



HealthPartners White Paper

Total Care Relative Resource Value (TCRRV™)

A Measurement Approach to Achieve the Triple Aim

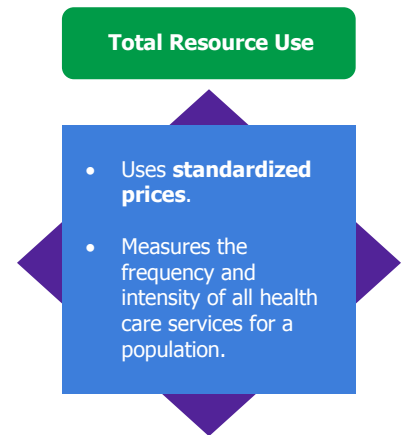
HealthPartners developed Total Care Relative Resource Values (TCRRVs) in 2004, as part of its Total Cost of Care measurement method. TCRRVs quantify resource-use for all procedures and services in a health care system, and are designed to facilitate easy comparisons within and across procedures, peer groups, and care settings (i.e. inpatient, outpatient, professional, and pharmacy). They are commonly used to support affordability initiatives, to identify instances of overuse / inefficiency, and to measure price variations.

When coupled with HealthPartners' other Total Cost of Care measures, TCRRVs facilitate a balanced, person-centered analysis of health care cost, resource use, and price drivers, accounting for 100 percent of the care that patients receive. HealthPartners' TCRRV measure was endorsed by the National Quality Forum in January 2012. Subsequently, measures were re-endorsed in September, 2017.

Introduction

For organizations concerned with health care affordability, it is important to understand how health systems use resources, and how those resources translate into outcomes. As part of a broader initiative to measure the cost of care, HealthPartners developed the Total Care Relative Resource Value (TCRRV™) methodology. Put simply, TCRRVs quantify resource-use for all procedures and services in a health care system. These measures facilitate relativity among services and populations which are not traditionally comparableⁱ—this enables users to evaluate how efficiently providers, hospitals, and physicians treat various populations. TCRRVs are an integral part of HealthPartners' *Total Cost of Care* measurement package, which is designed to identify resource-use and pricing opportunities while maintaining or improving quality outcomes and patient experience.

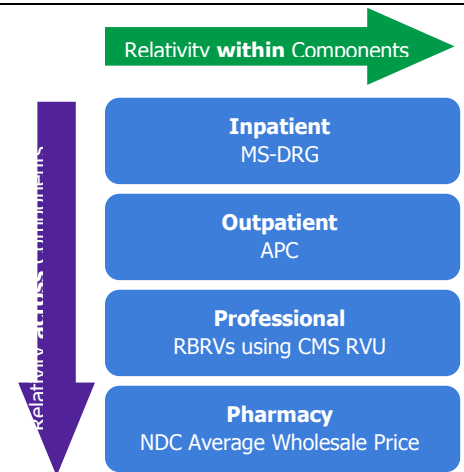
HealthPartners develops TCRRVs using data from the PharMetrics database, which includes information on 9 million lives from across the United States. A SAS-based grouper enables users to join these values with their own data. The grouper ensures consistent application of the TCRRV methodology across the various places of service within the health care system, and generates validation output. The following document describes this methodology in more detail, and briefly comments on the ways in which users may benefit from measuring and analyzing resource use.



What are TCRRVs?

Total Care Relative Resource Values (TCRRVs) quantify resource-useⁱⁱ for all procedures and services in a health care system. These values are designed to facilitate easy comparisons across procedures, peer groups, and health care settings (i.e. inpatient, outpatient, professional, and pharmacy).

TCRRVs are relative **within** and **across** care settings. In other words, the values assigned to services may be added and compared, regardless of whether services were performed within the same care setting. This permits users to value a patients' total resource consumption.



What are the Advantages of Using TCRRVs?

The TCRRV approach offers many benefits, including:

- TCRRVs are easy to use. They can be treated like any other dollar field; however, they reflect the resources required to perform services.
- TCRRVs can also be used to measure price variation—since they measure resource use, TCRRVs can be coupled with actual costs to quantify price. Expressed as a formula, Total Cost = Total Resource Use × Price.



- TCRRVs are well-vetted. They are the foundation of HealthPartners’ National Quality Forum-endorsed “Total Resource Use” measure. They have been used to support improvement initiatives in the mid-west for over 10 years, and are licensed by more than 60 organizations across the country.ⁱⁱⁱ
- TCRRVs identify overuse/inefficiency and price variation within and among provider groups, employer groups, geographic regions, and places of service.
- TCRRVs can optimize value for emerging ACOs. They enable easy reporting for large organizations seeking to lower costs by improving resource use and lowering price.

Developing TCRRVs

The HealthPartners TCRRV grouper assigns values for all inpatient, outpatient, professional, and pharmacy services. To establish relativity **within** each care setting, the grouper utilizes the CMS relative weighting systems—inpatient MS-DRGs, outpatient APCs and RVUs, and professional RVUs. For service-types that do not have CMS weights, relative weights are imputed based on the average cost per unit; except in the case of pharmacy, the process uses average wholesale price.

To establish relativity across care settings, the grouper calibrates each weight scale with an “average-paid-per-weight” value for each setting. Because they are relative within and across settings, TCRRVs function like any other monetary field.

Allowed Distribution	TCRRV Distribution
% Inpatient	% Inpatient
% Outpatient	% Outpatient
% Professional	% Professional
% Pharmacy	% Pharmacy

Building Inpatient TCRRVs

TCRRVs for inpatient services are established at the MS-DRG level.

- Relativity within the inpatient care setting is established by leveraging MS-DRGs, and their corresponding weights.
- Since hospitals typically expend more resources on the first day of a patient’s stay than on the second or subsequent days, HealthPartners re-calibrates MS-DRG weights into a day 1 and a day 2+ weight.^{iv} This distinction permits TCRRVs to distinguish between hospitals that have varied lengths of stay.
- To standardize TCRRVs across care settings, each MS-DRG code’s weight is multiplied by the average inpatient paid amount-per weight. This transforms the weight into a value that is relative to the other care settings.

Finally, HealthPartners provides upper and lower thresholds for each MS-DRG—it uses these boundaries to determine whether TCRRVs were accurately assigned.

The following two tables provide an example of how inpatient TCRRVs are developed and applied to users' data.

Example

The table below illustrates the TCRRV development process for two DRGs.^v In both cases, HealthPartners has calculated a "Day 1 weight," a "Day 2+ weight," and an average paid amount.

Table 1: Inpatient TCRRV Development

Development	Day 1 Wt	Day 2+ Wt	Avg. Paid Per Wt	Day 1 TCRRV	Day 2+ TCRRV	Upper Threshold Day 1	Upper Threshold Day 2+	Lower Threshold Day 1	Lower Threshold Day 2+
Knee Replacement (DRG 470)	2.062	0.011	\$13,500	27,837	149	457,822	2,454	5,737	30
Major Cardio w MMC (DRG 237)	2.870	0.036	\$13,500	38,740	486	629,979	7,918	7,894	99

The "Day 1 TCRRV" for knee replacement surgery is calculated by multiplying the day 1 weight (2.062) by the average paid amount (\$13,500), for a resulting value of 27,837. The "Day 2 TCRRV" is calculated in the same fashion: $\$13,500 \times 0.0109 = 147$. The "upper" and "lower" thresholds are used to ensure that when the TCRRVs are applied to the user's data, the amount of the TCRRV assigned accurately reflects the resources consumed.^{vi} TCRRVs for major cardiovascular procedures are also developed according to this process, as are TCRRVs for all other MS-DRGs.

After developed, these values are applied to users' data; the day 1 weight is added to the day 2+ weight for as many additional days as the patient was admitted. This establishes a "Total TCRRV," which may be added or compared to values derived in other care settings, or to other dollar fields within users' data. For instance, a user could divide the paid amount (or allowed amount) for each admission by the "Total TCRRVs," in order to establish a price-comparison.

Table 2: Inpatient TCRRV Application

Application	LOS	Paid Amt.	Day 1 TCRRV	Day 2+ TCRRV	Total TCRRV	Price
Knee Replacement (DRG 470)	2	\$25,000	27,837	+ 149	= 27,986	$\$25,000 \div 27,986 = 0.89$
Major Cardio w MMC (DRG 237)	3	\$40,000	38,740	+ 2 (486)	= 39,712	$\$40,000 \div 39,712 = 1.01$

Building Outpatient TCRRVs

Outpatient TCRRVs are established at the service line level, using the revenue procedure code on each line. Similar to the inpatient-development logic outlined above, the outpatient grouper leverages CMS weights to create relativity between services. In this case, the grouper utilizes both APC and RVU weighting scales.

- APC weights establish relativity between APC-weighted services, while RVU weights establish relativity between RVU-weighted services.
- To establish relativity across both APC and RVU services, as well as services provided in other care settings, the "average paid-per weight" is multiplied by the corresponding service's APC or RVU weight.
- Finally, the outpatient grouper also provides upper and lower thresholds and again uses these boundaries to determine whether the TCRRVs were accurately assigned to the user's data.

Building Professional TCRRVs

Professional TCRRVs are established at the service line level using the place of service, procedure code and procedure modifier.

- To establish relativity between professional services, TCRRVs utilize the CMS RVU weighting scale, which assigns a relative weight to each professional service—weights account for service-type and service-location. When weights do not exist, they are imputed using the average paid per service.
- Some professional services are performed both in office and hospital settings; in these instances, the TCRRV method values office-based services at a higher rate, to account for the office’s overhead expenses. When the same professional service is performed in a hospital, it is expected that the hospital will submit a separate bill to account for its overhead expenses. This is a standard in the CMS RVU weighting system.
- The TCRRV assignment process for professional services, like the processes described above, applies an “average paid-per weight” multiplier, and uses thresholds to validate output.

Building Pharmacy TCRRVs

Pharmacy TCRRVs are established at the prescription-level, using the National Drug Code (NDC).

- There is no relative weight scale for prescription drugs; therefore, the process uses the Average Wholesale Price (AWP) for each NDC. This establishes relativity between pharmacy and other care settings.
- Again, an upper and lower threshold is provided to ensure that TCRRVs are accurately assigned to the user’s data.

Targeted Areas of Resource Standardization

Beyond the development process outlined above, HealthPartners employs an additional technique to ensure that TCRRVs are relative across categories, regardless of care setting. Some services (like lab work) require similar resources, whether performed in a hospital, office, or outpatient setting. The grouper “targets” these services, and re-calibrates their TCRRVs to reflect a uniform resource value. For instance, EEGs require the same amount of resources, whether performed in an outpatient hospital or a free standing clinic. The TCRRV assignment process identifies outpatient EEG services and, deviating from the category-specific logic outlined above, assigns them the same resource value that professional EEGs receive. This ensures that all like-services are consistently measured, and that TCRRVs remain additive, across settings.

TCRRV Uses and Accolades

HealthPartners' Total Resource Use measure (built using TCRRVs), was reviewed and endorsed by the National Quality Forum—the NQF tested whether these measures deliver reliable and valid results, whether they are user-friendly and feasible to implement, and whether the results they produce are relevant. After this review, the NQF issued an endorsement for these methodologies, confirming both their integrity and their utility. As part of a four-year NQF maintenance process involving another rigorous review with emphasis on uptake, the Resource Use measure was re-endorsed in 2017.

As this endorsement noted, TCRRVs have many potential uses and are designed to support a variety of analytical initiatives. Having been in development and use for over a decade, these measures help providers, payers, employers, and government entities to approximate the resources used to care for relevant populations. Below are some high-level examples of ways in which various entities might use these measures.

- **Providers** can use TCRRV values to estimate overall costs, and to evaluate practice efficiency and price competitiveness.
- **Payers** can use TCRRV values to design benefits packages / create tiered networks, to develop reformed payment approaches (such as shared savings agreements).
- **ACOs** can use TCRRV values to develop payment strategies. For instance, over 80% of HealthPartners' membership is linked to providers who are paid on TCOC-based shared savings agreements.
- **Government entities** can use TCRRV measures to inform development of exchanges, and other innovations which assess cost and resource use for plans and providers.
- **Employer groups** can use TCRRV measures to support marketplace comparisons of cost, quality, and resource use.
- **Researchers** can use TCRRV data to understand cost and resource drivers in the health care industry.
- **Individuals** can use TCRRV tools and visuals (available at www.healthpartners.com/costandquality) to guide their decisions about their providers and services.

TCRRV Applied

The Dartmouth Institute uses TCRRV methods to track and compare resource use and price in local markets. This effort informs actions to slow spending growth (especially as concerns about geographic variations and pricing power increase).

Most of these suggested uses apply TCRRVs in an additive or comparative manner and demonstrates how Relative Resource Values for different service categories can be added together to summarize treatment episodes. In this example, two patients who need knee replacements receive inpatient, outpatient, professional, and pharmacy services during the duration of their care. Note that their attributed providers were paid equal amounts, but that the second provider did not order a follow-up MRI. By comparing the patients' data, one can see that patient 2 used fewer resources (measured at a 1.3% lower TCRRV), but had a 1.3% higher price-point. This comparison thus shows that reviewing only the patients' total paid amounts (without the use of TCRRVs) would mask a 2.6% cumulative savings opportunity—if provider 1 had utilized resources more efficiently, and provider 2 had offered a lower price point, related expenditures would have been 2.6% lower.

Table 3: TCRRV Addition

TCRRV Process					User Data			Outputs	
Patient 1 / Provider 1									
Service	Weight System	Weight	Avg. Paid Per Wt.	Day / Unit	Billed	Paid	TCRRV	Price	
Professional	Office Visit	RVU	3.03	\$60	1 unit	\$275	\$193	182	\$1.06
Outpatient	MRI	RVU	6.59	\$60	1 unit	\$880	\$658	395	\$1.66
Inpatient	Knee Replacement	MS-DRG	1.052	\$12,420	2 days	\$31,000	\$25,000	26,132	\$0.96
Professional	Surgery	RVU	42.57	\$60	1 unit	\$2,950	\$2,750	2,554	\$1.08
Professional	Office Visit	RVU	3.03	\$60	1 unit	\$275	\$193	182	\$1.06
Outpatient	MRI	RVU	6.59	\$60	1 unit	\$880	\$658	395	\$1.66
Rx	Pain Meds	AWP	15.8	\$0.30	10 pills	\$50	\$50	47	\$1.05
Total	—	—	Not Additive	No Common Avg.	Not Additive	\$36,310	\$29,500	29,888	\$0.99

TCRRV Process					User Data			Outputs	
Patient 2 / Provider 2									
Service	Weight System	Weight	Avg. Paid Per Wt.	Day / Unit	Billed	Paid	TCRRV	Price	
Professional	Office Visit	RVU	3.03	\$60	1 unit	\$320	\$225	182	\$1.24
Outpatient	MRI	RVU	6.59	\$60	1 unit	\$1,500	\$1,100	395	\$2.78
Inpatient	Knee Replacement	MS-DRG	1.052	\$12,420	2 days	\$31,000	\$25,000	26,132	\$0.96
Professional	Surgery	RVU	42.57	\$60	1 unit	\$3,500	\$2,900	2,554	\$1.14
Professional	Office Visit	RVU	3.03	\$60	1 unit	\$320	\$225	182	\$1.24
Outpatient	MRI (not ordered)	RVU	6.59	\$60	1 unit	--	--	--	--
Rx	Pain Meds	AWP	15.8	\$0.30	10 pills	\$50	\$50	47	\$1.05
Total	—	—	Not Additive	No Common Avg.	Not Additive	\$36,690	\$29,500	29,492	\$1.00

Patient 1 vs. Patient 2 → Difference: 1% 0% -1.3% 1.3%

About HealthPartners

Founded in 1957, HealthPartners is the largest consumer-governed, non-profit health care organization in the nation. It is dedicated to improving the health of its members, patients and the community. HealthPartners provides a full-range of health plan services including insurance, administration and health and well-being programs. Since its combination with Park Nicollet in 2013, its care system includes more than 1,700 physicians; five hospitals; 52 primary care clinics; 22 urgent care locations; and numerous specialty practices in Minnesota and western Wisconsin.

Contacts

Sue Knudson
Senior Vice President, Health Informatics
HealthPartners
Susan.M.Knudson@HealthPartners.com
952-883-6185

Chad Heim
Vice President, Health Informatics
HealthPartners
Chad.C.Heim@HealthPartners.com
952-883-5103

ⁱ CMS weights (MSDRGs, APCs, professional RVUs) function "within-category," and are not relative **across** the full spectrum of medical care.

ⁱⁱ "Resource Use" is defined as the utilization and intensity of the services delivered to manage all of a patient's healthcare needs.

ⁱⁱⁱ Figures accurate as of June, 2013.

^{iv} HealthPartners generates a day 1 vs. day 2+ weight using the HCUP Nationwide Inpatient Sample (NIS): Healthcare Cost and Utilization Project (HCUP), 2012. Agency for Healthcare Research and Quality, Rockville, MD.

^v Though only two DRGs are displayed, the HealthPartners grouper calculates TCRRVs for all MS-DRGs.

^{vi} The upper and lower thresholds are developed using PharMetrics data where 96-98% of the claims fall within the established ranges.