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Center for Health
Information and Analysis

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Health Care Provider Price Variation in the Massachusetts Commercial Market

Baseline Report

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This report was developed by the Division of Health Care Finance and Policy and published by the Center for Health Information and Analysis.

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Special Note about this Report

On November 5, 2012, Chapter 224 of the Acts of 2012 (Chapter 224) went into effect. Chapter 224 dissolved the Division of Health Care Finance and Policy (Division) and created a new, independent state agency—the Center for Health Information and Analysis (Center). The Center assumed many of Division's responsibilities, including the directive to collect, analyze, and report on relative price data.

The data collection and analysis for this report were conducted by the Division pursuant to M.G.L. c.118G, §6 and Chapter 288 of the Acts of 2010. Due to the timing of Chapter 224 implementation, this report was published by the Center.

Executive Summary

In recent years, provider price growth has driven the overall increase in health care spending in Massachusetts.[1] For commercially insured patients, the price a health care provider receives is determined by a contract between that provider and a health insurance payer. In many cases, providers and payers negotiate their own price schedule, which creates price variation for the same service within a payer's network between one provider and another provider. This report measures relative price: a comparison of the amount paid to a provider for a standard set of health care services relative to the network-wide average amount paid to the same type of providers in the payer's network.

Studying relative price is important because it provides insight into the different price levels paid by payers to health care providers within the payers' networks. If a provider has a higher relative price than another provider in the same network, it raises questions as to why prices vary to such an extent, and whether the difference in prices is reasonable or justifiable. As Massachusetts is trying to contain health care costs while maintaining or improving quality, relative price data provides transparency in provider price variation for consumers, providers, health care payers, and policy makers.

Key Findings

The Center for Health Information and Analysis (Center) reported data submitted by six payers in the Massachusetts commercial insurance market, including data from commercial, Medicare Advantage, Medicaid MCO, and Commonwealth Care plans if offered, based on standardized specifications. In conducting the analyses for the Center's report, the Division of Health Care Finance and Policy (Division) applied various analytic methods to understand and describe the data. These analyses by the Division yielded the following key findings:

- In every payer network, there was a significant variation in prices paid to providers for hospital services and physician services, and less variation in prices paid to most other provider types.
- The degree of price variation differed by payer.
    - For acute hospitals,[2] payers with larger market shares[3] generally had less price variation. Payers with smaller market shares generally had much wider price variation. Fallon Community Health Plan (Fallon) had the second smallest market share of payers analyzed and the largest degree of price variation. Fallon's highest priced hospital was paid nearly five times more than its lowest priced hospital. Conversely, Blue Cross Blue Shield of Massachusetts (Blue Cross Blue Shield) had the largest market share of payers analyzed and the lowest degree of variation. Blue Cross Blue Shield's highest priced hospital was paid less than three times more than its lowest priced hospital.

[1] Division of Health Care Finance and Policy Report, Recommendations of the Special Commission on Provider Price Reform, November 2011. Available at: http://www.mass.gov/chia/docs/g/p-r/special-comm-ppr-report.pdf (last accessed November 13, 2012).

[2] Hospital and Other Provider data is for calendar year 2010. Physician group data is for calendar year 2009.

[3] Payer market share is based on the number of covered lives (member months) in Massachusetts based on data reported to the Division for calendar year 2010 Total Medical Expenses.

  - For physician groups the trend was the same, but to a lesser degree. Tufts Health Plan had the lowest market share of payers analyzed. Its highest priced physician group was paid 2.9 times more than its lowest priced physician group. Blue Cross Blue Shield had the highest market share of payers analyzed. Its highest priced physician group was paid about 2.6 times more than its lowest priced physician group.

- Higher priced providers accounted for about four out of every five dollars paid by payers.
  - Total payments from commercial payers were more concentrated in higher priced providers both because of their relatively higher prices and because higher priced providers had higher volume on average than lower priced providers.
  - For acute hospital inpatient services, 86% of total inpatient payments and 74% of total inpatient discharges from commercial payers were concentrated in hospitals with inpatient relative prices above the network median.[4]
  - For acute hospitals, 80% of total payments from commercial payers were made to hospitals with blended relative prices above the network median.
  - For physician groups, 83% of total payments from commercial payers were made to physician groups with relative prices above the network median.
- Many providers had above median prices in some networks, and below median prices in other networks.[5] However, certain hospitals and physician groups consistently had higher relative prices or lower relative prices, regardless of payer.
  - Of the 65 acute care hospitals, 14 (22%) had consistently higher relative prices, and 17 (26%) had consistently lower relative prices.
  - Physician groups were even more dispersed. Of the 41 physician groups identified, 13 (32%) had consistently higher relative prices, and 17 (41%) had consistently lower relative prices.
  - Even if a provider had a higher *relative* price value in one payer's network compared to another payer's network, this does not imply whether the *absolute* dollar amount in the former network is higher or lower than in the latter network.
- This analysis does not describe *why* one provider has a higher relative price than another. That said, the following correlations were noted:
  - Hospitals with higher relative prices tended to be academic medical centers, teaching hospitals, specialty hospitals, and geographically isolated hospitals. A majority of the hospitals that had lower relative prices were disproportionate share hospitals (DSH).[6] After controlling for certain hospital characteristics, teaching hospital status was associated with higher relative prices, and DSH status was associated with lower relative prices.

4 Network median is the relative price value of the providers at the 50th percentile within a payer's network.

5 Relative price percentile ranks were used in order to derive a measure that would be comparable across all payers. This analysis identified the hospitals that had relative prices above and below the network median of all payers.

6 M.G.L. c. 118G, § 1 defines "disproportionate share hospital" as any acute hospital that exhibits a payer mix where a minimum of sixty-three per cent of the acute hospital's gross patient service revenue is attributable to Title XVIII and Title XIX of the federal Social Security Act other government payers and free care.

Introduction

Since 2000, Massachusetts residents have had the highest per capita health care expenditure among all 50 states.[7] In the last decade, health care per capita expenditure grew faster in hospital care than in all other types of services. The growth in per capita spending of Massachusetts' private insurance market has outpaced the growth in per capita spending of public payers, and has surpassed Massachusetts per capita gross state product (GSP) growth.[8] Provider price is one of the major determinants of health care expenditures. In Massachusetts, as in most states, prices paid by commercial payers to health care providers are the result of private contract negotiations. Relative price is a calculated measure that allows comparison of the price levels that result from these negotiations for each health care provider within a payer's network for a standard set of health care services and insurance products.[9] Studying relative price is important because it provides insight into the different price levels paid by payers to health care providers within each payer's network. If one provider is paid at a much higher rate than another in the same network, it raises questions as to why prices vary to such an extent, and whether the difference in prices is reasonable or justifiable. As Massachusetts is trying to contain health care cost while maintaining or improving quality, relative price data provides transparency in provider price variation for health care services for use by consumers, providers, health care payers, and policy makers.[10]

If a provider is paid at a much higher rate than another in the same network, it raises questions as to why prices vary to such an extent, and whether the difference in prices is reasonable or justifiable.

7 Centers for Medicare & Medicaid Services (CMS), Office of the Actuary, National Health Statistics Group, 2011.Available at: http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/res-tables.pdf (last accessed September 27, 2012).

8 Division of Health Care Finance and Policy Cost Trends Report, Massachusetts Health Care Cost Trends: Trends in Health Expenditures, June 2011, Mathematica Policy Research analysis of private, Medicare, and MassHealth claims for Massachusetts residents. Available at: http://www.mass.gov/chia/docs/cost-trend-docs/cost-trends-docs-2011/health-expenditures-report.pdf (last accessed November 13, 2012). Between 2007 and 2008, per capita spending of private insurance increased by 5.7%, compared to 4.8% of Medicare and 2.8% of MassHealth. Between 2008 and 2009, health care spending in the private insurance market grew 10.3%, while the Massachusetts per capita GDP decreased by 1.6%.

9 M.G.L. c. 118G, Section 6 and Section 13 of Chapter 288 of the Acts of 2010 required the Division of Health Care Finance and Policy to collect from private and public health care payers information regarding relative prices paid to every hospital, physician group, ambulatory surgical center, freestanding imaging center, mental health facility, rehabilitation facility, skilled nursing facility and home health provider in the payer's network, by type of provider and calculated according to a uniform methodology. The Division was further required to report and place this information on its website annually.

10 This is consistent with the data reporting requirements in Section 13 of Chapter 288 of the Acts of 2010, which states that the Division must annually "publish a report analyzing…comparative information for the purpose of assisting third-party payers and other purchasers of health services in making informed decisions."

This report examines the extent to which provider prices vary and identifies some underlying characteristics associated with price variation. This report also notes the extent to which significant differences in prices between providers of similar characteristics within the same payer's network is not fully explained. The measurement and reporting of relative price is somewhat new. Relative price methodology has been used to examine provider price variation in recent reports issued by the Office of the Attorney General (AGO) and the Division of Health Care Finance and Policy (Division). However, this report is different from previous studies because it contains relative price data submitted by a broader range of commercial health care payers and for more provider types than previously examined. Payers were required to report data in a standardized manner pursuant to regulations adopted by the Division.[11] The Division then applied various analytic methods to understand and describe the data.

Furthermore, provider relative price levels cannot be directly compared across payers; relative price is a ratio of provider prices compared to a specific payer's network average price.

Relative price is calculated to provide a uniform value that is adjusted for differences in the types of services delivered by providers and the types of insurance products under which providers were paid. Observed prices are based on all payments made by payers to hospitals, physician groups, and other providers, including payments that were not directly related to medical claims.

Note that while this report discusses providers' relative prices in the context of multiple payers, the reported relative price data cannot be used to draw conclusions about actual price levels between payers. Relative price is a ratio of provider prices compared to a specific payer's network average price. Comparing individual reported relative prices between payers is not meaningful.[12]

[11] 114.5 CMR 23.00: Payer Reporting of Total Medical Expenses and Relative Prices.

[12] For example, the average payment from payer A is $200, while the average payment from payer B is $100, then a single provider's relative price of 0.8 at payer A would represent an absolute payment of $160, while the same provider's relative price of 1.5 at payer B would represent an absolute payment of $150. This illustrates that differences in relative price may not correlate to differences in actual payments. This report does not include information regarding average payment levels at different payers..

Relative Price in the Broader Context of Health Care Reform

Overall health care spending in Massachusetts is rising, and spending growth is greatest in the private health insurance market.[13] In recent years, provider price growth has been the principal driver in the overall increase in health care spending in Massachusetts.[14] Between 2008 and 2009, overall health care spending for hospital inpatient services grew 7.3%. Pure price growth accounted for more than 85% of the increase in overall health care spending for hospital inpatient services.[15] For hospital outpatient services, pure price growth accounted for nearly all of the increase in total spending over the same period.[16] For physician and other professional services, total health care spending grew 5.5% between 2008 and 2009. [17] Pure price growth accounted for nearly 90% of this overall increase.[18]

Pure price growth accounted for more than 85% of the increase in overall health care spending for hospital inpatient services.[15]

The Special Commission on Provider Price Reform (Special Commission) reported in November 2011 that a wide disparity in provider prices was a contributing factor to pure price growth in the private health insurance market. Accordingly, the Special Commission provided recommendations to the legislature for mitigating the impact of provider price variation on the increase in overall health care spending.[19] Among these recommendations was a call to increase transparency related to price variation, and to research acceptable and unacceptable factors for price variation before further determining how to reduce unacceptable factors for variation.[20] This report on relative prices is intended to support this recommendation by reporting provider relative price levels and variation within payer networks. However, this report does not consider whether a particular characteristic associated with price variation is acceptable or unacceptable.

13 Division of Health Care Finance and Policy Report, Recommendations of the Special Commission on Provider Price Reform, November 2011. Available at: http://www.mass.gov/chia/docs/g/p-r/special-comm-ppr-report.pdf (last accessed November 13, 2012). From 1991 to 2000, the health care expenditure growth rate in Massachusetts was 5.0% compared with 4.8% for the national average. From 2000 to 2004, the health care expenditure growth rate for Massachusetts was 7.4% compared with 6.9% for the national average. Based on this trend, health care spending per capita in Massachusetts is projected to increase by approximately 70% from $10,262 in 2010 to $17,872 in 2020. Id.

14 Division of Health Care Finance and Policy Report, Recommendations of the Special Commission on Provider Price Reform, November 2011. Available at: http://www.mass.gov/chia/docs/g/p-r/special-comm-ppr-report.pdf (last accessed November 13, 2012).

15 *Id*. Other factors include: distribution of care across hospitals and locations, number of admissions, and service mix.

16 Division of Health Care Finance and Policy Report, Recommendations of the Special Commission on Provider Price Reform, November 2011. Available at: http://www.mass.gov/chia/docs/g/p-r/special-comm-ppr-report.pdf (last accessed November 13, 2012).

17 *Id*.

18 *Id*.

19 *Id.*

20 *Id*.

Data and Methodology

This report examines price relativities of various provider types and various insurance types.[21] The Division collected data from the ten largest payers in the Massachusetts commercial health insurance market and reported on the six payers that submitted complete data sets within the timeframe for inclusion in this report.[22] The Center also collected and compiled data from Medicare Advantage, Medicaid Managed Care Organization (MCO), and Commonwealth Care insurance products if offered by these ten payers.[23]

Relative price is a calculated measure that compares different provider prices within a payer's network for a standard mix of insurance products (e.g. HMO, PPO, and Indemnity). For hospital inpatient services, the Division calculated a product-adjusted base rate for each hospital. This product-adjusted base rate was further adjusted for hospital-specific case mix and network average product mix[24] within each insurance category (e.g. Commercial, Medicare, or Medicaid). Each hospital's inpatient relative price is the quotient of its product-adjusted base rate divided by the payer's network average product-adjusted base rate. Non-claims payments were also included in the relative price calculation.[25]

For hospital outpatient services, physician groups, and other providers, relative prices were calculated for a standard set of services and insurance products within a payer's network. Using the provider-specific service multiplier[26] for each service category within a payer's network, the Division calculated a base service- and product-adjusted multiplier for each provider, which was adjusted for the network average service mix and network average product mix within each insurance category. A product-adjusted non-claims multiplier was also calculated for each provider. The base service- and product-adjusted multiplier was then summed with the product-adjusted non-claims multiplier to produce an adjusted rate for each provider. The provider's adjusted rate was then divided by the network average adjusted rate to arrive at that provider's relative price.

The Center reported relative prices for providers that met revenue thresholds. Please see the Technical Appendix for more information on data and methodology, including revenue thresholds and the list of acute hospitals that met the revenue thresholds for blended relative prices but had low inpatient discharge volume. The Division intended to examine the price variation among providers in a comprehensive and consistent fashion, and established revenue thresholds such that a broad presentation of the providers within a payer's network could be included in the examination. The Division applied a revenue threshold rather than a volume threshold for all provider types as there was no standard utilization measure reported for hospital outpatient services, professional services, or services rendered by other providers. The same revenue threshold was used for acute hospital inpatient, hospital outpatient, and all other provider types for the commercial insurance category. The revenue thresholds for non-acute hospital inpatient services were adjusted to reflect the price differences between acute and non-acute inpatient services and between different insurance categories. In some cases, outlier payments may skew hospital inpatient relative prices. For example, a hospital may have a small number of inpatient discharges but could have received larger payments from a payer.

[21] Provider types include: acute hospitals, psychiatric hospitals, chronic hospitals, rehabilitation hospitals, physician groups, freestanding ambulatory surgical centers, community health centers, community mental health centers, freestanding clinical laboratories, freestanding diagnostic imaging centers, home health agencies, and skilled nursing facilities. Insurance types include: commercial, Medicare Advantage, Medicaid MCO, and Commonwealth Care.

[22] The ten largest commercial health insurance companies were identified based on CY2009 Health Safety Net surcharge payment data. Only six payers submitted data that met all reporting requirements by the time the Division analyzed the data.

[23] Payer-specific relative price data may be found in the Data Appendix.

[24] Product mix refers to the percent of a payer's network payments that is attributed to HMO and POS, PPO, or Indemnity insurance products.

[25] For detailed information on the relative price calculation, please see Technical Appendix.

[26] A multiplier is the percent mark-up a payer agrees to pay the specific provider based on the payer's standardized fee schedule for each service category on which the payer and provider negotiate.

Acute Hospital Relative Price Analysis

Relative prices among hospitals varied substantially across each payer's network. Some of the price differentials were associated with certain hospital characteristics, such as teaching status and DSH status. The vast majority of payers' payments to acute hospitals were concentrated in higher priced hospitals. Variations in relative price were not randomly distributed. Although most hospitals had higher relative prices from some payers and lower relative prices from others, some hospitals had higher relative prices from all payers, while other hospitals had lower relative prices from all payers.

The Division examined data from the following commercial payers for this section: Aetna, Blue Cross Blue Shield of Massachusetts (Blue Cross Blue Shield), Fallon Community Health Plan (Fallon), Harvard Pilgrim Health Care (Harvard Pilgrim), Tufts Health Plan (Tufts), and UniCare Life and Health Insurance Company (UniCare). The Division used a combination of inpatient and outpatient price relativities to develop a single blended[27] relative price for calendar year 2010 (CY 2010) to examine prices paid to acute hospitals. It is important to note that hospital relative prices have been adjusted to reflect differences between hospital inpatient acuity for inpatient hospital services.

Relative Price Variation across Payer Networks

For Massachusetts acute hospitals, relative prices varied significantly across payers' networks for CY 2010 (Table 1). Fallon had the widest variation in relative prices between acute hospitals, with its highest priced hospital paid almost five times that of its lowest priced hospital. Blue Cross Blue Shield had the narrowest variation in relative prices between acute hospitals, with its highest priced hospital paid just under three times that of its lowest priced hospital.

Payers also differed in the distribution of variation within their networks. Aetna and Blue Cross Blue Shield had the largest percentage of hospitals (79% and 78%, respectively) with relative prices within 25% above or below their network average relative price. Conversely, Fallon had only 50% of its hospitals with relative prices within 25% above or below its network average relative price. The number of hospitals with relative price levels within a given percent range of a payer's network average relative price may indicate how much of a payer's network is tightly grouped around the average, rather than being spread more evenly across the entire range of variation.

[27] The Division blended hospital relative price by weighting the hospital inpatient and hospital outpatient relative price by the network average distribution for hospital inpatient and hospital outpatient payments within a given payer.

Table 1: Hospital Network Variation in Blended Relative Price, CY 2010

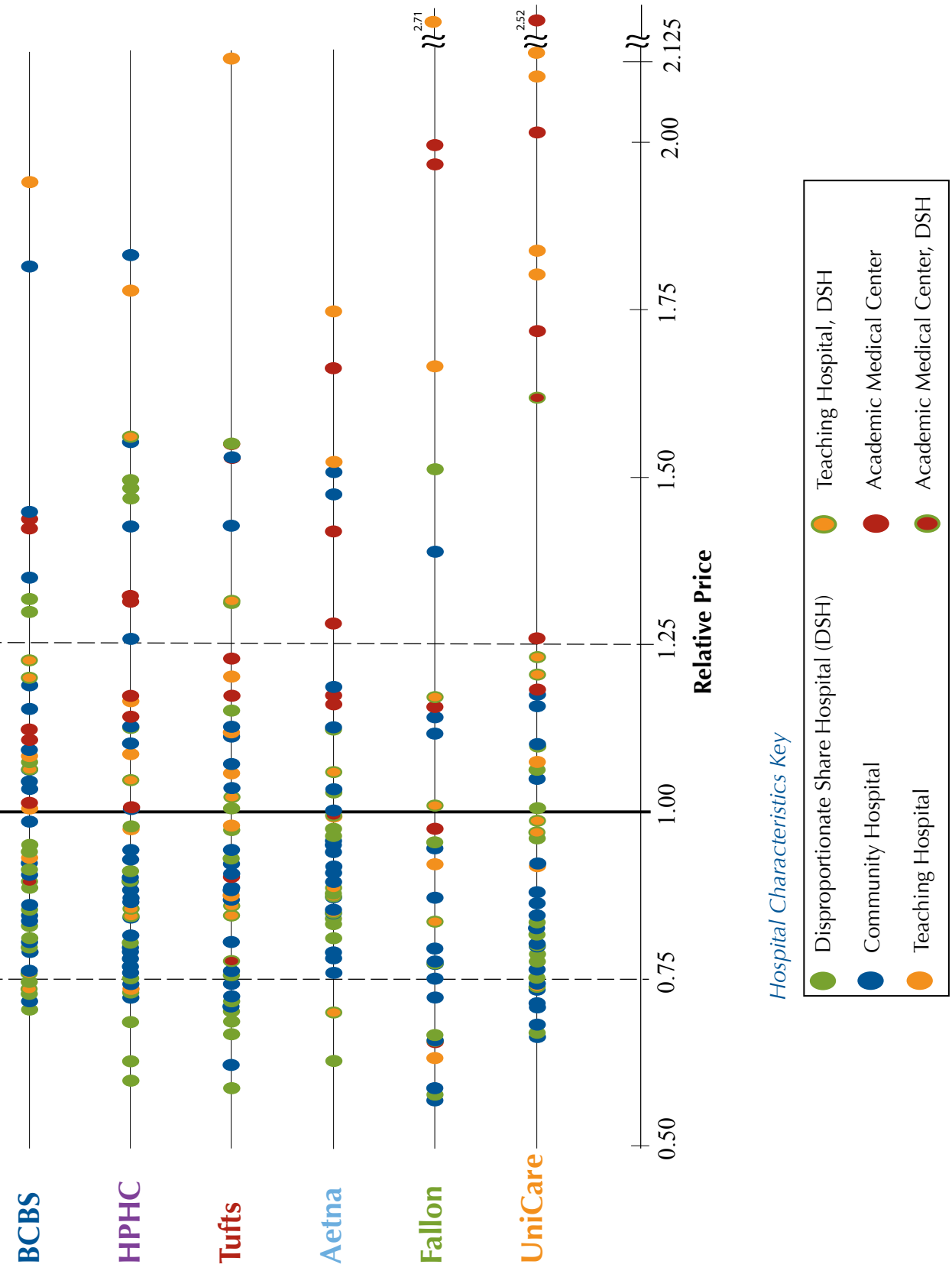
Payer (ordered by market share*)	Lowest Relative Price	Highest Relative Price	Highest RP to Lowest RP Ratio	Percent of providers within 25% of network average RP
Blue Cross Blue Shield	.71	1.94	2.73	78%
Harvard Pilgrim	.60	1.83	3.05	63%
Tufts	.59	2.11	3.58	68%
Aetna	.63	1.75	2.78	79%
Fallon	.57	2.71	4.75	50%
UniCare	.66	2.52	3.82	63%

* The order of payers presented in this table is based on each payer's market share, measured by each payer's number of covered lives among Massachusetts residents based on data submitted to the Division of Health Care Finance and Policy for 2010 Total Medical Expenses.

When examining the distribution of relative prices within each payer's network, the payers with larger market shares tended to have more hospitals with relative prices close to the network average.

When examining the distribution of relative prices within each payer's network, the payers with larger market shares tended to have more hospitals with relative prices close to the network average. This may reflect greater relative negotiating power of the larger payers. Blue Cross Blue Shield, Harvard Pilgrim, and Tufts had larger market shares and also had more hospitals with relative prices concentrated near their respective network average relative prices (Figure 1). Fallon and UniCare had smaller market shares and also tended to have greater dispersion of hospital relative prices relative to their respective network average relative prices.

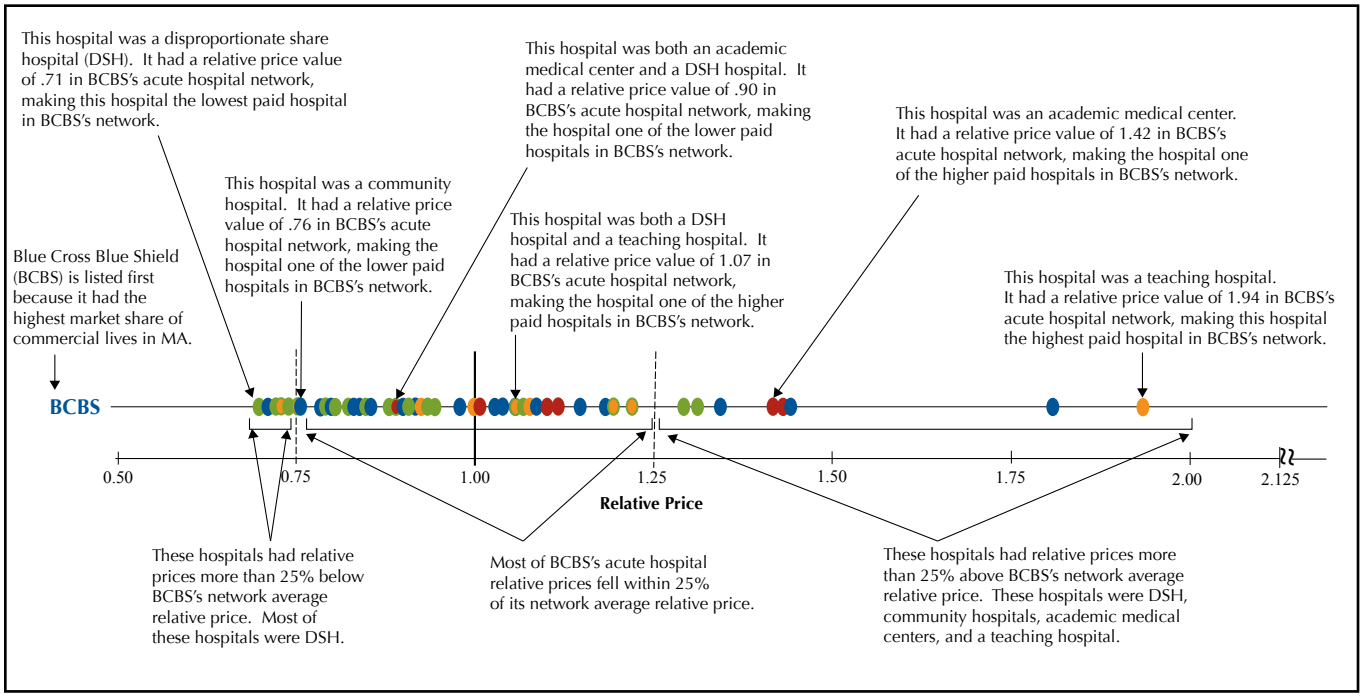
Figure 1 – Distribution of 2010 Acute Hospital Blended Relative Prices by Payer



How to Read Figure 1:

This figure shows the distribution of acute hospitals' blended relative prices for each payer. The payers are ordered by market share (i.e. number of covered lives), with the payer with the highest market share on top. The circles located within the two dashed lines represent hospitals within 25% of each payer's network average relative price. Hospitals are distinguished by their hospital characteristics, as described in the legend.

Figure 1 Sample



Relative Price Variation among Hospitals

Figure 2 shows the blended relative prices of all acute hospitals for all payers, organized by statewide market share, as measured by the number of inpatient discharges of commercially insured patients.[28] In general, hospitals with larger market shares tended to have higher relative prices. For example, Massachusetts General Hospital and Brigham and Women's Hospital had the largest market shares, and their relative prices for all payers were among the highest. Conversely, hospitals with lower market shares tended to have lower relative prices. For example, Merrimack Valley Hospital and Wing Memorial Hospital had both smaller market shares and lower relative prices.

In general, hospitals with larger market shares tended to have higher relative prices.

One exception to the above mentioned trend was found in geographically isolated hospitals,[29] including Fairview Hospital, Nantucket Hospital, and Martha's Vineyard Hospital. These hospitals had relative prices that were significantly above all network average relative prices despite the hospitals' lower statewide commercial market share. Other geographically isolated hospitals, including Falmouth Hospital, Berkshire Medical Center, and Cape Cod Hospital, also had higher relative prices compared to other hospitals with the same commercial market share. This suggests that geographic isolation could be a factor in price level negotiations although it is not clear what the causal mechanism is (e.g. local provider market power versus higher cost of delivering care in such settings). The only geographically isolated hospital with a consistently lower relative price was Athol Memorial Hospital, which was also a disproportionate share hospital (DSH).

Acute hospitals that had higher commercial market shares and higher relative prices across payers shared similar characteristics.[30] Academic medical centers and teaching hospitals[31] tended to have higher relative prices and also had higher shares in the commercial market.[32] Conversely, hospitals tended to have lower relative prices and also had lower shares in the commercial market.[33] These correlations make it difficult to conclusively evaluate whether price was driven more by market share or by teaching or DSH status.

Prior reports have found that the level of variation in hospital performance on available quality measures studied was far less than the level of variation observed in provider prices. According to the Division's 2011 report, *Price Variation in Massachusetts Health Care Services*, there was very little measurable variation in quality among Massachusetts hospitals for a number of common diagnosis related groups (DRGs), suggesting that Massachusetts hospitals tended to have similar and consistent performance for the examined quality measures.[34]

28 Statewide market share, calculated in this way, reflects a combination of hospital size and commercial payer mix.

29 For this report, a geographically isolated hospital is defined as a sole acute hospital within a 20 mile radius.

30 Characteristics considered include: academic medical centers, disproportionate share status, geographically isolated hospitals, specialty hospitals, and teaching hospitals.

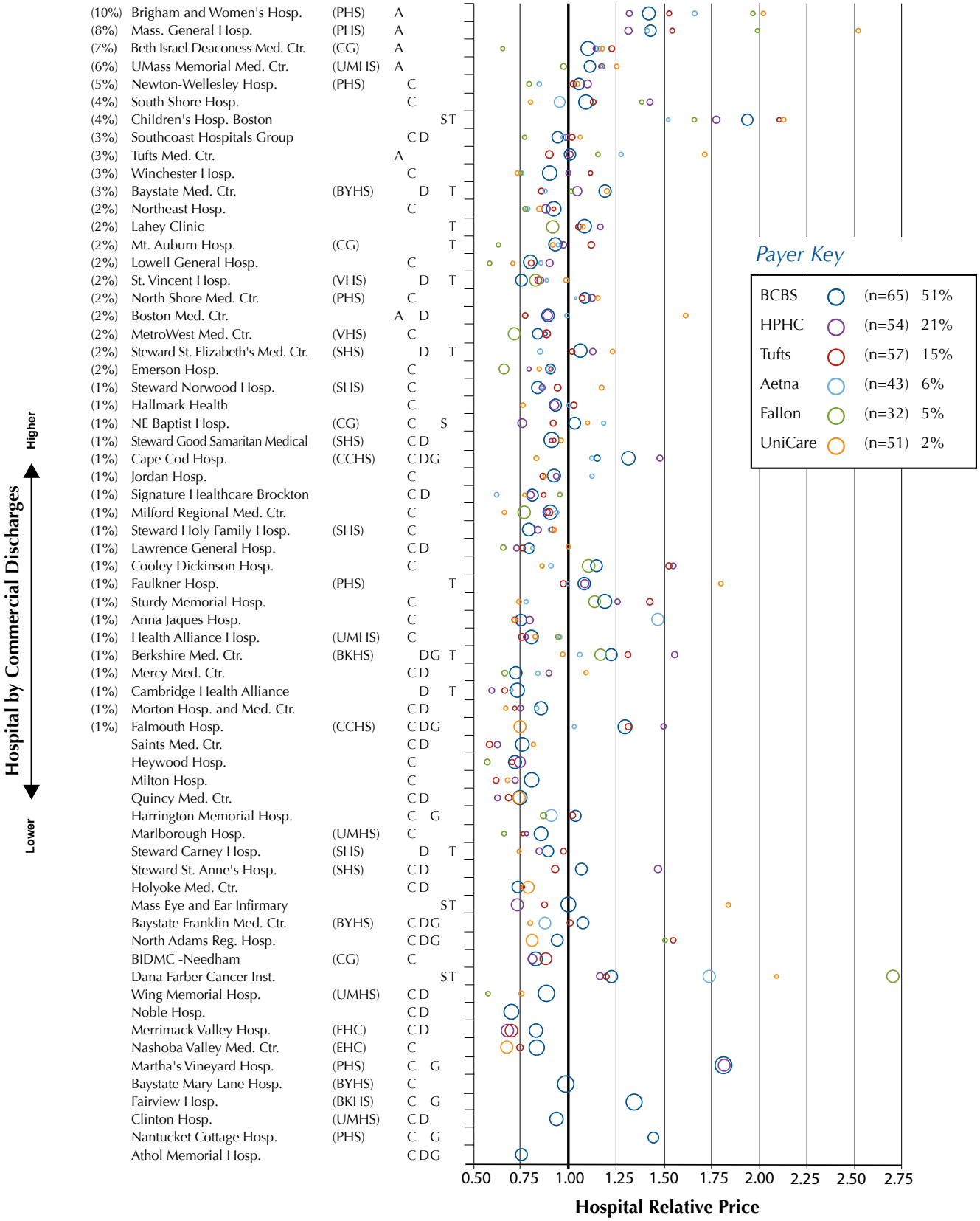
31 Academic medical centers (AMCs) are a subset of teaching hospitals. AMCs are further defined in the Office of the Attorney General's March 2010 Cost Trends Report, Examination of Cost Trends and Cost Drivers, as facilities "characterized by (1) extensive research and teaching programs and (2) extensive resources for tertiary and quaternary care, and are (3) principal teaching hospitals for their respective medical schools and (4) full service hospitals with a case mix intensity greater than 5% above the statewide average." The referenced report is available at: http://www.mass.gov/ago/docs/healthcare/2011-hcctd-full.pdf (last accessed September 27, 2012).

32 Massachusetts General Hospital and Brigham and Women's Hospital, both academic medical centers and teaching hospitals, reported the highest relative prices and had the largest number of inpatient discharges of commercially insured patients.

33 Mercy Medical Center and Holyoke Medical Center, both DSH hospitals, reported the lowest relative prices and had a lower number of inpatient discharges of commercially insured patients.

34 Division of Health Care Finance and Policy Report, Massachusetts Health Care Cost Trends: Price Variation in Health Care Services, May 2011. Available at: http://www.mass.gov/chia/docs/cost-trend-docs/cost-trends-docs-2011/price-variation-report.pdf (last accessed November 13, 2012).

Figure 2 - 2010 Acute Hospital Blended Relative Prices



How to Read Figure 2:

This figure shows the relative price for each hospital, for each payer. Data is displayed for acute hospitals where the amount of revenue from a payer met the applicable revenue threshold. The hospitals are ordered by market share, with the percentage of each hospital's share of statewide inpatient discharges of commercially insured patients listed on the left. The characteristics of each hospital and the system affiliation are shown to the right of the hospital's name.

Hospital Characteristics Key

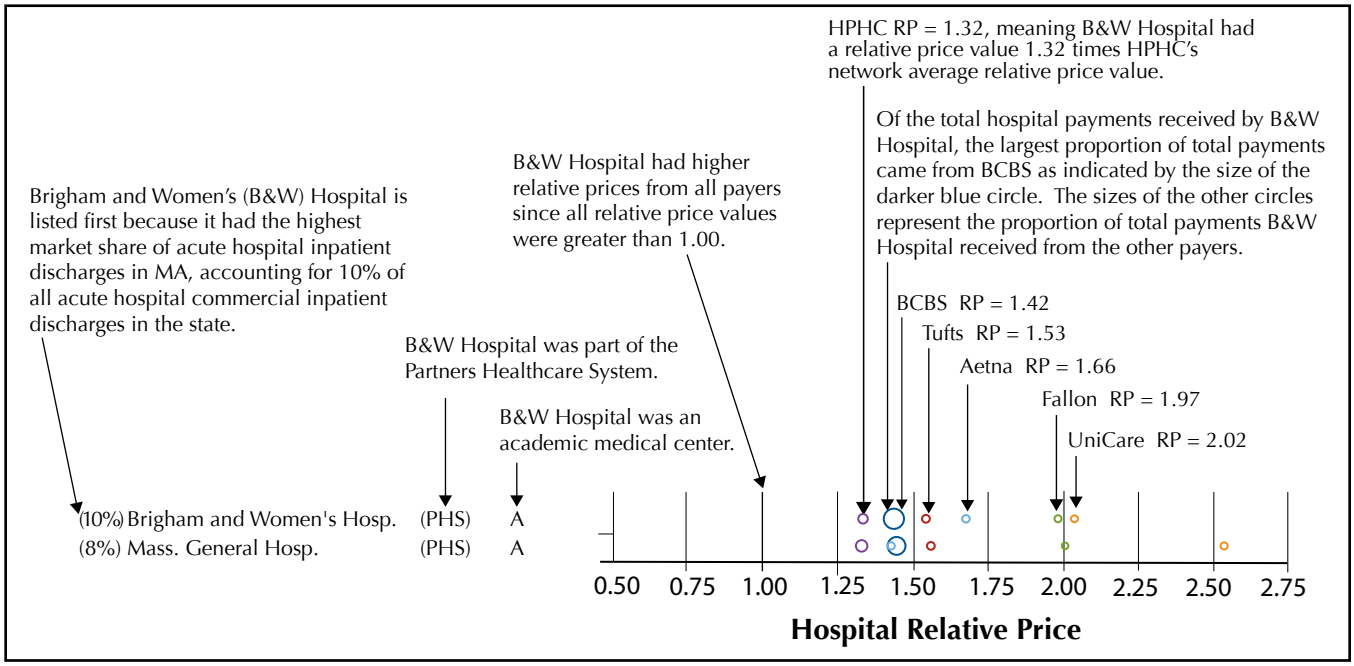
A	=	Academic Medical Center (n=6)
C	=	Community Hospital (n=47)
D	=	Disproportionate Share Hospital (n=26)
G	=	Geographically Isolated Hospital (n=10)
S	=	Specialty Hospital (n=4)
T	=	Non-Academic, Teaching Hospital (n=12)

System Affiliation Key

BKHS	=	Berkshire Health System (n=2)
BYHS	=	Baystate Health System (n=3)
CCHS	=	Cape Cod Health System (n=2)
CG	=	CareGroup (n=4)
EHC	=	Essent Health Care (n=2)
PHS	=	Partners HealthCare System (n=7)
SHS	=	Steward Health System (n=6)
UMHS	=	UMass Health System (n=5)
VHS	=	Vanguard Health System (n=2)

On the plot area, each circle represents the relative price value for a hospital; the size of the circle represents the size of that payer in the hospital's payer mix by payments received from studied payers. The bold line represents the average relative price within each payer's network: 1.0. The circles falling to the right side of the bold line represent higher than average relative price within a payer's network, and the circles to the left of the bold line represent lower than average relative price within a payer's network. Some hospitals have only one circle for a single payer; the Technical Appendix describes why other data may not have been available. Because relative price is a ratio dependent on a specific payer's particular price scale, the relative price values can only be directly compared within that payer's network, and not between networks.

Figure 2 Sample



Relationship between Acute Hospital Inpatient Relative Prices and Inpatient Payments and Discharges

To examine the extent to which hospital inpatient payments and volume were concentrated in the higher priced hospitals in a payer's network, the Division grouped hospitals into quartiles according to their inpatient relative price values and aggregated the payments and discharges for the hospitals in each quartile. The highest priced quartile included the hospitals that ranked in the top 25 percent of the relative price values in a payer's network. Please note that this analysis cannot be used to draw causal conclusions. For instance, if volume is correlated with teaching status, case intensity, or high quality the reason for higher payments may be unrelated to volume. As Figure 3 indicates, payers' total inpatient payments and inpatient discharges were both concentrated in the higher priced hospitals. The hospitals in the highest relative price quartile (Q4) received 66% of the total inpatient payments and accounted for 48% of the total inpatient discharges. The hospitals that had relative price values above the network median received 86% of total inpatient payments and accounted for 74% of the total inpatient discharges. The hospitals that had relative price values at or below the network median received only 14% of total inpatient payments and accounted for 26% of the total inpatient discharges. The disparity between the proportion of total inpatient discharges and the proportion of total inpatient payments illustrates that price differentials contribute materially to the distribution of network payments received by hospitals. This analysis suggests that hospitals that received higher prices tended to be hospitals with higher volume. This observation should inform further research.

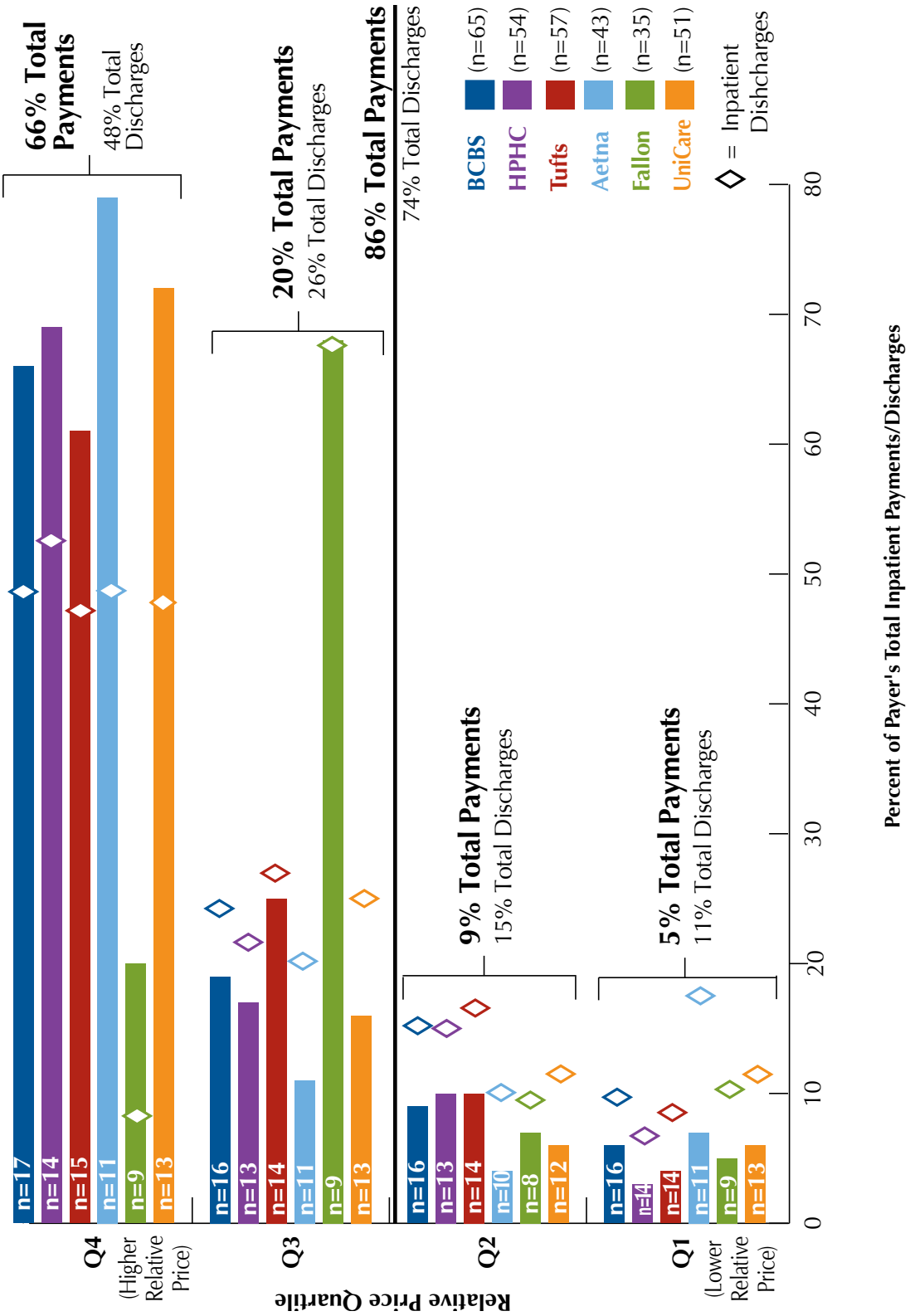
Table 2: Distribution of Total Inpatient Payments to Hospitals by Relative Price Quartile by Payer

	Aetna (n=43)	BCBS (n=65)	Fallon (n=35)	HPHC (n=54)	Tufts (n=57)	UniCare (n=51)
Q4	79%	66%	20%	69%	61%	72%
Q3	11%	19%	68%	17%	25%	16%
Q2	4%	9%	7%	10%	10%	6%
Q1	7%	6%	5%	3%	4%	6%

Table 3: Distribution of Total Hospital Inpatient Discharges by Relative Price Quartile by Payer

	Aetna (n=43)	BCBS (n=65)	Fallon (n=35)	HPHC (n=54)	Tufts (n=57)	UniCare (n=51)
Q4	49%	47%	9%	54%	47%	48%
Q3	21%	25%	68%	23%	28%	26%
Q2	12%	16%	11%	16%	17%	13%
Q1	18%	12%	11%	7%	8%	13%

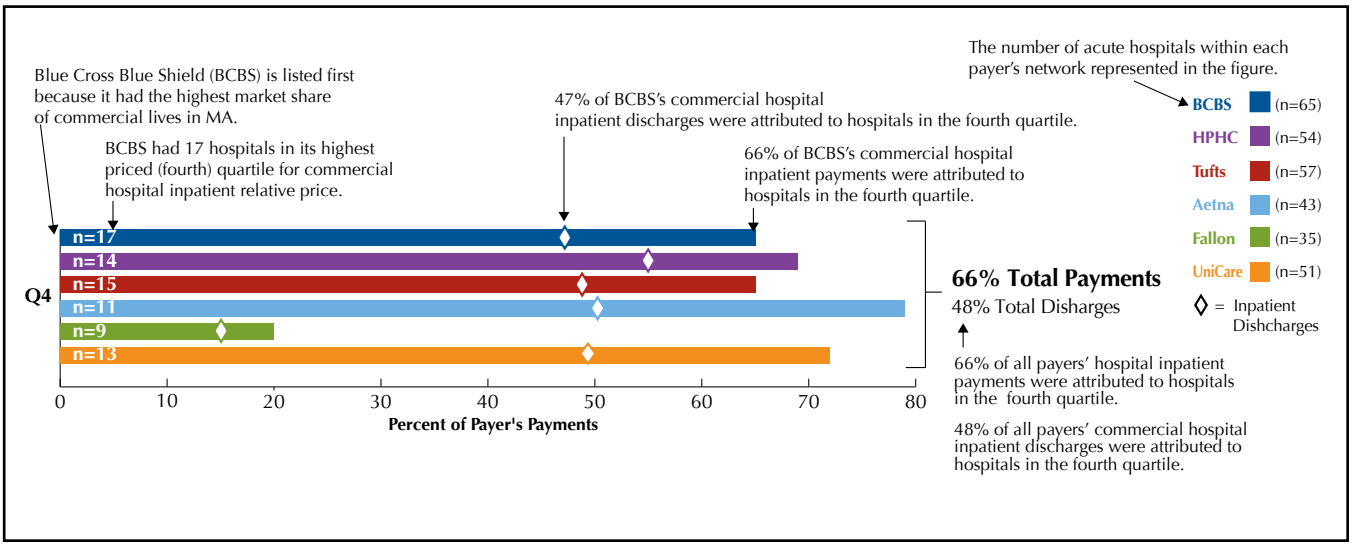
Figure 3 - 2010 Acute Hospital Inpatient Payments and Inpatient Discharges by Inpatient Relative Price Quartile



How to Read Figure 3:

Each bar on this figure indicates, for each payer, the percent of total inpatient payments made to hospitals in each quartile for that payer, where the quartiles are based on inpatient relative price values. The diamond represents the percent of total inpatient discharges attributed to those hospitals in that quartile for that payer. The number inside of the bar represents the number of hospitals for that payer within that quartile. Because relative prices may vary between payers, a given hospital may appear in different quartiles for different payers. The fourth quartile (Q4) represents the highest priced hospitals for a given payer, while the first quartile (Q1) represents the lowest priced hospitals.

Figure 3 Sample



Relationship between Acute Hospital Blended Relative Prices and Total Payments

Similar to the analysis in the previous section (which focused on inpatient payments and volume only), the Division examined to what extent hospital total inpatient and outpatient payments were concentrated in the higher priced hospitals in a payer's network (there are no consistent measures of outpatient volume available). The Division grouped hospitals into quartiles according to their blended relative price values and aggregated the payments for the hospitals in each quartile. The highest priced quartile included the hospitals that ranked in the top 25 percent of the relative price values in a payer's network. As Figure 4 indicates, payers' total hospital payments were concentrated in the higher priced hospitals. The hospitals in the higher two relative price quartiles that had relative price values above the network median received 80% of total hospital payments. Hospitals in the lower two relative price quartiles that had relative price values at or below the network median price [35] received only 20% of total hospital payments.

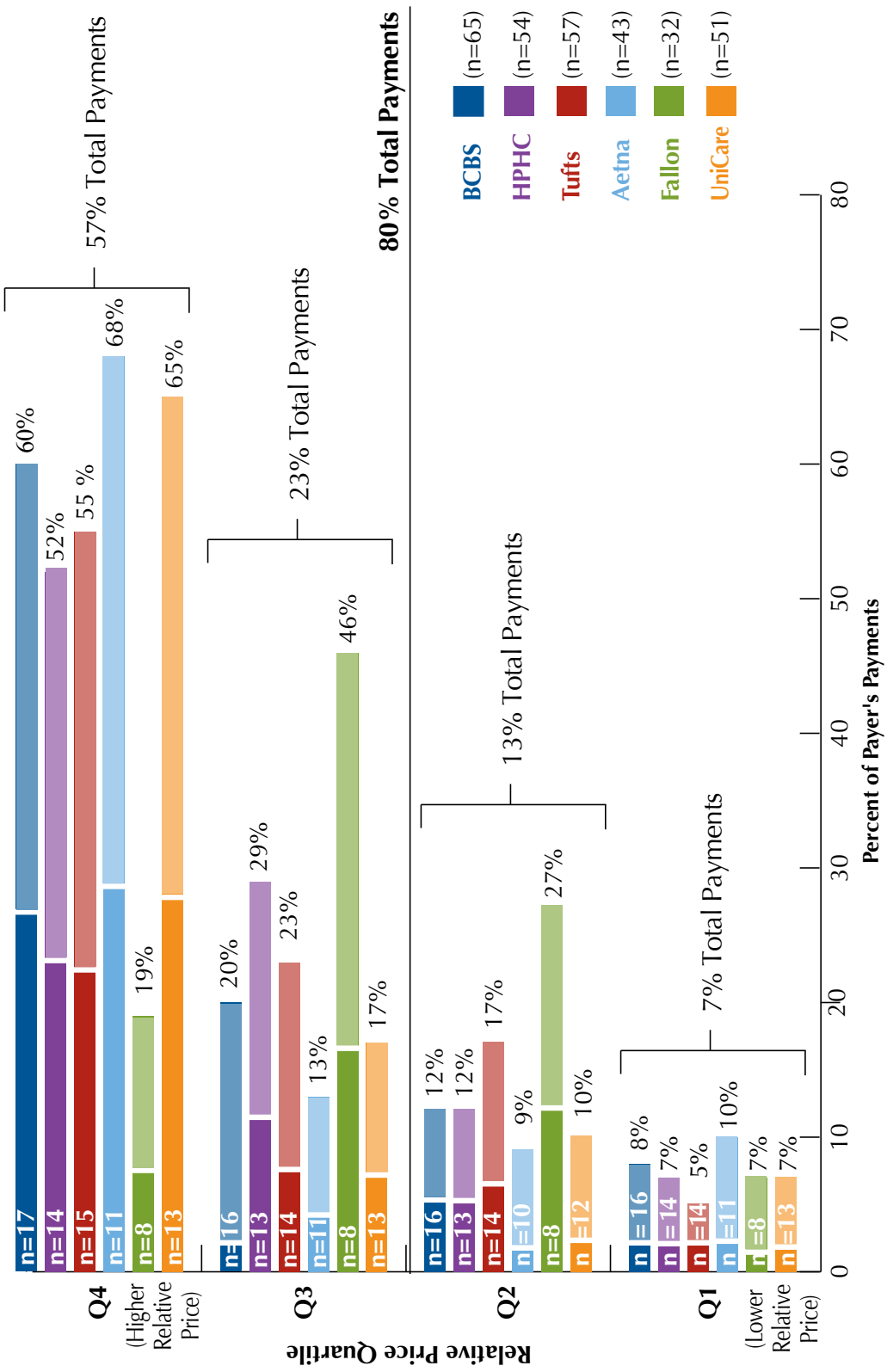
Table 4: Distribution of Total Payments to Hospitals by Relative Price Quartile by Payer

	Aetna (n=43)			BCBS (n=65)			Fallon (n=32)		
	Total	% Inpt	% Outpt	Total	% Inpt	% Outpt	Total	% Inpt	% Outpt
Q4	68%	46%	54%	60%	45%	55%	19%	38%	62%
Q3	13%	31%	69%	20%	45%	55%	46%	35%	65%
Q2	9%	30%	70%	12%	37%	63%	27%	43%	57%
Q1	10%	30%	70%	8%	37%	63%	7%	30%	70%

	HPHC (n=54)			Tufts (n=57)			UniCare (n=51)		
	Total	% Inpt	% Outpt	Total	% Inpt	% Outpt	Total	% Inpt	% Outpt
Q4	52%	46%	54%	55%	42%	58%	65%	44%	56%
Q3	29%	45%	55%	23%	33%	67%	17%	39%	61%
Q2	12%	38%	62%	17%	39%	61%	10%	32%	68%
Q1	7%	36%	64%	5%	23%	77%	7%	31%	69%

[35] Hospitals with relative prices exactly on the 50th percentile were grouped in the second quartile.

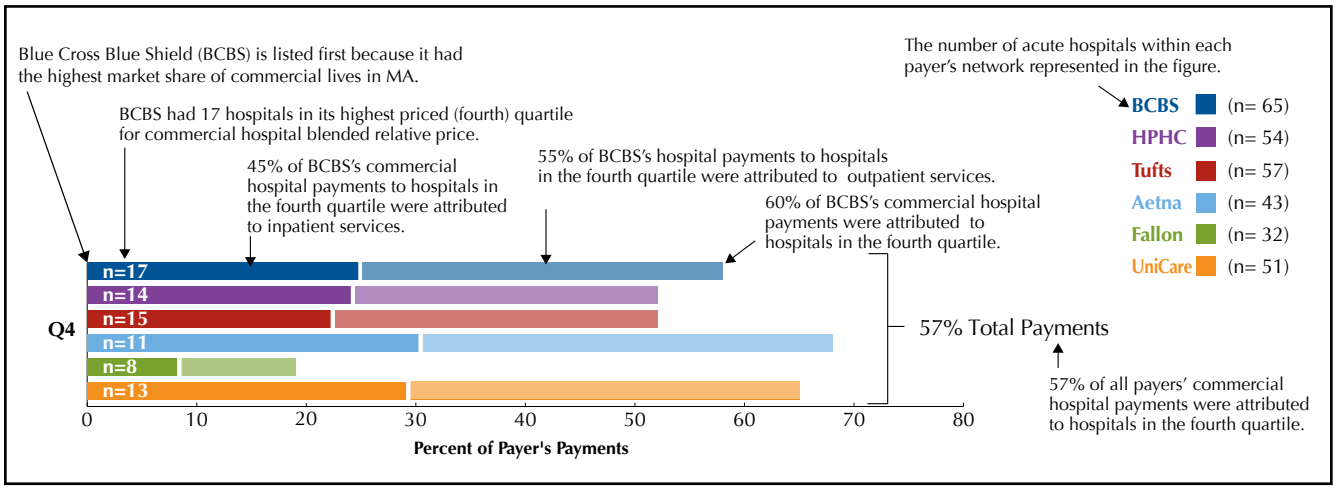
Figure 4 – 2010 Acute Hospital Inpatient and Outpatient Payments by Blended Relative Price Quartile



How to Read Figure 4:

Each bar on this figure indicates the percent of total inpatient and outpatient payments made to hospitals in that quartile for that payer, where the quartiles are based on blended relative price values. The darker shade on the left side of the bar represents the percent of that payer's quartile payments attributed to inpatient payments, and the lighter shade on the right side of the bar represents the percent of that payer's quartile payments attributed to outpatient payments. Because relative prices may vary between payers, a given hospital may appear in different quartiles for different payers. The fourth quartile (Q4) represents the highest relative priced hospitals for a given payer, while the first quartile (Q1) represents the lowest relative priced hospitals.

Figure 4 Sample



Acute Hospitals with Consistently Higher and Consistently Lower Relative Prices

For Massachusetts acute hospitals, the Division examined each hospital's range of variation in blended relative prices across payers within each payer's network for CY 2010. Relative price percentile rank was used as a measure that is comparable across all payers.[36] This analysis identified the hospitals that had relative prices above and below the network median of all payers.[37] Figure 5 illustrates how hospitals are stratified across all payers: which hospitals had higher blended relative prices for all payers, which had lower blended relative prices for all payers, and which fell into neither of these groups.

A hospital that had a consistent ranking among all payers is represented by a short line. For instance, Brigham and Women's Hospital was often ranked among the highest relative prices; Steward Norwood Hospital was often ranked near the 50th percentile of relative prices; and Cambridge Health Alliance was often ranked among the lowest relative prices. A hospital that had widely varying relative prices is represented by a long line. The most extreme example is Sturdy Memorial Hospital, which ranged from nearly the 90th percentile in one payer's network to less than the 10th percentile in another. This indicates that for some payers, Sturdy was among the higher priced hospitals, while for other payers, Sturdy was among the lower priced. As discussed above, these relative price rankings do not indicate the absolute prices received by Sturdy from different payers.

- Fourteen of the 65 acute hospitals (22%) consistently ranked above the 50th percentile of relative price across multiple payers and received 49% of total commercial payments for all hospitals.
- Seventeen of the 65 acute hospitals (26%) consistently ranked below the 50th percentile of relative price across multiple payers and received 7% of total commercial payments for hospitals.
- Thirty-four of the 65 acute hospitals (52%) were located within the middle of the relative price percentile range, indicating that they had higher relative prices from some payers, but lower relative prices from others.

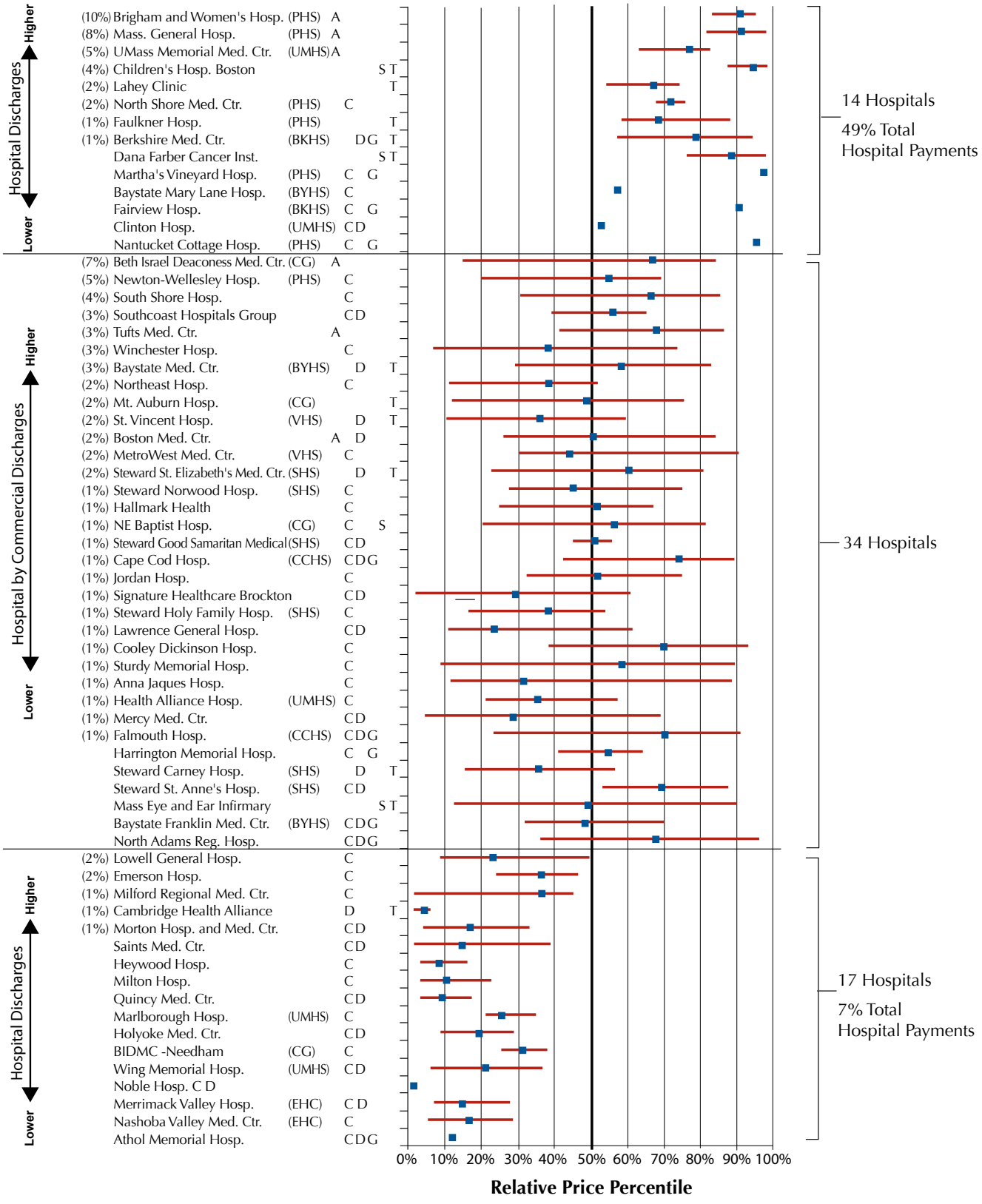
The majority of the hospitals in the consistently higher relative price percentile range across payers were academic medical centers, teaching hospitals, geographically isolated hospitals, and specialty hospitals. For example, Massachusetts General Hospital, Brigham and Women's Hospital, Children's Hospital Boston, Fairview Hospital, Martha's Vineyard Hospital, and Nantucket Cottage Hospital each exhibited one or more of these characteristics and were located in the top relative price percentile range. Additionally, most of the hospitals in the consistently higher relative price percentile range were affiliated with hospital systems that generally had higher relative prices. These systems included Baystate Health System, Berkshire Health System, and Partners HealthCare System. On the other hand, most of the hospitals in the consistently lower relative price percentile range were not affiliated with a hospital system.

The majority of hospitals in the consistently lower relative price percentile range were disproportionate share hospitals (DSH). Quincy Medical Center, Holyoke Medical Center, and Merrimack Valley Hospital were examples of hospitals that were consistently ranked in the lower relative price percentile range and served a disproportionate number of patients receiving publicly funded health care services.

[36] Percentile rank uses the same scale for all of the payers, so that when relative price is ordered based on the percentile rank, the relative position of the provider may be compared across all payers.

[37] Every provider data point was included that met the revenue threshold, even if only one payer reported for that provider.

Figure 5 – Range of Percentile Ranks of 2010 Acute Hospital Blended Relative Prices



How to Read Figure 5:

For each hospital, the variation in ranking, or percentile, between payers is indicated by a horizontal line that spans from lowest rank to highest rank. Accordingly, short lines indicate hospitals that had consistent rankings across payers, and long lines show wide variation in ranking. The box in the middle shows the average percentile rank. Hospitals with only one box value represent hospitals that had only one relative price percent rank value reported for a single payer.[38] The vertical bold line highlights the 50th percentile. On the right side of the 50th percentile line are hospitals that had relative prices from all payers in the top half of the relative price distribution.

This figure is arranged into three sections. The top section includes the 14 hospitals that had relative prices above the network median for all payers. Conversely, the bottom section shows the 17 hospitals that had relative prices below the median for all payers. The rest of the hospitals appear in the middle, and their lines span across the 50th percentile.

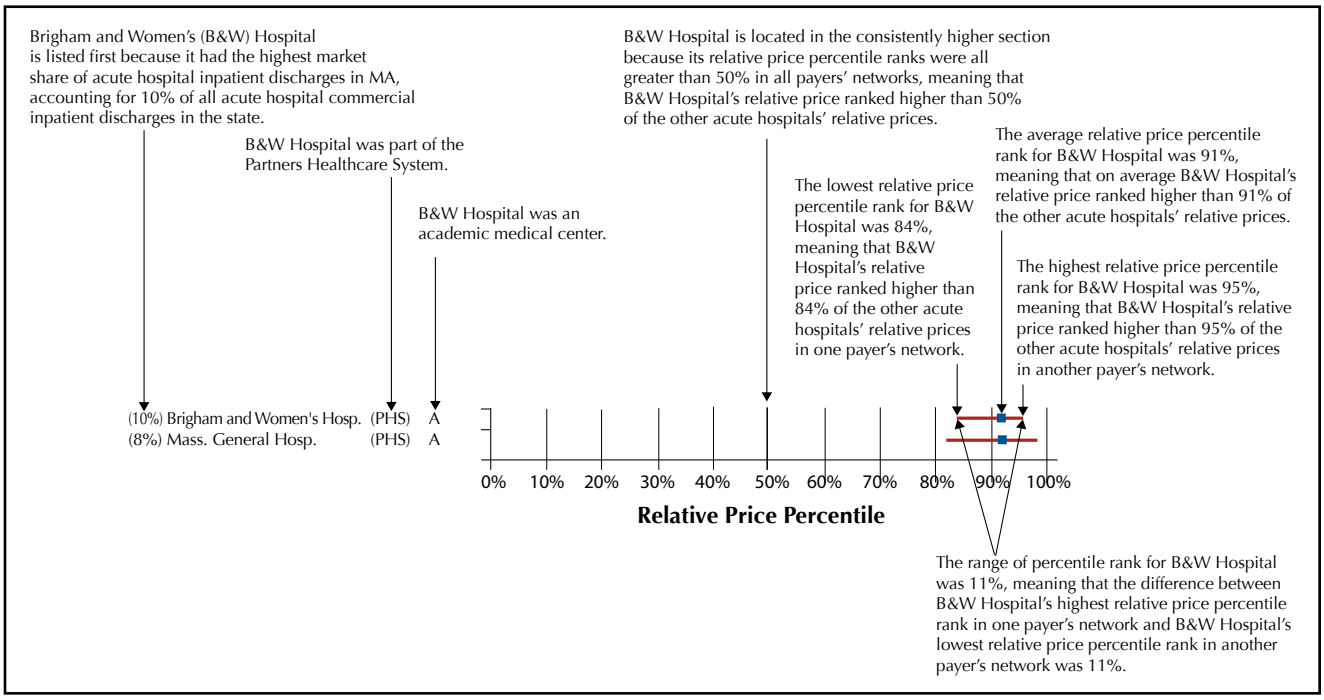
Hospital Characteristics Key

A	=	Academic Medical Center (n=6)
C	=	Community Hospital (n=47)
D	=	Disproportionate Share Hospital (n=26)
G	=	Geographically Isolated Hospital (n=10)
S	=	Specialty Hospital (n=4)
T	=	Non-Academic, Teaching Hospital (n=12)

System Affiliation Key

BKHS	=	Berkshire Health System (n=2)
BYHS	=	Baystate Health System (n=3)
CCHS	=	Cape Cod Health System (n=2)
CG	=	CareGroup (n=4)
EHC	=	Essent Health Care (n=2)
PHS	=	Partners HealthCare System (n=7)
SHS	=	Steward Health System (n=6)
UMHS	=	UMass Health System (n=5)
VHS	=	Vanguard Health System (n=2)

Figure 5 Sample



[38] Other payers may have also reported relative price values for these hospitals that were not included in this analysis because these values did not meet reporting thresholds.

Factors Explaining Acute Hospital Variation in Relative Prices

The Division also conducted multiple regression analyses to examine whether certain factors could explain variations in relative price. The factors included teaching status, DSH status, number of inpatient discharges, and geographic areas. After controlling for other factors, teaching status appeared to be a common predictor for higher relative prices across all payers. In most payers' networks, DSH status tended to predict lower relative prices. For some payers, the number of inpatient discharges and geographic areas could also explain some of the variation in relative prices among network hospitals. For more information about the regression results, please see Appendix A2.

Physician Group Relative Price Analysis

Relative prices varied substantially among physician groups within each payer's network. Some of the differentials were associated with a physician group's affiliation with larger health care provider organizations. The vast majority of payments were concentrated in the highest priced physician groups. Furthermore, some physician groups had higher prices from all payers, while other physician groups had lower prices from all payers.

The Division examined physician group relative price data for the following commercial payers: Blue Cross Blue Shield of Massachusetts (Blue Cross Blue Shield), Harvard Pilgrim Health Plan (Harvard Pilgrim), and Tufts Health Plan (Tufts).[39] The data represents physician group relative prices for calendar year 2009 (CY 2009).[40]

Relative Price Variation across Payer Networks

In CY 2009, the amount of price variation for physician groups varied between payer networks. Overall, Blue Cross Blue Shield and Harvard Pilgrim reported similar patterns of variation, with the highest priced physician group paid about two and a half times as much as the lowest priced physician group, and more than 90% of physician groups were paid prices within 25% of the network average. Tufts showed a slightly larger range of price variations, and less concentration around the network average relative price (Table 5). The number of physician groups with relative price levels within a given range of a payer's network average may indicate the extent to which relative price levels are concentrated around the average within the payer's network.

Table 5: Physician Group Network Variation, CY 2009

Payer (ordered by market share*)	Lowest Relative Price	Highest Relative Price	Highest RP to Lowest RP Ratio	Percent of providers within 25% of network average RP
Blue Cross Blue Shield	.81	2.07	2.56	91%
Harvard Pilgrim	.79	2.11	2.67	93%
Tufts	.75	2.13	2.85	87%

* The order of payers presented in this table is based on each payer's market share, measured by each payer's number of covered lives among Massachusetts residents based on data submitted to the Division of Health Care Finance and Policy for 2010 Total Medical Expenses.

[39] Physician group data was not included in this report for Fallon Community Health Plan, Neighborhood Health Plan or UniCare due to inconsistencies in the data reported by these payers.

[40] Calendar year 2009 data is used for physician groups because payers require 17 months for physician claims run out. Additional time is needed for non-claims payments, as these types of payments are reconciled at the end of the calendar year based on a provider's budget and other measures used to determine the final settlement amount. Alternative payment methodologies, especially those utilizing quality measures, usually require an additional amount of time to settle as well.

Relative Price Variation among Physician Groups

The physician groups that received larger amounts of payments[41] from commercial payers also tended to have higher relative prices (Figure 6). For example, Partners Community HealthCare, Inc., Atrius Health, and Pediatric Physician Organization at Children's all had a larger share of payments in the commercial sector and also had higher relative prices. Conversely, the physician groups that received smaller amounts of payments from commercial payers also tended to have lower relative prices. For example, Valley Health Partners P.H.O. at Holyoke Medical Center, Southcoast Primary Care, LLC, and Heywood Physician Organization all had lower shares of commercial payments and lower relative prices.

Some physician groups tended to have higher relative prices if they were affiliated with hospitals that had higher relative prices. Examples include Partners Community HealthCare, Inc. physician groups, which were affiliated with Partners' hospitals, Massachusetts General Hospital, and Brigham and Women's Hospital. Other examples include UMass Memorial Health Care physician groups, which were affiliated with UMass Memorial Medical Center. Conversely, some physician groups tended to have lower relative prices if they were affiliated with hospitals that also had lower relative prices. Examples include Boston Medical Center Management Services' physician groups, which were affiliated with Boston Medical Center, and Valley Health Partners at Holyoke Medical Center, which was affiliated with Holyoke Medical Center.

[41] Unlike acute hospitals where discharges can be used to identify higher volume providers, no uniform volume statistic was available to measure physician group service volume. As such, each group's proportion of total physician group payments was used as a substitute for service volume for ranking and analytic purposes.

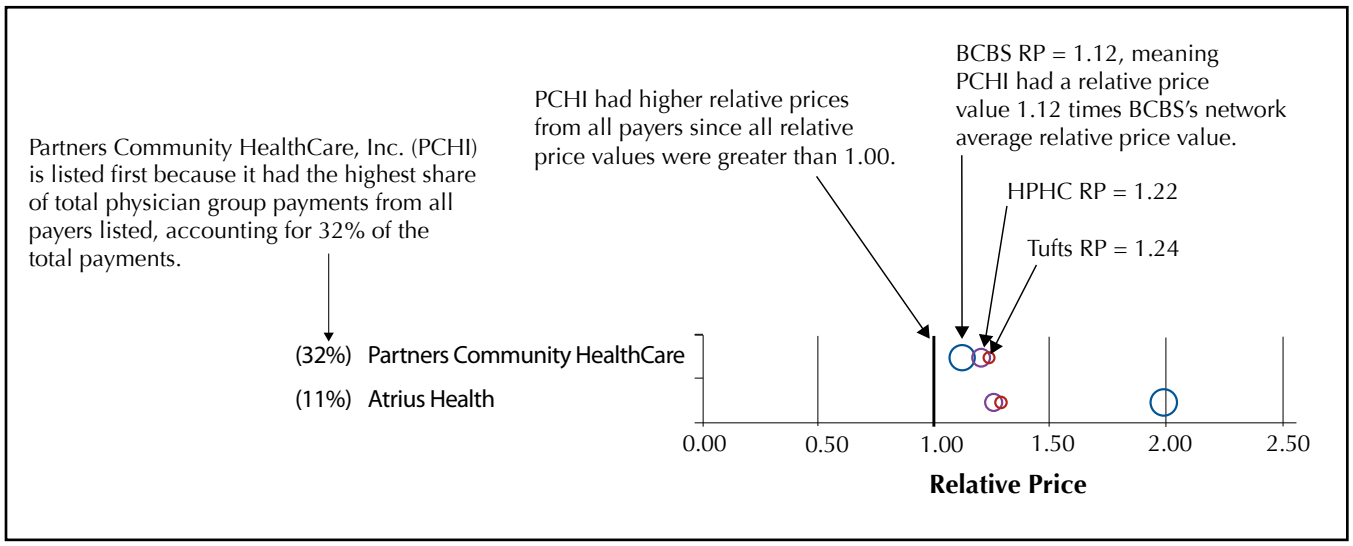
Figure 6 - 2009 Physician Group Relative Prices

How to Read Figure 6:

This figure shows the relative price for each physician group, for each payer. Data is displayed for physician groups where the amount of revenue from a payer met the applicable revenue threshold. The physician groups are ordered by market share, with the proportion of total payments going to one physician group compared to the amount of total payments going to all physician groups shown to the left.

On the plot area, each circle represents the relative price value for each physician group, and the size of the circle represents the size of that payer's payments to the physician group as a proportion of the amount of total payments the physician group received from studied payers. The bold line represents the average relative price within each payer's network: 1.0. The circles falling to the right side of the bold line represent higher than average relative prices within a payer's network. Some physician groups have only one point for a single payer; the Technical Appendix describes why other data may not have been available. Because relative price is a ratio dependent on a specific payer's particular price scale, the relative price values can only be directly compared within that payer's network.

Figure 6 Sample

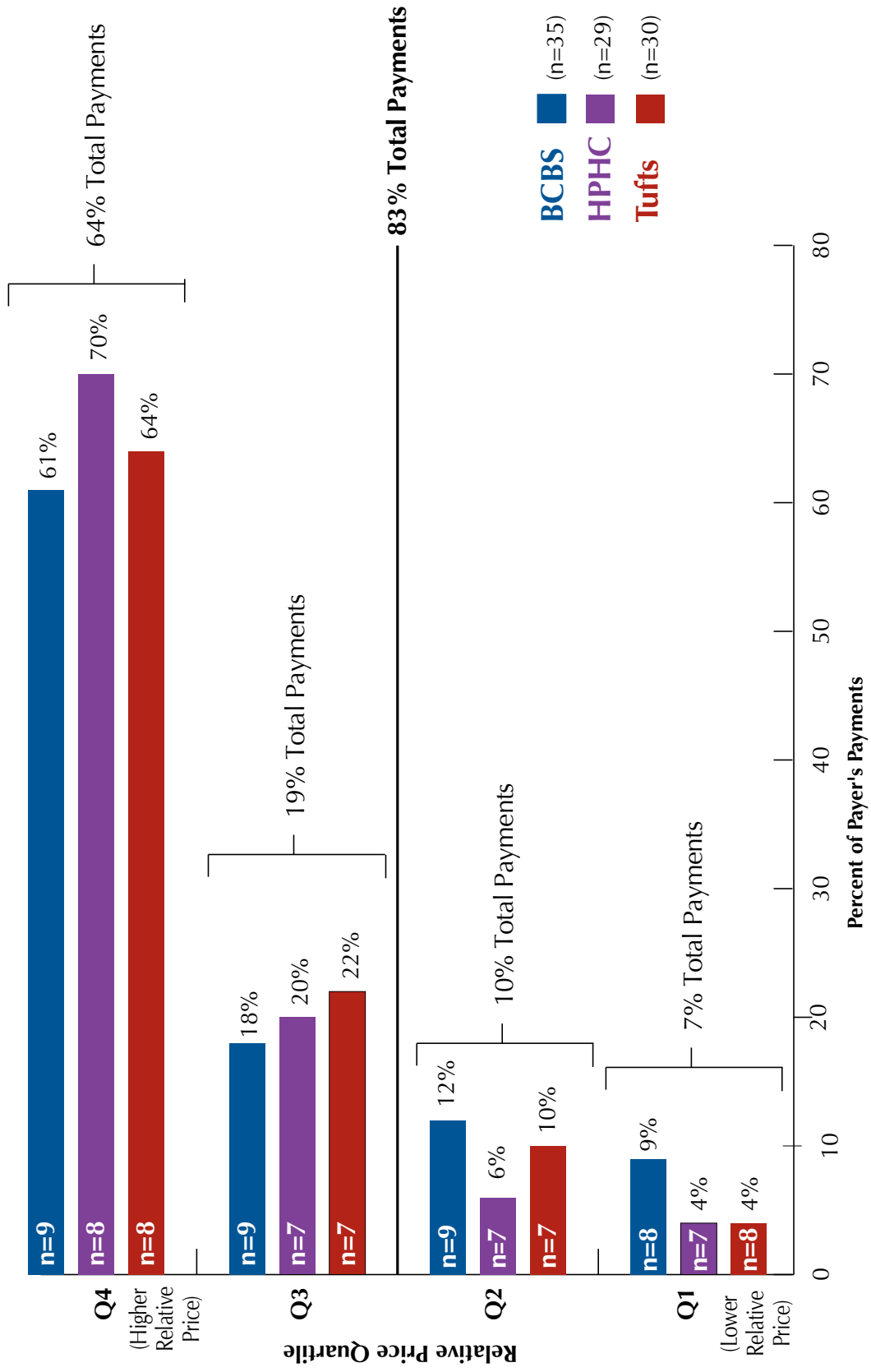


Relationship between Physician Group Relative Prices and Payments

To examine to what extent physician group total payments were concentrated in the higher priced physician groups in a payer's network, the Division organized physician groups into quartiles according to their relative price values and aggregated the payments for the physician groups in each quartile. The highest priced quartile included the physician groups that ranked in the top 25 percent of the relative price values in a payer's network. As Figure 7 indicates, payers' total physician group payments were concentrated in the higher priced physician groups. The physician groups in the upper two relative price quartiles that had relative price values above the network median received 83% of total physician group payments. Physician groups in the lower two relative price quartiles that had relative price values at or below the network median[42] received only 17% of total physician group payments.

[42] Physician groups with relative prices exactly on the 50% percentile were grouped in the second quartile.

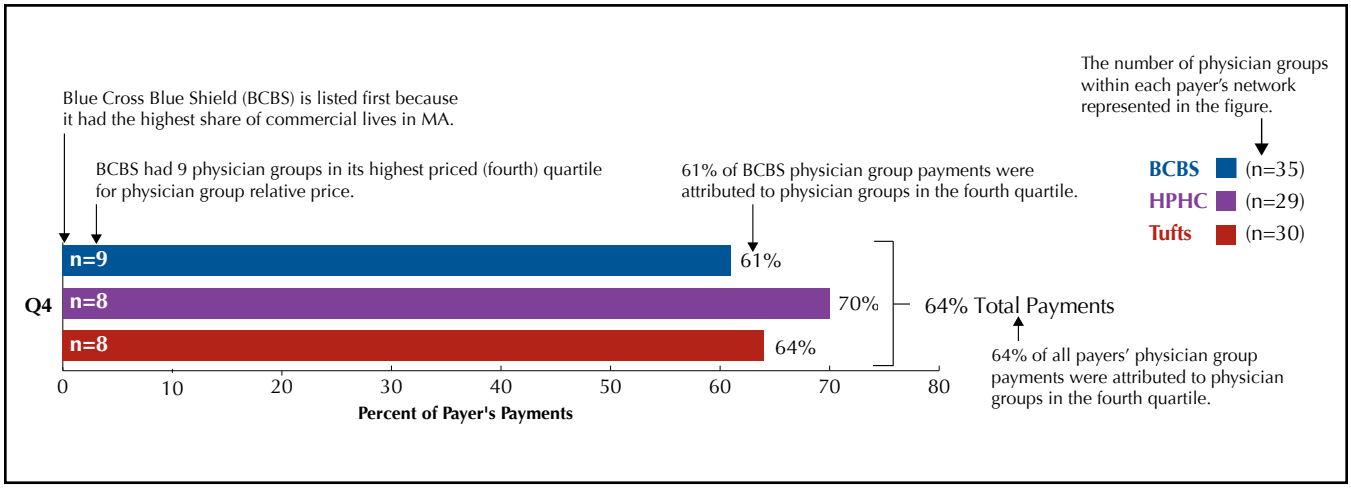
Figure 7 - 2009 Physician Group Payments by Relative Price Quartile



How to Read Figure 7:

Each bar on this figure indicates the percent of total payments made to physician groups in that quartile for that payer, where the quartiles are based on relative price values. Because relative prices may vary between payers, a given physician group may appear in different quartiles for different payers. The fourth quartile (Q4) represents the highest relative priced physician groups for a given payer, while the first quartile (Q1) represents the lowest relative priced physician groups. The percentage at the end of each bar represents the proportion of each payer's network payments attributed to the providers within each respective relative price quartile.

Figure 7 Sample



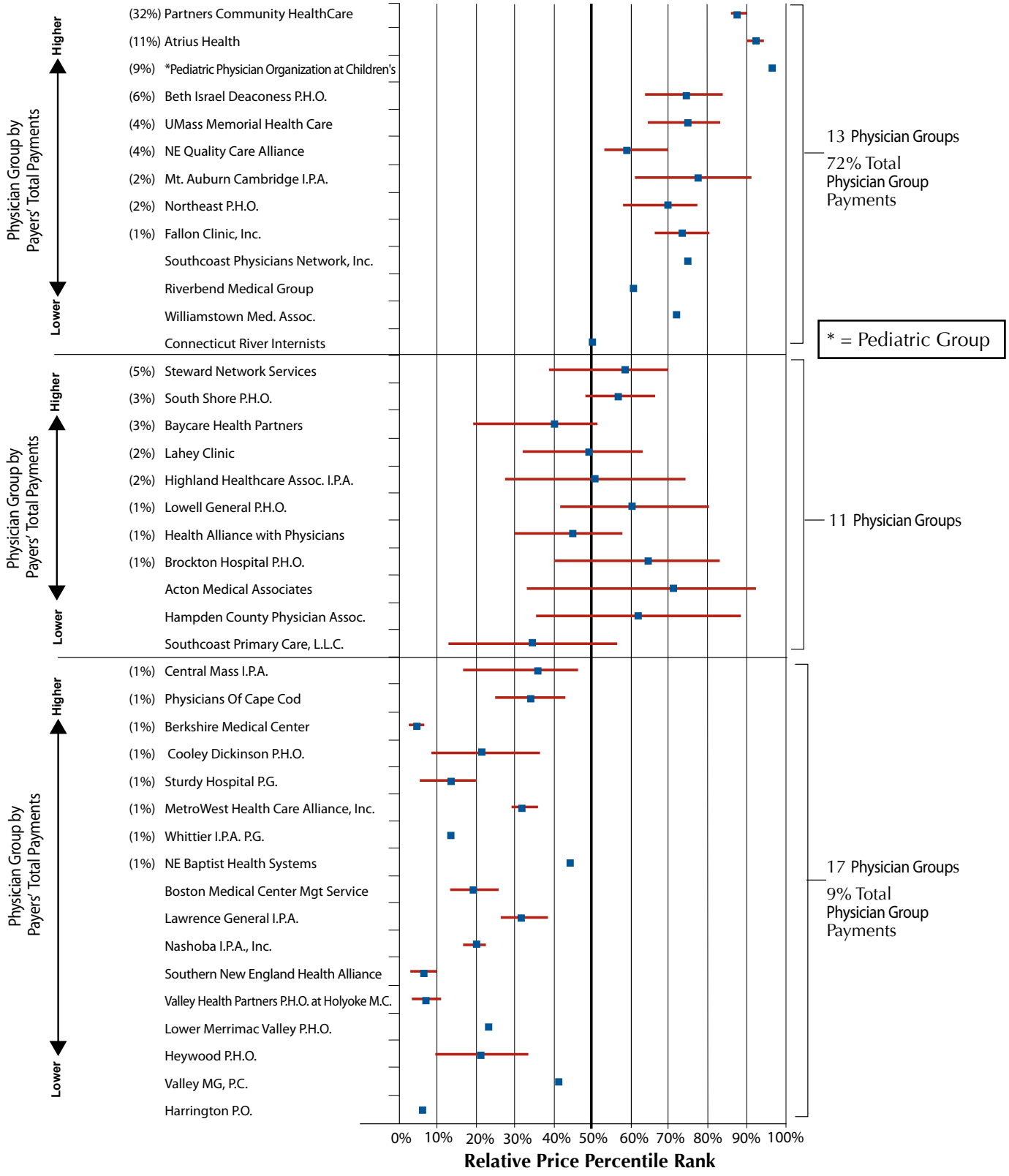
Physicians Groups with Consistently Higher and Consistently Lower Relative Prices

Figure 8 illustrates how physician groups are stratified across all payers: which physician groups had higher relative prices for all payers, which had lower relative prices for all payers, and which fell into neither of these groups. In order to put this grouping into context, Figure 8 indicates variation in ranking, or percentile, for a single physician group between various insurers.

A physician group that had a consistent ranking among all payers is represented by a short line. For instance, Partners Community HealthCare, Inc. was often ranked among the highest relative prices; South Shore P.H.O. was often ranked near the 50th percentile of relative prices; and Valley Health Partners P.H.O. at Holyoke Medical Center was often ranked among the lowest relative prices. A physician group that had widely varying relative prices is represented by a long line. The most extreme example is Acton Medical Associates that had relative prices ranging from higher than the 90th percentile in one payer's network to slightly higher than the 30th percentile in another. This indicates that for some payers, Acton Medical Associates was among the highest paid physician group, while for other payers, Acton Medical Associates was among the lowest paid. As discussed above, these relative price rankings do not indicate the absolute prices received by Acton Medical Associates from different payers.

- Thirteen of the 41 physician groups (32%) consistently ranked above the 50th percentile of relative price across multiple payers, and received 72% of total commercial payments for all physician groups.
- Seventeen of the 41 physician groups (41%) consistently ranked below the 50th percentile of relative price across multiple payers, and received 9% of total commercial payments for all physician groups.
- Eleven of the 41 physician groups (27%) were located within the middle of the relative price percentile range, indicating that they had higher relative prices from some payers, but lower relative prices from others.

Figure 8 – Range of Percentile Ranks of 2009 Physician Group Relative Prices

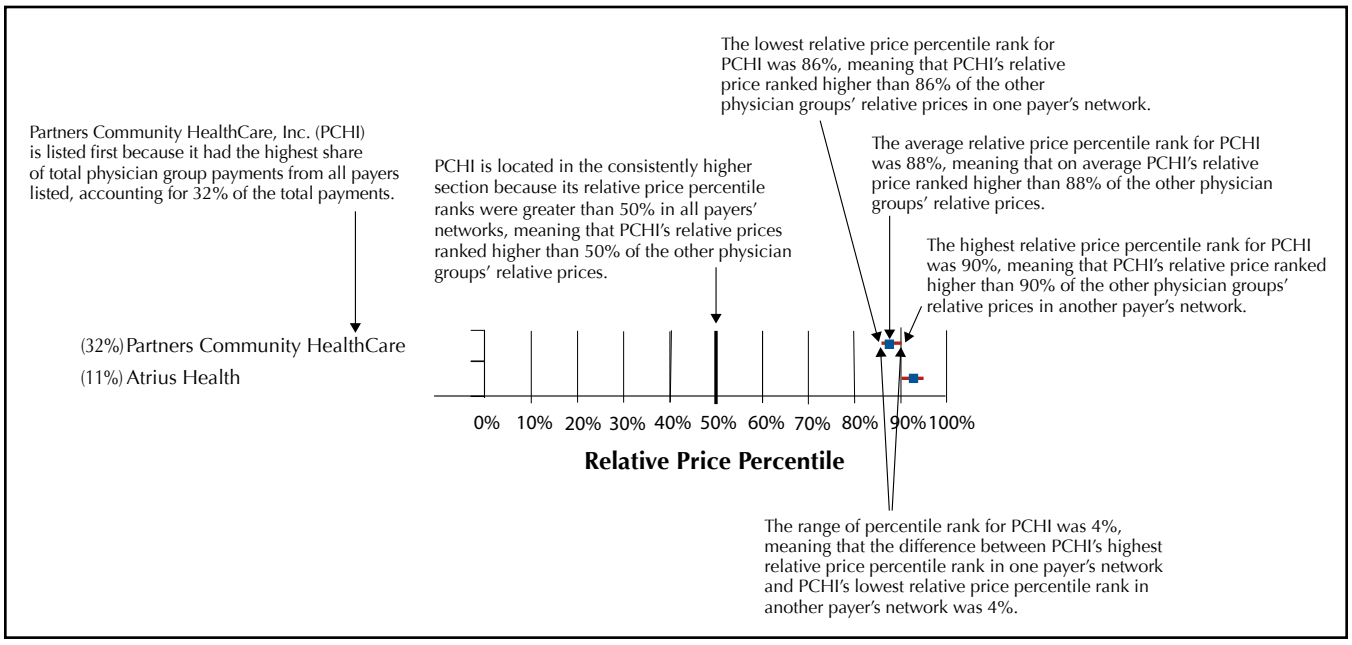


How to Read Figure 8:

For each physician group, the variation in ranking, or percentile, between payers is indicated by a horizontal line that spans from lowest rank to highest rank. Accordingly, short lines indicate physician groups that had consistent rankings across payers, and long lines show wide variation in ranking. The box in the middle shows the average percentile rank. Physician groups with only one box value represent physician groups that had only one relative price percent rank value reported for a single payer.[43] The vertical bold line highlights the 50th percentile. The right side of the 50th percentile line indicates the physician groups that received relative prices from all payers in the top half of the relative price distribution.

Figure 8 is arranged into three sections. The top section includes the 13 physician groups that had relative prices above the network median for all payers. Conversely, the bottom section shows the 17 physician groups that had relative prices from all payers below the median. The rest of the physician groups appear in the middle, and their lines span the 50th percentile.

- *Figure 8 Sample*



[43] Other payers may have also reported relative price values for these physician groups that were not included in this analysis because these values did not meet reporting thresholds.

Psychiatric Hospital and Acute Hospital Behavioral Health Unit Relative Price Analysis

The Division examined relative price and payment data for psychiatric hospitals and acute hospitals with dedicated psychiatric care or substance abuse units for the following commercial payers: Blue Cross Blue Shield of Massachusetts (Blue Cross Blue Shield), Fallon Community Health Plan (Fallon), Harvard Pilgrim Health Plan (Harvard Pilgrim), and Tufts Health Plan (Tufts). This analysis included hospital/unit blended[44] relative price data for calendar year 2010 (CY 2010).

For Massachusetts psychiatric hospitals/units, the Division examined the range of variation in relative prices across payers for each hospital based on the hospital's relative price percentile rank within each payer's network for CY 2010. Relative price percentile rank was used in order to derive a measure that would be comparable across all payers.[45] This analysis identified the hospitals/units that had relative prices above and below the network median of all payers.[46]

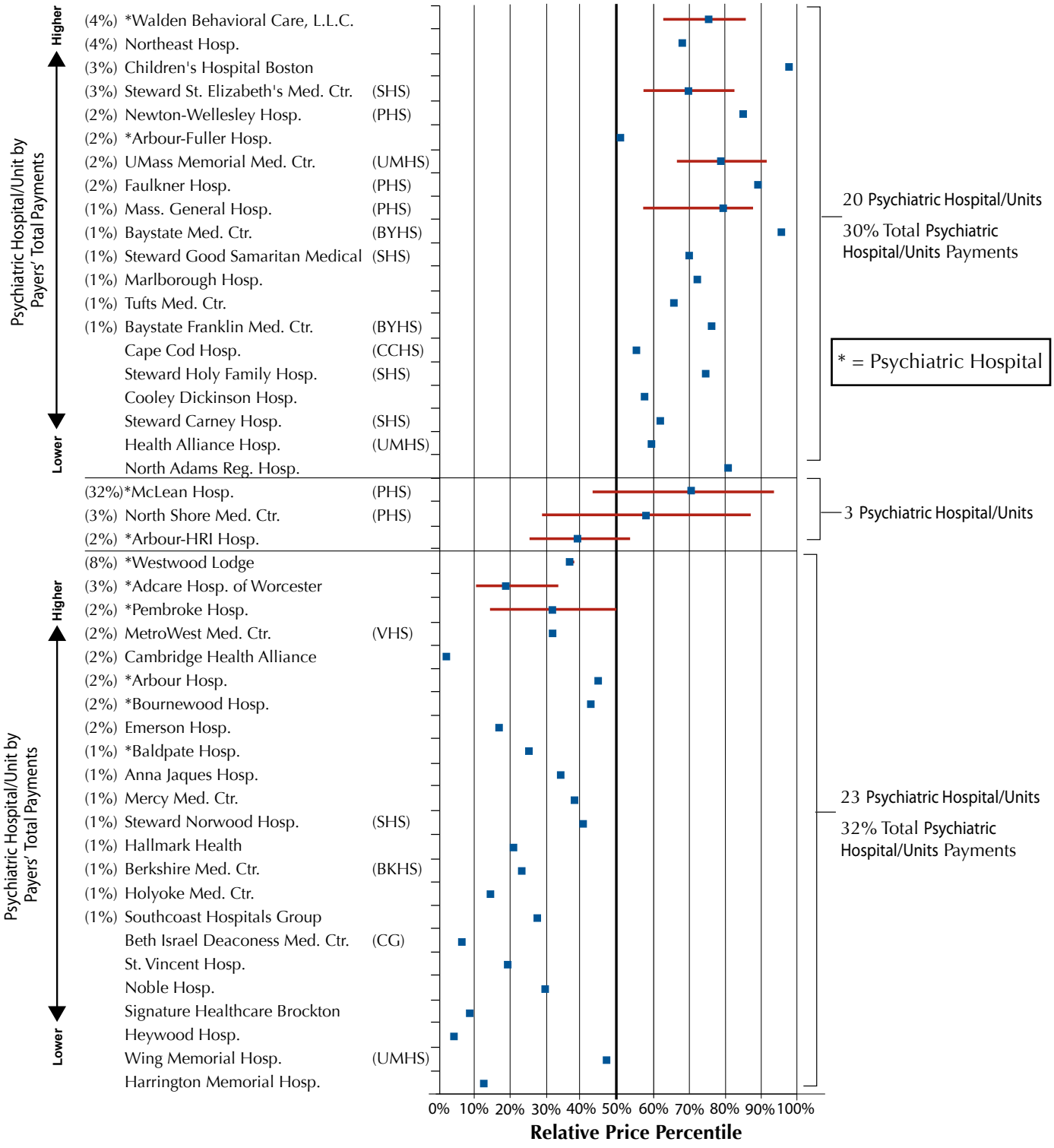
Most of the psychiatric hospitals/units were located in either the consistently higher or consistently lower relative price percentile range (Figure 9). Among 46 psychiatric hospitals/units, 20 of them had relative price values consistently ranked above the 50th percentile in each payer's network and received 30% of total commercial payments. Twenty-three psychiatric hospitals/units consistently ranked below the 50th percentile and received 32% of total commercial payments. Only three psychiatric hospitals/units, including McLean Hospital, North Shore Medical Center, and Arbour-HRI Hospital, had higher relative prices in some payers' networks, but lower relative prices in others. McLean Hospital received about 32% of total commercial payments for psychiatric hospitals/units.

[44] The Division blended hospital relative price by weighting the hospital inpatient and hospital outpatient relative price by the network average distribution for hospital inpatient and hospital outpatient payments within a given payer.

[45] Percentile rank uses the same scale for all of the payers, so that when relative price is redistributed based on percentile rank, the relative position of the provider may be compared across all payers.

[46] Every provider data point was included that met the revenue threshold, even if only one payer reported for that provider.

Figure 9 - Range of Percentile Ranks of 2010 Psychiatric Hospitals and Acute Hospital Behavioral Health Units Relative Prices



How to Read Figure 9:

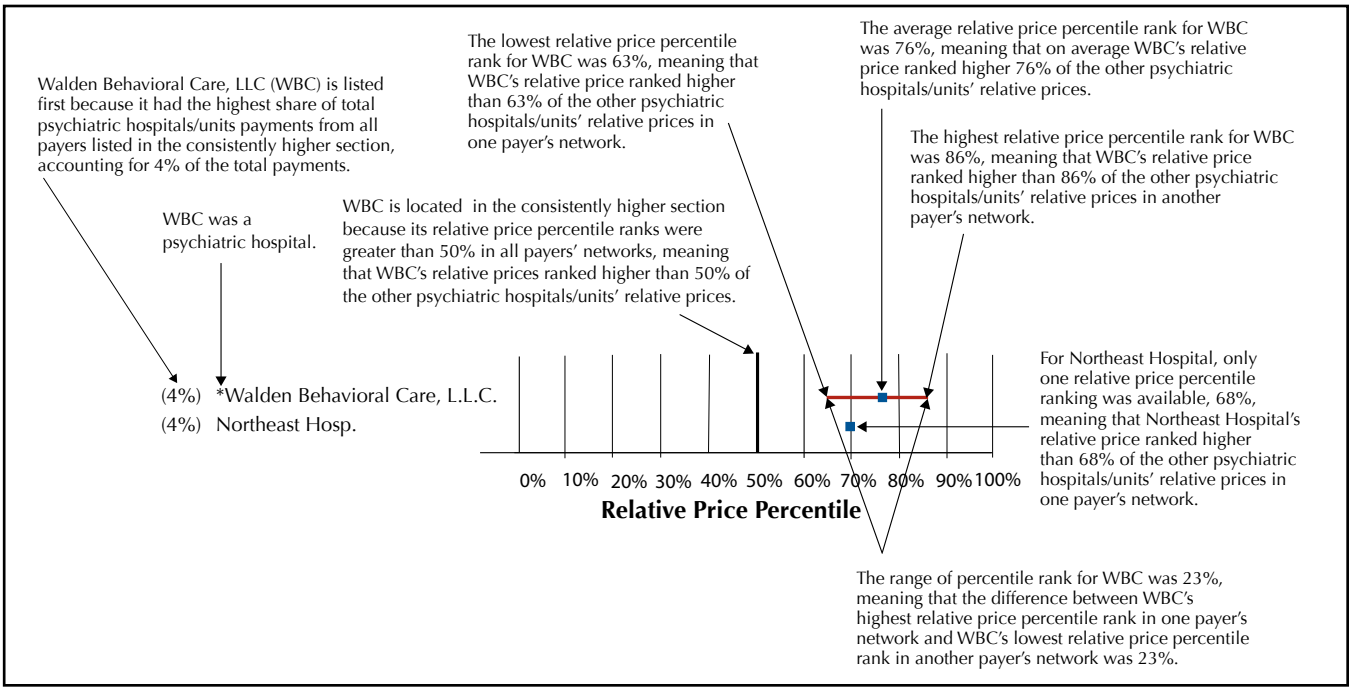
For each psychiatric hospital/unit, the variation in ranking, or percentile, between payers is indicated by a horizontal line that spans from lowest rank to highest rank. Accordingly, short lines indicate psychiatric hospitals/units that had consistent rankings across payers, and long lines show wide variation in ranking. The box in the middle shows the average percentile rank. Psychiatric hospitals/units with only one box value represent psychiatric hospitals/units that had only one relative price percent rank value reported for a single payer.[47] The vertical bold line highlights the 50th percentile. The right side of the 50th percentile line indicates the psychiatric hospitals/units that received relative prices from all payers in the top half of the relative price distribution.

This figure is arranged into three sections. The top section includes the 20 psychiatric hospitals/units that had relative prices above the network median for all payers. Conversely, the bottom section shows the 23 psychiatric hospitals/units that had relative prices from all payers below the median. The rest of the psychiatric hospitals/units appear in the middle, and their lines span the 50th percentile, meaning that they received higher relative prices from some payers and lower relative prices from other payers.

System Affiliation Key

BKHS	=	Berkshire Health System (n=1)
BYHS	=	Baystate Health System (n=2)
CCHS	=	Cape Cod Health System (n=1)
CG	=	CareGroup (n=1)
PHS	=	Partners HealthCare System (n=5)
SHS	=	Steward Health System (n=5)
UMHS	=	UMass Health System (n=3)
VHS	=	Vanguard Health System (n=1)

Figure 9 Sample



[47] Other payers may have also reported relative price values for these hospitals that were not included in this analysis because these values did not meet reporting thresholds.

Rehabilitation Hospital Relative Price Analysis

Total commercial payments were concentrated in only a few rehabilitation hospitals. The rehabilitation hospital that received the largest amount of the total commercial payments also had higher relative prices from all payers. All other rehabilitation hospitals received a much lesser amount of the total commercial payments, and relative price ranges were more evenly distributed among these other rehabilitation hospitals.

The Division examined rehabilitation hospital relative price and payment data for the following commercial payers: Blue Cross Blue Shield of Massachusetts (Blue Cross Blue Shield), Harvard Pilgrim Health Plan (Harvard Pilgrim), and Tufts Health Plan (Tufts). The analysis included hospital blended[48] relative price data for calendar year 2010 (CY 2010). For Massachusetts rehabilitation hospitals, the Division examined the range of variation of relative prices among hospitals across all payers based on each hospital's range of relative price percentile ranks for CY 2010. Relative price percentile rank was used in order to derive a measure that would be comparable across all payers.[49] This analysis identified the hospitals that had relative prices above and below the network median across payers.[50]

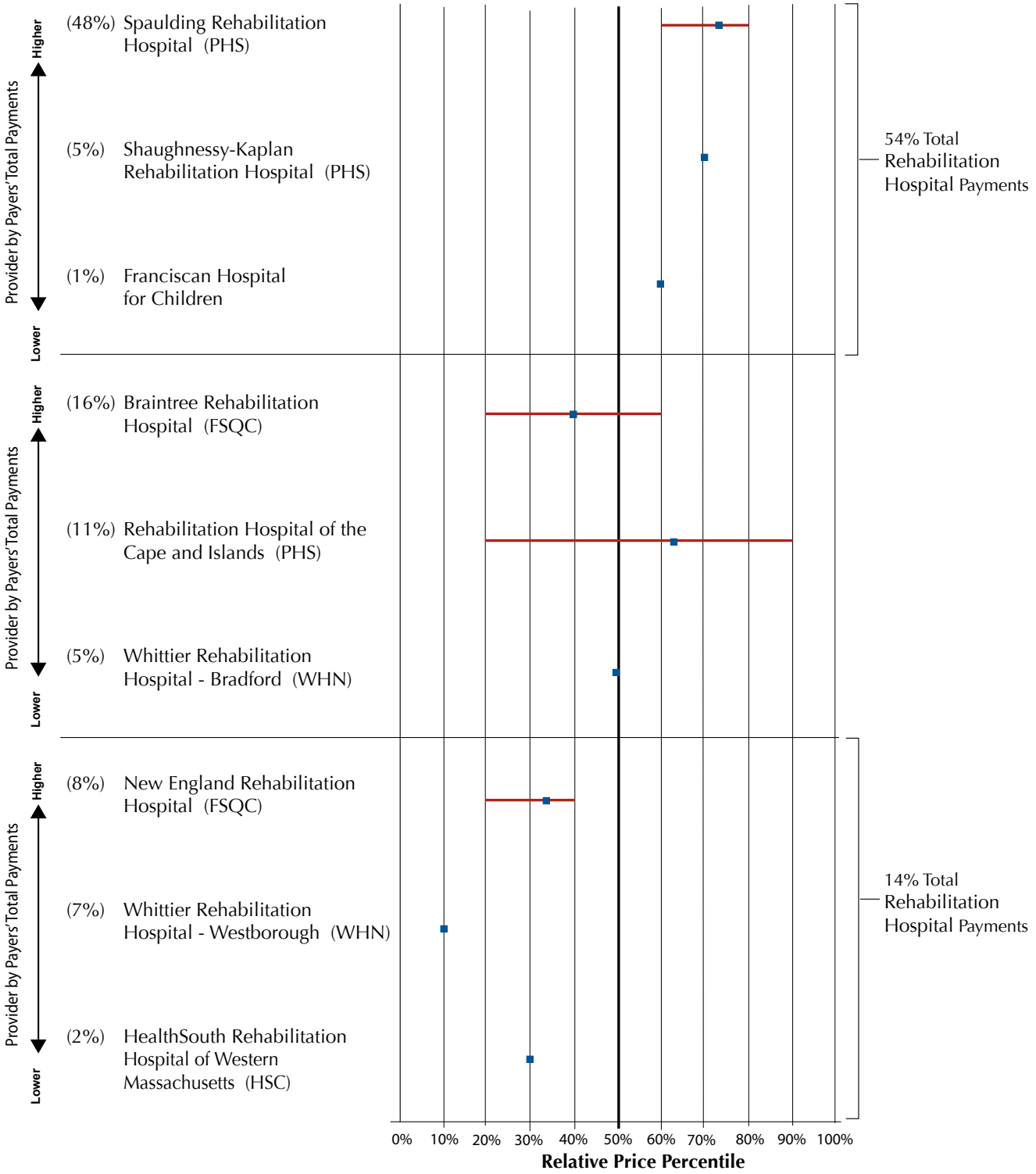
Among nine rehabilitation hospitals, three hospitals consistently had higher relative prices across payers and received 54% of total commercial payments for rehabilitation hospitals, while three hospitals consistently had lower relative prices and received 14% of total commercial payments (Figure 10). Three rehabilitation hospitals had higher relative prices in some payers' networks, but lower relative prices in others.

[48] The Division blended hospital relative price by weighting the hospital inpatient and hospital outpatient relative price by the network average distribution for hospital inpatient and hospital outpatient payments within a given payer.

[49] Percentile rank uses the same scale for all of the payers, so that when relative price is redistributed based on percentile rank the relative position of the provider may be compared across all payers.

[50] Every provider data point was included that met the revenue threshold, even if only one payer reported for that provider.

Figure 10 – Range of Percentile Ranks of 2010 Rehabilitation Hospitals Relative Prices



How to Read Figure 10:

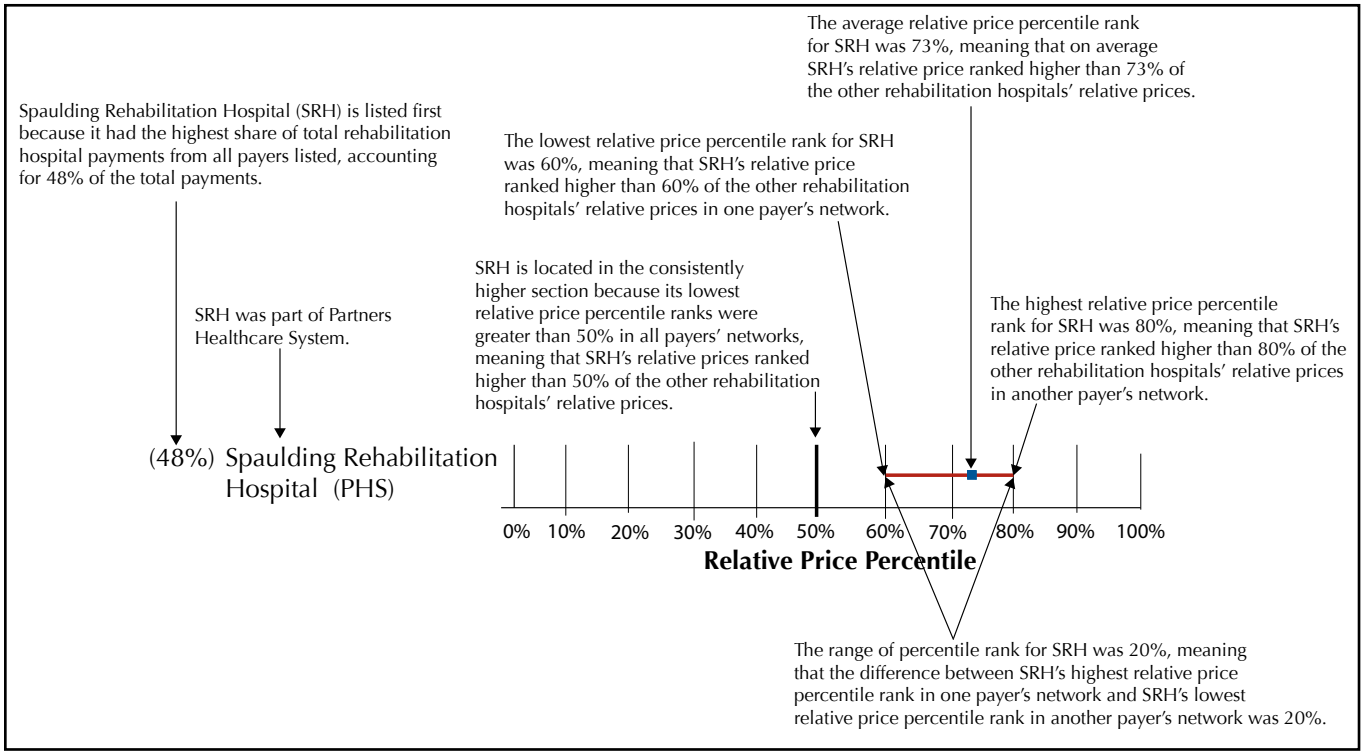
For each rehabilitation hospital, the variation in ranking, or percentile, between payers is indicated by a horizontal line that spans from lowest rank to highest rank. Accordingly, short lines indicate hospitals that had consistent rankings across payers, and long lines show wide variation in ranking. The box in the middle shows the average percentile rank. Rehabilitation hospitals with only one box value represent rehabilitation hospitals that had only one relative price percent rank value reported for a single payer.[51] The vertical bold line highlights the 50th percentile. The lines on the right side of the 50th percentile line indicate the rehabilitation hospitals that received relative prices from all payers in the top half of the relative price distribution.

This figure is arranged into three sections. The top section includes the 3 rehabilitation hospitals that had relative prices above the network median for all payers. Conversely, the bottom section shows the 3 rehabilitation hospitals that had relative prices from all payers below the median. The rest of the rehabilitation hospitals appear in the middle, and their lines span across the 50th percentile.

System Affiliation Key

FSQC	=	Five Star Quality Care (n=2)
HSC	=	HealthSoulth Corporation (n=1)
PHS	=	Partners Healthcare System (n=3)
WHN	=	Whittier Health Network (n=2)

Figure 10 Sample



[51] Other payers may have also reported relative price values for these rehabilitation hospitals that were not included in this analysis because these values did not meet reporting thresholds.

Other Provider Relative Price Analysis

The Division examined the relative prices of eight other provider groups, including: chronic hospitals,[52] community health centers, community mental health centers, freestanding ambulatory surgical centers, freestanding clinical labs, freestanding diagnostic imaging centers, home health agencies, and skilled nursing facilities. The services provided within each provider type may differ substantially between providers. This may limit comparisons of providers within the same provider type. Data on these provider groups may be found in Appendix F.

Generally, the relative prices for other providers did not vary within each network. Some payers paid all providers within a given provider type based on a standard fee schedule so there was no variation from one provider to the next. Data collected for other provider groups had lower total reported payments compared to hospital and physician group total reported payments. Of note, outlier payments may have contributed to skewed relative prices for some payers. For example, if a payer did not pay providers of a given provider type based on the payer's standard fee schedule, and one of those providers had an unusually high payment amount associated with an outlier claim, then that provider's relative price would be exaggerated.

[52] Relative prices of chronic hospitals are not reported here due to the small number of chronic hospitals reported. For more information, please refer to the Data Appendix.

Table 6: Network Variation in Relative Price for Other Providers, CY 2010

Provider Type	Payer	Number of organizations	Lowest Relative Price	Highest Relative Price	Highest RP to Lowest RP Ratio
Ambulatory Surgical Centers	BCBS	9	1.00	1.00	1.00
	HPHC	13	.74	1.33	1.80
	Tufts	13	.86	1.10	1.28
	Aetna	5	.43	1.82	4.23
	UniCare	11	.17	2.60	15.35*
Community Health Centers	BCBS	4	1.00	1.00	1.00
	HPHC	2	1.00	1.00	1.00
Community Mental Health Centers	BCBS	7	.70	1.51	2.16
	HPHC	6	.97	1.06	1.09
	Tufts	5	.99	1.02	1.03
	Aetna	3	.99	1.02	1.03
Freestanding Clinical Laboratories	BCBS	3	1.00	1.00	1.00
	HPHC	1	1.00	1.00	1.00
	Tufts	2	.64	1.36	2.13
	Aetna	2	.88	1.12	1.27
	UniCare	4	.96	1.11	1.17
Freestanding Diagnostic Imaging Centers	BCBS	7	.96	1.04	1.08
	HPHC	6	1.00	1.00	1.00
	Tufts	5	.78	1.10	1.41
	Aetna	10	.69	1.26	1.83
	UniCare	8	.94	1.01	1.07
Home Health Agencies	BCBS	8	.98	1.12	1.14
	HPHC	5	.95	1.06	1.12
	Tufts	5	.98	1.03	1.05
	Aetna	3	.79	1.40	1.77
	UniCare	5	.96	1.14	1.19
Skilled Nursing Facilities	HPHC	3	1.00	1.00	1.00
	Tufts	1	1.00	1.00	1.00
	Aetna	5	.72	1.20	1.67
	UniCare	2	.77	1.23	1.60

* A few providers in UniCare's network were priced much higher than the rest of the providers, which resulted in a much larger high relative price to low relative price ratio than other payer's networks.

Conclusion

As discussed, relative prices varied significantly across payers' networks for both hospitals and physician groups. The Division found that there were certain characteristics that tended to be associated with higher or lower relative prices, such as a providers' proportion of commercial market share, system affiliation, geographic location, and DSH status. However, the Division found no set of factors that could adequately explain the full extent of observed variation in provider prices.

Describing some of the factors influencing price variation is helpful, but it is only the first step to fully understanding the dynamics of the market for health care provided to commercially insured patients. Further research is necessary to better understand how provider and insurer characteristics influence price variation. Ultimately, in the commercial market, prices are set based on individual negotiations between providers and payers that are unique by their nature. It is likely that quantitative methods may never be able to fully explain variation in prices that arise in this context.

While this report did not attempt to quantify how much identified factors did, or should, drive price variation, the observed range of provider price variation is not necessarily warranted or justified by observed factors. The Special Commission on Provider Price Reform found that both acceptable and unacceptable factors for variation exist in prices among providers.[53] However, categorizing factors as "acceptable" and "unacceptable" is a statement of policy preferences, and cannot be determined through quantitative analysis.

Moreover, while the Special Commission identified quality, stand-by services, care coordination, and community-based services provided by allied health professionals as potential acceptable factors for variation, these characteristics cannot be quantified by the payments-based relative price methodology used in this report.

This report did consider the impact of statewide market share[54] on prices, and found that, in general, providers with larger shares of commercial business tended to have higher prices. While suggestive of the influence of size and market share, this analysis is only preliminary. Moreover, this analysis is confounded by the fact that larger hospitals tended to be teaching institutions, and larger physician groups tended to be affiliated with teaching hospitals.

While certain elements of provider price variation cannot be explained through relative price analyses, the relative price data analytics presented in this report provide a baseline from which future price variation analyses may be compared.

[53] Division of Health Care Finance and Policy Report, Recommendations of the Special Commission on Provider Price Reform, November 2011. Available at: http://www.mass.gov/chia/docs/g/p-r/special-comm-ppr-report.pdf (last accessed November 13, 2012).

[54] Market share in this report is measured by number of discharges for commercially insured patients for acute hospitals and total payment from commercial payers for physician groups and other types of providers.

Glossary of Terms

Acute Hospital: A hospital licensed under M.G.L. c. 111, § 51 that contains a majority of medical-surgical, pediatric, obstetric, and maternity beds, as defined by the Department of Public Health.

Behavioral Health Unit: Acute hospitals with psychiatric or substance abuse units.

Chronic hospitals: A non-acute hospital, or a unit within a facility, with a majority of its beds licensed by the Massachusetts Department of Public Health to provide chronic-disease services in accordance with the provisions of M.G.L. c. 111.

Community Health Centers: A clinic which provides comprehensive ambulatory services and which is not financially or physically an integral part of a hospital, as licensed by the Department of Public Health.

Community Mental Health Centers: A clinic which provides comprehensive mental health services and which is not financially or physically an integral part of a hospital, as licensed by the Department of Public Health.

Freestanding Ambulatory Surgical Centers: A distinct entity that operates exclusively for the purpose of providing surgical services that do not require the availability of hospital facilities, as licensed by the Massachusetts Department of Public Health, and meets the conditions for payment by the purchaser for facility services.

Freestanding Clinical Laboratories: A clinical laboratory which is operated independently from a hospital or from an attending or consulting physician's office. If the laboratory is operated or directed by one or more licensed physicians, it must offer its services to other physicians to qualify as an independent laboratory. In cases where two or more distinct, physically separated laboratory facilities operate under the same name and the same director, each facility which performs clinical laboratory services shall be treated as a separate independent laboratory.

Freestanding Diagnostic Imaging Centers: A diagnostic imaging center which is operated independently from a hospital, or from an attending or consulting physician's office. If the diagnostic imaging center is operated or directed by one or more licensed physicians, it must offer its services to other physicians to qualify as an independent diagnostic imaging center. In cases where two or more distinct, physically separated diagnostic imaging facilities operate under the same name and the same director, each facility which performs diagnostic imaging services shall be treated as a separate diagnostic imaging center independent laboratory.

Insurance Category: Line of business. Includes: Commercial, Medicare Advantage, Medicaid MCO, and Commonwealth Care.

Health Care Payer ("Payer"): A Private or Public Health Care Payer that contracts or offers to provide, deliver, arrange for, pay for, or reimburse any of the costs of Health Care Services. A Health Care Payer includes an insurance carrier, a health maintenance organization, a nonprofit hospital services corporation, a medical service corporation, a Third Party Administrator, and a self-insured health plan.

Home Health Agencies: An agency that provides health services in a home setting. These services include skilled nursing, physical therapy, occupational therapy, speech therapy, medical social work, and home health aide services.

Member: A person who holds an individual contract or a certificate under a group arrangement contracted with a Health Care Payer.

Member Months: The number of Members participating in a plan over a specified period of time expressed in months of membership.

Non-Claims Related Payments: Payments made to providers not directly related to a medical claim including, but not limited to, pay for performance, care management payments, infrastructure payments, grants, surplus payments, lump sum settlements, capitation settlements, signing bonuses, governmental payer shortfall payments, infrastructure, medical director, and health information technology payments.

Physician Group: A medical practice comprised of two or more physicians organized to provide patient care services (regardless of its legal form or ownership).

Physician Local Practice Group: A geographically organized subgroup of a Physician Group that provides primary care.

Product Mix: The percentage of payments to a provider attributed to each product type, within each insurance category.

Product Type: Within each insurance category, the design of the insurance. Includes: Health Maintenance Organizations (HMO) and Point of Service (POS), Preferred Provider Organization (PPO), Indemnity, and Other.

Provider: Any person, corporation partnership, governmental unit, state institution, or any other entity qualified under the laws of the Commonwealth to perform or provide health care services.

Psychiatric Hospitals: Any psychiatric facility or inpatient program in a licensed psychiatric facility that has six beds or more for inpatient use, is certified by the Massachusetts Department of Public Health for participation in Medicare, and primarily treats patients whose principal diagnosis is based on the DSM-IV. "Primarily treats" means that, over a six-month period, inpatient care has been provided to a patient population of which 51 percent or more consistently have a principal diagnosis that is psychiatric.

Rehabilitation Hospitals: A non-acute hospital, or a unit within a facility, devoted to the provision of comprehensive services to patients whose handicaps are primarily physical, coordinated with efforts to minimize the patient's mental, social, and vocational disadvantages. The course of treatment is limited to the period in which the member continues to make progress toward his or her treatment goal, as described in the member's service plan. The hospital is licensed by the Department of Public Health in accordance with the provisions of M.G.L. c. 111.

Relative Prices: The contractually negotiated amounts paid to Massachusetts providers by each Private and Public Payer for health care services, including Non-Claims Related Payments, and expressed in the aggregate relative to the payer's network wide average amount paid to providers, as calculated under 114.5 CMR 23.05.

Service Category: The type of health care services for which payers separately negotiate rates with providers. Payers define their own service categories based on their contracting arrangements.

Service Mix: The percentage of payments to a provider attributed to each service category, within each insurance category and product type.

Service Multipliers: Negotiated service-specific mark-ups from the standard fee schedule, within each insurance category and product type.

Skilled Nursing Facilities: A nursing or convalescent home; an infirmary maintained in a town; a charitable home for the aged, as defined in M.G.L. c. 111, s.71; or a Nursing Facility operating under a hospital license issued by the Department of Public Health pursuant to M.G.L. c. 111, and certified by the Department of Public Health for participation in the State Medical Assistance Program. Also included are facilities that operate a licensed residential care Unit within the Nursing Facility.

Total Medical Claims: Total allowed claims for all categories of medical expenses including, but not limited to, hospital inpatient, hospital outpatient, sub-acute such as skilled nursing and rehabilitation, professional, pharmacy, mental health and behavioral health and substance abuse, home health, durable medical equipment, laboratory, diagnostic imaging, and alternative care such as chiropractic and acupuncture claims, incurred under all fully insured and self-insured plans.

Total Payments: The sum of Total Medical Claims and Non-Claims Related Payments.

Technical Appendix

Relative Price Data and Methodology

Relative Price Data and Methodology

Regulation 114.5 CMR 23.00 was promulgated pursuant to Chapter 288 of the Acts of 2010 and governed the reporting method and filing requirements for health care payers reporting relative prices. The regulation required annual filings with the Division of Health Care Finance and Policy (Division) of relative price data by the ten largest commercial health care payers, as determined by the Center based on Massachusetts health care payments, and commercial payers that contract with MassHealth (the Commonwealth's Medicaid program), the Commonwealth Health Insurance Connector Authority, the Group Insurance Commission, and/or Medicare. Under Chapter 224 of the Acts of 2012, the Center for Health Information and Analysis (Center) assumed the Division's responsibilities of collecting, analyzing, and reporting on relative price data.

There are four types of providers for which relative prices are reported: inpatient hospital, outpatient hospital, physician groups, and other providers. For each of these provider types, relative price is provided separately by insurance category (Commercial self- and fully-insured, Commonwealth Care, Medicaid MCO, and Medicare Advantage) and by product type (HMO and POS, Indemnity, PPO, and Other). The Center reported relative prices for providers that met certain revenue thresholds. In conducting the analytics for this report, the Division applied a revenue threshold rather than a volume threshold for all provider types as there was no standard utilization measure reported for hospital outpatient services, professional services, or services rendered by other providers. The Division intended to examine the price variation among providers in a comprehensive and consistent fashion, and established revenue thresholds such that a broad presentation of the providers within a payer's network could be included in the examination.

Inpatient Hospital

Inpatient hospital relative price data is reported separately for four types of hospitals: acute hospitals, chronic hospitals, psychiatric hospitals (including substance abuse hospitals and behavioral health hospitals), and rehabilitation hospitals. Inpatient hospital data was provided for 2009 and 2010. The Center reported calendar year 2010 data since this data was the most relevant and most recent. For each hospital, the reported data includes number of discharges, case mix score (which represents the relative health of the population that was treated), total claim payments and total non-claim payments. For each applicable hospital, an adjusted base rate for each product type (i.e. product-specific adjusted base rate) was calculated for each insurance category by summing the claim and non-claim payments, and dividing the total payments by the product of the number of discharges and the case mix score. The payer's network average product weights for the applicable hospital type and insurance category were then applied to the product-specific adjusted base rates to develop a weighted average adjusted base rate for each hospital. The weighted average adjusted base rate was divided by the simple average of all of the payers' reported hospitals to determine the relative price of each hospital. For a detailed demonstration of these calculations, please refer to the Relative Price file layout example: http://www.mass.gov/chia/researcher/health-care-delivery/hcf-data-resources/total-medical-expenses-relative-price/relative-prices-filing-information.html.
Only those hospitals that had total annual revenue exceeding the threshold amounts specified below are reported.

Table A-1: Revenue Thresholds for Hospital Relative Price Reporting

Hospital Type	Insurance Category	Revenue Threshold
Acute Hospital	Commercial	$200,000
	Commonwealth Care	$160,000
	Medicaid MCO	$130,000
	Medicare Advantage	$160,000
Chronic Hospital	Commercial	$210,000
	Commonwealth Care	$320,000
	Medicaid MCO	$400,000
	Medicare Advantage	$290,000
Psychiatric Hospital	Commercial	$120,000
	Commonwealth Care	$60,000
	Medicaid MCO	$80,000
	Medicare Advantage	$130,000
Rehabilitation Hospital	Commercial	$200,000
	Commonwealth Care	$220,000
	Medicaid MCO	$270,000
	Medicare Advantage	$290,000

The reporting thresholds were calculated by using a distribution of inpatient commercial claims produced from a database of nationwide claims. After applying this distribution to average Massachusetts statewide inpatient allowed claims for the commercial market, it was estimated that $200,000 of inpatient claim volume was needed to be 85% confident that actual claims would be within +/- 10% of the average inpatient-allowed claim amount.

The revenue thresholds for non-acute hospital inpatient services, including services provided at chronic, psychiatric, and rehabilitation hospitals, were adjusted to reflect the price differences between acute and non-acute inpatient services and between different insurance categories (Table A-1). Hospital types that had a higher cost per discharge, for example, required a higher dollar threshold than lower cost hospital types.

Several adjustments were made to the filed data. Most of the adjustments were made after consultation with payers to correct minor errors in the data that they submitted. The adjusted base rate for acute hospitals in the Medicare insurance category of Blue Cross Blue Shield of Massachusetts was revised to equal the base rate reported by Blue Cross Blue Shield of Massachusetts times the sum of the claim and non-claim payments, divided by the claim payments. Blue Cross Blue Shield of Massachusetts and Tufts Health Plan reported psychiatric hospital data in the format used for outpatient hospital data due to their contracting structures. Therefore, the analysis was conducted in a manner similar to the outpatient analysis described in the next section.

Outpatient Hospital

Outpatient relative price data was reported for the same four hospital types as were reported for inpatient hospitals: acute hospitals, chronic hospitals, psychiatric hospitals (including substance abuse hospitals and behavioral health hospitals), and rehabilitation hospitals. Data were collected for 2009 and 2010. The Center reported calendar year 2010 data as this data was the most relevant and most recent. Relative price metrics were calculated by the payers and reported separately by service category where the service categories were defined by the payers to most closely match how prices were negotiated with the hospitals for outpatient services. Payers reported hospital-specific service category weights by insurance category and product type. Payers also reported both claim and non-claim payments made to the hospitals for outpatient services. These payments were used to develop network average service category weights and network average product type weights for each insurance category within a payer's network.

Provider-specific service multipliers are the negotiated service-specific mark-up from the standard fee schedule, reported for each provider, by insurance category and product type. If a provider was not paid on a fee-for-service basis (e.g. percent of charge basis), the multiplier used was the ratio of actual paid claims for a given service line to the network average payment for that service line.

Using the hospital-specific service multiplier for each service category within a payer's network, the Division calculated a base service and product-adjusted multiplier for each hospital, which was adjusted for network average service mix and network average product mix within each insurance category. A product-adjusted non-claims multiplier was also calculated for each hospital. The base service and product-adjusted multiplier was then summed with the product-adjusted non-claims multiplier to produce an adjusted rate for each provider. The provider's adjusted rate was then divided by the network average adjusted rate to arrive at that provider's relative price.

Several adjustments were made to the data to correct minor errors in the values submitted by the payers. In addition, some calculations were revised as needed for payers that reported relative price using two types of calculation methods. The two possible calculation methods were calculated payment-derived and negotiated. When a payer used both methods, calculations were included to appropriately combine the results.

Since there was not a utilization measure, such as discharges, available for hospital outpatient services, a $200,000 payer revenue threshold was used for reporting hospital outpatient relative prices for all insurance types.

Inpatient and Outpatient Hospital Blend

Blended inpatient and outpatient hospital results are reported only for those hospitals with payments that exceeded both the inpatient and outpatient reporting thresholds as specified above. For those hospitals, the inpatient and outpatient relative price results were blended using network average inpatient and outpatient weights. The inpatient weight was determined by the percent of the payer's revenue attributed to hospital inpatient services. Likewise, the outpatient weight was determined by the percent of the payer's revenue attributed to hospital outpatient services.

Table A-2 shows the list of acute hospitals that met the revenue thresholds for blended relative prices but had 25 or less discharges. Although patient acuity was adjusted when developing the hospital inpatient price relativity, if these discharges were associated with outlier payments, the hospital's relative price value may have been skewed.

Table A-2: Acute Hospitals with 25 or Less Inpatient Discharges

Acute Hospital Name	Insurance Category	Payer
Dana-Farber Cancer Institute	Commercial	Aetna
	Commercial	Fallon
	Commercial	UniCare
Harrington Memorial Hospital	Commercial	Aetna
Massachusetts Eye and Ear Infirmary	Commercial	UniCare
North Adams Regional Hospital	Commercial	Fallon
Sturdy Memorial Hospital	Commercial	Fallon

Table A-3: Psychiatric Hospitals/Behavioral Health Units with 25 or Less Inpatient Discharges

Psychiatric Hospital/Behavioral Health Unit Name	Insurance Category	Payer
Massachusetts General Hospital	Commercial	Tufts
Walden Behavioral Care, LLC	Commercial	Tufts

Table A-4: Rehabilitation Hospitals with 25 or Less Inpatient Discharges

Rehabilitation Hospital Name	Insurance Category	Payer
Rehabilitation Hospital of the Cape and Islands	Commercial	Tufts

Physician Groups

Physician group data was provided for the parent physician groups that were the largest based on revenue volume within a payer's network for calendar year 2009. Once the physician groups were identified, the data for the physician groups was provided in a manner analogous to the outpatient hospital data. The method for calculating relative prices for physician groups was similar to the method used for hospital outpatient services.

For all insurance types, only those physician groups that had annual revenue from a payer exceeding a $200,000 payer revenue threshold amount were reported.

Other Providers

Other provider data was provided for calendar year 2010 only. The services provided within each provider type may have differed substantially between providers. This may have limited comparisons of providers within the same provider type. Other providers were reported in the following categories:

- Ambulatory Surgical Centers
- Community Health Centers
- Community Mental Health Centers
- Freestanding Clinical Laboratories
- Freestanding Diagnostic Imaging Centers
- Home Health Agencies
- Skilled Nursing Facilities

The data and analysis were similar to those described for outpatient hospital and physician groups. Adjustments were made to the data to correct minor reporting errors by the payers.

For all insurance types, only those providers that had annual revenue from a payer exceeding a $200,000 threshold amount were reported.

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