



HealthPartners®

HealthPartners White Paper

# Total Cost of Care (TCOC) and Total Resource Use

---

## A Measurement Approach to Achieve the Triple Aim

HealthPartners' Total Cost of Care and Resource Use (TCOC) measurement approach addresses one of the most fundamental problems related to population health: rising health care costs. This analytical framework is designed to support affordability initiatives, to identify instances of overuse / inefficiency, and to highlight cost-saving opportunities—it is a full population, person-centered measurement tool that accounts for 100 percent of the care provided to a patient. What's more, the TCOC reporting suite supports multiple levels of analysis—users can compare cost, resource, and utilization metrics by provider, by condition cohort, by procedure or by patient. By facilitating these comparisons, TCOC promotes the Institute for Healthcare Improvement's triple aim objectives: improving population health, improving patient experience, and reducing the per capita cost of health care services. TCOC measures were endorsed by the National Quality Forum in January, 2012.

## Introduction

In recent years, many organizations have begun to measure and track health care costs. This process involves a mix of complicated factors, including patient illness burden, market-specific variation, service utilization, and negotiated prices. As a result of these complexities, few cost measures are flexible enough to support different levels of analysis; in other words, most existing measures cannot be disaggregated or rolled-up. The HealthPartners TCOC framework was built to address this problem—it provides a robust, scalable measurement system for both cost and resource use, as well as patient-level predictions to identify high-risk individuals. Additionally, it supplies a reporting suite which easily and systematically pinpoints savings opportunities at the population, provider, condition, procedure, and patient-levels. This versatility is what allows TCOC to identify problem areas, and to produce actionable results. Having been in development and use for over a decade, these measures have helped providers, payers, employers, researchers, and government entities to make a meaningful difference in their efforts to manage population health.

## Why are Total Cost of Care and Total Resource Use Important?

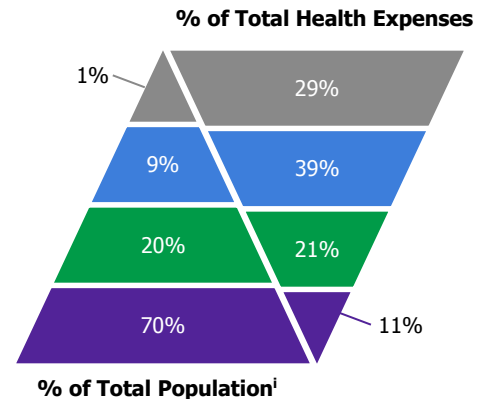
In 2012, health care spending represented 17.9 percent of the United States gross domestic product (GDP) and it is expected to continue to rise to over 20 percent by 2018—this is the largest percentage of any developed nation in the world.<sup>ii</sup> Rising costs prohibit thousands from being able to afford treatment, and contribute largely to personal bankruptcies.

Consequently, affordability of care has become an increasingly prominent issue. In spite of this fact, however, few publically-available cost and resource use measures exist.<sup>iii</sup> HealthPartners developed the Total Cost of Care measure to bring awareness of health care costs to providers and patients, and to drive improved value for the health care dollar.

TCOC measures address this goal by identifying potential over/underuse of health services. For example, a primary care physician might refer patients with back pain directly to an orthopedic surgeon; as a result, these patients would have increased specialist costs and receive more back surgeries than would be expected for their population. Further examples include:

- Preventable emergency department visits and hospitalization.
- Inappropriate medication use, lab testing, or consultations.
- Unwarranted diagnostic or surgical procedures.
- Inappropriate site-of-service usage (e.g. performing MRI at a hospital instead of a free standing radiology center).

These types of overuse have led to wide variation in health care cost and use across geographies. Studies suggest that Medicare spending would be decreased by almost 30 percent if medium and high spending geographies consumed health care services comparable to that of lower spending regions.<sup>iv</sup> Experts agree that reducing overuse can make care safer and more efficient.<sup>vi</sup> The TCOC framework was created to address this type of problem, with the goal of decreasing costs without sacrificing quality.



## TCOC Implications and Applicability

Having been in development and use for over a decade, TCOC measurement tools help providers, payers, employers, researchers, and government entities to approximate the costs and resources used to treat relevant populations. Below are some high-level examples of ways in which various entities might use these measures.

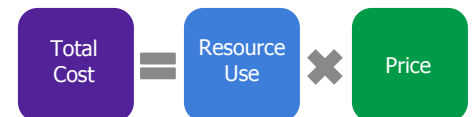
- **Providers** can use TCOC values to estimate overall costs, and to evaluate practice efficiency and price competitiveness.
- **Payers** can use TCOC values to design benefits packages / create tiered networks, to develop reformed payment approaches (such as shared savings agreements).
- **ACOs** can use TCOC 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 TCOC measures to inform development of exchanges, and other innovations which assess cost and resource use for plans and providers.
- **Employer groups** can use TCOC measures to support marketplace comparisons of cost, quality, and resource use.
- **Researchers** can use TCOC data to understand cost and resource drivers in the health care industry.
- **Individuals** can use TCOC tools and visuals (available at [www.healthpartners.com/costandquality](http://www.healthpartners.com/costandquality)) to guide their decisions about their providers and services.

### TCOC Applied

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

## TCOC Framework and Design

HealthPartners' TCOC framework is a full population, person-centered analytical tool that accounts for 100 percent of the care provided to a patient. By design, this process measures the cost of that care, and also quantifies resources used; few existing measurements combine these efforts. When considered together, they facilitate a standardized price-comparison (as total cost is the product of resource use and price). In other words, by disentangling resource use from cost, TCOC enables users to directly assess the impact of providers' pricing decisions, which can involve fee schedules, referral patterns, and place-of-service choices.



TCOC measures are communicated using a relative reporting system, which indexes performance against a benchmark average. The Total Cost Index (TCI) and Resource Use Index (RUI) support multiple levels of analysis—users can compare cost, resource, and utilization metrics by provider, by condition cohort, procedure or by patient. At each level of analysis, TCOC measurements and predictive analytics account for varying illness burdens by using a commercial risk adjustment tool.

The measures (TCI and RUI) remain the only ones of their kind to be NQF endorsed at the population level, with the ability to cascade to other levels and support more particularized analyses.

## TCOC Measurement and Development

---

### Total Cost

Total Cost measurement begins by coupling administrative claims data with membership eligibility data. To preserve accuracy, this process considers patients who were active/eligible for at least 9 of the 12 medical months in the measurement period. All administrative claims—for inpatient, outpatient, clinic, ancillary, pharmacy, and all other types of services—contribute to the total cost measure for these continuously-enrolled individuals. Population-level costs therefore reflect a per-member per-month (PMPM) sum, estimated by dividing members’ total costs (or paid amounts) by total member months.

To account for a member’s illness burden, both Total Cost of Care and Total Resource Use measures require the use of a commercial risk adjustment tool. HealthPartners uses Johns Hopkins’ Adjusted Clinical Groups (ACG System) to assign each individual a risk score based on diagnoses, age and gender (although other adjustment methods are also supported).

To facilitate peer group comparisons, the TCOC method creates a Total Cost Index (TCI), which compares each provider’s risk-adjusted PMPM against the risk-adjusted PMPM for the appropriate peer group (or benchmark).<sup>vii</sup> Using this measurement process, costs for all providers—even those that treat patients with a high illness burden—can be measured on an even playing field.

Finally, the TCOC reporting suite provides patient-level predicted values, estimating patients’ future costs and probability of inpatient hospitalization. These values help to inform outreach initiatives, and to support the analysis of care models.

**Drill Down to Desired Measurement Level**

Population-Level

Provider-Level

Condition-Level

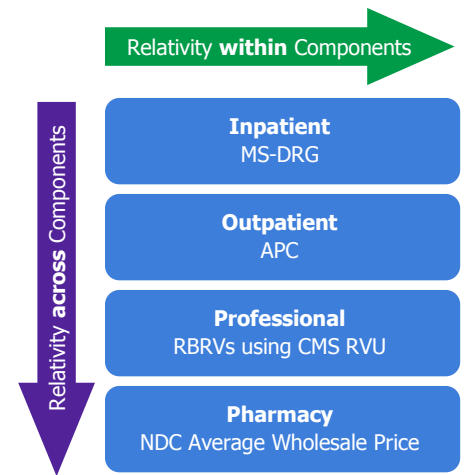
Patient-Level

Procedure-Level

## Resource Use

HealthPartners calculates Resource Use using its patented Total Care Relative Resource Value (TCRRV) algorithm. 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 health care settings (i.e. inpatient, outpatient, professional, and pharmacy). The TCRRV algorithm utilizes the Centers for Medicare & Medicaid Services (CMS) relative weighting systems as a starting point, and calibrates the weight scales with an “average-paid-per-weight” value for each setting.<sup>viii</sup> The methodology uses a national commercial database—PharMetrics, Inc. (Watertown, MA)—to establish relativity and calculate category “average-paid-per-weight” values.

Unlike other resource measures (which typically re-price claims to match a standard fee schedule), the TCRRV method takes additional steps to ensure that all places of service are treated consistently. 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.



## TCOC Tools and Levels of Analysis

### Attribution

TCOC measurement serves a variety of analytical purposes. The process of determining how to group individual members depends largely on users’ objectives, and desired unit of measurement. For users hoping to measure costs for an entire health plan, all members should be included. For users wishing to assess a provider group’s patient costs, HealthPartners recommends attributing members to a single provider, to be deemed responsible for the patient’s cost and quality of care. When this information is not available, HealthPartners uses an attribution algorithm to identify the member’s principal provider.

### Peer Groups

In order to support users’ varied needs, HealthPartners’ TCOC process supports various types of peer groupings, which make analysis and comparison easy. Peer groups can be defined any number of ways—the TCOC process categorizes output geographically (by market, region, state, etc.), by specialty (internal medicine, family medicine, pediatrics, etc) and by condition. In other words, peer groups may be established and compared at multiple levels, serving an array of different analytical purposes.

## TCOC Scientific Acceptance

### Reliability

Reliability testing demonstrates the extent to which a measure produces consistent results a high proportion of the time. HealthPartners tested the reliability of TCI and RUI measures using data for Twin Cities metro and regional area primary care providers, for 3 years. By using bootstrapping / re-sampling techniques, the tests assessed reliability by measuring the average variance between sampling iterations and the actual results. In addition, the test analyzed TCI and RUI measures over time, to demonstrate stability and sensitivity to provider changes or improvement initiatives.

Ultimately, the results for each provider group were very robust, and were able to be consistently replicated. When the National Quality Forum employed an independent statistical consultant to review this method, the consultant confirmed that it met NQF standards, and that the results showed that “noise was small, relative to the signal.” For more information about this test, please see accompanying [reliability documentation](#).

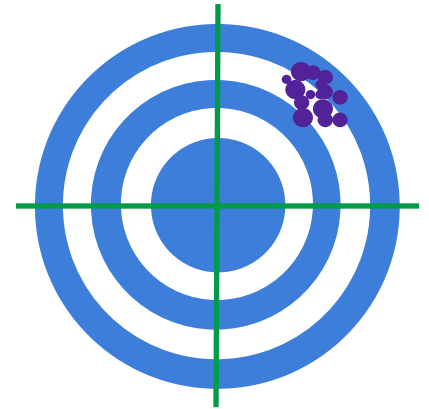
### Validity

Validity testing ensures that measures are substantively meaningful, and relate to one another as intended. Complex measurement systems can easily become over-engineered, and distort the phenomenon they attempt to measure. To ensure that TCOC measures are valid and can be used as advertised, HealthPartners tested a series of assumptions:

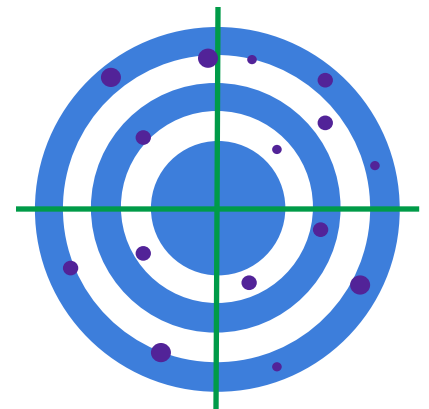
- TCRRVs should correlate well with risk scores, since providers with high risk patients should use more resources in delivering their care.
- The correlation between TCRRVs and risk score should be higher than the correlation between the resource values and PMPM spend amounts, since the latter is impacted by pricing decisions and the former are not.
- Resource use should correlate highly with utilization metrics.
- Case studies and experience should corroborate that TCI and RUI measures accurately and consistently identify providers that are low or high performers.

HealthPartners’ validity tests confirmed and upheld all of the above assumptions. Additionally, these tests were reviewed and deemed credible by the NQF’s independent statistical consultant. For more information on validity testing, please see the corresponding [validity documentation](#).

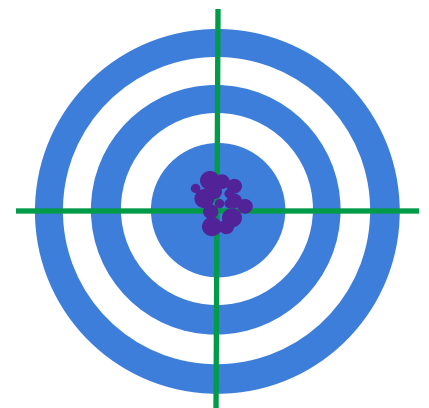
Reliable, Not Valid



Valid, Not Reliable



Reliable and Valid



## Transparency

TCOC methodology and development tools are available online at [www.healthpartners.com/tcoc](http://www.healthpartners.com/tcoc), and can be downloaded free of charge. Additionally, the health plan publically reports the results of its Total Cost of Care analyses online, at [www.healthpartners.com](http://www.healthpartners.com). All providers included on the reports are able to view their TCI and RUI measures, along with a package of broader data provided by the HealthPartners team. Each year, the measure is open for a 45-day comment period prior to public release.

## TCOC Uses and Accolades

The TCOC analytical package was reviewed and endorsed by the National Quality Forum in 2012—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 TCI and RUI measurement tools, confirming both their integrity and their utility.

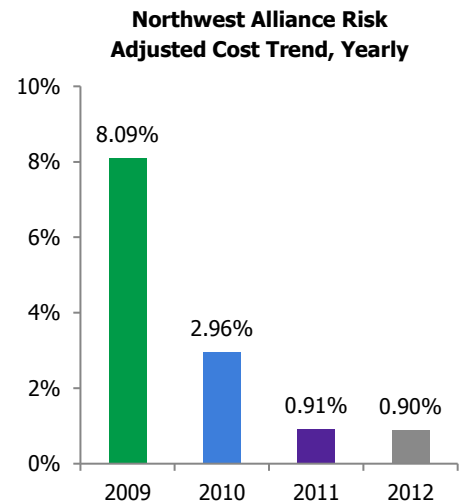
As this endorsement noted, the TCOC analytical package has many potential uses and is designed to support a variety of analytical initiatives. TCOC users have found measurable success can be seen through provider group outcomes and widespread licensing.

## Provider Group Outcomes

The Northwest Metro Alliance is a collaborative multi-provider group, responsible for the care of nearly 300,000 people in the Twin Cities metro area. In 2009, medical costs for the Northwest Metro Alliance population increased more than 8 percent over the previous year, which was more than two percent higher than the Twin Cities metro average. Using TCOC data, the Alliance was able to pinpoint cost-saving opportunities and craft key improvement strategies, including:

- Improving generic prescription rates.
- Providing appropriate care for patients with bronchitis.
- Managing care for patients with low back pain.
- Improving readmission rates.
- Making sure patients with mental health admission have timely clinic visits.
- Facilitating safe, effective inductions of labor.

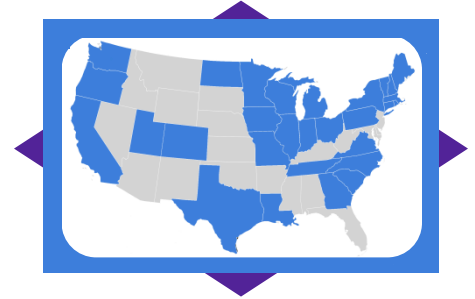
As a result of these focused strategies, Northwest Alliance cost increases were less than one percent for the past two years (below the metro average).



## Licensing

Since 2012, the TCOC measures have been licensed by more than 90 users in 29 states. Licensees are able to find helpful information and publically-reported results on the HealthPartners website; there, they can view cost indices as well as complementary quality metrics (also published online). For members, TCI is displayed as a number of dollar signs (out of four), with fewer dollar signs indicating lower cost.

## TCOC Uptake



## Conclusions

By simultaneously assessing cost and resource use, TCOC users are able to develop a standardized pricing comparison, and to pinpoint opportunities for cost reduction. The reporting suite allows users to determine which cost drivers are within a providers' control, and which are beyond.

As an integrated health care organization, HealthPartners considered the perspectives of multiple stakeholder groups when developing the Total Cost of Care and Total Resource Use analytical package. Coupling cost and resource metrics with measures of utilization, quality, and patient experience can drive greater health care value for purchasers and patients.

More information about Total Cost of Care measurement and reporting is available online at [www.healthpartners.com/tcoc](http://www.healthpartners.com/tcoc).

## 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](mailto:Susan.M.Knudson@HealthPartners.com)  
952-883-6185

Chad Heim  
Vice President, Health Informatics  
HealthPartners  
[Chad.C.Heim@HealthPartners.com](mailto:Chad.C.Heim@HealthPartners.com)  
952-883-5103

<sup>i</sup> Data Source: Thomson Reuters Market Scan Database, National Sample of 21 million insured Americans, 2003-2007.

<sup>ii</sup> The World Bank Database. (2012). Almanac of Chronic Disease. Retrieved November 7, 2013: <http://data.worldbank.org/indicator/SH.XPD.TOTL.ZS>.

<sup>iii</sup> National Committee for Quality Assurance. (2010). *Insights for Improvement - Measuring Health Care Value*. Retrieved July 26, 2011, from NCQA: [http://www.ncqa.org/portals/0/hedisqm/RRU/BI%20NCQA\\_RRU\\_Publication\\_FINAL.pdf](http://www.ncqa.org/portals/0/hedisqm/RRU/BI%20NCQA_RRU_Publication_FINAL.pdf).

<sup>iv</sup> Glass, D. S. (2009, March 12). Accountable Care Organizations. Retrieved November 7, 2013: <http://www.medpac.gov/transcripts/ACO%203%2009.pdf>.

<sup>v</sup> National Priorities Partnership. (2008). National Priorities and Goals. National Priorities Partnership convened by the National Quality Forum. Retrieved July 26, 2011: [http://www.nationalprioritiespartnership.org/uploadedFiles/NPP/08-253-NQF%20ReportLo\[6\].pdf](http://www.nationalprioritiespartnership.org/uploadedFiles/NPP/08-253-NQF%20ReportLo[6].pdf).

<sup>vi</sup> National Quality Forum Issue Brief. (2009). Waste Not, Want Not: The Right Care for Every Patient. Retrieved July 26, 2011: [http://www.qualityforum.org/Publications/2009/07/Waste\\_Not,\\_Want\\_Not\\_The\\_Right\\_Care\\_for\\_Every\\_Patient.aspx](http://www.qualityforum.org/Publications/2009/07/Waste_Not,_Want_Not_The_Right_Care_for_Every_Patient.aspx).

<sup>vii</sup> To remain consistent with the ACG risk-adjustment system, HealthPartners truncates member's combined medical and pharmacy costs at \$100,000. In order for users to drill down into the components of care and service provided, outlying member's total medical and total pharmacy claims are reduced proportionally, by the rate at which their total claims exceed \$100,000. For example, if a member's claims total \$125,000, the truncation factor would be 0.80 (\$100,000 / \$125,000). This factor is then multiplied by all claim lines—this preserves proportional equivalence among all services contributing to the member's total costs.

<sup>viii</sup> In areas where there is no weight-based payment system available (e.g. national drug code or NDC), HealthPartners creates one, ensuring that it is relative to the other payment systems.