CENTER FOR HEALTH INFORMATION AND ANALYSIS

Relative Price and Provider Price Variation in the Massachusetts Commercial Market

October 2020

Technical Appendix

CHIA.

Publication Number 20-291-CHIA-01

Relative Price and Provider Price Variation in the Massachusetts Commercial Market (October 2020)

TECHNICAL APPENDIX

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Introduction

This Technical Appendix provides an overview of the data source and analytic methods that were used in *Relative Price and Provider Price Variation in the Massachusetts Commercial Market (October 2020)*, by the Center for Health Information and Analysis (CHIA).

Relative price (RP) is a calculated, aggregate measure used to evaluate variation in health care provider prices in a given calendar year (CY). The Center for Health Information and Analysis (CHIA) is statutorily mandated under Massachusetts General Law s Chapter 12C to collect and report data on relative prices from private and public health care payers operating in the Massachusetts health care market. RP reporting supports the Commonwealth's goals of promoting transparency, cost containment, and efficiency.

RP compares prices paid to different providers within a payer's network, while accounting for differences in intensity of services (for inpatient services), the quantity and types of services delivered by providers (for outpatient services and for physician groups and other providers), and for differences in the types of insurance products offered by payers.

In addition, RP data forms the basis for the calculation of statewide relative price (S-RP), a measure of the prices paid to a provider across multiple payers in a given calendar year. Pursuant to Section 2TTTT of Chapter 29 of the Massachusetts General Laws, CHIA is required to calculate commercial S-RP values for acute care hospitals, and compare these results with the statewide median. Hospitals with S-RP values below 120 percent of the statewide median relative price will be eligible for payments from the Community Hospital Reinvestment Trust Fund (CHRTF).

S-RP blends relative price across payers using payer payment distributions. Since relative price is calculated within each payer, a blending of relative prices will not account for absolute price differences across payers. For this reason, it is not advisable to use S-RP to understand absolute price differences between one provider and another. S-RP should only be used for directional purposes.

Data and Methodology

Payers submit three data files for different provider types: Hospitals including Inpatient and Outpatient datasets separately, Physician Groups, and Other Providers. Relative price is calculated for each of the payer's networks. A network is defined as a provider type-insurance type combination, e.g., Acute Inpatient Hospital-Commercial or Physician Group-Medicare Advantage. Within each network, RPs are calculated separately for each product type, as well as for all products combined.

Payers report data for the following insurance categories:

- Commercial (self and fully insured)
- Medicare Advantage
- Medicaid Managed Care Organization (MCO)
- Medicare and Medicaid Dual-eligibles, aged 65 and over
- Medicare and Medicaid Dual-eligibles, aged 21-64

- Other

Payers report the following product types:

- Health Maintenance Organization and Point of Service (HMO and POS)
- Preferred Provider Organization (PPO)
- Indemnity
- Other

RP calculations are performed at the network level. A network is defined by the following attributes:

- Insurance Payer
- Provider Type (Hospital-Inpatient, Hospital-Outpatient, Total Hospital, Physician Group, Other Provider)
- Insurance Category (Commercial (self and fully insured), Medicare Advantage, Medicaid Managed Care Organization (MCO), Medicare and Medicaid Dual-eligibles aged 65 and over, Medicare and Medicaid Dual-eligibles, aged 21-64, Other)
- Product Type (HMO and POS, PPO, Indemnity, Other, All products combined)

The basic steps for computing RP are the same across all file types:

1. Compute provider-specific aggregate price levels. (This calculation varies by provider type)
2. Take unweighted average of provider-specific price levels to obtain the network average price level.
3. For each provider, divide provider-specific price level by network average price level to obtain each provider's relative price (RP).

By construction, the network average RP equals 1.0 for each payer network. Providers with RP above 1.0 receive higher-than-average payments in a payer's network, and vice versa.

Limitations

RP is an aggregate measure for assessing providers' overall price levels across all services. It is not designed to compare provider prices for particular services. And, because the measure is specific to each payer's network, RP values are not directly comparable across payers. For example:

> *The network average price level for payer A corresponds to $200, while the network average price level for payer B is $100. Provider X has RP=0.8 for payer A, which represents an absolute dollar amount of 0.8*$200=$160. The same provider has RP=1.5 for Payer B, which corresponds to an absolute dollar amount of 1.5*$100=$150. So while Provider X has a higher RP value for Payer B, Provider X was reimbursed a higher amount from Payer A.*

The example illustrates that a higher relative price value may not translate to higher absolute price; therefore RP cannot be used draw conclusions about absolute price levels across payers.

For hospital inpatient services, payers report case mix adjustment scores to enable the calculation to control for differences in patient acuity. For hospital outpatient and physician services, payers report the service category groupings used in their contracts with these provider types, as well as the associated distribution of claims payments within these service groupings. These service groupings enable the calculation to control for differences in the types of services provided at different hospitals. Because both the case mix index and service groupings are payer-specific, relative prices cannot be compared across payers or insurance categories. In addition, because relative price results are reported relative to payer-specific, and data year-specific network averages, relative prices cannot be compared across data years.

Blue Cross Blue Shield and Tufts Health Plan are unable to report inpatient and outpatient psych hospital services separately due to the nature of their capitated contract arrangements. Therefore, the Outpatient Hospital RP value includes payments for Inpatient Psych services as well.

RP Percentiles

Within each payer's network, hospitals are ordered by blended relative price, and the Blended RP Percentile is calculated. Blended RP Percentile reports the position (from 0 to 100%) of a hospital's blended RP as compared to all the hospitals in the payer's network[1]. Blended RP Percentile is calculated using data for all hospitals that have a calculated Blended RP. Hospitals without a calculated RP are excluded from the percentile calculation, and no percentile is reported. Using this methodology, the hospital (or hospitals) with the lowest Blended RP will have a percentile of 0%, and the hospital with the highest RP in the network will have a Blended RP percentile of 100%[2]. The calculation is performed on the Hospital Blended RP after being rounded to two decimal places. If all the hospitals in the network have the same Blended RP, they are listed with a percentile of 0%. If there is a single hospital in the network, the hospital will have a percentile of 100%.

This calculation is also performed within each payer's network for physician groups and other providers. The methodology for calculating the percentile for Physician Group RP and Other Provider Group RP is consistent with the methodology describe for Hospital Blended RP percentile, using the same methodology.

Acute Hospital RP Quartiles

Within each payer's network, hospitals are ordered by blended relative price, and grouped into quartiles such that each quartile contains an equal (or as close to equal as possible) number of providers. For each payer, the first quartile (Q1) contains hospitals with the lowest RP values while Q4 contains those with the highest RP values in the network. Payments to hospitals assigned to Q1 are then summed across all payers to calculate total Q1 payments. Note that a specific hospital may be assigned to different quartiles in different payer networks. Additionally, not all hospitals are included in each payer's network.

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[1] The percentile for a hospital is defined as the number of hospitals with an RP less than the hospital divided by the number of hospitals with an RP less than the hospital plus the number of hospitals with an RP greater than or equal to the hospital, excluding the hospital for which the percentile is being calculated.

[2] If there are multiple hospital with the same, highest RP the percentile will be the same for all of these "highest" hospitals, but it will not be 100%. Footnote 1 describes the calculation.

RP quartiles calculations include only payments made to acute hospitals that were included in the blended relative price calculation after payment thresholds were applied.

Physician Group RP Quartiles

Within each payer's network, physician groups are ordered by relative price and grouped into quartiles such that each quartile contains an equal (or as close to equal as possible) number of providers. For each payer, the first quartile (Q1) contains physician groups with the lowest RP values while Q4 contains those with the highest RP values in the network. Payments to physician groups assigned to Q1 are then summed across all payers to calculate total Q1 payments. Note that a specific provider may be assigned to different quartiles in different payer networks.

Physician Group Composite RP

The largest physician groups were identified by the share of total commercial payments in CY2017. Because RP values are not comparable across payers, physician groups are examined across payers in this chart using a "composite RP percentile." To compute this value, each physician group is ranked within a payer's network. This percentile rank is then averaged across payers, weighted by the payer share of the provider's total payments, to achieve the composite RP percentile depicted in the report.

Payers Included in the Report and Included Insurance Categories

PAYER	SHORT NAME	2018 HOSPITAL RP	2017 PHYSICIAN GROUP RP
Aetna Health Inc. (PA) - Aetna Life Ins. Co. (ALIC)	Aetna	Commercial; Medicare	Commercial; Medicare
AllWays Health Partners	AllWays	Commercial; Medicaid	Commercial; Medicare; Medicaid; Dual-Eligibles, 18-64; Dual-Eligibles, 65+
Blue Cross Blue Shield of Massachusetts	BCBS	Commercial; Medicare	Commercial; Medicare
BMC HealthNet Plan, Inc. (Medicaid MCO)	BMC HealthNet	Commercial; Medicaid; Dual-Eligibles, 65+	Commercial; Medicaid; Dual-Eligibles, 65+
Cigna Health and Life Ins. Co. (EAST)	Cigna-East	Commercial	Commercial
CIGNA Health and Life Insurance Company (CHLIC)	Cigna-West	Commercial	Commercial
Fallon Community Health Plan	Fallon	Commercial; Medicare; Medicaid; Dual-Eligibles, 65+; Other	Commercial; Medicare; Medicaid; Dual-Eligibles, 65+; Other
Harvard Pilgrim Health Care	HPHC	Commercial	Commercial
Health New England, Inc.	HNE	Commercial; Medicare; Medicaid	Commercial; Medicare; Medicaid
Tufts Associated Health Maintenance Organization, Inc.	Tufts Commercial	Commercial; Medicare	Commercial
Tufts Medicare Advantage	Tufts Medicare	Medicare	Medicare
Network Health, LLC (aka Tufts Public Plans)	Network Health	Commercial; Medicaid; Dual-Eligibles, 18-64	Commercial; Medicaid; Dual-Eligibles, 18-64
UniCare Life and Health Insurance Company[i]	UniCare	Commercial	
United Healthcare Insurance - Medicare & Retirement (SCO)	United SCO	Dual-Eligibles, 65+	Medicare
United Healthcare Insurance Company[i]	United	Commercial	
United Healthcare Insurance Company - Medicare Advantage	United Medicare	Medicare	Medicare

[i] Excluded from analysis due to data quality concerns