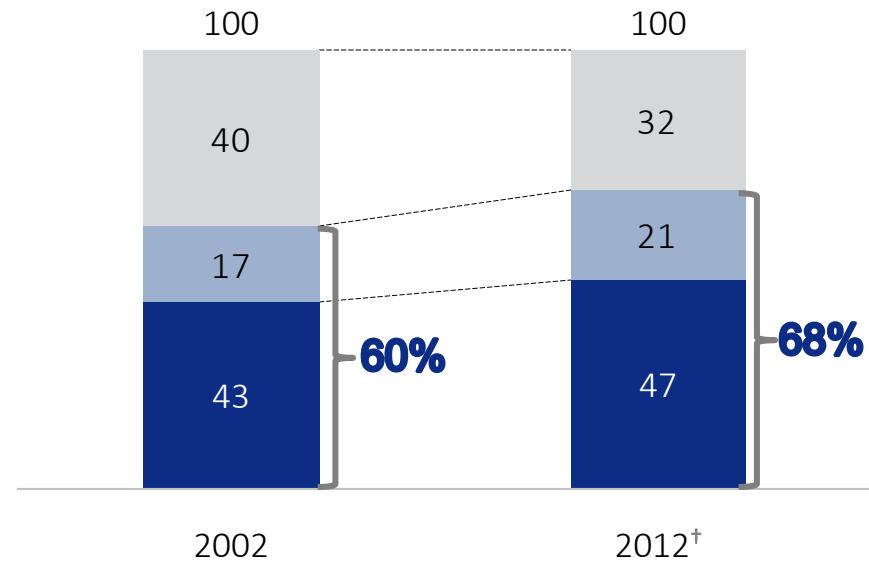
Medicare discharges

40% of Medicare discharges in Massachusetts were in major teaching hospitals* in 2011

16% of Medicare discharges nationwide were in major teaching hospitals* in 2011

All-payer discharges

- Major teaching hospitals*
- Other hospitals in systems with major teaching hospitals
- Other hospitals not in systems with major teaching hospitals



* Major teaching hospitals are defined as those with at least 25 residents per 100 beds.

[†] Based on systems in 2012. Does not include impact of Cooley Dickinson Hospital with Partners HealthCare System and Jordan Hospital with Beth Israel Deaconess Medical Center transactions completed in 2013.

Figure 1.8: Prevalence of diabetes by region among Medicare beneficiaries

Medicare prevalence rate

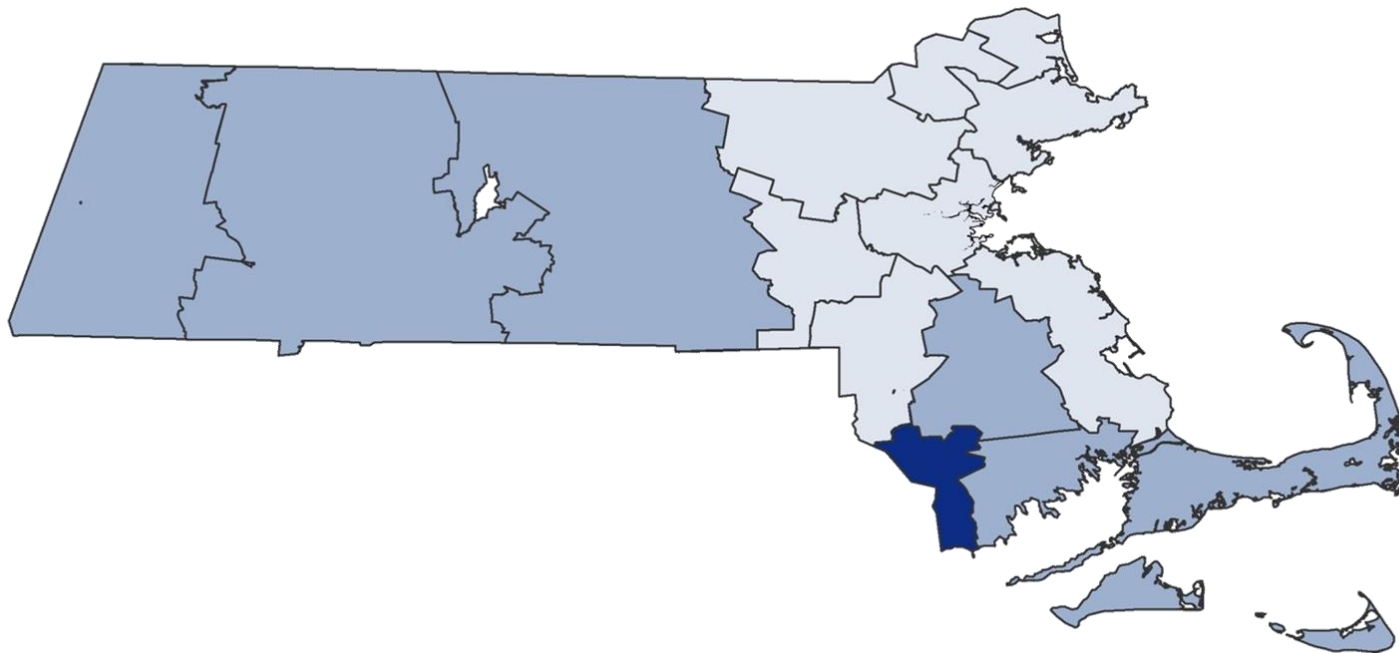
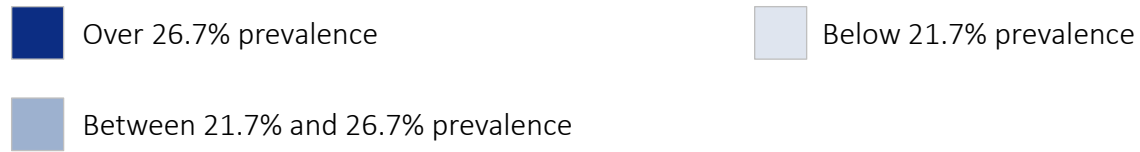


Figure 1.9: Prevalence of diabetes by region among commercial members

Commercial prevalence rate

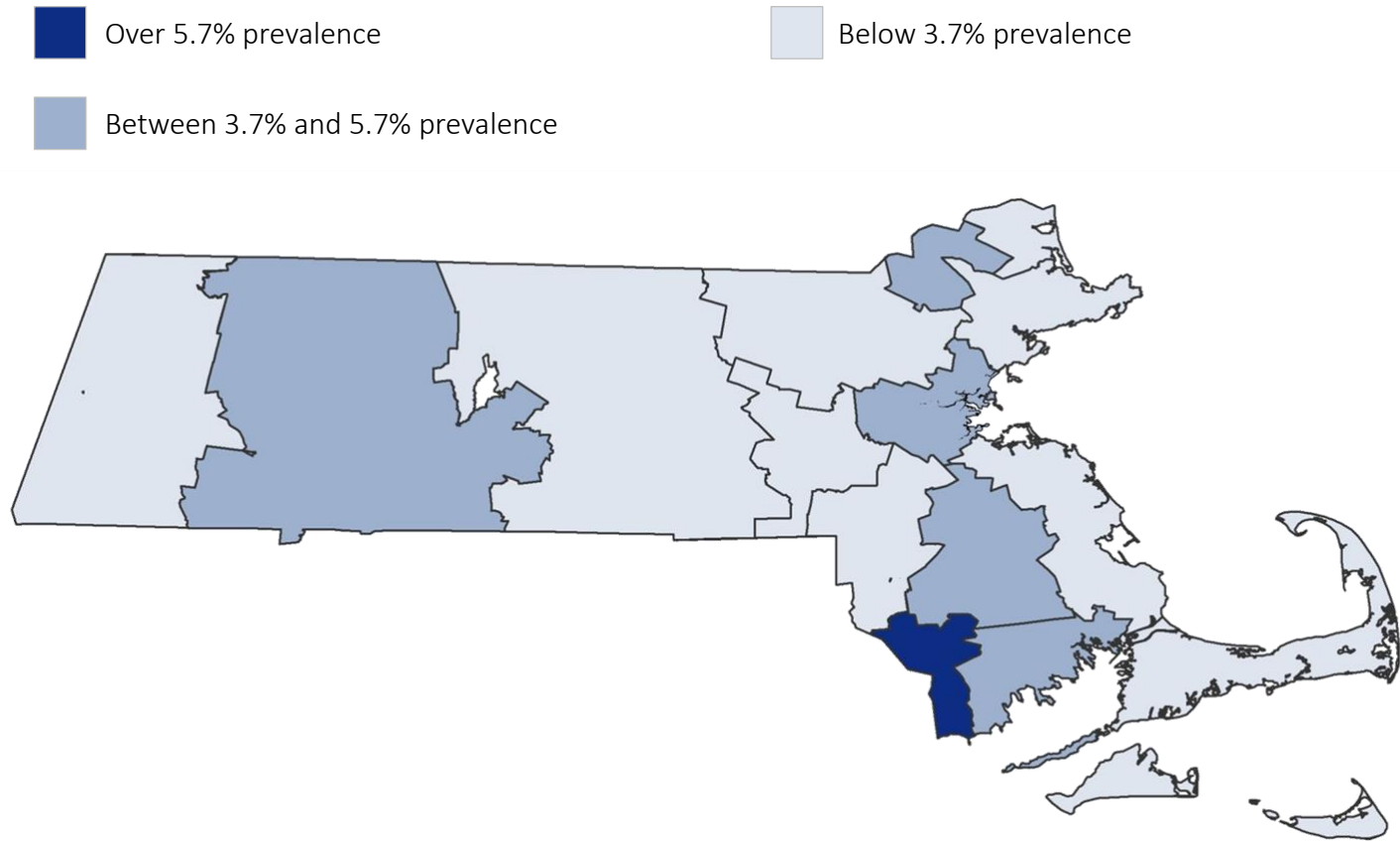
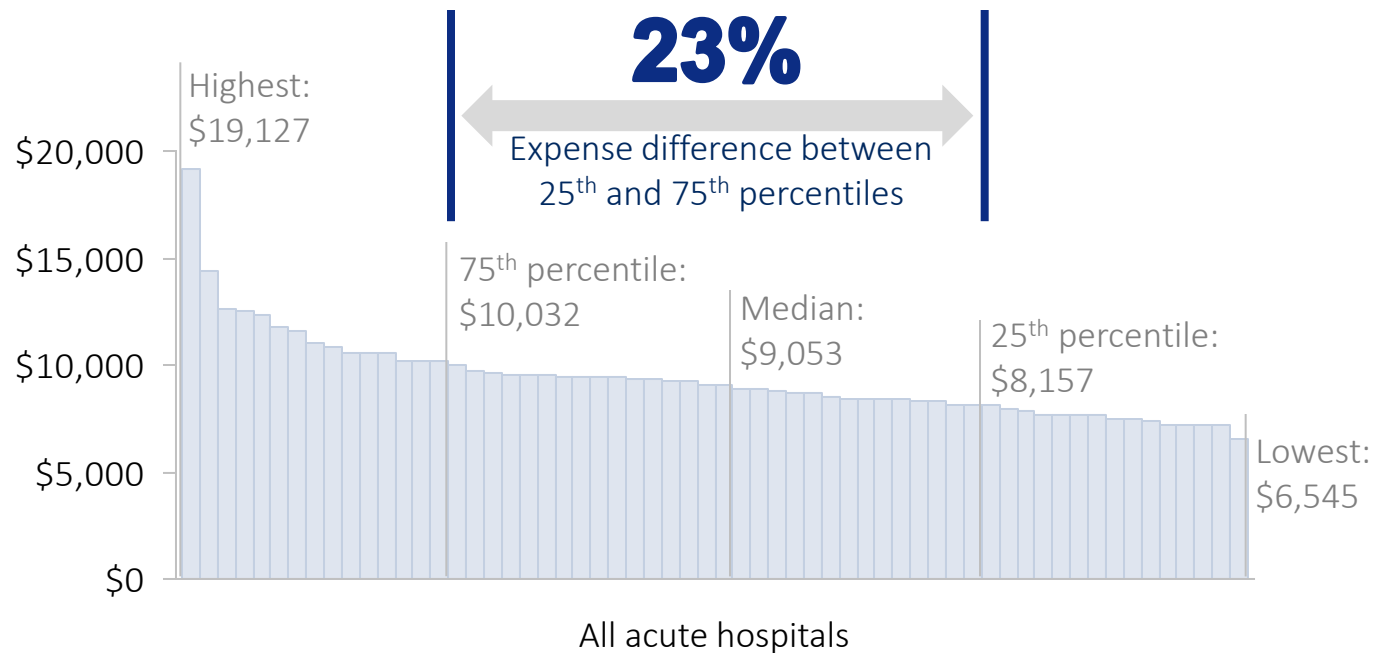


Figure 2.1: Inpatient operating expenses per discharge* for all Massachusetts acute hospitals

Dollars per case mix- and wage-adjusted discharge, 2012

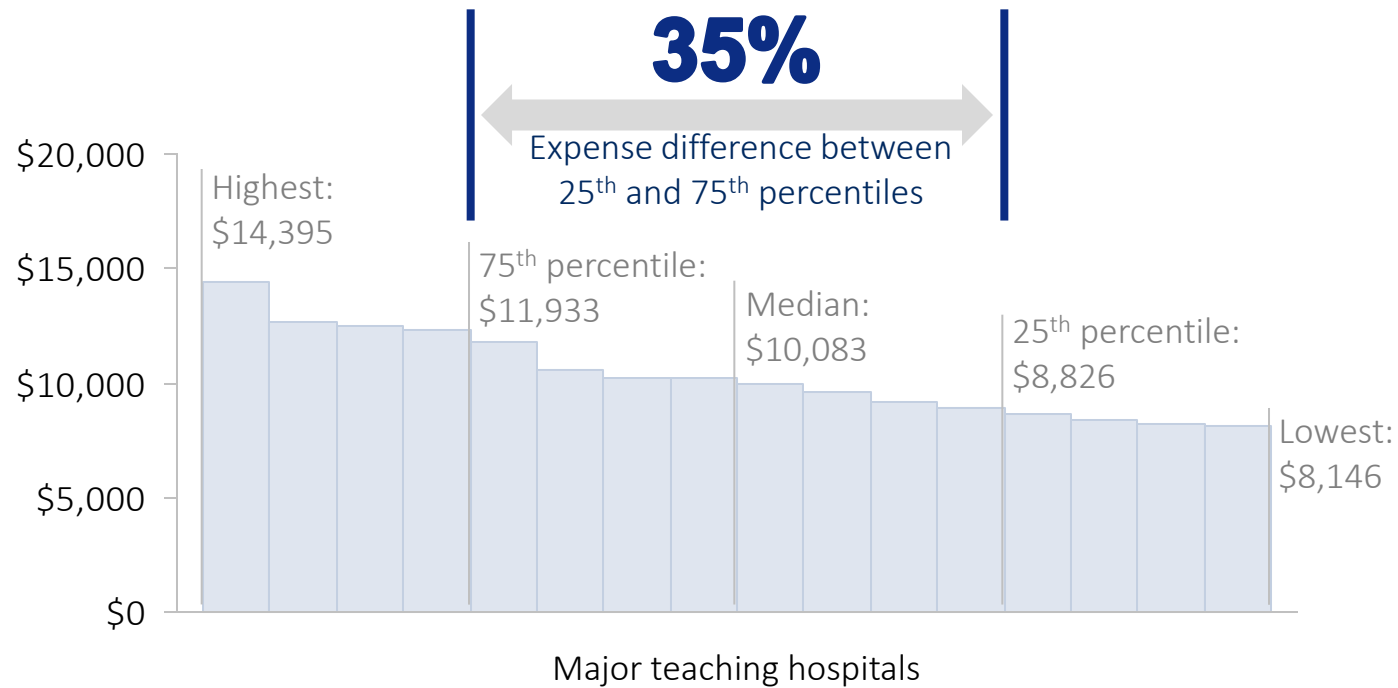


* Inpatient patient service expenses divided by inpatient discharges. Adjusted for hospital case mix index (CHIA 2011) and area wage index (CMS 2012).

Source: Center for Health Information and Analysis; Centers for Medicare & Medicaid Services; HPC analysis

Figure 2.2: Inpatient operating expenses per discharge* for major teaching hospitals in Massachusetts

Dollars per case mix- and wage-adjusted discharge, 2012

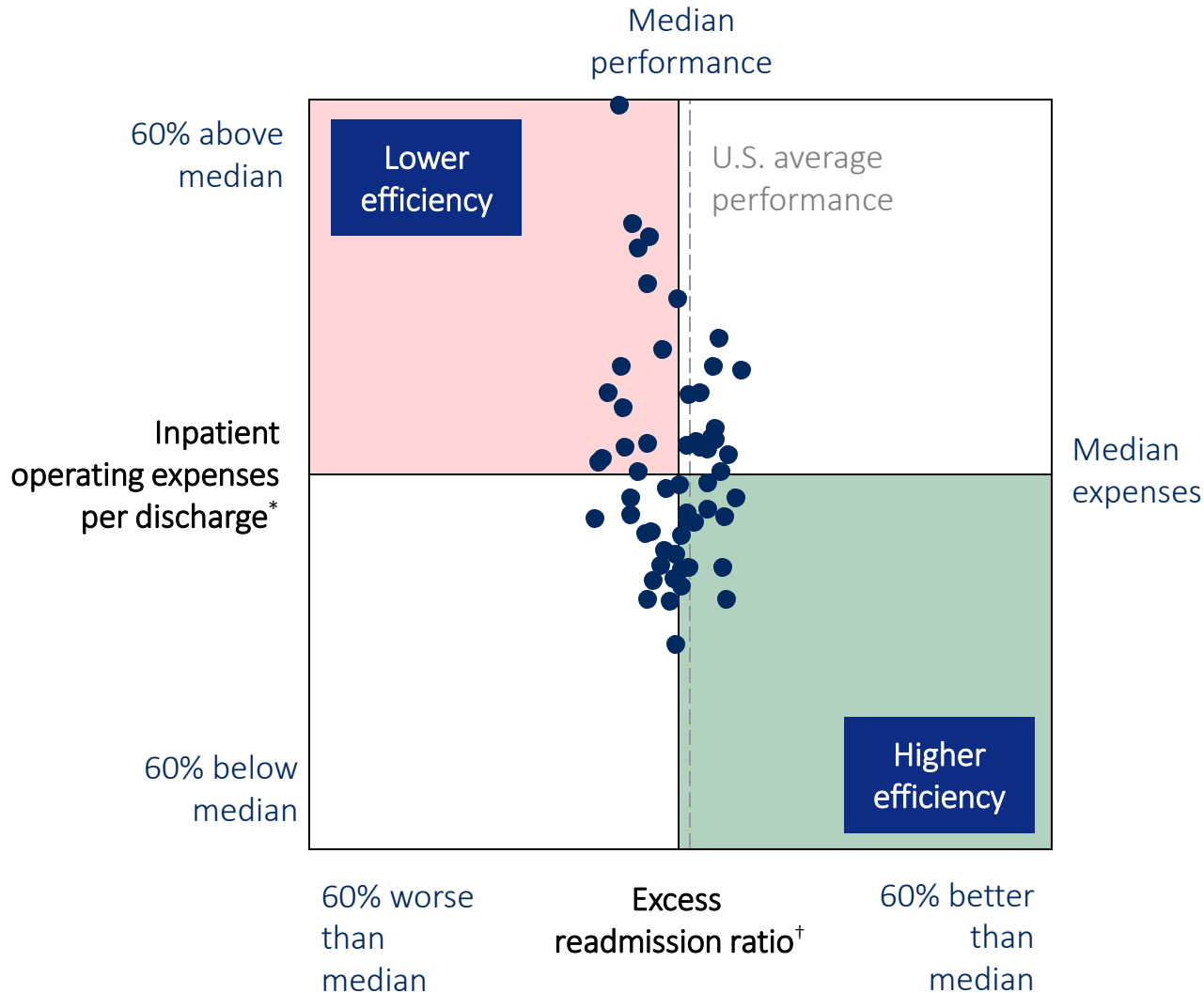


* Inpatient patient service expenses divided by inpatient discharges. Adjusted for hospital case mix index (CHIA 2011) and area wage index (CMS 2012).

Source: Center for Health Information and Analysis; Centers for Medicare & Medicaid Services; HPC analysis

Figure 2.3: Quality performance relative to inpatient operating expenses per admission: excess readmission ratio

Excess readmission ratio versus dollars per case mix-adjusted discharge*

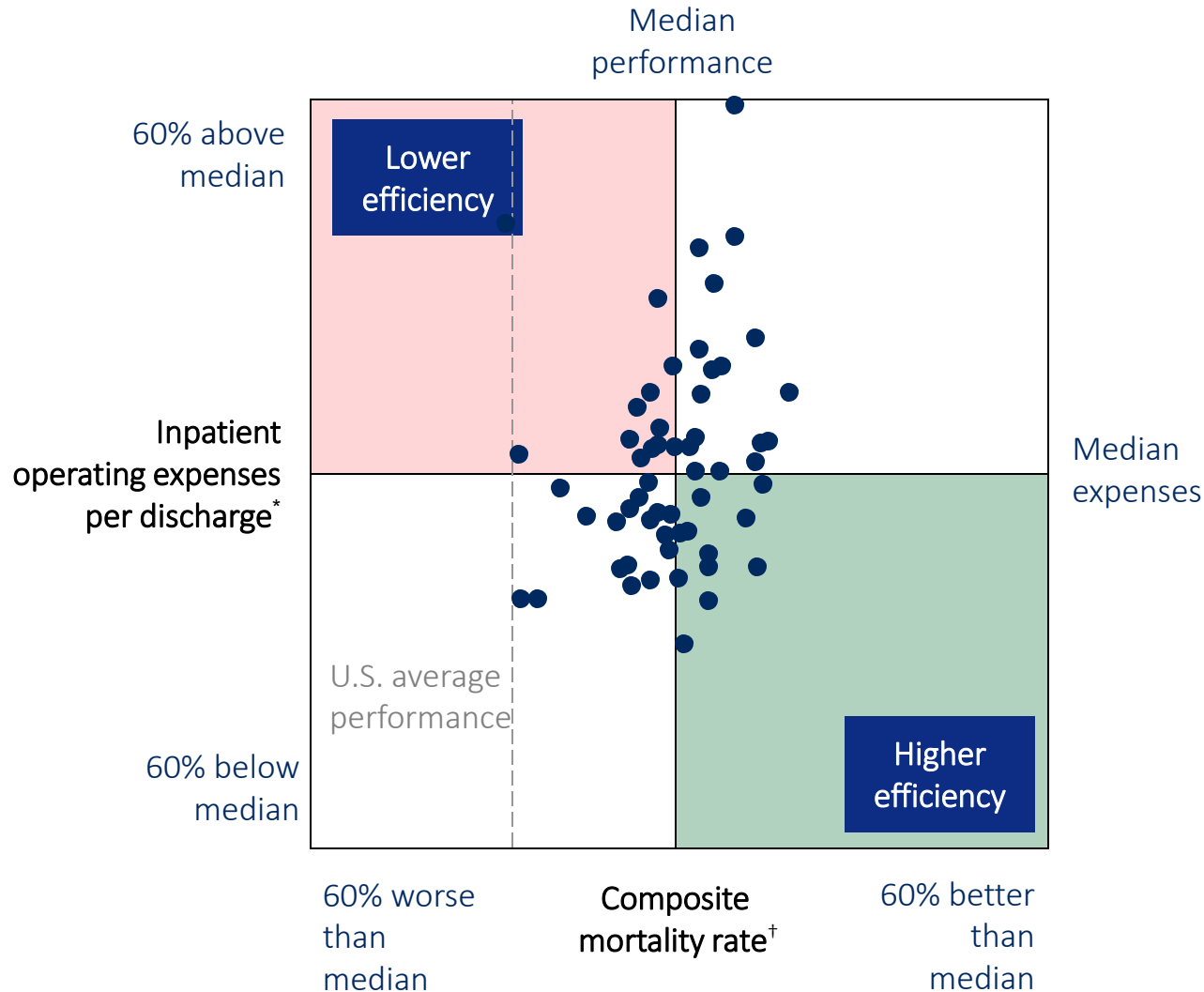


* 2012 inpatient patient service expenses divided by inpatient discharges. Adjusted for hospital case mix index (CHIA 2011) and area wage index (CMS 2012).

† 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.

Figure 2.4: Quality performance relative to inpatient operating expenses per admission: mortality rate

Composite mortality rate versus dollars per case mix-adjusted discharge*



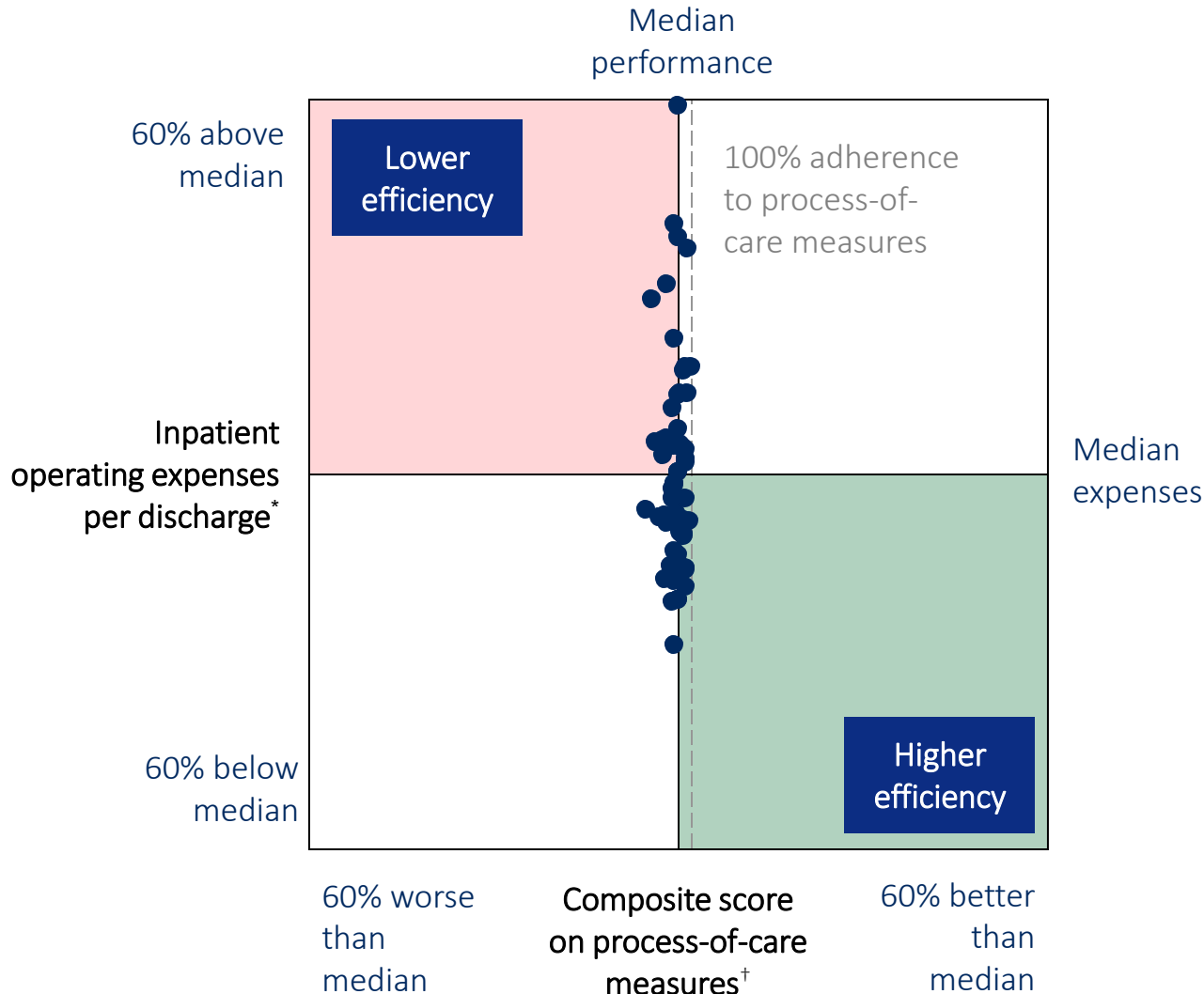
* 2012 inpatient patient service expenses divided by inpatient discharges. Adjusted for hospital case mix index (CHIA 2011) and area wage index (CMS 2012).

† Composite of risk-standardized 30-day Medicare mortality rates for acute myocardial infarction, heart failure, and pneumonia (2009-2011). For each condition, mortality rates were normalized so that the Massachusetts average was 1.0. The composite mortality rate is a weighted average of the three normalized, condition-specific mortality rates.

Source: Center for Health Information and Analysis; Center for Medicare & Medicaid Services; HPC analysis

Figure 2.5: Quality performance relative to inpatient operating expenses per admission: process-of-care measures

Composite of process-of-care measures versus dollars per case mix-adjusted discharge*



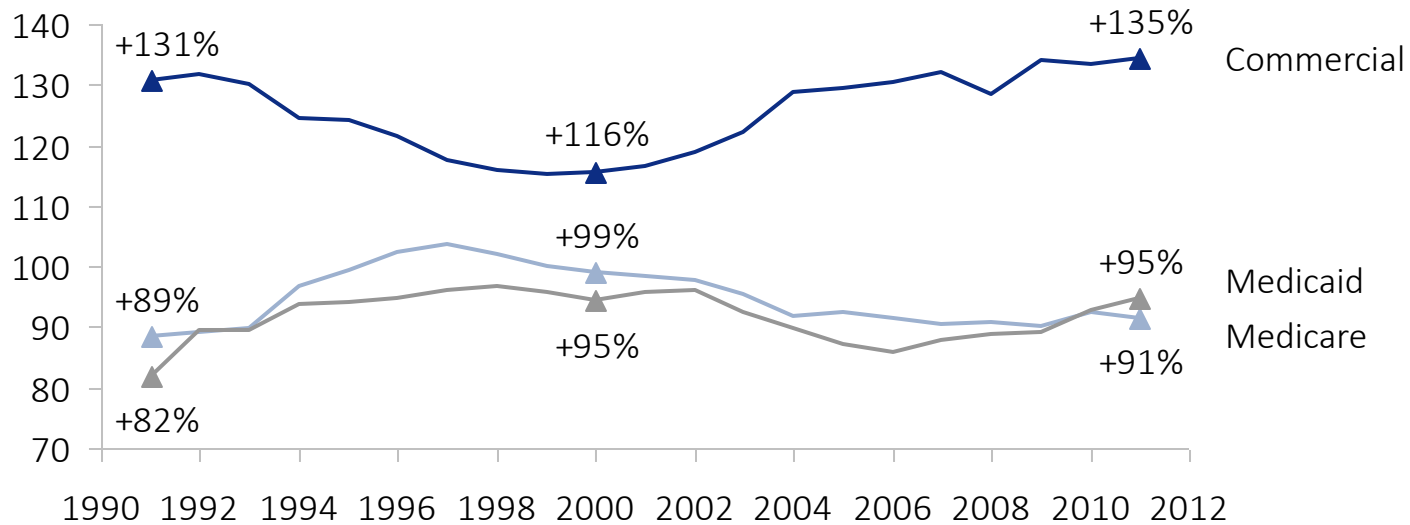
* 2012 inpatient patient service expenses divided by inpatient discharges. Adjusted for hospital case mix index (CHIA 2011) and area wage index (CMS 2012).

† Average across 10 process-of-care measures (CMS 2012): SCIP-Inf-1; SCIP-Inf-2; SCIP-Inf-3; SCIP-Inf-9; SCIP-Inf-10; AMI 2; AMI 8-a; PN 6; HF 2; and HF 3. Detail on measures available in Technical Appendix B2: Hospital Operating Expenses.

Source: Center for Health Information and Analysis; Center for Medicare & Medicaid Services; HPC analysis

Figure 2.6: Aggregate U.S. hospital payment-to-cost ratios for commercial payers, Medicare, and Medicaid*

Percent of total expenses, 2011



* Medicaid and Medicare figures include Disproportionate Share payments.

Source: Avalere Health analysis of American Hospital Association Annual Survey data, 2011, for community hospitals

Figure 2.7: Illustrative examples of margin differences driven by prices and operating expenses

ILLUSTRATION: SAME OPERATING EXPENSES, DIFFERENT PRICES

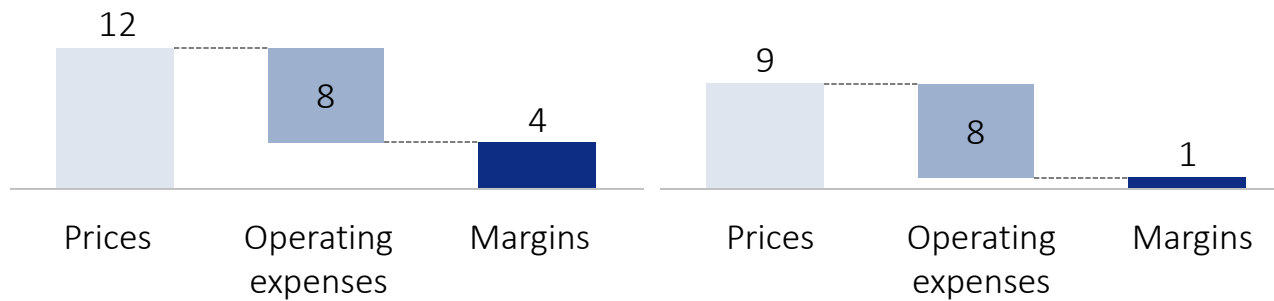


ILLUSTRATION: SAME PRICES, DIFFERENT OPERATING EXPENSES

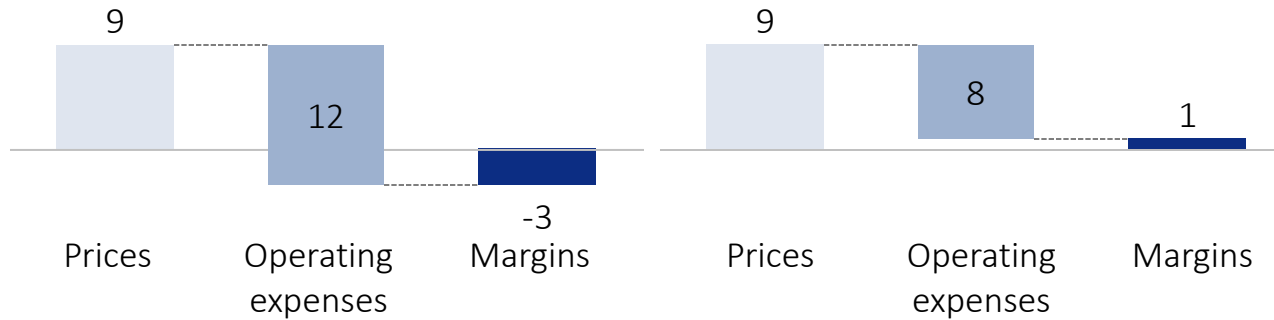
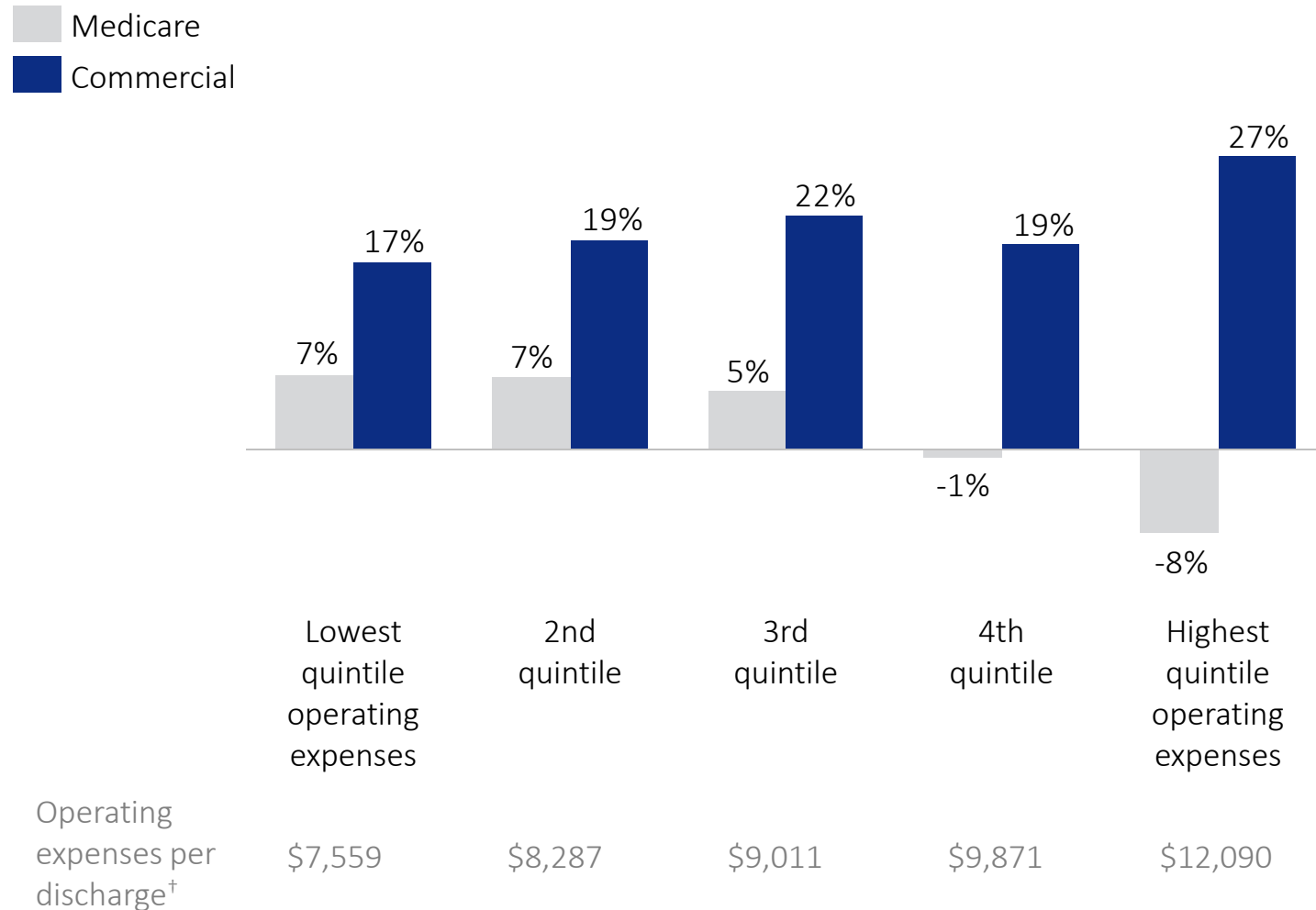


Figure 2.8: Operating margins by payer type for hospitals at different operating expense levels

Operating income as proportion of net patient service revenue*, 2012



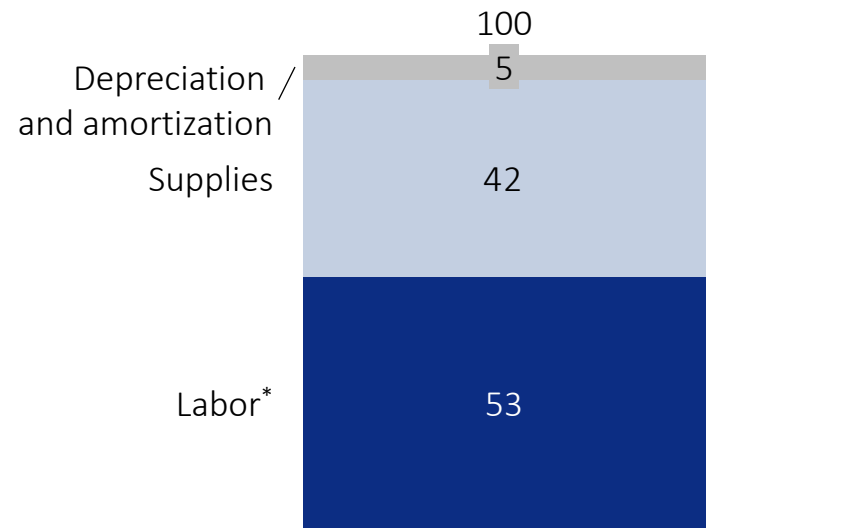
* Operating income defined as total net patient service revenue less total patient service expenses. Payer-specific expenses are estimated by applying hospital-specific cost-to-charge ratios to hospital's charges by payer.

† 2012 inpatient patient service expenses divided by inpatient discharges. Adjusted for hospital case mix index (CHIA 2011) and area wage index (CMS 2012).

Source: Center for Health Information and Analysis; HPC analysis

Figure 2.9: Breakdown of hospital operating expenses

Percent of expenses by category, 2012



* Labor expense category is composed of salaries and benefits, physician compensation paid directly by hospitals, and purchased services.

Source: Center for Health Information and Analysis; HPC analysis

Figure 3.1: Readmissions within 30 days for acute myocardial infarction for Massachusetts acute hospitals

Risk-standardized excess readmission ratio for Medicare beneficiaries by hospital, 2009-2011

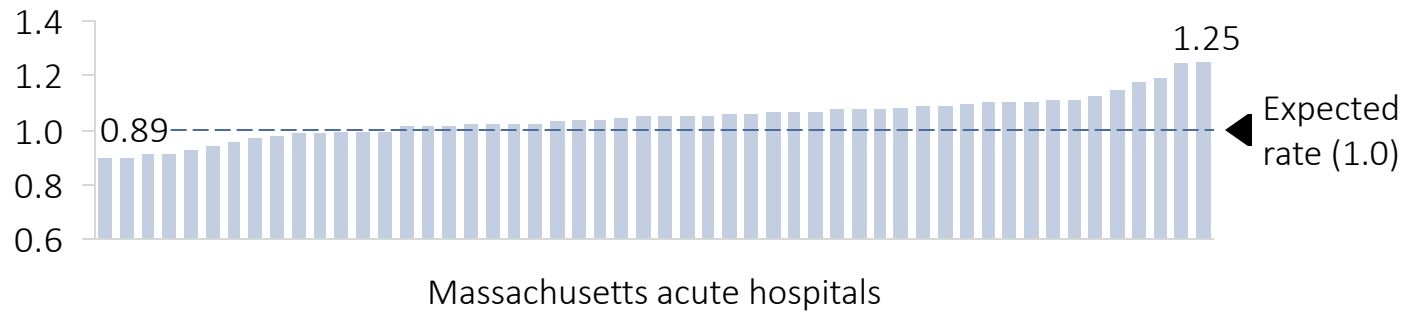


Figure 3.2: Readmissions within 30 days for heart failure for Massachusetts acute hospitals

Risk-standardized excess readmission ratio for Medicare beneficiaries by hospital, 2009-2011

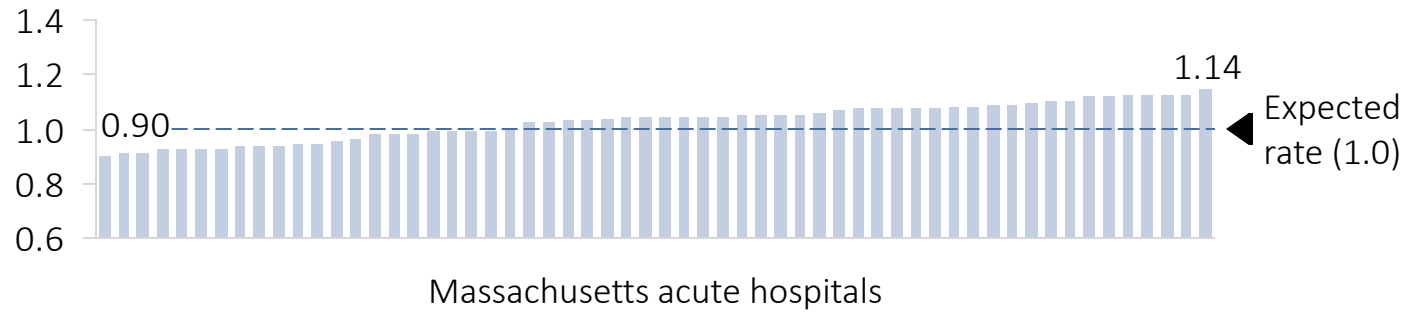


Figure 3.3: Readmissions within 30 days for pneumonia for Massachusetts acute hospitals

Risk-standardized excess readmission ratio for Medicare beneficiaries by hospital, 2009-2011

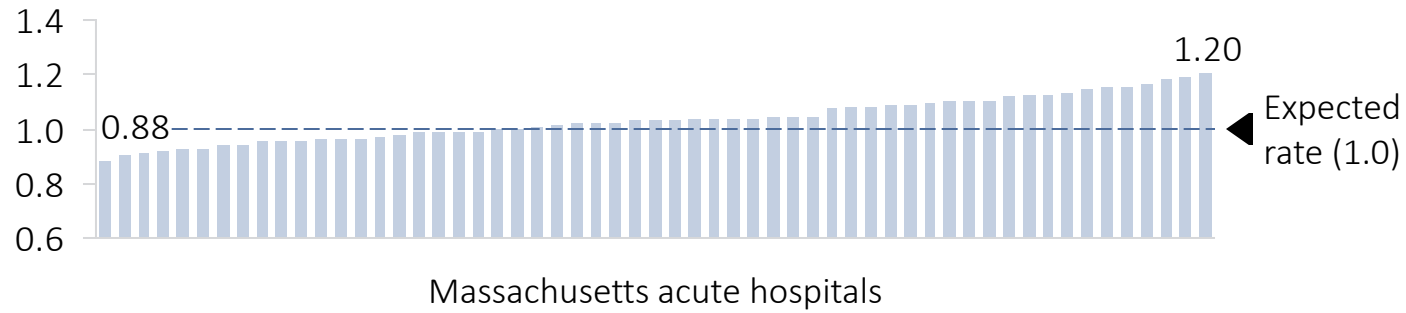
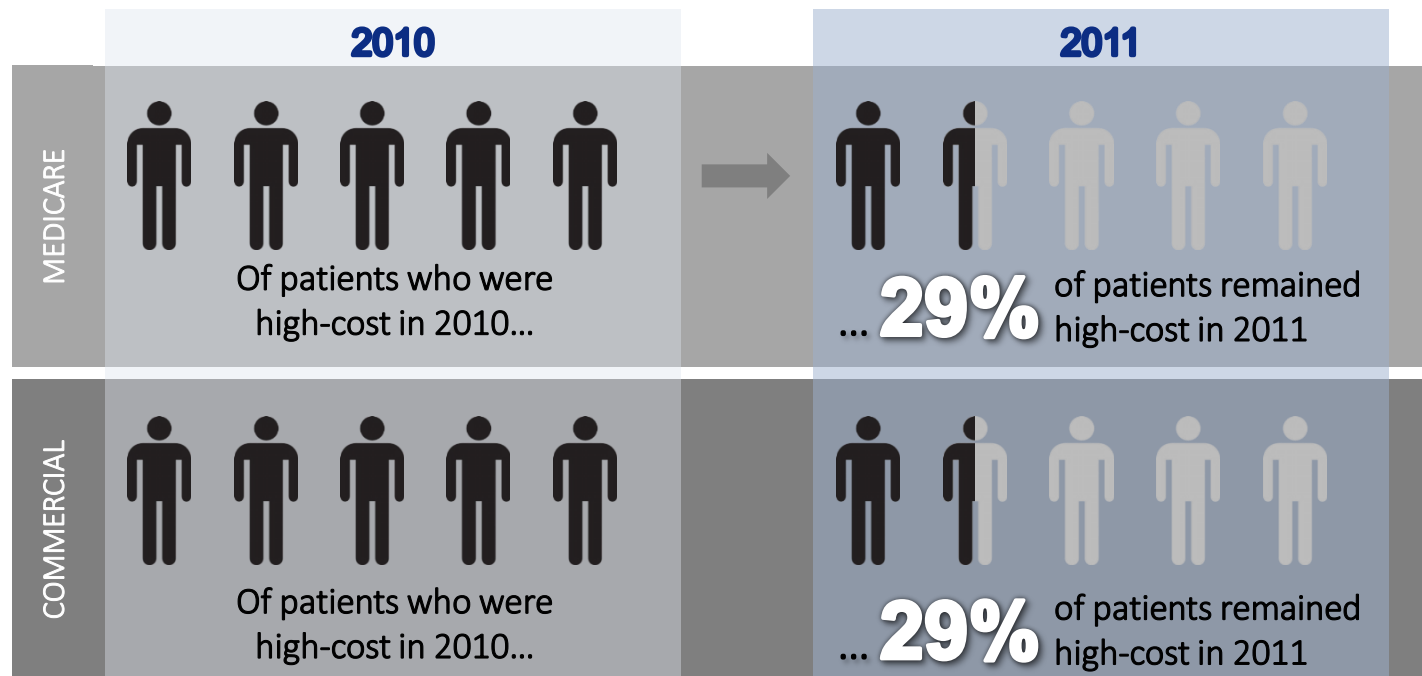


Figure 4.1: Persistence among high-cost Medicare and commercial patients in Massachusetts

Claims-based medical expenditures (excluding pharmacy spending) in 2010 and 2011

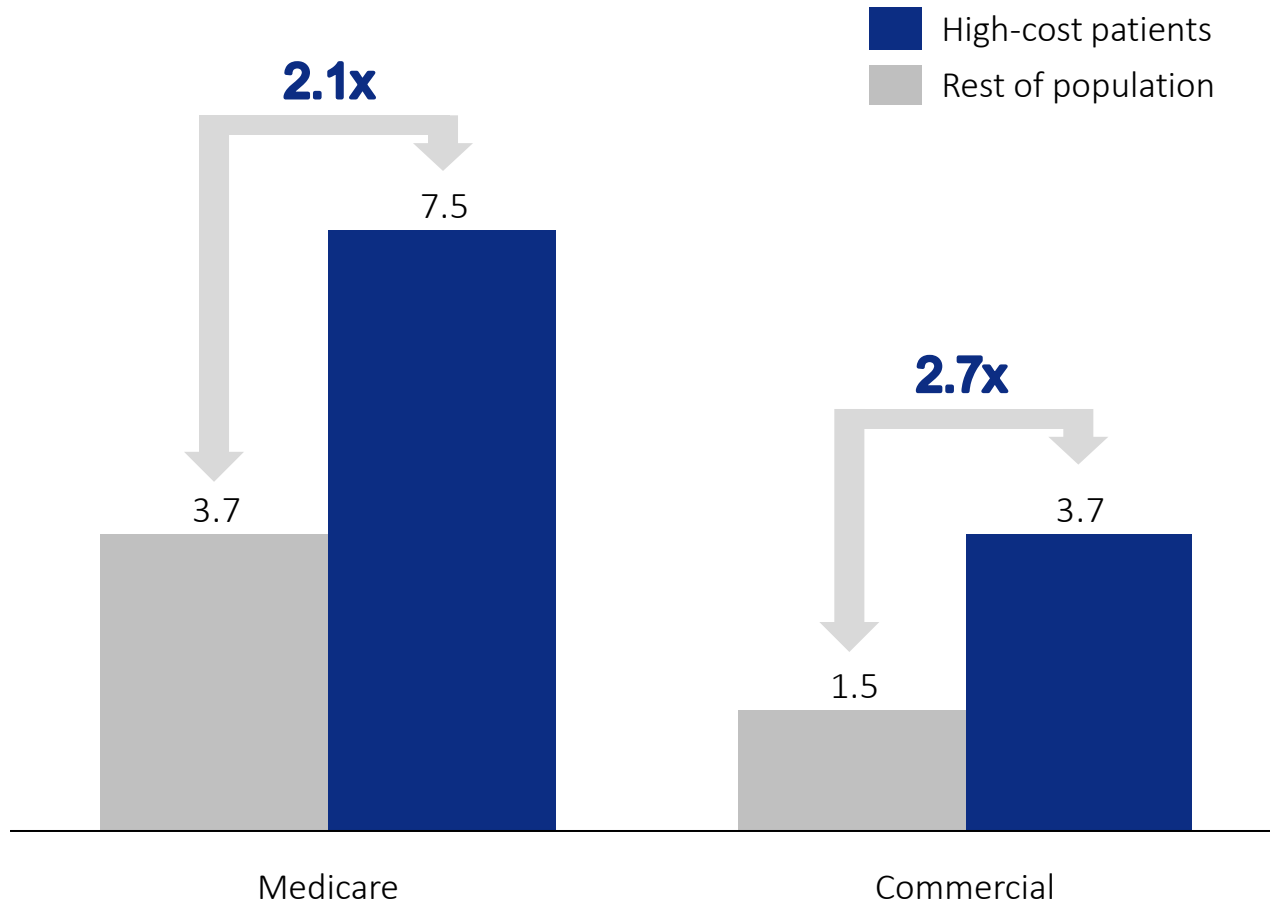


Notes: (A) High-cost patients defined as 5% of patients with highest claims-based medical expenditures (excluding pharmacy spending) in a given year.
 (B) The sample for analysis was limited to patients who had at least six months of enrollment in both 2010 and 2011 and costs of at least \$1 in each year. Figures do not capture pharmacy costs, payments outside the claims system, Medicare cost-sharing, or end-of-life care for patients who died in 2010 or 2011.

Source: All-Payer Claims Database; HPC analysis

Figure 4.2: Prevalence of multiple conditions among Medicare and commercial populations

Number of clinical conditions*, 2010



* Clinical conditions as defined by Lewin's ERG grouper. 23 clinical conditions selected to include common chronic conditions and conditions particularly prevalent among high-cost patients.

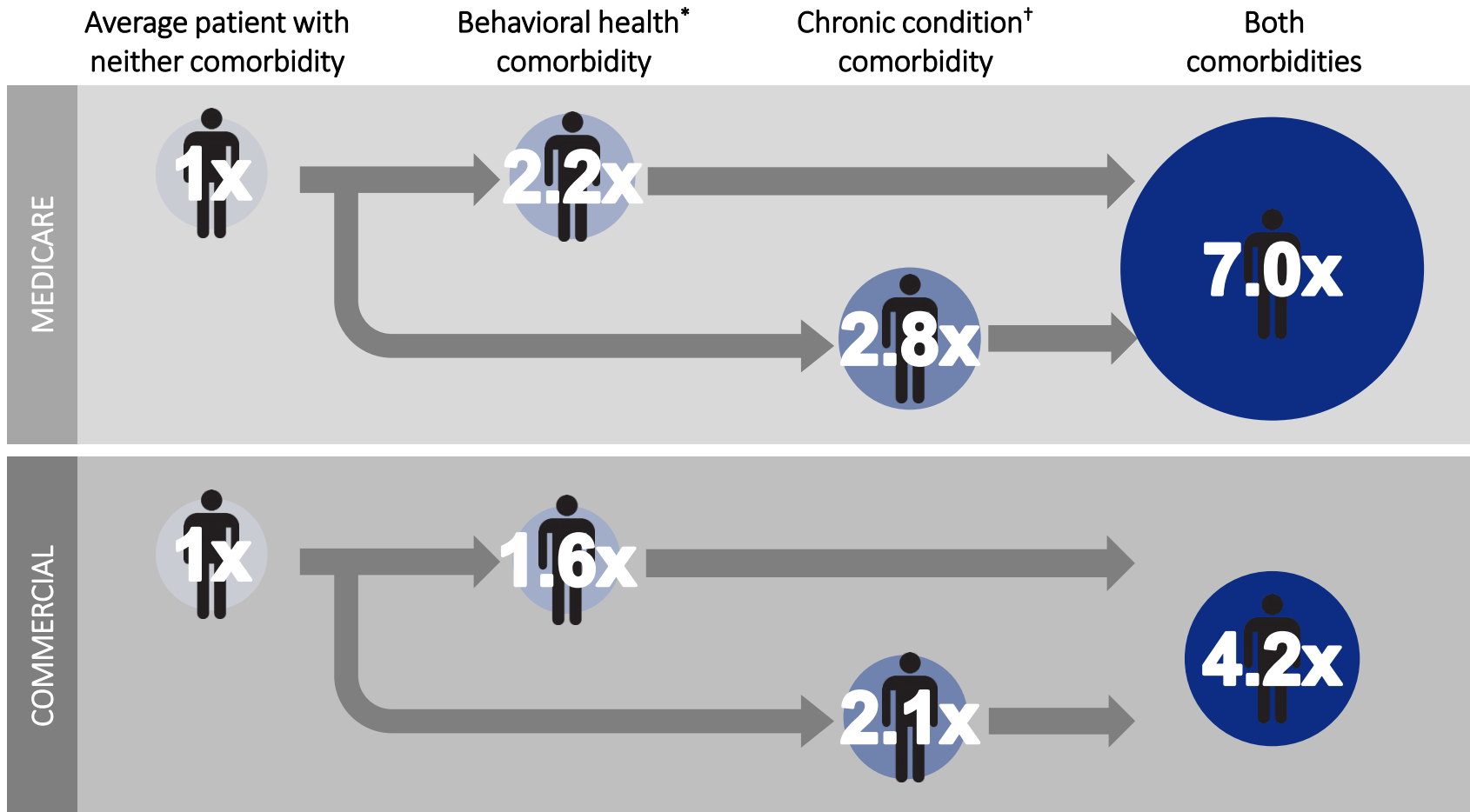
Notes: (A) High-cost patients defined as 5% of patients with highest claims-based medical expenditures (excluding pharmacy spending) in a given year.

(B) The sample for analysis was limited to patients who had at least six months of enrollment in both 2010 and 2011 and costs of at least \$1 in each year. Figures do not capture pharmacy costs, payments outside the claims system, Medicare cost-sharing, or end-of-life care for patients who died in 2010 or 2011.

Source: All-Payer Claims Database; HPC analysis

Figure 4.3: Average spending per patient based on behavioral health and chronic condition comorbidities

Claims-based medical expenditures (excluding pharmacy spending) relative to average patient with no behavioral health or chronic condition comorbidity in 2010



* Behavioral health comorbidity includes child psychology, severe and persistent mental illness, mental health, psychiatry, and substance abuse.

† Chronic condition includes arthritis, epilepsy, glaucoma, hemophilia, sickle-cell anemia, heart disease, HIV/AIDS, hyperlipidemia, hypertension, multiple sclerosis, renal, asthma, and diabetes.

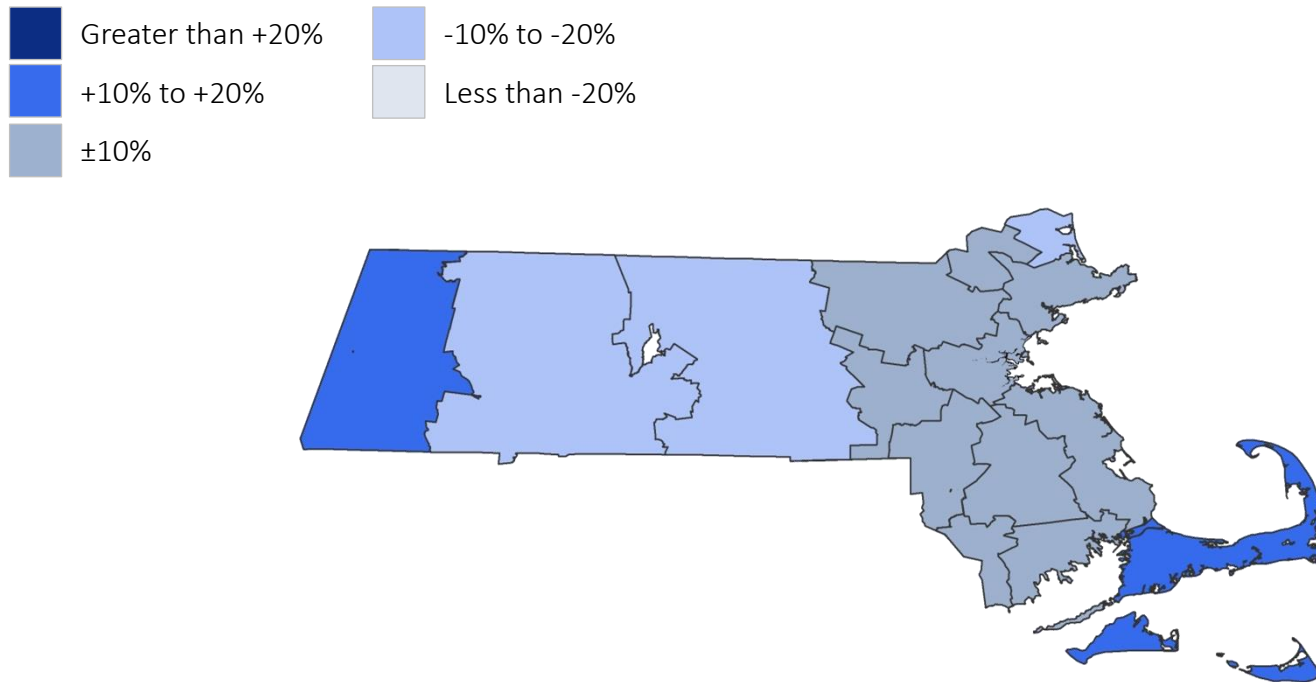
Notes: (A) High-cost patients defined as 5% of patients with highest claims-based medical expenditures (excluding pharmacy spending) in a given year.

(B) The sample for analysis was limited to patients who had at least six months of enrollment in both 2010 and 2011 and costs of at least \$1 in each year. Figures do not capture pharmacy costs, payments outside the claims system, Medicare cost-sharing, or end-of-life care for patients who died in 2010 or 2011.

Source: All-Payer Claims Database; HPC analysis

Figure 4.4: Concentration of commercial high-cost patients

Percent difference between region and statewide average, adjusted for age and sex

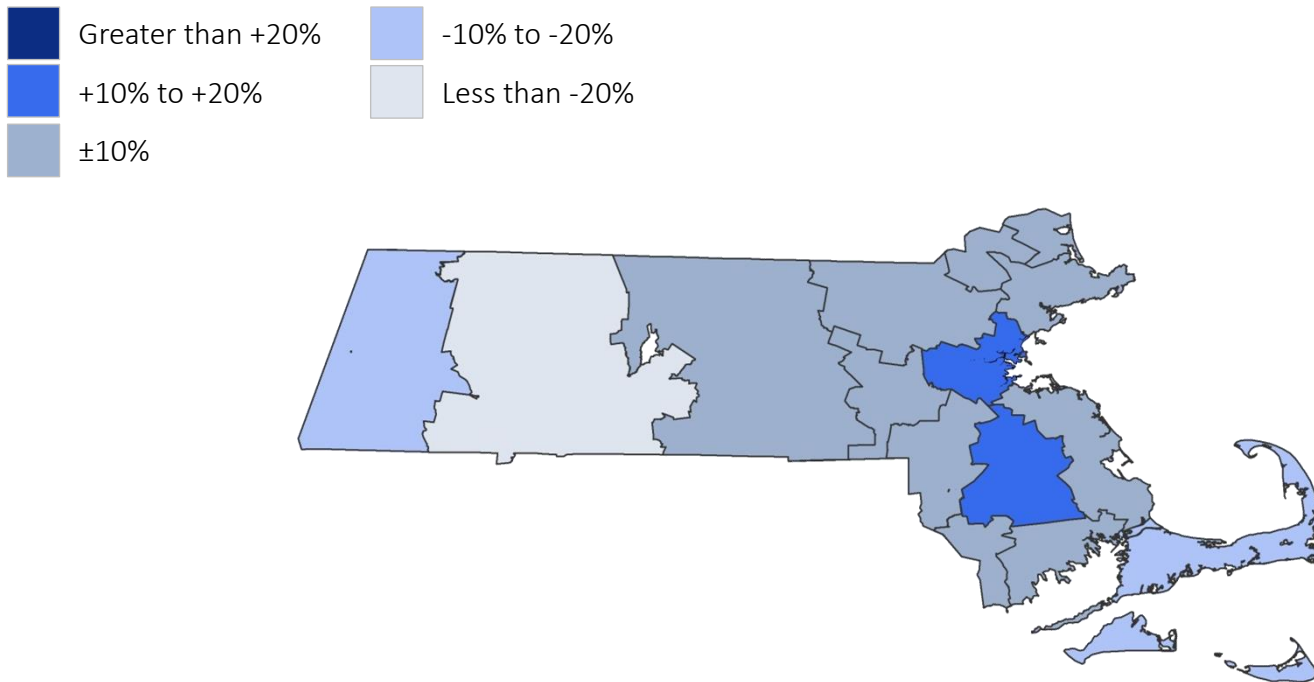


Notes: (A) High-cost patients defined as 5% of patients with highest claims-based medical expenditures (excluding pharmacy spending) in a given year.
 (B) The sample for analysis was limited to patients who had at least six months of enrollment in both 2010 and 2011 and costs of at least \$1 in each year. Figures do not capture pharmacy costs, payments outside the claims system, Medicare cost-sharing, or end-of-life care for patients who died in 2010 or 2011.

Source: All-Payer Claims Database; HPC analysis

Figure 4.5: Concentration of Medicare high-cost patients

Percent difference between region and statewide average, adjusted for age and sex

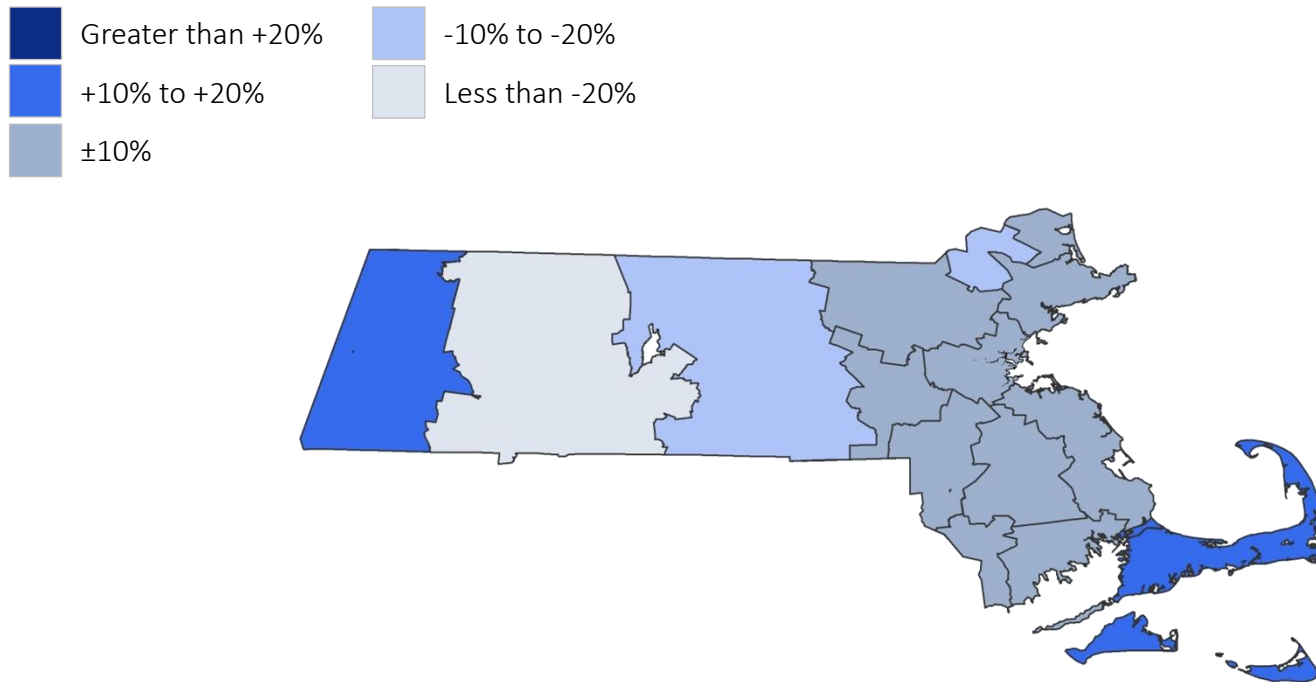


Notes: (A) High-cost patients defined as 5% of patients with highest claims-based medical expenditures (excluding pharmacy spending) in a given year.
 (B) The sample for analysis was limited to patients who had at least six months of enrollment in both 2010 and 2011 and costs of at least \$1 in each year. Figures do not capture pharmacy costs, payments outside the claims system, Medicare cost-sharing, or end-of-life care for patients who died in 2010 or 2011.

Source: All-Payer Claims Database; HPC analysis

Figure 4.6: Concentration of commercial persistent high-cost patients

Percent difference between region and statewide average, adjusted for age and sex

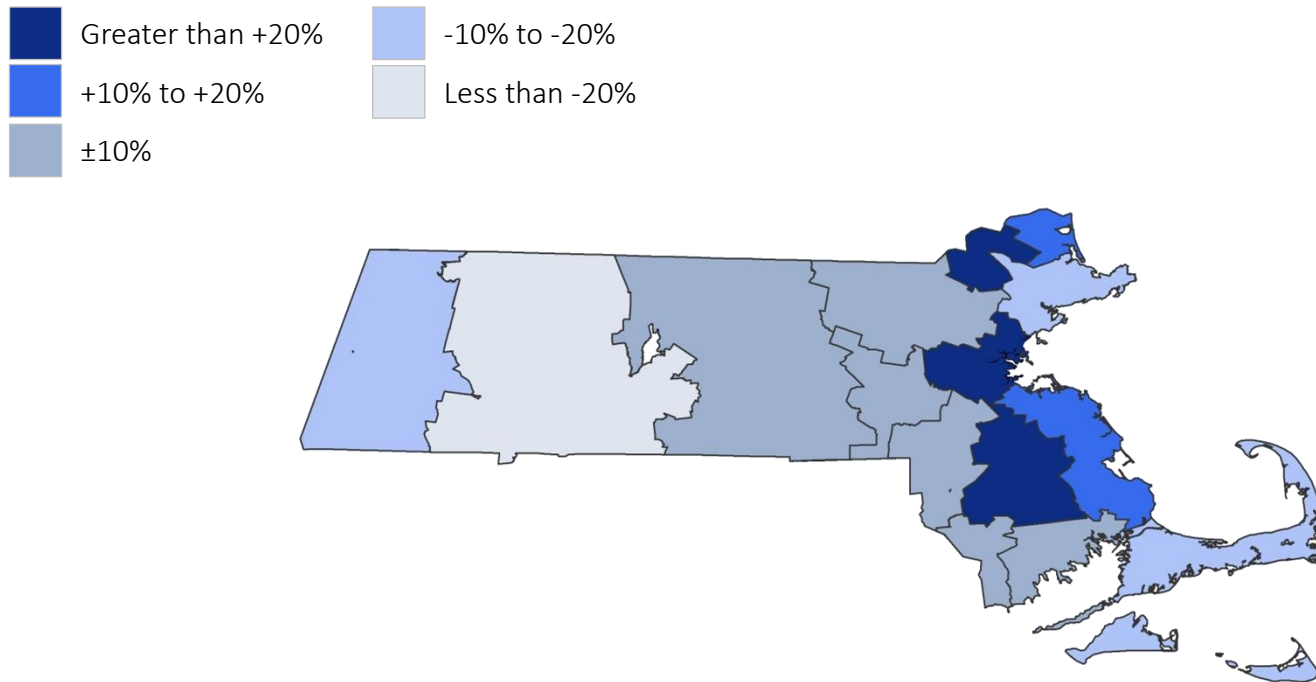


Notes: (A) High-cost patients defined as 5% of patients with highest claims-based medical expenditures (excluding pharmacy spending) in a given year.
 (B) The sample for analysis was limited to patients who had at least six months of enrollment in both 2010 and 2011 and costs of at least \$1 in each year. Figures do not capture pharmacy costs, payments outside the claims system, Medicare cost-sharing, or end-of-life care for patients who died in 2010 or 2011.

Source: All-Payer Claims Database; HPC analysis

Figure 4.7: Concentration of Medicare persistent high-cost patients

Percent difference between region and statewide average, adjusted for age and sex



Notes: (A) High-cost patients defined as 5% of patients with highest claims-based medical expenditures (excluding pharmacy spending) in a given year.
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Source: All-Payer Claims Database; HPC analysis