nrhi

Network for
Regional Healthcare
Improvement

**Getting to
Affordability**

From Claims to Clarity: Deriving Actionable Healthcare Cost Benchmarks from Aggregated Commercial Claims Data

Section I: Benchmark Overview

Section II: Benchmarking Methodology

October 31, 2016

Acknowledgments

This report was developed with support from the Robert Wood Johnson Foundation.

Network for Regional Healthcare Improvement (NRHI)
Compass Health Analytics
Center for Improving Value in Health Care (CIVHC)
HealthInsight Utah (HI) in partnership with the Utah Office of Healthcare Statistics
Maryland Health Care Commission (MHCC) in partnership with The Hilltop Institute
Midwest Health Initiative (MHI)
Minnesota Community Measurement (MNCM)
Oregon Health Care Quality Corporation (Q Corp)

ABOUT THE NETWORK FOR REGIONAL HEALTHCARE IMPROVEMENT (NRHI)

The Network for Regional Healthcare Improvement is a national organization representing over 35 regional multi-stakeholder groups working toward achieving the Triple Aim of better health, better care, and reduced cost through continuous improvement. NRHI and all of its members are non-profit organizations, separate from state government, working directly with physicians, hospitals, health plans, purchasers, and patients using data to improve healthcare. For more information about NRHI, visit www.nrhi.org.

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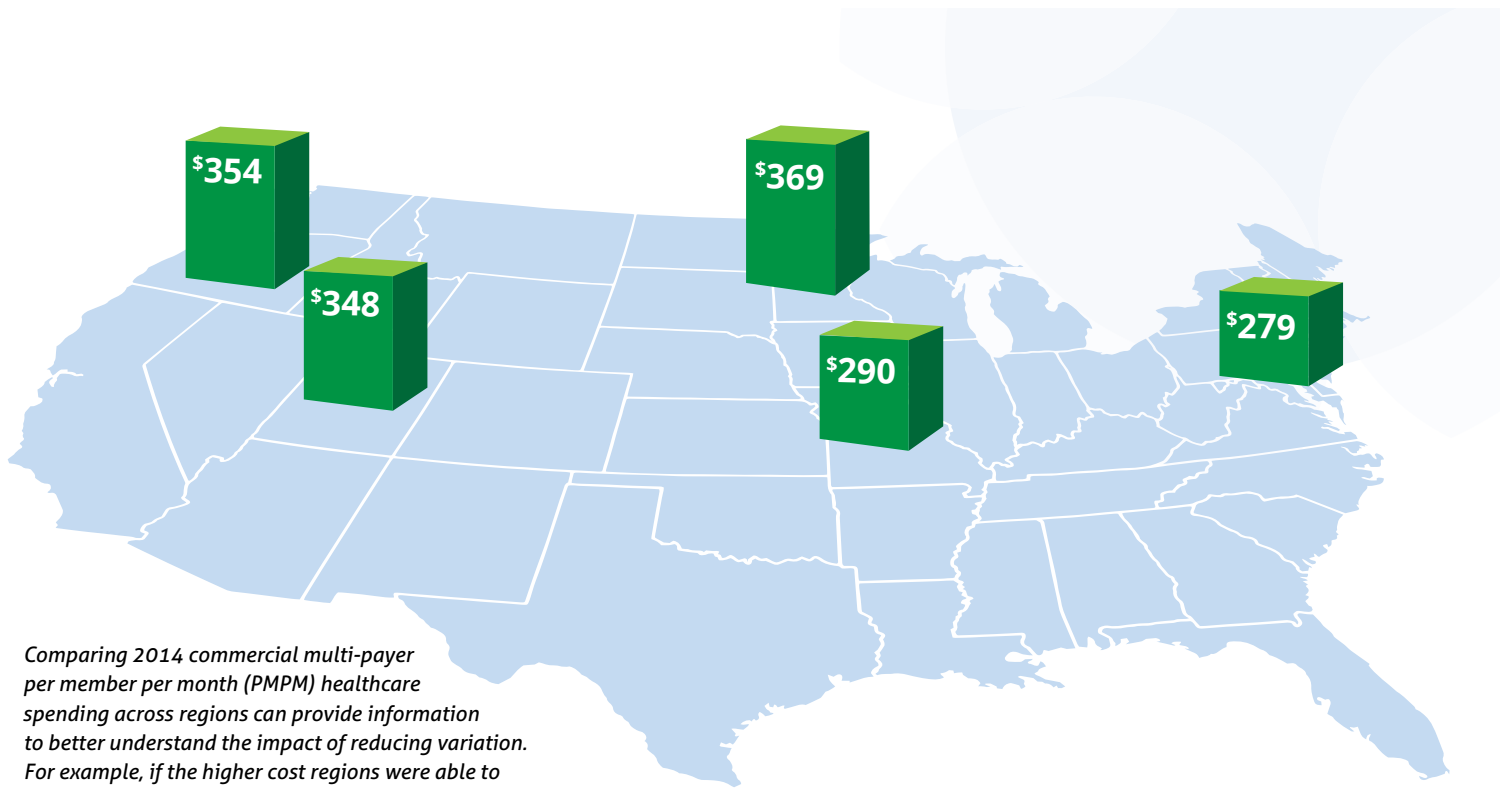
Comparing 2014 commercial multi-payer per member per month (PMPM) healthcare spending across regions can provide information to better understand the impact of reducing variation. For example, if the higher cost regions were able to reduce spending by as little as 2½%—it could result in over $200M in reduced annual healthcare spend.

From Claims to Clarity

Over the past three years Regional Health Improvement Collaboratives (RHICs), working collectively through the Network for Regional Healthcare Improvement's (NRHI's) Getting to Affordability Total Cost of Care initiative, have demonstrated the ability to assess and refine raw regional healthcare cost data, to standardize that data, and to use it in establishing meaningful, local practice level reports and comparisons within and between healthcare markets.

This effort demonstrates:

1. Commercial claims data can be refined and standardized to a level of quality sufficient to make meaningful, actionable healthcare cost comparisons.

2. Given access to sufficient and complete commercial claims data, access to which is typically withheld as being proprietary, it is possible to produce standardized data that would allow meaningful cost transparency. Participants have produced Total Cost Index (TCI), Resource Use Index (RUI) and Price Index (PI) comparisons locally, regionally and nationally—at levels of detail capable of informing provider-level insights into healthcare cost and quality.

This work advances healthcare cost transparency, a necessity toward solving the healthcare cost crisis facing the US. We invite you to join us as we further refine and leverage the results summarized in this report. Join the conversation, access other valuable resources and connect with those on the ground doing the work by joining the Getting to Affordability social learning community at https://g2a.healthdoers.org or email us at Gettingtoaffordability@nrhi.org.

What we've done.

In a noisy environment of tired, misused superlatives, it's easy to overlook an accomplishment that's truly groundbreaking—even if it has the potential to revolutionize the nation's most complex and costly market sector.

This Benchmark Overview tells a story that's never been told. A story that has the potential to tip the momentum of healthcare away from unbridled growth, accelerated spending and inconsistent care quality—tilting it toward a more rational marketplace. This effort demonstrates something often discussed, but never realized until now: a framework that allows healthcare stakeholders to collaborate within and across regions to produce the clear, reliable, standardized commercial healthcare cost data needed to improve care quality, streamline delivery, reduce costs and improve community health.

For decades, one number at a time, we've produced massive volumes of healthcare data that told us stories through the very limited lens of a local system's—or region's—experience. The effort to aggregate and standardize that data, reflected in this Overview, has never been done before. By no means comprehensive—or perfect—it demonstrates proof of concept. We can standardize disparate data. We can establish benchmarks that enable meaningful, actionable healthcare cost comparisons within and between regions. And we can create transparency.

Without transparency, we lack broader insight. Without broader insight, we lack the ability to recognize disparities. To identify outliers. And to make meaningful, informed changes to the work we do in an effort to enhance care quality, reduce costs and improve community health.

Price x Utilization = Total Cost
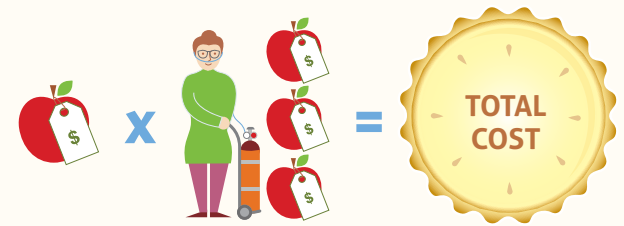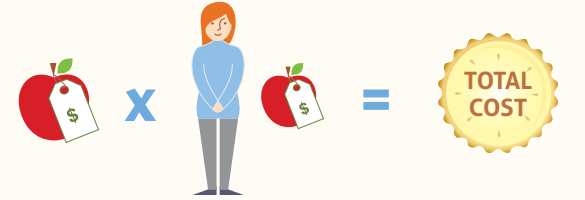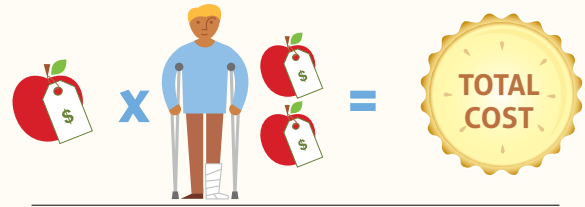
Price (PI)   Utilization (RUI)   Total Cost Index (TCI)

The Total Cost Index (TCI) can be separated into two components, the Resource Use Index (RUI) and the Price Index (PI). By breaking TCI into these component parts, we're able to ascertain whether observed cost differentials are a result of above (or below) average resource use, prices paid for services, or a combination thereof. And when standardized, high-quality data is available in multiple regions, it's possible to make meaningful cost comparisons at the state, local and national levels, identify outliers, and better understand where to look for the underlying causes of those differentials.

Total Cost Index and Resource Use Index:
Commercial Population 2014
Combined Attributed and Unattributed

Measure	HI Utah	MHCC Maryland	MHI St. Louis, MO	MNCM Minnesota	Q CORP Oregon
Risk Adjusted Total PMPM Per Member Per Month	$348	$279	$290	$369	$354
TCI Price x Utilization	1.07	0.86	0.89	1.13	1.09
RUI Utilization	1.08	0.88	1.08	1.05	0.93
PI Price Index	0.99	0.97	0.82	1.08	1.17

How we've done it.

Over the past three years, the Network for Regional Healthcare Improvement (NRHI) has collaborated with several of its member Regional Health Improvement Collaboratives (RHICs) and other regional partners to advance its Total Cost of Care (TCOC) initiative. Working in phases, the initiative has proven that existing—and abundant—regional healthcare data may hold the secret to advancing healthcare cost transparency. Here's how it works:

Our process calculates all healthcare costs for each commercially insured patient in the quality-controlled regional datasets. In some cases, such as when comparing regions, we include all the patients in the TCOC measures. In other cases, such as when providing comparative insights to practices about their patient panels in value-based payment systems, we include only patients who see a Primary Care Provider (PCP) during the year. Regional comparisons look the same on both populations. Learn more about how these regions have produced, shared and used this data to support their local regions by visiting www.nrhi.org/work/multi-region-innovation-pilots/tcoc/.

PHASE I: DATA ASSESSMENT AND STANDARDIZATION.

In Phase I, five RHICs worked together to understand differences in their data sources and develop criteria for assessing data quality and determining comparability. These standards allowed each participant to determine which portions of their data should be used to produce meaningful cost measures. A benchmarking approach was developed and tested. These trial benchmarks were not published, but the lessons learned formed the basis for Phase II.

PHASE II: PROOF OF CONCEPT.

Using the approach developed in Phase I, five participating RHICs selected specific cost data subsets, or snapshots, that represented those populations whose claims data was of sufficient completeness and stability to support reliable comparisons. Those populations were then used to benchmark specific cost measures, and to demonstrate the potential to compare those costs within and among regions.

These benchmarks are based on limited populations, and therefore don't support comprehensive regional healthcare cost comparisons—yet. But they do prove that, with access to sufficient volumes of stable, existing (but often inaccessible) claims data, it's possible to: (a) refine dissonant regional claims information into standardized, high-quality, transparent data; and (b) generate results based on the application of standardized methodologies to establish benchmarks for inter- and intra-regional care cost comparisons.

Clearer data through collaboration

Until now, efforts to achieve transparency in commercial cost data have been hindered by the lack of standardization among health measures and underlying data. A data point in one region—or even one healthcare system—calculated differently than a data point of the same name in another.

While there have been attempts to analyze disparate data in pursuit of standardization, the resulting data sets lack the granularity to inform meaningful, actionable comparisons.

This initiative is markedly different. It relies on data made available locally through unique relationships developed among regional health improvement collaboratives (RHICs) and their many stakeholders. That data, once aggregated and standardized, enables accurate comparisons of inter- and intra-regional healthcare costs.

What makes our data/model different?

The healthcare universe is awash in data. Unfortunately, very little of that data is available in a form that allows for the type of clear, meaningful or accurate comparisons that could inform healthcare decisions on the local, regional or national level.

This multi-payer, commercial benchmarking data is different because:

- **It's more complete.** This benchmarking effort is utilizing data capable of painting a clear picture of variation in regional healthcare expenditures—and of where those costs are incurred. It represents a larger slice of the market than a single payer's data.

- **It's subject to rigorous analysis and centralized quality assessment.** Only data that withstands the rigors of our process is made available for use in modeling and comparisons. Our standards for quality are high—and can produce valuable analysis for use in the marketplace.

- **It's tied to practice.** The data used throughout this project is highly granular, allowing deep, thorough and specific views of local costs. Leveraging robust provider directories maintained locally provides a solid basis for accurate attribution of patients. Because of that granularity, the results are actionable.

- **It's gathered locally.** As the product of regional collaboration, our data is vetted and aggregated by stakeholders who understand their marketplace and the nuances of the numbers they produce.

Benchmarking: making good data better

Among the lessons learned during NRHI's benchmarking efforts, few were more important than those learned by comparing results at various levels across regions. Fortunately, the benchmarking process involves a series of checkpoints, each allowing intense scrutiny of results—both within and across regions.

During one of those checkpoints, a participating RHIC—Colorado's Center for Improving Value in Health Care (CIVHC)—recognized the enormous impact that their risk score was having on the Total Cost Index (TCI) calculation. While CIVHC's unadjusted per member per month costs appeared to be consistent with those of other participating RHICs, its risk score was quite low relative to the other regions—and raised red flags.

Unadjusted PMPM

Unadjusted PMPM	CIVHC	Regional Low	Regional High
Overall	$321	$301	$365
Inpatient	$49	$34	$64
Outpatient	$91	$58	$92
Professional	$112	$104	$158
Pharmacy	$70	$55	$86

Average Rick Score

	CIVHC	Regional Low	Regional High
Average Risk Score	0.85	0.92	1.13

After participating in the benchmarking effort, CIVHC is investigating the impact of calculating risk scores at the person vs. health plan member level and Colorado's highly seasonal workforce as potential contributors to the low risk score. And while CIVHC was unable to provide complete results for this round of benchmarking, they will apply the lessons learned during the pilot program, share their findings with other project participants and join in future benchmark efforts.

What are the factors that drive the cost of healthcare?

Per-person healthcare costs are the result of many underlying factors. Claim-level datasets allow detailed analysis to isolate the impact of some of these factors, which may suggest strategies to lower cost. Cost drivers can be grouped into factors that affect the quantity (utilization) of services provided and those that affect the prices paid for those services.

Factors affecting utilization of services include:

- **Patient health status**—Healthy people utilize care very differently than those with chronic conditions, and average health status varies significantly from one population to another.

- **Services covered by health benefit plans**— Health insurance plans are under the regulatory authority of individual states. States vary on the list of services they require health plans to cover, and sometimes reduce or eliminate cost-sharing on specific services to lower barriers to access.

- **Patient cost-sharing levels**—A basic law of economics, that higher prices reduce consumption, has been proven to apply to use of healthcare services. Patients who have to pay more for a service use less of that service (for example, to discourage Emergency Room visits, many plans require a high co-pay). Higher average cost-sharing will on average reduce utilization of services.

- **Choice of treatment services**—The average level of services used, given a level of health status, is a key component of the overall cost of healthcare. Efforts to reduce the cost of healthcare have often included attempts to identify overuse of such services as tests and imaging.
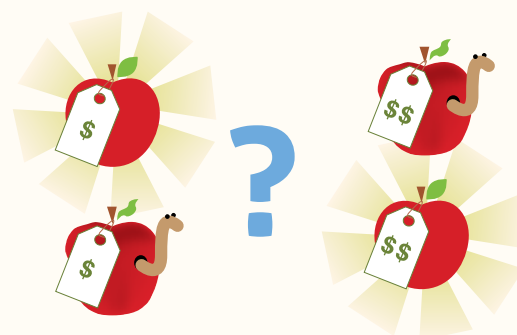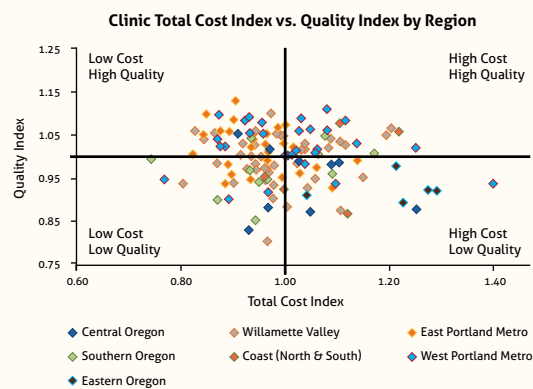
Bringing cost and quality together

In most marketplaces, quality is directly correlated to cost—and vice versa. That logic doesn't always apply in healthcare. Instead, healthcare costs are seemingly arbitrary—driven more by what the market will bear than on competitive forces that inform costs in most other industries.

This report demonstrates the potential to spotlight cost disparities, and to arm stakeholders with information they need to drive accountability and effect meaningful change.

Clinic Total Cost Index vs. Quality Index by Region

Measurement Period: January 1, 2014–December 31, 2014
Oregon Health Care Quality Corporation
http://www.q-corp.org/our-work/costofcare

Efforts to correlate healthcare cost and quality are an invitation to frustration. As demonstrated here, results are widely scattered, supporting the idea that higher cost is not always indicative of higher quality. Improved data transparency provides a community with the means to identify and better understand variation and develop strategies and tactics that lead to higher quality at lower cost—and to share those strategies for broad adoption throughout the healthcare system.

Cost drivers that affect the prices paid for services received include:

- **Reimbursement rates**—The prices that commercial plans pay providers are the result of complex negotiations, which are affected by factors such as the market power of the individual provider and payers; the amount of uncompensated care in the market; and the level of public payer reimbursement.

- **Provider reimbursement methods**—Payers (both insurance companies and self-insured employer groups) are increasingly setting up programs that reward providers for managing the cost of patient populations (such as Accountable Care Organizations—ACOs).

- **Narrowness of provider networks**—Health insurance products that use a more limited list of providers from which an insured patient can choose generally cost less. Providers in the network agree to lower prices because of the increased volume, and patients are discouraged from using high-priced providers outside the network.

- **Wage levels and general cost of living**—As with other goods and services, the price of healthcare is linked to the overall cost of living in each area.

What we've learned.

Through the course of data distillation and benchmarking, we worked with regions with very different landscapes—and very different data. By the very process of assessing data, lines of communication opened in and among regional participants, resulting in a clearer understanding of both the variations in healthcare costs and the steps necessary to reduce them.

KEY TAKE-AWAYS:

- The TCOC project—and the resulting benchmarks— demonstrate that we can achieve data transparency and standardization by working with raw, available regional data. We now have a test case on which to build, improve and streamline this work.

- Using standardized data cleaning and analysis, we can now refine more data—and expand both the model and the number of participating stakeholders and regions.

- The barriers to better reporting offer the means to open stakeholder dialogue, and to discuss tactics to overcome those barriers.

- The prospect of broadly available, standardized data has the potential to change the way all stakeholders participate in the healthcare marketplace:

  - Employers/Purchasers will have the ability to negotiate contracts to ensure the best possible care for employees at competitive costs.

  - Providers will have the means to make informed referrals that take cost into consideration—and to compare their own costs to providers both within and beyond their markets.

  - Policymakers will have reliable, transparent data for the development of smarter, more effective policy and legislative recommendations.

  - Plans will evaluate providers based on value, not cost, allowing them to develop coverage that delivers better care at lower cost.

Detailed Analysis—Deeper Insights
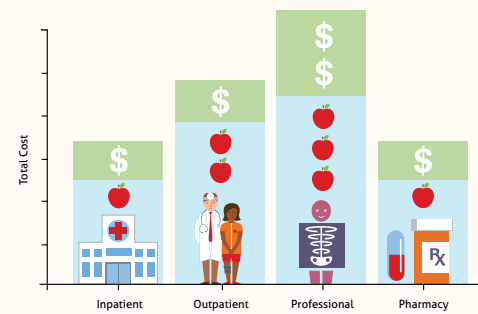
High-level data can demonstrate generalized national and even regional healthcare cost disparities, but a clear understanding of cost drivers—and the actions required to alter their course—requires more detailed analysis that breaks generalizations down into more granular insights.

Components of Medical Cost
Commercial Population 2014
Combined Attributed and Unattributed

Measure	HI Utah	MHCC Maryland	MHI St. Louis, MO	MNCM Minnesota	Q CORP Oregon
TCI					
Overall	1.07	0.86	0.89	1.13	1.09
Inpatient	1.45	0.62	0.82	1.12	1.08
Outpatient	1.15	0.67	0.97	1.09	1.17
Professional	0.94	0.90	0.76	1.26	1.16
Pharmacy	0.91	1.16	1.09	0.95	0.86
RUI					
Overall	1.08	0.88	1.08	1.05	0.93
Inpatient	1.57	0.63	1.03	1.01	0.85
Outpatient	1.21	0.52	1.25	1.07	0.99
Professional	0.93	1.05	0.96	1.07	0.97
Pharmacy	0.93	1.14	0.96	1.06	0.88
Price Index					
Overall	0.99	0.97	0.82	1.08	1.17
Inpatient	0.93	0.98	0.79	1.11	1.27
Outpatient	0.95	1.28	0.77	1.02	1.18
Professional	1.01	0.86	0.79	1.18	1.19
Pharmacy	0.98	1.02	1.13	0.89	0.98

As more high-quality data becomes available, our ability to understand the factors driving regional disparities in the TCI will improve. The concept, demonstrated in the above table, is a simple one:

- *TCI is (and can be expressed as) a combination of the Price Index and RUI.*

- *Price Index and RUI can be calculated separately for Inpatient, Outpatient, Professional and Pharmacy components.*

- *With sufficient data, those service level categories can be further drilled down to their component parts. This detail is often most helpful on an attributed patient basis at the practice level within a region(s).*

What it means.

If information is power, high quality information—like the data aggregated and standardized for use in the Getting to Affordability TCOC project—has the potential to be extremely powerful indeed. But in isolation, even high quality data isn't intrinsically good or bad. That assessment can only be determined by how it's put to use.

In the right hands, the type of data used for TCOC benchmarking has enormous potential to improve the way our healthcare system works— at virtually every level. Working with standardized data, all stakeholders— from providers to purchasers to policymakers—can develop strategies to improve their engagement with our nation's healthcare system. And over time, consumers will be the ultimate beneficiaries of transparency through higher quality care, lower costs and premiums, and improved health.

High quality data can also be misused. In past efforts at healthcare reform, it has—typically in pursuit of objectives that benefit one stakeholder group at the expense of the rest. Unfortunately, in a closed system where there's a finite amount of benefit to go around, stakeholders have limited patience for uneven distribution of gains and losses.

That's why collaboration—and cooperation—is invaluable. It's also why this program's regional underpinnings are so vitally important. From the ability to gather, analyze and standardize data to the commitment among stakeholder-members to work together in using that data, RHICs' deep engagement are vital to this project's success—and to its long-term potential to leverage the positive potential of healthcare transparency.

Getting to
Affordability

Section II: Benchmarking Methodology

Purpose

The purpose of the Benchmarking Methodology is to summarize the process and the results of two years of work among regional participants from the Network for Regional Healthcare Improvement (NRHI) Total Cost of Care: Phase II project (Phase II) to compare Total Cost of Care using 2014 commercial data across several regions in the US using the National Quality Forum (NQF) endorsed HealthPartners TCOC Measure Set[1]. This report provides an in-depth disclosure of the technical and policy barriers to transparency and the progress made to date.

Summary

During Phase II significant strides were made in improving data quality by continuing the rigorous data quality assessment process that was introduced in the pilot (Phase I). The process was once again conducted by the regions and monitored by the technical advisor. In Phase II, five regions identified at least some portion of their data that passed data quality standards and could be included in the benchmark results.

Phase II of the Total Cost of Care project advanced transparency in several ways. Regions with very different healthcare landscapes were compared. Regional benchmarks of TCOC measures were produced using data that were carefully examined for quality. All regions learned more about the contents of their data store, and most improved the current and future submission streams. Several potential drivers of cost were introduced and examined for impact. The foundation has been laid for measuring and understanding variation in healthcare cost, a significant and necessary step toward reducing it.

The improvement over the Phase I process notwithstanding, there remain significant and largely unmeasurable technical data issues that may introduce some distortions into the benchmark results:

- Data used to produce measures are not a random sample of the commercial market in each region, and so produce benchmarks that represent a comparison of the regional samples rather than the regions themselves

- Pharmacy and Behavioral Health Carve Outs may be imperfectly included in the claims costs affecting both the total cost and the $100,000 spending truncation used in the TCOC methodology

- Substance abuse and other behavioral claims are sometimes excluded from data submissions or aggregated data stores for privacy reasons

- Provider coding patterns vary, which affects risk scores

- Non-claims payments (e.g., capitation, Pay for Performance payments) are not in the data stores

- Data processes in some regions limited quality assessment control processes or attempts to correct issues identified in that process

These issues should be included as caveats in any presentation of the benchmark results, and represent an agenda for continuing refinement of the TCOC calculation.

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[1] https://www.healthpartners.com/hp/about/tcoc/index.html

The calculation of the various measures in the TCOC methodology provides a starting point for understanding variation in healthcare costs among different areas of the country. Cost drivers can be identified by deconstructing per-person cost into its individual components. Conceptually this sub-division can include:

- Health status—this is measured and adjusted for in the TCOC methodology through risk adjustment

- Differences in services covered by the health benefit plan (e.g., mandate differences by state)

- Patient cost-sharing levels in the benefit plan

- Rates of utilization of health services—this is measured by the Resource Use Index (RUI)

- Provider reimbursement methods

- Provider price levels (including influences of cost-shifting from other payers and uncompensated care and from market power)—this is measured by the price index

- Narrowness of provider networks

- Wage levels and general cost of living

Refining and extending this identification of potential cost drivers and their relative impact provides an agenda for continuing to improve the ability to understand cost differences across regions.

Participants and Process

PARTICIPANTS

In November of 2013, under the leadership of NRHI and through funding from the Robert Wood Johnson Foundation (RWJF), five pilot sites embarked on Phase I to report TCOC measures in their regions and develop a benchmark approach to compare results. These sites are NRHI member Regional Health Improvement Collaboratives (RHICs) and included:

- Center for Improving Value in Health Care (CIVHC)

- Maine Health Management Coalition (MHMC)

- Midwest Health Initiative (MHI)

- Minnesota Community Measurement (MNCM)

- Oregon Health Care Quality Corporation (Q Corp)

In May 2015, the Pilot was extended by RWJF through October 2016, and Compass Health Analytics was retained as the Technical Advisor. In Phase II, two additional regions were brought on board to test spread of standardized measurement:

- HealthInsight Utah (HI) in partnership with the Utah Office of Healthcare Statistics

- Maryland Health Care Commission (MHCC) in partnership with The Hilltop Institute

Four additional regions joined Phase II as Development Sites to address specific barriers they faced to test potential solutions. Development Sites include the following and, along with the Maine Health Management

Coalition, did not participate in the benchmarking efforts:

- The Health Collaborative

- The University of Texas Health Science Center at Houston

- Washington Health Alliance

- Wisconsin Health Information Organization

GENERAL PROCESS

Participants in Phase II conducted detailed quality assessments of their data sources. Tables examining the following characteristics were produced and compared across contributors within each data source as well as across data sources:

- Member counts and claim dollars by month

- Procedure code integrity and coverage

- Diagnosis code fields

- Surgical procedure code fields

- Professional place of service

- High cost pharmacy

- Consistency of member ID across claims and eligibility

An iterative process between the Technical Advisor and each region led to the resolution of some data quality problems. The results presented in this report represent data from each participant that met rigorous data quality, stability and completeness requirements for supporting the TCOC measure set. While the intensive process used to improve data quality yielded final results for Phase II that have more comparability than the results from the Phase I pilot, issues remain that provide an important agenda for future refinement. These are enumerated in the technical data issues discussed further in this report.

Results

The analytical results produced by the project include the TCOC measures, as well as additional analysis drilling further into the cost drivers underlying the aggregate measures. These results represent multi-payer commercial data for 2014.

TCOC RESULTS

Table 1 and Table 2 show the Total Cost Index (TCI) and the Resource Use Index (RUI)[2] for the five participating regions, using the combined Adult and Pediatric populations. Both the TCI, which measures total per person per month spending, and the RUI, which focuses on differences in utilization by re-pricing services for all participants using a standard pricing schedule, have been adjusted for differences in the populations' underlying health status using Johns Hopkins Adjusted Clinical Groups® System (ACG® System).

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[2] For more detailed information on the TCOC measure set, including TCI and RUI, see the HealthPartners White Paper: https://www.healthpartners.com/ucm/groups/public/@hp/@public/documents/documents/dev_057649.pdf

Table 1 displays the TCI and RUI for the total measurement population of each of the five regions that submitted aggregated data. The measures are indexed to the non-weighted average of the five regions. This approach avoids letting larger regions dominate the average. Interpretation and application of the results must be done with close attention to the technical data issues discussed above, and to the insight into interpreting benchmark data discussed in the next section.

Table 2 displays the TCI and RUI for each region, using only the population that was attributed to a primary care practice. Each region used its own methodology for doing this attribution. At the commencement of Phase II, project participants were committed to and at various stages of delivering TCOC reporting to primary care practices in their regions. As a result of involving stakeholders in the process, the participants differed in the methodologies they used to attribute patients to practices. To create comparability of data despite differences in attribution methodologies, the participants agreed to submit data for the entire insured population, with the ability to separate the summaries into attributed and non-attributed populations. The benchmarking analysis drew upon data for the entire insured population as the most comparable, and the impact of having different attribution methodologies was studied by examining whether the results for the overall population differed from the results for the attributed population. A comparison of the population who could be attributed to a practice (Table 2) with the total population (Table 1) shows that the difference in attribution methodologies does not have very much impact on the way the RHICs look relative to each other.

As noted, risk scores were calculated using the Johns Hopkins ACG® System methodology, calibrated to the unweighted averages of the five participating regions. The risk scores in Table 2 are uniformly higher than in Table 1. Patients who can be attributed had at least enough activity to create the link to a provider, whereas all of the inactive patients fall into the unattributed population, raising the average risk of the attributed and lowering the average risk of the unattributed group.

TABLE 1: TOTAL COST INDEX AND RESOURCE USE INDEX: COMMERCIAL POPULATION 2014 COMBINED ATTRIBUTED AND UNATTRIBUTED

Measure	HEALTH INSIGHT *Utah*	MHCC *Maryland*	MHI *St. Louis, MO*	MNCM *Minnesota*	Q CORP *Oregon*
Average Risk Score	*0.890*	*1.088*	*1.079*	*0.996*	*0.986*
Risk Adjusted Total PMPM	$348	$279	$290	$369	$354
TCI	**1.07**	**0.86**	**0.89**	**1.13**	**1.09**
RUI	**1.08**	**0.88**	**1.08**	**1.05**	**0.93**
Price Index	0.99	0.97	0.82	1.08	1.17

TABLE 2: TOTAL COST INDEX AND RESOURCE USE INDEX: COMMERCIAL POPULATION 2014 ATTRIBUTED ONLY

Measure	HEALTH INSIGHT _Utah_	MHCC _Maryland_	MHI _St. Louis, MO_	MNCM _Minnesota_	Q CORP _Oregon_
Average Risk Score	_1.196_	_1.397_	_1.234_	_1.213_	_1.143_
Risk Adjusted Total PMPM	$427	$323	$341	$455	$425
TCI	**1.09**	**0.82**	**0.87**	**1.16**	**1.09**
RUI	**1.08**	**0.86**	**1.08**	**1.08**	**0.93**
Price Index	1.01	0.96	0.81	1.08	1.17

COST DRIVER EXPLORATION

Measuring and reporting on the cost of healthcare supports efforts to pursue the Triple Aim: higher quality healthcare, with more satisfied patients, at a lower cost. Having some response to the question, "what is the difference in the cost of healthcare in various regions?" we can turn our attention to "why does it differ?" Answers to that question will suggest specific strategies that can be employed to reduce cost.

Factors that drive the cost of healthcare can be divided into two main components: those that affect the unit price of services, and those that affect the amount of services used (utilization).

Factors Affecting Commercial Unit Price:	Factors Affecting Utilization:
Provider market power	Health status (morbidity)
Health Plan market power	Physician practice patterns
Cost-shifting	Patient cost-sharing level
Regional cost of living	State mandates
Location of service	Providers in network

Each factor that contributes to differences in cost can be used as both an adjustment in order to isolate the other factors contributing to cost, and as an important stand-alone measure for further exploration of potential strategies to reduce healthcare costs. For example, risk scores are used to adjust for basic health status in the regional groups to make costs more comparable. At the same time, we might examine the regional risk scores themselves to explore ways to reduce cost through improved health status (lower morbidity) potentially through policies to improve underlying causes. Similarly, the RUI measure controls for provider prices, allowing us to focus on reducing utilization as a way to lower overall cost. We might also examine why unit prices vary, including consideration of wage levels and cost of living, or provider market power. The ongoing process of improving our understanding of the drivers of differences in cost provides the most useful results for finding strategies that will reduce costs.

The TCOC results presented in Tables 1 and 2 begin to break cost into components by showing the risk score, the cost measure adjusted for risk score, and the effect of eliminating unit cost differences through the Total Care Relative Resource Value (TCRRV™) and RUI. The TCOC measure set offers some additional insight into service categories. Table 3 breaks down the components of medical cost by

region. Prices in the MHI sample are lower than other regions in all three medical services components, leading to the lowest overall price index, but the difference from the other regions is most marked in Outpatient. The low proportion of cost in facility claims for MHCC may be related to Maryland's longstanding efforts to regulate hospital payments, including global budgets for inpatient and outpatient revenues introduced in 2014. MHCC's low TCI (0.86) suggests that this approach may be associated with lower healthcare costs overall, an important finding which merits further investigation. Utah's high proportion of claims in inpatient could be a result of billing practices that include professional services on the inpatient bill rather than as separate professional claims.

TABLE 3: COMPONENTS OF MEDICAL COST
COMMERCIAL POPULATION 2014
COMBINED ATTRIBUTED AND UNATTRIBUTED

Measure	HEALTH INSIGHT Utah	MHCC Maryland	MHI St. Louis, MO	MNCM Minnesota	Q CORP Oregon
TCI					
Overall	1.07	0.86	0.89	1.13	1.09
Inpatient	1.45	0.62	0.82	1.12	1.08
Outpatient	1.15	0.67	0.97	1.09	1.17
Professional	0.94	0.90	0.76	1.26	1.16
Pharmacy	0.91	1.16	1.09	0.95	0.86
RUI					
Overall	1.08	0.88	1.08	1.05	0.93
Inpatient	1.57	0.63	1.03	1.01	0.85
Outpatient	1.21	0.52	1.25	1.07	0.99
Professional	0.93	1.05	0.96	1.07	0.97
Pharmacy	0.93	1.14	0.96	1.06	0.88
PRICE INDEX					
Overall	0.99	0.97	0.82	1.08	1.17
Inpatient	0.93	0.98	0.79	1.11	1.27
Outpatient	0.95	1.28	0.77	1.02	1.18
Professional	1.01	0.86	0.79	1.18	1.19
Pharmacy	0.98	1.02	1.13	0.89	0.98
MEDICAL COST BALANCE*					
Inpatient	26%	16%	19%	19%	18%
Outpatient	32%	27%	36%	29%	32%
Professional	42%	58%	45%	53%	50%

* Pharmacy data not applicable

Phase II began exploratory analysis of additional cost drivers including the impact of patient cost-sharing levels and region-specific cost of living. Continued analysis is warranted in order to fully understand the impact these factors may have on the variation in healthcare costs across regions.

To help understand patient cost-sharing levels, the Phase II project added the paid/allowed ratio to the data points collected from each participant. A higher paid/allowed ratio means plans are paying a higher portion of the healthcare cost (and therefore the individual patient is paying less). The paid/allowed ratio varies by region as shown in Table 4. Rough estimates of the impact on utilization suggest this variation in the proportion of costs covered by insurance could explain up to 10 points of difference in RUI across regions. This finding provides support for more detailed data collection and analysis in future projects.

TABLE 4: PORTION OF HEALTHCARE COST PAID BY INSURANCE

Measure	HEALTH INSIGHT *Utah*	MHCC *Maryland*	MHI *St. Louis, MO*	Q CORP *Oregon*
Paid/Allowed Ratio*	0.77	0.86	0.84	0.81

* MNCM data not available

Information on healthcare costs in a geographic region must also be interpreted in light of the relative cost of living in that region. Direct comparison of dollars would be misleading. As an example suggestive of the importance of adjusting for cost of living, the following table displays an indicator of health cost of living as assessed by the Missouri Department of Economic Development's Economic Research and Information Center (MERIC). MERIC's Health Cost of Living Index[3] tracks closely with the TCI as calculated by the regions in the project (correlation coefficient = 0.52) and with the Price Index (correlation coefficient = 0.70).

TABLE 5: COMPARING COST OF LIVING INDEXES WITH TCI AND RUI

Measure	HEALTH INSIGHT *Utah*	MHCC *Maryland*	MHI *St. Louis, MO*	MNCM *Minnesota*	Q CORP *Oregon*
Health Cost of Living Index 2014[3]	0.92	0.91	0.99	1.04	1.14
TCI	1.07	0.86	0.89	1.13	1.09
RUI	1.08	0.88	1.08	1.05	0.93
Price Index	0.99	0.97	0.82	1.08	1.17

The analysis highlights the role of cost of living, along with other factors, in explaining differences in the cost of healthcare across regions and the importance of including them in future refinements of benchmarking.

Other comparability issues not explored in this study, but which can affect the cost of healthcare, include the services covered by the health benefit plan and provider reimbursement methods. Likely to be most significant, the general level of payment from public payers has a substantial impact on the rates paid by the commercial insurers whose claims are the basis of this study. Uncompensated care, Medicare rates, and Medicaid rates are all related to the degree to which costs have been shifted from regulated reimbursed payer populations to the commercial population. Differences in the TCOC across regions reflect differences in the rate of uninsured individuals, funding levels for Medicaid, and the degree of Disproportionate Share Hospital and Graduate Medical Education funding from Medicare. The RUI measure and the Price Index allow separate analysis of price and utilization.

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[3] Cities across the nation participate in the Council for Community & Economic Research (C2ER) survey on a volunteer basis. Price information in the survey is governed by C2ER collection guidelines (http://coli.org/wp-content/uploads/2016/06/2016-COLI-Manual.pdf). Weights assigned to relative costs are based on government survey data on expenditure patterns for professional and executive households. MERIC derives the cost of living index for each state by averaging the indices of participating cities and metropolitan areas in that state.

Opportunities for Further Exploration for Improved Transparency

Technical data issues that persist and have the potential to affect regional comparisons are:

1. **NON-RANDOM SAMPLE OF COMMERCIAL POPULATION.** The population samples provided by the regional data organizations do not always reflect the complete commercial markets in the states in which they operate. First, some payers were reluctant to share the detailed cost information necessary to participate, and so are missing from their state's sample. Second, state laws mandating specific benefits apply only to state-regulated fully-insured products (and sometimes only to subsets of those) and not to self-insured employer populations, which are operated under Federal ERISA law rather than state insurance law. The degree to which the samples are representative of fully-insured/self-insured mix in each state varies across the regions. Third, the cost of preparing and processing data extracts created a hurdle that kept payers with smaller market share out of the mix. Finally, provider-based plans that do not operate on a fee-for-service basis were not included in the cost measure used in this study. The market size of these plans varied greatly among the participants and further work is required to better understand if and how to include in future data sets. As a result of all these issues, it is unknown whether the TCI and RUI shown in the comparison table are representative of the cost of healthcare in each region. Any and all presentations of the results of this study should make it clear that the numbers do not represent the complete market in all regions.

2. **PHARMACY AND BEHAVIORAL HEALTH CARVE OUTS.** Self-insured plans sometimes carve out behavioral health and pharmacy benefits to management companies such as Magellan or Express Scripts. Carve outs often can't be included in TCOC measures because the members are identified differently in the carve out data than they are in the medical claims file, preventing costs from being combined accurately at the patient level. While every attempt was made to limit the analysis of pharmacy claims to those patients with pharmacy benefits in the data store, some uncertainty remains about how well the data conform to expectation.

3. **COST TRUNCATION.** Patient-level truncation at $\$100,000$, part of the TCOC methodology to limit the impact of outlier patients, is based on having both medical and pharmacy claims. Medical and pharmacy components are factored down so that the total does not exceed $\$100,000$. For patients whose pharmacy data is missing from the data store, the medical amount can be overstated. Simulation suggests the impact is less than 1%.

4. **BEHAVIORAL HEALTH CLAIMS.** Behavioral health claims are treated inconsistently among regions. Data contributors in some regions include all claims in their extracts, while others exclude claims pertaining to Substance Use Disorder (SUD) and/or other health conditions or treatments deemed sensitive due to stringent interpretations of governing privacy statutes. For similar reasons, even if the data contributors send all claims, vendor policies may prevent the inclusion of sensitive claims in data stores used for TCOC calculations. Differences in the process of aggregating data across contributors limit the ability to create an artificial commonality by excluding Behavioral Health claims completely from all regions. Regions that collect summarized data from contributors can't make changes at that level of detail.

An attempt was made during the initial quality assessment to measure the amount of Mental Health and Substance Use Disorder claims in each region's data. Regions found producing the quality assessment tables to be daunting and some chose to focus on those required for calculating the TCOC measure set accurately. For those who did the additional analysis, the cost of Behavioral Health claims ranged from 1.3% (for one region who did not include SUD, only Mental Health) to 4.8% (for one region who included both) of total medical allowed amount.

While the inclusion/exclusion of Behavioral Health claims would affect the total cost of care, the impact on the risk score is less clear. Eight ACG cells have a description indicating a component of psychosocial condition as perceived from diagnoses. The portion of the population assigned to these 8 cells varies only from 3.2% to 4.0% among the five regions, suggesting that the diagnoses required to detect conditions relevant to this label did appear in the claims despite partial or complete suppression of sensitive claims.

This degree of variation suggests that the proportion of the full population behavioral health claims that are missing varies across regions, introducing a (likely modest) source of error in the overall benchmark comparisons.

5. **CODING PATTERNS BY PROVIDERS.** A US Government of Accountability (GAO) report (http://www.gao.gov/assets/660/651712.pdf) found a 4%–6% difference in the risk score assigned to a member depending on coding characteristics of the provider completing the claims. We need more information about how coding practices differ in regions before we can have confidence that the TCOC results, which depend on risk scores, are truly comparable.

6. **NON-CLAIM PAYMENTS.** Payments made to providers outside the standard fee-for-service environment are not captured on claims. Using claims alone will underestimate total cost to the degree that services (such as labs or office visits) are paid on a capitated basis; services are bundled; patients use pharmacy discount programs such as Walmart; pharmacy rebates are made to plan sponsors; patients pay costs above the allowed amount for out-of-network care (balance billing); or providers receive payments through programs such as ACO risk sharing, Pay for Performance, or bulk payments against future claims. These practices are likely to differ across regions and data to assess these differences were not available as part of this project.

7. **DATA QUALITY ASSESSMENT.** Regions had varying degrees of control/access into their data. This limited the ability of some to assess data quality and mitigate issues as thoroughly as other regions.

These issues create comparability problems for the benchmarking results that are material but impossible to quantify precisely. These issues should be included as caveats in any presentation of the benchmark results, and represent an agenda for continuing refinement of the TCOC methodology.

Conclusion

Phase II of the RWJF Total Cost of Care project advanced transparency in several ways. Regions with very different healthcare landscapes were compared. Regional benchmarks of TCOC measures were produced using data that was carefully examined for quality. All regions learned more about the contents of their data store, and most improved the current and future submission streams. Several potential drivers of cost were introduced and examined for impact. The foundation has been laid for measuring and understanding variation in healthcare cost, a significant step toward reducing it.