

Healthcare Affordability: Data is the Spark, Collaboration is the Fuel

Section I: Benchmark Overview Section
II: Benchmarking Methodology

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THE FOLLOWING ORGANIZATIONS CONTRIBUTED DATA AND ANALYSIS FOR THIS PROJECT.

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HealthInsight Oregon | Oregon
HealthInsight Utah | Utah
Maine Health Management Coalition | Maine *

Maryland Health Care Commission | Maryland
Midwest Health Initiative | St. Louis, Missouri
Minnesota Community Measurement | Minnesota

THE FOLLOWING ORGANIZATIONS PARTICIPATED AS DEVELOPMENT SITES.

Greater Detroit Area Health Council | Michigan
HealthInsight Nevada | Nevada
HealthInsight New Mexico | New Mexico
Health Care Improvement Foundation | Philadelphia
Integrated Healthcare Association | California
Massachusetts Health Quality Partners | Massachusetts

The Health Collaborative | Ohio
The University of Texas Health Sciences Centers
at Houston | Texas
Virginia Health Information | Virginia
Washington Health Alliance | Washington
Wisconsin Health Information Organization | Wisconsin

ABOUT THE NETWORK FOR REGIONAL HEALTHCARE IMPROVEMENT (NRHI)

The Network for Regional Healthcare Improvement (NRHI) is a national organization representing more than 30 member regional health improvement collaboratives (RHICs) and state/regional affiliated partners. These multi-stakeholder organizations are working in their regions and collaborating across regions to transform the healthcare delivery system. They share the goal of improving the patient experience of care, including quality and satisfaction; improving the health of populations; and reducing the per-capita cost of healthcare. The RHICs are accomplishing this transformation by working directly with physicians and other healthcare providers, provider organizations, commercial and government payers, employers, consumers, and other healthcare-related organizations. Both NRHI and its members are non-profit, non-governmental organizations. For more information about NRHI, visit www.nrhi.org.

ABOUT THE ROBERT WOOD JOHNSON FOUNDATION

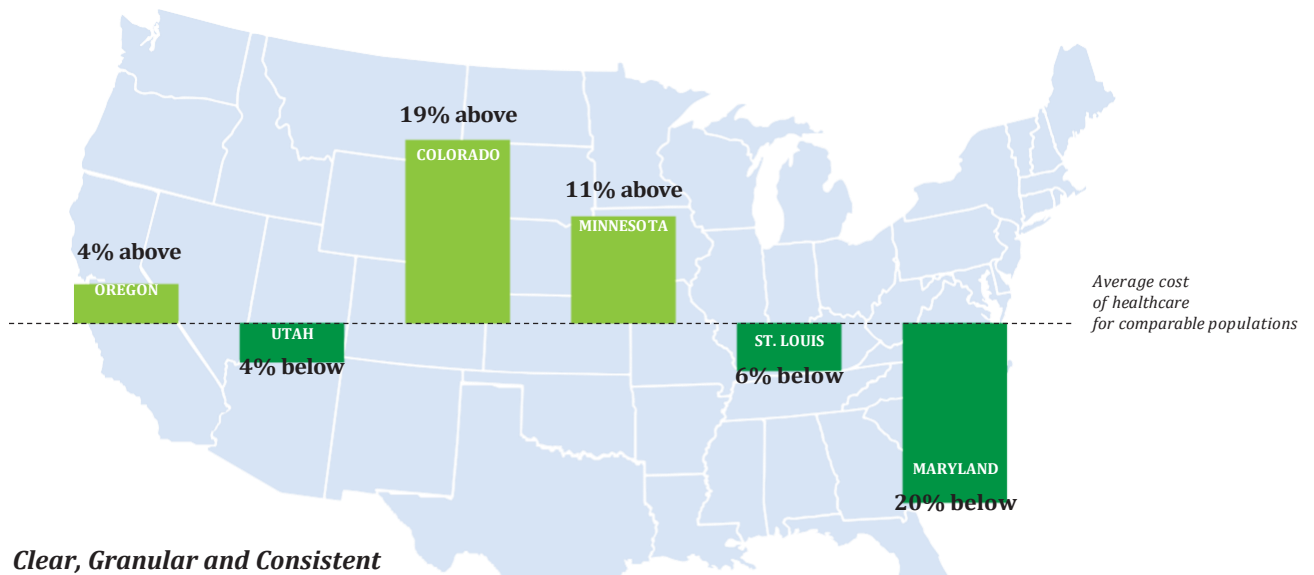
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or on Facebook at [www.rwjf.org/facebook](https://www.facebook.com/rwjf).

The Getting to Topography team dedicated this report to Linda Bartnyska, Director of Analysis and Information Services at the Maryland Health Care Commission. Linda's contributions went far beyond her knowledge of, and dedication to, healthcare cost measurement. Linda's quiet leadership and steady presence were appreciated by every member of the team. She is greatly missed.



* Maine Health Management Coalition participated in Phases I and II and is now known as the Healthcare Purchaser Alliance of Maine



Clear, Granular and Consistent

The third release of the Getting to Affordability (G2A) Total Cost of Care (TCOC) benchmarks continues to highlight variation in the underlying drivers of healthcare costs across regions. Once again, it finds that although price is the driver of both higher and lower healthcare costs in some geographies, utilization makes the difference in others.

Although the magnitude of the contribution of price and usage varies year to year, the relativity has remained constant. This consistency reinforces the stability of this measure and its utility in informing changes in policy and care delivery.

Rising healthcare costs, and the underlying causes and attempts to rein them in is at the forefront of the news. This unsustainable trend is causing emotional distress and financial harm to individuals, communities and our country.

The Network for Regional Healthcare Improvement (NRHI) recognizes that credible, digestible information that quantifies and compares overall healthcare costs at the depth and granularity necessary for providers, policymakers, payers, purchasers and patients to act is essential. Through the Getting to Affordability (G2A) initiative NRHI and its members have taken on this challenge. They have leveraged the power of the nationally-standardized HealthPartners Total Cost of Care (TCOC) measure set to deliver this critical information to stakeholders in six regions across the country and have spread promise of cost transparency to an additional twelve regions.

A contagion of curiosity has spread across the country during the five-year G2A initiative. A dozen additional regions now benefit from the strong foundation built. The promise of measuring and reporting TCOC with a standardized approach that provides valuable information to various stakeholders has spread, carrying the proof that cost transparency can be achieved.

However, the data alone is not sufficient to guide new models of care delivery and payment. RHICs’ multi-stakeholder forums leverage collaboration, healthy tension and intelligence from local healthcare leaders who understand the markets they serve. The result is greater confidence in the accuracy of the data and that the information gained will be used for good purposes.

Data is the spark, collaboration is the fuel

In healthcare, there's little question that the costs are too high. As the National Academy of Medicine has long reported, a third or more of spending does nothing to improve health. Because of these and many other factors, we simply do not receive the healthcare we deserve for the dollars we spend.

A barrier to overcoming these realities has been the lack of a credible approach for quantifying overall healthcare cost, utilization and price that could simultaneously empower national understanding, inspire state and regional policy change, paying for what matters and promote care delivery transformation. There are accepted methods to measure some elements of cost and utilization. However, they lack the breadth, depth and granularity necessary to be actionable to providers, policymakers, payers, purchasers and patients.

Overcoming these barriers requires three inputs. 1) Reliable, standardized measures of cost, price and resource use that could be applied across different populations such as states, regions, provider practices, health plan memberships, and employer workforces. 2) High-quality data sets with transparent cost information including the amount paid for services. 3) A detailed and well-documented process to ensure consistency in data processing and analysis and in turn, results.

NRHI is a national membership organization of more than 30 RHICs and state partners across the United States. These multi-stakeholder organizations are working in their regions and collaborating across regions to transform the healthcare delivery system to improve health, reduce price and eliminate waste.

NRHI and its members long recognized the need for high-quality, comparative data on healthcare spending. Working collaboratively and with the support of the Robert Wood Johnson Foundation, they began to produce it. Beginning in 2013, NRHI intensified its focus on making healthcare more affordable through an initiative now known as Getting to Affordability or G2A. Supporting six of its members in measuring and reporting on differences in total cost of care and the impact of price and resource use has been a core part of this work.

“The way we receive healthcare in the United States is broken, and as a result Americans are paying too much and are less healthy than other developed nations,” said NRHI Executive Director, Healthcare Affordability Ellen Gagnon. “There are ways we can work together to change the system, but we need trusted data to focus our collective efforts and measure our shared success.”

FIVE YEARS OF NRHI TOTAL COST OF CARE MEASUREMENT:

- **Goal:** Explore whether data from multiple states, multi-payer and all-payer claims datasets could be processed and analyzed with sufficient standardization to achieve comparable results across states and regions.
- **Outcome:** Over the last five years, RHICs and state partners participating in total cost of care measurement have collaborated to produce three reports comparing their performance against one another and developed state, regional and local results to inform policy and practice. Consistency across the three measurement periods suggest the project's extensive efforts to standardize data collection, measurement, and analysis processes has produced reliable, comparable results across the regions.
- **Goal:** Utilize this data to share information on differences in total cost and its components—utilization and price—to inspire a national discussion of cost drivers and remedies.
- **Outcome:** Featured in publications such as [Health Affairs](#), [Modern Healthcare](#) and [Forbes](#) and at leading conferences including AcademyHealth's Datapalooza, ACG System International Conference and the National Association of Health Data Organizations' annual meeting, NRHI's work in total cost of care measurement is providing meaningful contributions to the national dialogue on affordability.
- **Goal:** Produce local, actionable results that could be shared in different ways with providers, health plans, employers and the public to inform conversations about the local drivers impacting cost and how they could be addressed.
- **Outcome:** It's estimated that, for each year of the benchmark, healthcare cost information on over 5 million patients attributed to approximately 20,000 individual physicians has been calculated and shared. NRHI members are providing comparative cost data to state legislatures and state agency leaders, physician practices, health plans, leading national employers and in some regions, consumers. The information is used to inform strategy, shape policy and support interventions.

RHICs' ability to access, understand and utilize claims data for the purposes of cost measurement and their experience bringing together diverse stakeholders to act on the results, made them an ideal home for the first national project to develop a total cost of care benchmark across the participating regions.

Before the project began, it was clear previous attempts to reduce costs often had a balloon effect. Market pressure squeezed the balloon to save in one part of the system, such as emergency department use or imaging, but the balloon expanded elsewhere, resulting in the same high healthcare costs. Deflating the balloon would require an understanding of what's behind the total cost of care and monitoring to ensure overall costs are reduced. Through Getting to Affordability's multi-region analysis of total cost of care and its drivers, NRHI found striking variation between regions. While some national studies find that pricing is the biggest driver of healthcare cost increases, that is not true everywhere. More granular analyses make it possible to identify differences by market.

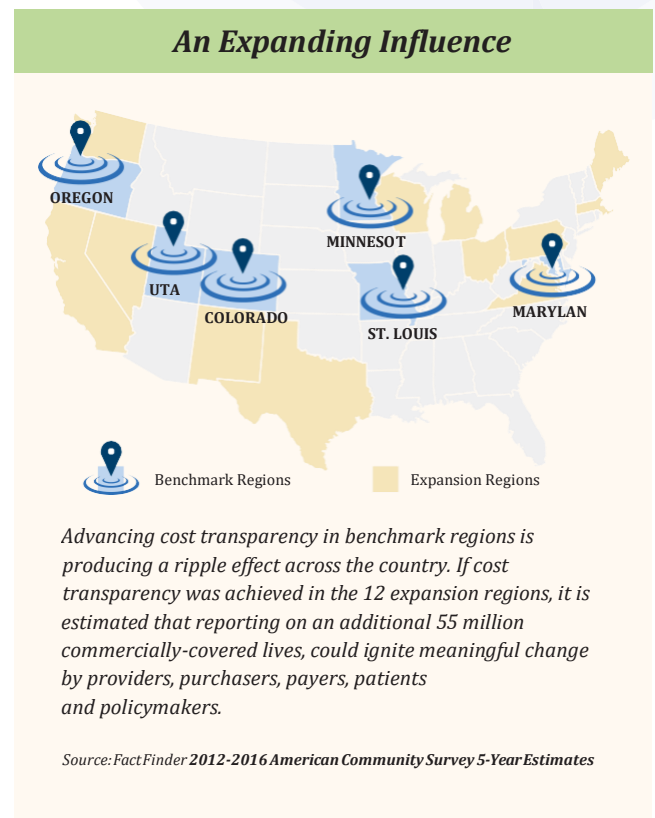
Achieving affordability will require the data and collaborations necessary to address all components of cost. Despite intensive work by providers to ensure appropriate utilization of resources, total cost of care may remain high as prices increase to make up for decreased utilization.

GATHERING, ANALYZING THE DATA

The regions base the analysis on data collected via the claims databases they steward. To produce comparable results, extensive standardization is critical. This work utilizes the Total Cost of Care (TCOC) and Total Care Relative Resource Value™ measures developed by HealthPartners which were first endorsed by the National Quality Forum in 2012 and again in October 2017. NRHI members work closely with each other and a technical advisor to standardize the application of these measures, including the risk adjustment methodology, and analyze the reasonableness of results.

“At the end of the day I think it's fairly remarkable,” said Norman Thurston, Director of the Office of Health Care Statistics, which partners with HealthInsight Utah on the project. “One reason that it was successful was that so many people spent so much time worrying about the minutiae of the process.”

Of course, none of this work would be possible without high-quality claims data and either supportive regulatory environments or highly engaged health plans



and self-insured employers that allow this data to be used in ways that illuminate opportunities to drive improvements in cost, quality, and utilization. Statewide all payer claims databases are typically created by a state mandate. They systematically collect healthcare claims data, such as medical, pharmacy, eligibility, and provider data, from a variety of payer sources. Three of the six RHICs participating in this project use data provided voluntarily by health plans.

Minnesota Community Measurement (MNCM) partners with leading Minnesota health plans to provide a unique data set. In this model, each payer applies the HealthPartners methodology to its own data. Then, MNCM aggregates all of the plans' data and analyzes. Then the data is sent to NRHI for the national benchmark. MNCM also produces extensive public information for the community, including patients, providers and payers. Medical group data enables local comparisons and gives consumers information on cost differences.

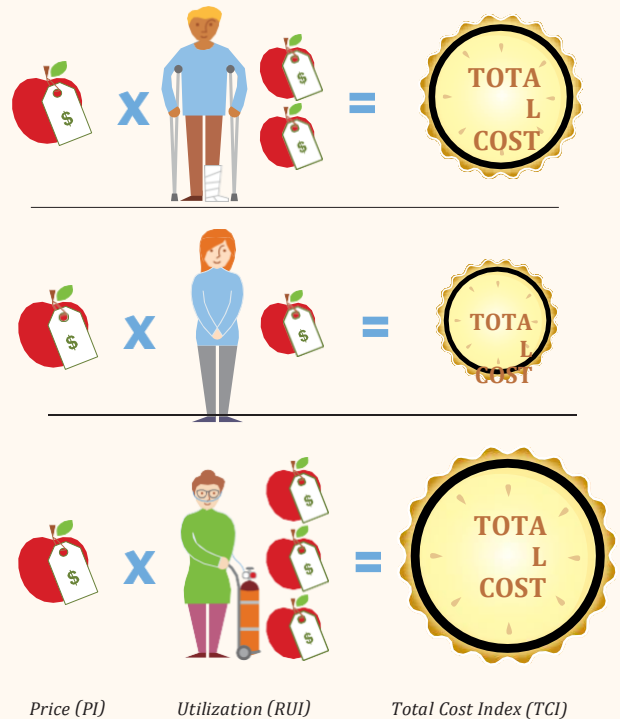
“The data shuts down anecdotal conversations and opens peoples’ eyes,” says Jonathan Mathieu, Vice President of Data and Delivery at the Center for Improving Value in Health Care (CIVHC), the RHIC serving the state of Colorado.

COSTS VARY, CONSISTENTLY

With three national total cost of care benchmark reports complete, some trends have begun to emerge.

- In each of the three benchmarks, Maryland was the lowest cost of the regions. In the most recent year, the total cost index varied from 20 percent below the benchmark for Maryland, to 19 percent above the benchmark for Colorado, the highest cost region. As shown in [Table 1](#), similar differences for these same states were observed in previous reporting periods. Further, the ordering of the four RHICs participating in all three of the total cost of care benchmark periods has remained consistent.

Price x Utilization = Total Cost



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.

Risk Adjusted Total Cost and Resource Use Compared to the Average:

Commercial Population 2016 Combined
Attributed and Unattributed

| Measure | Colorado | Maryland | Minnesota | Oregon | St. Louis, MO | Utah |
|-------------|----------|----------|-----------|--------|---------------|------|
| Risk Score | -7% | 15% | -1% | -2% | 4% | -9% |
| TCI | 19% | -20% | 11% | 4% | -6% | -4% |
| RUI | 5% | -7% | 7% | -10% | 10% | -5% |
| Price Index | 13% | -14% | 4% | 16% | -15% | 1% |

Note: This is the midpoint of the ranges created from the sensitivity analysis and represents the percent above or below the risk adjusted average across all regions. View the full range of results in [Table 1 on page 21](#).

- Prices and care delivery patterns vary across states and within states across markets. Those variations drive differences in cost.
- Showing differences in price, cost and resource use gives stakeholders a framework to consider the roles of policies, demographics and market factors in steering healthcare costs.
- Consistency in year-over-year total cost of care results, despite some differences in the underlying populations, reflect the regional norms in care delivery and pricing.
- Most regions tend to have the same higher price and/or higher utilization service lines year over year.
- Pharmacy pricing showed the least variability, which is largely a result of the influence of a few, large pharmacy benefit managers and pharmaceutical manufacturers' national pricing policies. It's also important to note that many of the new and expensive specialty medicines are being administered and represented in the medical expense so they may not be reflected in the pharmacy service line results.

Ben Steffen, Executive Director of the Maryland Health Care Commission (MHCC), said the results showing Maryland as the lowest cost are not surprising. For more than 35 years, Maryland has operated the nation's only all-payer hospital rate regulation program. In 2014, this program was expanded. Under the new model, the state agreed to limit all-payer per capita hospital growth, including inpatient and outpatient care, to 3.58 percent. In addition, Maryland agreed to limit annual Medicare per capita hospital cost growth to a rate lower than the national annual per capita growth rate per year for 2015-2018. This year, the program was expanded to physicians and nursing homes and extended until 2023. Steffen said the total cost of care methodology is different from the methodology used by the Centers for Medicare and Medicaid Services. However, he said, the results from this project may point to the all-payer model having a positive impact for the commercially-insured as well.

STAKEHOLDER ENGAGEMENT DEEPENS UNDERSTANDING OF THE DATA

NRHI members' standardized process, granular data and strong connections to stakeholders allow them to dig into the "why" and reveal how variations in care delivery and local prices contribute to the significant cost differences. The process also highlights differences in underlying populations and how risk adjustment impacts the numbers. This knowledge enables stakeholders to take steps to address the specific issues facing their states and regions.

In four of the six regions, some service lines reported higher prices or resource use than the benchmark and other service lines reported lower prices or resource use than the benchmark. Colorado reported a higher price than the benchmark for all service lines and Oregon reported lower resource use than the benchmark for all service lines.

In all three sets of results, Oregon prices, outside of pharmacy costs, have consistently been higher than the benchmark while resource use has been lower. In contrast, in St. Louis, prices have consistently been shown to be lower than other regions. However, resource use in St. Louis has consistently been higher.

The relatively lower prices shown in this data is consistent with previous years' benchmark reports and other information about the St. Louis healthcare market that its RHIC, the Midwest Health Initiative, (MHI) has reviewed over time, said Louise Probst, MHI Executive Director.

“The cost of living here is so much more reasonable than a lot of places so you wouldn’t expect our costs to be as high,” Probst said. “But the other side of cost is utilization. In St. Louis, we tend to have a slightly older population and higher rates of utilization than other markets”.

The HealthPartners Total Cost of Care measure set allows regions to analyze the total cost of inpatient care, outpatient care, professional services and pharmacy, compare themselves to others, and better understand the price and utilization factors driving those costs.

The Oregon and St. Louis divergence described above was most dramatic in outpatient care where St. Louis’ use of outpatient care was 53 percentage points higher than Oregon but its prices were 54 percentage points lower. Similarly, for inpatient care, prices were 48 percentage points lower in

Comparing Participants in All Three

Year to Year Comparison of Total Cost of Care Compared to Average Commercial Population 2014 – 2016 Combined Attributed and Unattributed

Only Participants With Data For All Three Years

| | Maryland | Minnesota | Oregon | Utah |
|-------------------|----------|-----------|--------|------|
| Measure | | | | |
| Total Cost | | | | |
| 2014 | -16% | 11% | 7% | 0% |
| 2015 | -12% | 11% | 4% | 0% |
| 2016 | -17% | 14% | 7% | -1% |
| Rank | | | | |
| 2014 | 1 | 4 | 3 | 2 |
| 2015 | 1 | 4 | 3 | 2 |
| 2016 | 1 | 4 | 3 | 2 |

Note: This table will differ from the values in other tables, which reflect the six participants used in 2016. The 2015 and 2016 values represent the midpoint of the ranges created from the sensitivity analysis.

Rank Order: 1 = Lowest; 4 = Highest

All Participants For All Three Years

| | Colorado | Maryland | Minnesota | Oregon | St. Louis, MO | Utah |
|-------------------|----------|----------|-----------|--------|---------------|------|
| Total Cost | | | | | | |
| 2014 | — | -14% | 14% | 10% | -10% | 2% |
| 2015 | 17% | -16% | 7% | 0% | — | -4% |
| 2016 | 19% | -20% | 11% | 4% | -6% | -4% |
| Rank | | | | | | |
| 2014 | — | 1 | 5 | 4 | 2 | 3 |
| 2015 | 5 | 1 | 4 | 3 | — | 2 |
| 2016 | 6 | 1 | 5 | 4 | 2 | 3 |

Note: Differences in Total Cost are due to the changes in the average caused by differing participants. The 2015 and 2016 values represent the midpoint of the ranges created from the sensitivity analysis.

Rank Order: 1 = Lowest; 6 = Highest

St. Louis than Oregon but resource use was 29 percentage points higher. All of the results are provided on a risk-adjusted basis.

Across states, inpatient care had the greatest variation in price in all three of the benchmark periods. Colorado’s hospital prices were 31 percent higher than the average, compared to 23 percent below average in St. Louis, in the most recent period. During the most recent period, the same differential was reported for outpatient care as well across the two regions.

Outpatient care also showed the greatest differences in resource use, with Maryland coming in 26 percent below average and St. Louis coming in 29 percent above average. Professional services had the least variation in resource use across the regions.

INFORMING HEALTHCARE COST POLICY

HealthInsight Oregon, one of the original RHICs participating in the project, has been sharing the information with providers, payers and policymakers for several years. Legislators have convened several workgroups addressing various components related to cost. HealthInsight Oregon is frequently called in to present the total cost of care data to help inform policy.

“We’re often called upon as having local expertise and a true and tried methodology,” said Meredith Roberts Tomasi, Associate Executive Director for HealthInsight Oregon. “Legislators see this data as an important source of information as they consider how to create a higher-value healthcare system for our state.”

She said Oregon has consistently shown higher prices and lower resource use. This year, the trend was most prominent in outpatient care. Last year, it was more evident in inpatient and professional. She thinks the legislature may focus on prices in light of this year’s results, and a recent recommendation from a legislative taskforce to take a multi-stakeholder statewide approach to total cost of care across service areas.

Detailed Analysis—Deeper Insights

Total Cost of Care by Service Category

Commercial Population 2016 Combined
Attributed and Unattributed

| | Colorado | Maryland | Minnesota | Oregon | St. Louis, MO | Utah |
|---------------------|----------|----------|-----------|--------|---------------|------|
| Measure | | | | | | |
| Total Cost | | | | | | |
| Overall | 19% | -20% | 11% | 4% | -6% | -4% |
| Inpatient | 21% | -27% | 12% | 5% | -13% | 8% |
| Outpatient | 34% | -34% | 3% | 0% | 1% | 5% |
| Professional | 2% | -16% | 30% | 18% | -22% | -9% |
| Pharmacy | 28% | -3% | -10% | -16% | 15% | -14% |
| Resource Use | | | | | | |
| Overall | 5% | -7% | 7% | -10% | 10% | -5% |
| Inpatient | -8% | -10% | 9% | -16% | 13% | 13% |
| Outpatient | 17% | -26% | 6% | -24% | 29% | 3% |
| Professional | -4% | 2% | 17% | -3% | -5% | -8% |
| Pharmacy | 22% | -4% | -16% | -7% | 21% | -17% |
| Price | | | | | | |
| Overall | 13% | -14% | 4% | 16% | -15% | 1% |
| Inpatient | 31% | -19% | 3% | 25% | -23% | -4% |
| Outpatient | 15% | -11% | -3% | 32% | -22% | 3% |
| Professional | 7% | -18% | 11% | 22% | -17% | -1% |
| Pharmacy | 5% | 1% | 7% | -10% | -5% | 4% |

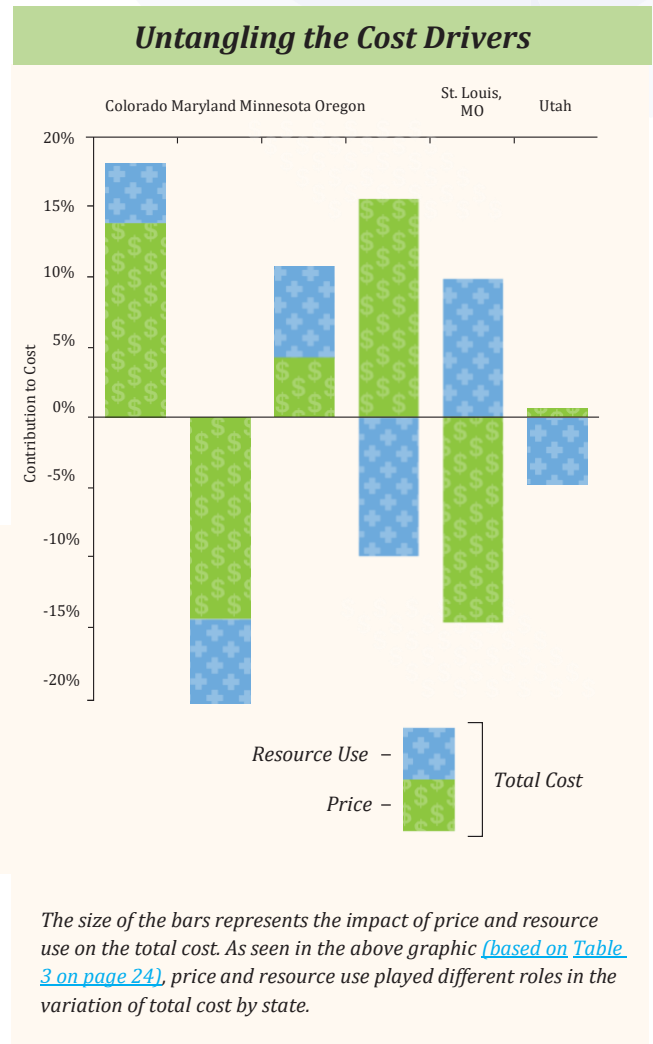
Note: This is the midpoint of the ranges created from the sensitivity analysis and represents the percent about or below the risk adjusted average across all regions.

[View the entire Table 2 on page 23](#)

Data from the project has been persuasive to the Colorado legislature as well. CIVHC, the RHIC which participates in the NRHI project on behalf of Colorado, looked at regional variation across the state and triangulated the data against other publicly available sources. CIVHC consistently found the state’s high use of outpatient services and the high prices of those services have the greatest impact on its total cost. To highlight their findings, CIVHC developed and distributed a white paper to the Colorado legislature and other stakeholders so policymakers, providers and purchasers could better understand how the cost of care in Colorado compares to other states and consider policy changes to impact those costs. In response to strong interest, CIVHC staff presented to legislators, legislative staff and interns, and a conversation began to emerge. They started to move past discussing what the problem is and began talking about how to fix it.

“Now we have a problem in outpatient cost,” said Cari Frank, Vice President of Communications and Marketing at CIVHC. “So, what are we going to do about it? It takes out the guesswork and people start to focus on the solution.”

With its unrestricted funding sources, CIVHC worked with legislators to help inform the development of several bills aimed at increasing healthcare transparency in the state. A key piece of legislation passed. It requires every freestanding outpatient facility—freestanding emergency departments, urgent care centers, imaging centers and others—to bill using its own unique national provider identifier. This change will give CIVHC the ability to identify these various facilities in its dataset rather than have the care provided by those facilities look as though it were provided by a hospital or another facility. The additional data will allow CIVHC to conduct valuable analyses on the care, and the cost of care, delivered by these facilities.



SHARING INFORMATION WITH LOCAL PROVIDERS AND PURCHASERS

Variation across states gains the attention of policymakers. However many local stakeholders, particularly those who provide and pay for healthcare, are more interested in local comparisons of medical groups and practice sites. Five of the six regions share detailed total cost of care data with providers. Increasing interest in population health management and value-based contracting have generated increasing interest in the reports over the years.

At MHI in St. Louis, employers were invited to join representatives of the region's leading provider groups for a joint discussion. At the event, MHI shared how each of the groups performed on the total cost of care, utilization and quality measures compared to each other and a regional benchmark.

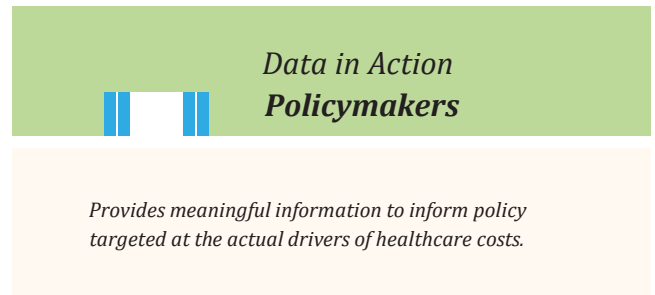
"We thought the providers would appreciate having the purchaser voice in the room to better understand the need to manage total cost of care," said Patti Wahl, Senior Director of Value-Based Purchasing, who leads the project for MHI. "Everybody can learn together."

Probst added, "Only by all stakeholders coming together to discuss trusted information can we deliver on the promise of higher-value, safer, and more affordable healthcare in our community."

HealthInsight Utah also is working with an employer workgroup to think about the cost information that would be most meaningful to employers and other purchasers and how it should be reported. Another HealthInsight Utah workgroup is focused on developing a consumer-focused website on affordability and a third workgroup is coordinating related data on social determinants of health from sources such as the United Way.

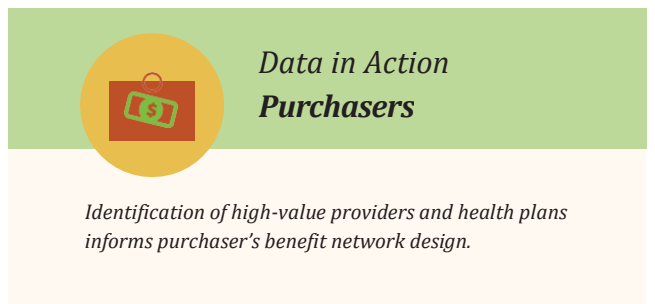
DEMAND FOR COST TRANSPARENCY ON THE RISE

Over the course of the project, with suggestions from local providers and others, several of the RHICs added new metrics and more sophisticated data visualizations to their provider reports. In some cases, they trimmed back information providers found less useful. For example, in Oregon, they have added a quality composite versus total cost index graph. They've also begun



*Data in Action
Policymakers*

Provides meaningful information to inform policy targeted at the actual drivers of healthcare costs.



*Data in Action
Purchasers*

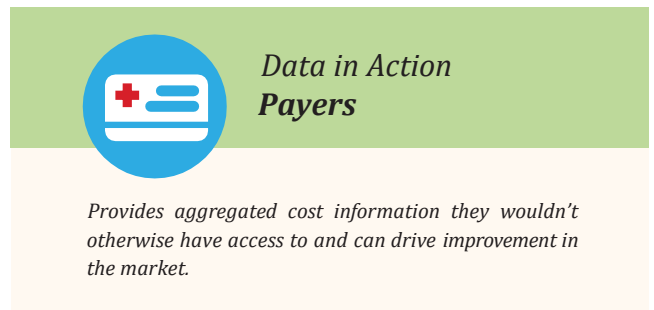
Identification of high-value providers and health plans informs purchaser's benefit network design.

to share trending information, so providers can see how the cost and resource use compares to their peers over time. Utah shares quality data and year-over-year variability at the clinic level.

“We now have people calling us wanting to know where their reports are. That’s quite a change,” Roberts Tomasi said. “People are paying attention. We’ve tried to get the word out that public reporting is coming so providers want to understand how they are performing in comparison to other providers.”

Utah has also seen an uptick in interest for the total cost of care information, especially from providers and clinic managers who oversee several clinics and can recognize unexplained variability. In addition, these same providers are becoming more willing to share information to improve the accuracy of Utah’s master provider list for attribution.

Gunnar Nelson, who has led Total Cost of Care reporting for MNMCM since before the NRHI project began, said he’s been inspired by the look and content of the HealthInsight Oregon reports, which were originally inspired by reports provided to primary care practices by the Maine Health Management Coalition. Now, MNMCM is redesigning its reports to mimic elements of the Oregon report.



The graphic features a green header bar with a blue circular icon containing a white cross and a stylized 'E' shape. To the right of the icon, the text 'Data in Action' is written in a serif font, with 'Payers' below it in a bold sans-serif font. Below the green bar, on a light orange background, is a quote in italics: 'Provides aggregated cost information they wouldn't otherwise have access to and can drive improvement in the market.'

Minnesota and Oregon also report data back to their contributing payers, and Colorado is moving in this direction. All said it’s a way to provide value back to the payers who spend time and resources sharing the data and who will benefit from a greater understanding of overall market performance .

For the first time this year, the regions added the utilization metrics component of the HealthPartners measure set. The utilization metrics, which include measures of emergency department use, high-cost imaging and length of hospitalizations to name a few, can help providers focus more succinctly on one or two patterns that might be contributing to higher than necessary cost.

Utah plans to incorporate the data into its next round of physician reports and tailor each report to the physician group with an emphasis on the utilization metrics of greatest interest. Tables comparing utilization metrics across regions can be found beginning on [page 27](#) of this report.

“We attribute the uptick in TCOC interest in Utah to our efforts to customize summaries for the clinics, highlighting variability in service lines versus last year,” said Rita Hanover, a senior analyst at HealthInsight Utah. “We think that taking time to highlight the more detailed utilization variability is well worth the effort and will further increase the ability of the clinics to take action.”

Here's one example of how this type of data might be useful. If the HealthPartners measure set finds high outpatient utilization, the next question for a practice is, "What type of outpatient utilization?" The utilization breakdown can help the practices identify areas for further investigation. In this case, the data might suggest high rates of MRIs or emergency department visits. Then, the question moves from, "Where do I look?" to "How do I fix it?"



Data in Action Providers

Multi-payer reporting enables providers to validate, challenge, and change practice patterns, select high-value specialists, and monitor the impact of change over time.

SPREADING COST TRANSPARENCY TO NEW REGIONS

In addition to the six sites currently contributing to the benchmark, another dozen sites have participated in the project in other ways, including exploring various barriers to reporting on cost such as data availability and stakeholder readiness. These regions have the opportunity to learn from the sites that have gone before them, offer their stakeholders tangible examples of success and offer their own contributions to the collective knowledge base. For many of these sites, the result is the ability to break down technical barriers to reporting. For others, the focus is on engaging stakeholders to assess or broaden support for total cost of care reporting. Across a wide array of market structures, political environments and data infrastructures, RHICs have worked with their regional partners to find solutions to make progress in achieving cost transparency.

Virginia Health Information (VHI), an APCD and RHIC, had Data Submission and Use Agreements between itself and participating health insurance plans that restricted the use of actual allowed amounts submitted. As part of its work to revise these agreements to add TCOC reporting as an approved use, VHI hosted a series of professionally-facilitated meetings that included hearing about project successes and lessons learned from HealthInsight Oregon. With this intensive stakeholder engagement as an underpinning, VHI and its legal counsel determined that VHI could move forward with using actual allowed amounts within the TCOC calculation if authorized through an official vote of its APCD Advisory Committee. This appeared to be both a faster and less costly approach to resolving the barrier as opposed to amending health plan APCD agreements.

Both the Greater Detroit Area Health Council (GDAH) and HealthInsight New Mexico hosted regional events where members of the Getting to Affordability project team provided an overview of the measure and what their region has gained through measuring and reporting total cost of care. Stakeholders in both regions now have a greater sense of urgency and are meeting to discuss their

regional strategy for healthcare cost transparency. While each region faces different barriers, both were able to advance healthcare affordability by leveraging and sharing the work done by members of the project team.

At the University of Texas, physicians and researchers came together over many months, even on a Saturday, to think through how the state might begin aggregating medical claims data. The result is Health of Texas, a soon to be launched website providing state and regional comparisons of cost and utilization trends by payer type using a multi-payer claims data set representing an estimated 80 percent of the state's claims data.

In other markets with more capitated payment contracts, regional health improvement collaboratives, including the Wisconsin Health Information Organization, the Washington Health Alliance and the Integrated Healthcare Association, are exploring options on how to value capitated payments in the TCOC measure.

While the nudge of a national project can often help local stakeholders realize the benefits of cost reporting, in other instances strong market dynamics can continue to limit the collection and broad use of this data. In Philadelphia, at the Health Care Improvement Foundation (HCIF), an assessment of stakeholders' readiness for sharing cost-related data found health plans worried it would put their plan at a competitive disadvantage and decrease their overall leverage during provider negotiations. With this knowledge, HCIF is considering other ways to increase cost transparency and partner on other opportunities to address cost drivers.

HealthInsight Nevada is working to align Medicare Advantage payers to engage and understand the interest for a common definition of TCOC. By focusing on Medicare Advantage plans, HealthInsight Nevada wanted to learn what barriers exist for obtaining health plan costs for non-Medicare populations in the future.

The Getting to Affordability project provided an excellent opportunity for The Health Collaborative in Cincinnati, OH to develop a standardized method of measuring and improving how the community pays for care. Ultimately, this will support the region in ensuring better care, smarter spending and healthier people. As trends in healthcare progress towards payment for value, transparency and uniform measurement across the region will assist in accelerating improvement for all stakeholders.



Data in Action **Patients**

Public reporting raises patient awareness of the variation that exists and informs selection of higher quality, more cost-efficient providers.

CONTINUING TO ADVANCE COST TRANSPARENCY

Over the last five years, multi-stakeholder partners in 18 regions have worked together to better understand the power of cost transparency. Each region has grown in its ability to understand the availability or quality of potential data and the appetite of stakeholders for measurement and reporting. Throughout the project, participants also have seen continued and growing interest across stakeholders for information related to affordability. Much of this stems from increasing concern regarding the high cost of care and a desire to buy care differently through value-based contracts. With CMS' recent announcement that it will be looking for health systems to take on increasing risk for total cost of care, this interest likely will only grow.

For several of the regions, reporting on Medicare and making more data public will be the next frontiers in the work. All will continue to work collaboratively across stakeholder groups to better understand affordability of care in their regions, the factors driving price and resource use, and opportunities to reduce waste.

Network for Regional Healthcare Improvement (NRHI) recently launched ***Affordable Care Together***, a national campaign that strives to achieve affordable healthcare by focusing on three major drivers: health, price, and waste. A key component of this work is developing a better understanding of the specific relationships across health, price, and waste, in each region and supporting local stakeholders in developing and implementing tailored strategies to increase likelihood of more affordable healthcare.

Affordable Care Together builds on NRHI's Getting to Affordability work.

As part of this national campaign, NRHI is inviting national organizations and healthcare advocates interested in taking community action to address healthcare affordability in collaboration with other like minded change agents across the country.

Join the movement—we can achieve Affordable Care Together by improving health, reducing price, and eliminating waste. Stay up to date on the work NRHI and its members are doing to make our healthcare system higher quality and more affordable for everyone by signing up for our email list (<http://affordablecaretogether.com/>) and following us on Twitter (www.twitter.com/reghealthimp).



Network for
Regional Healthcare
Improvement

Getting to Affordability

Section II: Benchmarking Methodology

Purpose

The Network for Regional Healthcare Improvement (NRHI) has previously published two national annual reports¹ comparing the total cost of care among commercially insured populations. This report, covering healthcare delivered in 2016, is the third installment of these reports. The Benchmarking Methodology Section summarizes the process and results of the second year of NRHI's Total Cost of Care (TCOC): Phase III project (Phase III Year Two)². This installment, similar to the previous reports, used the National Quality Forum (NQF) endorsed HealthPartners TCOC Measure Set³ to compare commercial data across several regions in the United States. This section provides an in-depth review of the participants, process, and results.

Summary

Phase III Year Two saw several advancements from the previous years. These included increasing the number of participating regions from five to six, adding a review of utilization statistics to the report, and an increase in the number of commercial plans meeting the data quality requirements for inclusion in the report.

Phase III Year Two of the Total Cost of Care project continued to advance healthcare transparency in several ways:

- Regions with different healthcare markets and population demographics were compared;
- Participants produced TCOC measure benchmarks after a careful and thorough data quality review;
- Regions learned more about the contents of their data and improved data quality to refine current and future submission streams;
- Several potential cost drivers were examined for impact;
- Results compared to prior years showed stability, increasing confidence in the TCOC measure set's ability to produce meaningful results despite limitations of the data.

Previously identified data limitations and considerations persisted in Phase III Year Two. These were thoroughly examined and an issue brief was published⁴

¹ http://www.nrhi.org/uploads/benchmark_report_final_web.pdf
<http://www.nrhi.org/uploads/g2a-benchmark-report-final-web-1.pdf>

² http://www.nrhi.org/uploads/g2a_onepager_r17.pdf

³ <https://www.healthpartners.com/hp/about/tcoc/index.html>

⁴ http://www.nrhi.org/uploads/futureconsiderationsforreportingtcc_r10.pdf




to help navigate them. However, they still pose the potential risk of distorted benchmarks and should be included as caveats in any presentation of the benchmark results.

- Data used to produce measures are not a random sample of the commercial market in each region.
- Claims paid by pharmacy and behavioral health benefit managers may not be included.
- Following HealthPartners TCOC methodology, patient-level costs were truncated at \$100,000.
- Substance abuse and other behavioral claims are sometimes excluded from data submissions or aggregated data stores for privacy reasons.
- Variation in provider coding patterns potentially affects risk scores.
- Non-claims payments (e.g. capitation, pay for performance payments) are not in the data stores.
- Data store structure limited data quality control or attempts to correct issues identified during that process for some regions.

Further information about these issues is available in previous publications of the benchmark.

This publication continues to aid in understanding healthcare cost variation among different areas of the country. Cost drivers can be identified by deconstructing per member cost into its individual components. Conceptual cost drivers might include:

- Health status—measured and adjusted for in the TCOC methodology through risk adjustment;
- Differences in services covered by the health benefit plan (e.g., mandated differences by state);
- Patient cost-sharing levels in the benefit plan;
- Utilization rates of health services—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)—measured by the price index;
- Narrowness of provider networks;
- Wage levels and general cost of living;
- Urbanization and access to healthcare facilities.



While the HealthPartners TCOC methodology addresses some of these issues, there are some that are outside the scope of this project. Further investigation and analysis of cost drivers and their relative impact will help create a clear vision of how these cost drivers are impacting the healthcare costs among regions.

Participants and Process

PARTICIPANTS

The TCOC project, under the leadership of NRHI and through funding from the Robert Wood Johnson Foundation (RWJF), began with five pilot sites in November of 2013. 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)⁵
- Midwest Health Initiative (MHI)
- Minnesota Community Measurement (MNCM)
- HealthInsight Oregon

Since 2013 NRHI has expanded to include several other RHICs. These regions can be classified as either Standardized Regions or Developmental Sites. The Standardized Regions contribute data in the creation of the National Benchmark, while Developmental Sites seek to address specific barriers to price transparency. For Phase III Year Two the Standardized Regions included:

- Center for Improving Value in Health Care (CIVHC)
- Midwest Health Initiative (MHI)
- Minnesota Community Measurement (MNCM)
- HealthInsight Oregon
- HealthInsight Utah in partnership with the Utah Department of Health, Office of Health Care Statistics
- Maryland Health Care Commission (MHCC) in partnership with Social and Scientific Systems The

Developmental Sites that participated were:

- Greater Detroit Area Health Council
- HealthInsight Nevada

⁵ MHMC participated in Phase I benchmarks only and is now known as Healthcare Purchaser Alliance of Maine

- HealthInsight New Mexico
- Health Care Improvement Foundation
- Integrated Healthcare Association
- Massachusetts Health Quality Partners
- The Health Collaborative
- The University of Texas Health Science Center at Houston
- Virginia Health Information
- Washington Health Alliance
- Wisconsin Health Information Organization

Work done by the Developmental Sites expands the TCOC measurement by exploring the use of capitated claims, Medicaid data, and Medicare advantage data, as well as collaborating with stakeholders to achieve greater price transparency. More information and publications on these topics can be accessed through the NRHI Getting to Affordability website⁶.


GENERAL PROCESS

Regions participating as Standardized Regions in the Phase III TCOC Year

Two benchmarking performed robust data quality assurance and data quality control processes using their data store to determine fitness for TCOC analysis. Improvements in data quality from previous years led to a combined increase of over 600,000 unique members for three of the regions. Data quality tables examining the following characteristics were produced and compared across contributors' data stores as well as across data sources within them:

- Member counts and claim dollars by month
- Members and claims indicating primary insurance
- Payment deduplication
- Procedure code integrity and coverage
- Diagnosis code fields
- Surgical procedure code fields
- Professional place of service
- Inpatient Diagnosis-Related Group
- High cost pharmacy
- Consistency of member ID across claims and eligibility

⁶ See G2A Case Studies at <http://www.nrhi.org/work/multi-region-innovation-pilots/tcoc/>



An iterative process between the Technical Advisor and each region addressed most data quality issues. The results presented in this report represent data from each participating Standardized Region that met rigorous data quality, stability, and completeness requirements for supporting the TCOC measure set. The intensive process used to improve data quality yielded final results that improved on Phase I and Phase II. However, limitations remain and provide an important opportunity for future refinement. These limitations can be further examined in the aforementioned prior reports and issue brief.

Results

The analytical results produced by the project include the TCOC measures including the recently added utilization statistics, as well as additional analysis drilling further into the cost drivers underlying the aggregate measures. These results represent multi-payer commercial data for 2016.

TCOC RESULTS

[Table 1](#) shows the Total Cost Index (TCI), the Resource Use Index (RUI), and the Price Index for the six participating Standardized Regions using the commercial population (ages 1–64). The TCI compares total per member per month spending and the RUI focuses on differences in intensity of utilization. Both the TCI and RUI are adjusted for differences in the populations' underlying health status using the Johns Hopkins Adjusted Clinical Groups® System (ACG® System)⁷. The RUI measure and the Price Index allow separate analysis of intensity of utilization and price.

[Table 1](#) and [Table 2](#) display these TCOC measures as ranges. The cost, utilization, and price shown in the first section of this report are derived from the midpoint of the ranges in these tables and displayed as a percentage above or below one. The risk score ranges were determined by conducting a sensitivity analysis on the risk scores and then indexing the results. This analysis considered variation in claim detail across data contributors. After consulting with subject matter experts about the potential effect of variation in claim detail, maximum potential variation was applied to affected risk scores. Some regions experienced higher variation in risk score due to the variation in claim level detail. The risk scores were indexed so that their unweighted average was equal to one. This was done by dividing each region's risk score by the overall unweighted risk score.

⁷ 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

The range of indexed risk scores produces ranges in TCI and RUI because these indexes are both risk score adjusted. However, since the Price Index is calculated directly from the TCI and RUI, their risk score adjustments cancel each other out. Hence the Price Index does not vary with the risk score. A region's index is above the risk-adjusted average if the range is greater than one, approximately average if the range spans one, and below average if the range is less than one.

TABLE 1: TOTAL COST INDEX AND RESOURCE USE INDEX: COMMERCIAL POPULATION 2016

| | Colorado | Maryland | Minnesota | Oregon | St. Louis, MO | Utah |
|---------------------------|-------------|-------------|-------------|-------------|---------------|-------------|
| <i>Indexed Risk Score</i> | 0.90 – 0.97 | 1.11 – 1.19 | 0.98 – 1.01 | 0.96 – 0.99 | 1.02 – 1.05 | 0.89 – 0.92 |
| TCI | 1.15 – 1.23 | 0.78 – 0.83 | 1.10 – 1.13 | 1.03 – 1.06 | 0.92 – 0.95 | 0.95 – 0.97 |
| RUI | 1.01 – 1.09 | 0.90 – 0.97 | 1.05 – 1.09 | 0.89 – 0.91 | 1.08 – 1.12 | 0.94 – 0.97 |
| Price Index | 1.13 | 0.86 | 1.04 | 1.16 | 0.85 | 1.01 |

HealthPartners' TCOC measure set is designed to produce results at the primary care practice level. In this scenario, results consist only of those patients who can be attributed to a primary care practice. However, this report compares regions rather than practices. The measures shown here reflect the entire available population regardless of whether individuals visited a primary care provider. Using the entire available population provides the largest possible sample and avoids potential impact on results caused by differences in attribution methodologies across regions. Analysis showed that the regional results based on primary care practice populations did not vary substantially from the TCI, RUI, and Price Index of the entire available population.

It is important to note that the measures are indexed to the non-weighted average of the participating regions. Using the non-weighted averages avoids letting larger regions dominate the average. Furthermore, the indexes are directly impacted by the regions participating in the benchmark. Phase III Year Two added St. Louis, MO (MHI) into the benchmark. Other region's indexes were impacted due to St. Louis' relatively high healthcare resource use and low price. Application of the results should be interpreted with the relative nature of indexes in mind, as well as close attention to the technical data issues and to the insight into interpreting benchmark data as will be discussed.

COST DRIVER EXPLORATION

Measuring and reporting costs of healthcare support providers and policymakers in their efforts to pursue the Triple Aim: higher quality healthcare, with more

satisfied patients, at a lower cost. Once response to the question, “What is the difference in the cost of healthcare in various regions?” have been established, then attention can turn to “Why does it differ?” Answers to this last question will lead to 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 intensity 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 both as 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, an examination of the regional risk scores themselves may be conducted to explore ways for cost reduction through improved health status (lower morbidity) and potentially through policies to improve underlying causes. Similarly, the RUI measure controls for provider prices, allowing a focus on the reduction of certain types of utilization as a way to lower overall cost. Another aspect for additional research and examination is to discover why unit prices vary, including consideration of wage levels, cost of living, urbanization, healthcare access, or provider and payer market power. Improving the collective understanding of the differing cost drivers and contributing factors may provide the most useful results for finding strategies that will reduce costs.

The TCOC results presented in [Table 1](#) begin to break cost into components by showing average indexed 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 which are displayed in [Table 2](#). As stated above, the results are indexed according to the participants and thus, if year-to-year comparisons are made it should be done with reference to a consistent set of participants.

Table 2 breaks down the components of medical cost by region. As an example of how to interpret this table, notice that St. Louis has a lower than average overall TCI (0.92–0.95). However, their pharmacy TCI is much higher than average (1.13–1.17), which appears to be driven by higher than average utilization (1.19–1.23). This result suggests that while St. Louis seems to be keeping medical costs fairly low, pharmacy utilization can be examined for its relationship to quality of care.

**TABLE 2: COMPONENTS OF MEDICAL COST:
COMMERCIAL POPULATION 2016**

| | Colorado | Maryland | Minnesota | Oregon | St. Louis, MO | Utah |
|---|-------------|-------------|-------------|-------------|---------------|-------------|
| TCI | | | | | | |
| Overall | 1.15 – 1.23 | 0.78 – 0.83 | 1.10 – 1.13 | 1.03 – 1.06 | 0.92 – 0.95 | 0.94 – 0.97 |
| Inpatient | 1.17 – 1.26 | 0.70 – 0.75 | 1.10 – 1.14 | 1.04 – 1.07 | 0.86 – 0.89 | 1.07 – 1.10 |
| Outpatient | 1.29 – 1.39 | 0.64 – 0.68 | 1.01 – 1.04 | 0.99 – 1.02 | 0.99 – 1.02 | 1.04 – 1.07 |
| Professional | 0.98 – 1.06 | 0.81 – 0.87 | 1.28 – 1.32 | 1.17 – 1.20 | 0.77 – 0.80 | 0.90 – 0.92 |
| Pharmacy | 1.23 – 1.33 | 0.94 – 1.00 | 0.89 – 0.92 | 0.83 – 0.85 | 1.13 – 1.17 | 0.85 – 0.87 |
| RUI | | | | | | |
| Overall | 1.01 – 1.09 | 0.90 – 0.97 | 1.05 – 1.09 | 0.89 – 0.91 | 1.08 – 1.12 | 0.94 – 0.97 |
| Inpatient | 0.89 – 0.96 | 0.87 – 0.93 | 1.07 – 1.10 | 0.83 – 0.86 | 1.11 – 1.15 | 1.12 – 1.15 |
| Outpatient | 1.13 – 1.21 | 0.71 – 0.76 | 1.04 – 1.08 | 0.75 – 0.77 | 1.27 – 1.31 | 1.01 – 1.04 |
| Professional | 0.92 – 0.99 | 0.99 – 1.06 | 1.16 – 1.19 | 0.95 – 0.98 | 0.93 – 0.97 | 0.91 – 0.93 |
| Pharmacy | 1.18 – 1.27 | 0.92 – 0.99 | 0.83 – 0.86 | 0.92 – 0.95 | 1.19 – 1.23 | 0.82 – 0.84 |
| PRICE INDEX | | | | | | |
| Overall | 1.13 | 0.86 | 1.04 | 1.16 | 0.85 | 1.01 |
| Inpatient | 1.31 | 0.81 | 1.03 | 1.25 | 0.77 | 0.96 |
| Outpatient | 1.15 | 0.89 | 0.97 | 1.32 | 0.78 | 1.03 |
| Professional | 1.07 | 0.82 | 1.11 | 1.22 | 0.83 | 0.99 |
| Pharmacy | 1.05 | 1.01 | 1.07 | 0.90 | 0.95 | 1.04 |
| PROPORTION OF HEALTHCARE BY PLACE OF SERVICE | | | | | | |
| Inpatient | 14% | 13% | 14% | 14% | 13% | 16% |
| Outpatient | 30% | 22% | 24% | 26% | 28% | 29% |
| Professional | 32% | 39% | 44% | 42% | 31% | 35% |
| Pharmacy | 24% | 27% | 18% | 18% | 27% | 20% |
| Overall | 100% | 100% | 100% | 100% | 100% | 100% |

The Overall Healthcare Cost Percentages in the above table shows that there is variation in where healthcare dollars are being spent. This variation is impacted by several different local and regional factors. Continuing the example above, one contribution to St. Louis' high pharmacy usage may be related to the billing practices for specialty medications. In some regions, medication that is administered in a clinical setting is usually procured and billed under the medical benefit. However, there is a growing trend in some regions among self-insured employer and union plans to move specialty medicines out of the medical benefit, whenever the situation allows, and into the pharmacy, where the patient and plan cost is lower. This example serves as a reminder that underlying regional practices can and do have an influence on where and how healthcare dollars are spent.

Table 3, below, explores the cost drivers by breaking the TCI into the RUI and Price Index components⁸. The indexes in the table represent the midpoint of the ranges presented in [Table 2](#). The percentages indicate the contribution to total cost each of the components made. A positive percentage indicates utilization or price is driving cost higher compared to the benchmark, and a negative percentage indicates utilization or price is driving cost lower compared to the benchmark. In some cases, the RUI and the Price Index are working in opposite directions. In those cases, the component that contributes most determines if the cost is above or below average.

TABLE 3. PRICE AND UTILIZATION CONTRIBUTIONS TO TOTAL COST

| | Colorado | Maryland | Minnesota | Oregon | St. Louis, MO | Utah |
|---------------------|----------|----------|-----------|--------|---------------|------|
| TCI | 1.19 | 0.80 | 1.11 | 1.04 | 0.94 | 0.96 |
| RUI | 1.05 | 0.93 | 1.07 | 0.90 | 1.10 | 0.95 |
| Contribution to TCI | 27% | -32% | 64% | -39% | 40% | -85% |
| Price Index | 1.13 | 0.86 | 1.04 | 1.16 | 0.85 | 1.01 |
| Contribution to TCI | 73% | -68% | 36% | 61% | -60% | 15% |

In order to get a more comprehensive picture when comparing healthcare costs, overall cost of living should be examined. In this report, the Missouri Department of Economic Development's Economic Research and Information Center (MERIC) was used to help provide this perspective. [Table 4](#) shows MERIC's 2016 Health Cost of Living Index⁹ along with the TCI, RUI, and Price Index. As in previous publications a high correlation exists between the Health Cost of Living Index and TCI (correlation coefficient = 0.82) and with the Price Index (correlation coefficient = 0.65).

⁸ TCI equals Price Index multiplied by RUI. The contribution to TCI calculation takes this relationship into consideration

⁹ 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/2017/12/2018-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.

TABLE 4: COMPARING HEALTH COST OF LIVING INDEX TO TCI, RUI AND PRICE INDEX

| | Colorado | Maryland | Minnesota | Oregon | St. Louis, MO | Utah |
|---|----------|----------|-----------|--------|---------------|------|
| <i>Health Cost of Living Index 2016</i> | 1.06 | 0.92 | 1.09 | 1.05 | 0.97 | 0.90 |
| TCI | 1.19 | 0.80 | 1.11 | 1.04 | 0.94 | 0.96 |
| RUI | 1.05 | 0.93 | 1.07 | 0.90 | 1.10 | 0.95 |
| Price Index | 1.13 | 0.86 | 1.04 | 1.16 | 0.85 | 1.01 |

These results highlight the complexity of healthcare costs and how cost of living is one factor that plays a role in the healthcare landscape. There are many factors that influence healthcare costs. Some of these other factors include richness of the benefit plan, provider-payer reimbursement relationships, market share of public payers, and the rate of uninsured individuals—all contribute to commercial healthcare costs. Of particular note is research performed on how uncompensated care, Medicare rates, and Medicaid rates caused shifts in costs from regulated reimbursed payer populations to the commercial population. For those who may be interested in learning more on this topic, please reference Frakt’s publication¹⁰.

Utilization Metrics

INTRODUCTION

The TCRRV™ (RUI) measures intensity of healthcare resource utilization. To determine whether variation in Relative Resource Use is due to differences in the level of a service used (e.g., an MRI instead of an X-ray) or the number of times a provider orders a particular service (x-rays on more patients), the expanded TCRRV™ software offers a look at counts of specific services ordered, such as admissions, office visits, Emergency Room (ER) services, and pharmacy prescriptions. These utilization metrics are produced using the same patients and claims as the TCOC and TCRRV™ measure sets.

The utilization metrics include:

- Inpatient Admissions
- Inpatient Days

¹⁰ Frakt, Austin B. "How Much Do Hospitals Cost Shift? A Review of the Evidence." *The Milbank Quarterly* 89.1 (2011): 90–130. PMC. Web. 11 Jan. 2018.

- Surgery Admissions
- Surgery Admission Days
- Medical Admissions
- Medical Admission Days
- Emergency Room Visits
- Outpatient Surgery
- Primary Care Office Visits
- Specialty Office Visits
- Lab and Pathology Tests
- High Tech Radiology Use
- Standard Radiology Use
- Pharmacy Use
- Generic Pharmacy Use Ratio

RISK ADJUSTMENT FOR UTILIZATION METRICS

The risk score used for the Total Cost Index is designed to adjust for expected dollars spent for a particular configuration of conditions. Different conditions can have similar costs per year with distinctly different utilization patterns (see Table 5 below). This makes it necessary to use a different risk adjustment method for Utilization Metrics.

TABLE 5. RISK SCORE AND UTILIZATION DIFFERENCES

| ACG | 1721 | 4830 |
|---|-------------------------------|--|
| Description | Pregnancy, 2-3 ADG, Delivered | 6-9 ADG with complications, Female 18-34, 2 major ADGs |
| Risk Score | 3.32 | 3.41 |
| UTILIZATION PER 1000 PATIENTS PER YEAR | | |
| Office Visits | 2,040 | 8,825 |
| Inpatient Admissions | 987 | 197 |
| Emergency Room Use | 79 | 565 |
| Pharmacy Scripts Filled | 4,665 | 24,209 |

Utilization also varies by age and sex:

TABLE 6. EMERGENCY ROOM VISITS PER 1000 PATIENTS PER YEAR

| | Female | Male |
|-----------|--------|------|
| Age 1-17 | 136 | 150 |
| Age 18-39 | 197 | 131 |
| Age 40-64 | 157 | 132 |

To enable comparison across regions, the utilization pattern by age/sex/ACG cell within a region is measured. These utilization rates are then applied to a standard distribution of patients by age/sex/ACG cell. This method calculates the regional utilization as if all regions were presented with the same set of patients. The differences in these risk-adjusted rates are then due to differences in the way providers in each region treat patients, rather than differences in the patients they are treating.¹¹

UTILIZATION RESULTS

The tables below display selected utilization metrics for the participating regions. The metrics are adjusted for risk as described above. As with the TCI and RUI, all measures are calculated on 2016 dates of service. The RUI is shown alongside the risk-adjusted utilization rates because the interaction of the indexed utilization and the RUI highlight the difference between raw utilization and intensity.

TABLE 7. RISK ADJUSTED UTILIZATION AND RESOURCE USE INDEX

| Region | Office Visits | | | | | | RUI |
|----------------|--------------------------|--------------|--------------|------------------|-------------|-------------|--------------|
| | Count per 1,000 Patients | | | Index to Average | | | Professional |
| | PCP | Specialist | Total | PCP | Specialist | Total | |
| Colorado | 2,068 | 1,245 | 3,313 | 1.07 | 0.75 | 0.92 | 0.96 |
| Maryland | 2,006 | 2,281 | 4,287 | 1.04 | 1.37 | 1.19 | 1.02 |
| Minnesota | 1,920 | 1,542 | 3,462 | 0.99 | 0.93 | 0.96 | 1.17 |
| Oregon | 1,786 | 1,673 | 3,459 | 0.93 | 1.01 | 0.96 | 0.97 |
| St. Louis, MO | 1,993 | 1,625 | 3,618 | 1.03 | 0.98 | 1.01 | 0.95 |
| Utah | 1,808 | 1,585 | 3,393 | 0.94 | 0.96 | 0.95 | 0.92 |
| Average | 1,930 | 1,659 | 3,589 | 1.00 | 1.00 | 1.00 | 1.00 |

¹¹ For more information on the method of direct standardization, see <https://www.healthknowledge.org.uk/e-learning/epidemiology/specialists/standardisation>

| | Inpatient | | | | | | RUI |
|----------------|-------------------------------|------------|------------------------|------------------|-------------|------------------------|-------------|
| | per 1,000 Patients | | | Index to Average | | | Inpatient |
| Region | Admissions | Days | Average Length of Stay | Admissions | Days | Average Length of Stay | |
| Colorado | 41.1 | 146 | 3.55 | 1.00 | 0.92 | 0.93 | 0.92 |
| Maryland | 43.6 | 174 | 3.99 | 1.06 | 1.10 | 1.04 | 0.90 |
| Minnesota | 45.1 | 174 | 3.86 | 1.09 | 1.10 | 1.01 | 1.09 |
| Oregon | 35.4 | 122 | 3.45 | 0.86 | 0.77 | 0.90 | 0.84 |
| St. Louis, MO | 40.5 | 191 | 4.72 | 0.98 | 1.21 | 1.23 | 1.13 |
| Utah | 41.4 | 139 | 3.36 | 1.00 | 0.88 | 0.88 | 1.13 |
| Average | 41.2 | 158 | 3.83 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Emergency Room Visits | | | | | | RUI |
| | per 1,000 Patients | | | Index to Average | | | Inpatient |
| Region | Count | | | Count | | | |
| Colorado | 168 | | | 1.11 | | | 1.17 |
| Maryland | 178 | | | 1.18 | | | 0.74 |
| Minnesota | 144 | | | 0.95 | | | 1.06 |
| Oregon | 139 | | | 0.92 | | | 0.76 |
| St. Louis, MO | 148 | | | 0.98 | | | 1.29 |
| Utah | 132 | | | 0.87 | | | 1.03 |
| Average | 151 | | | 1.00 | | | 1.00 |
| | Pharmacy Prescriptions Filled | | | | | | RUI |
| | per 1,000 Patients | | | Index to Average | | | Pharmacy |
| Region | Count | | | Count | | | |
| Colorado | 11,847 | | | 0.97 | | | 1.22 |
| Maryland | 11,860 | | | 0.98 | | | 0.96 |
| Minnesota | 11,865 | | | 0.98 | | | 0.84 |
| Oregon | 11,428 | | | 0.94 | | | 0.93 |
| St. Louis, MO | 13,391 | | | 1.10 | | | 1.21 |
| Utah | 12,555 | | | 1.03 | | | 0.83 |
| Average | 12,158 | | | 1.00 | | | 1.00 |

*Note: Emergency Room visits that result in direct admission to the hospital are excluded.

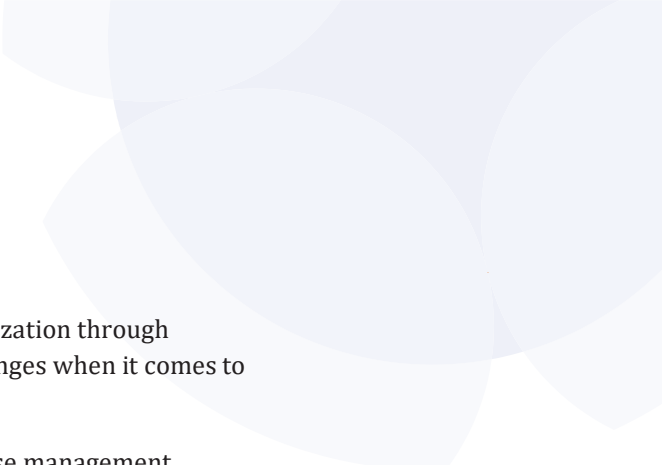
| Region | Laboratory/Radiology | | | | | | RUI |
|----------------|----------------------|---------------------|--------------------|------------------|---------------------|--------------------|----------------|
| | per 1,000 Patients | | | Index to Average | | | Not Applicable |
| | Lab/ Pathology | High Tech Radiology | Standard Radiology | Lab/ Pathology | High Tech Radiology | Standard Radiology | |
| Colorado | 5,387 | 189 | 596 | 0.97 | 1.02 | 0.91 | |
| Maryland | 6,620 | 186 | 704 | 1.20 | 1.01 | 1.08 | |
| Minnesota | 5,334 | 202 | 589 | 0.96 | 1.09 | 0.90 | |
| Oregon | 5,086 | 151 | 626 | 0.92 | 0.82 | 0.96 | |
| St. Louis, MO | 5,823 | 201 | 757 | 1.05 | 1.09 | 1.16 | |
| Utah | 4,921 | 178 | 640 | 0.89 | 0.96 | 0.98 | |
| Average | 5,529 | 185 | 652 | 1.00 | 1.00 | 1.00 | |

DISCUSSION

The first table above compares the regional rates of office visits to Primary Care Providers and Specialists, an important component of the Professional RUI. While the PCP visit rate varies somewhat across the regions, with Colorado at 7% above the average and Oregon 7% below, the rate of Specialist visits shows more dramatic differences. Maryland makes heavy use of specialists while Colorado is 25% below the average. Minnesota, despite its high Professional RUI, is about average in terms of office visits to both PCPs and specialists. This highlights the value of the utilization metrics as a way of understanding and addressing the RUI results, by giving users some insight into what is or is not driving them.

The Inpatient utilization metrics relate directly to the Inpatient RUI. Minnesota's 1.09 RUI and 1.09 indexed admission rate indicate that the intensity of admissions is about average. In contrast, Maryland's 0.90 inpatient RUI compared to its 1.06 indexed admission rate suggests that the average intensity is low. They are using below average resources on inpatient admissions, but more people are spending time in the hospital. Utah and St. Louis (MHI) show the opposite situation, with average admission rates but high resource utilization.

Emergency Room visits are only one component of Outpatient RUI, but they are often a focus of efforts to curtail inappropriate utilization. Colorado and Maryland have higher than average rates of ER utilization, but they have very different measures of outpatient resource consumption. These utilization metrics suggest



that both of these regions have an opportunity to reduce utilization through programs directed at ER visits, but they have different challenges when it comes to overall Outpatient utilization.

Pharmacy utilization is a complex issue. In some cases, disease management programs encourage greater use of appropriate medications to control chronic conditions. In other cases, such as antibiotic use, providers and patients should be focused on using prescriptions only in situations that warrant them. Comparing 30-day prescription counts with pharmacy RUI for each of the regions shows that Colorado uses particularly high-intensity medications, while Utah uses more prescriptions with a lower average intensity.

A review of the Laboratory/Radiology metrics shows that Oregon is consistently below the average for Laboratory tests and both types of Radiology. In contrast, St. Louis makes heavier than average use of all three types of testing. Along with St. Louis, Minnesota uses High Tech Radiology 9% more than the average and 33% more than Oregon, who has the lowest rate of High Tech Radiology.

DATA CONSIDERATIONS FOR UTILIZATION METRICS

The utilization methodology in the TCRRV™ software does not test thresholds or outliers. It counts all the activity within the category, unlike the TCI calculation which limits the costs per patient to a preset limit (in this case \$100,000 per member per year). The TCRRV™ values are limited to specific ranges so a missing or mistaken value does not drastically impact the result. The lack of outlier threshold should be noted in any analysis of the data but not adjusted within the data.

This difference in methods puts a greater importance on data review. For example, on the initial data run, one region had five inpatient admission claims with no admission date. This created inpatient admissions with apparent lengths of stay of over 20,000 days each. After a review, these data points were corrected, and the lengths of stay recalculated.

Billing and practice patterns impact results. For example, the HealthPartners TCRRV™ Utilization metric for Outpatient Surgery counts only surgeries billed on the UB04 hospital claim form. Ambulatory surgical centers, which use the HCFA 1500 claim form, are not included. This phenomenon is apparent in the differences seen among regions in the Outpatient Surgery utilization metric, shown below:

TABLE 8: RISK ADJUSTED OUTPATIENT UTILIZATION

| Region | Outpatient Surgery per 1000 Patients Per Year |
|---------------|---|
| COLORADO | 133.3 |
| MARYLAND | 84.8 |
| MINNESOTA | 109.2 |
| OREGON | 59.3 |
| ST. LOUIS, MO | 132.1 |
| UTAH | 124.1 |

Use of Ambulatory Surgical Centers in Maryland and Oregon could be a possible explanation of outpatient surgery 21% and 45% lower than the other regions.

UTILIZATION CONCLUSION

The Utilization Metrics included in the expanded TCRRV™ software offer some insight into factors underlying differences in RUI by region. Because there is no truncation or testing for reasonability in the methodology, more attention to data cleaning and preparation is required. Utilization metrics drill down into specific services and are therefore more sensitive to differences in provider coding and billing patterns. These may be more alike within a state, creating more reliable comparisons among practices within a state, than among states. As with all statistics, one should interpret them with an understanding of their source (claims data) and context (the changing healthcare landscape).

Year-to-Year Comparisons

In Phase III Year Two, six regions contributed to the TCOC benchmark results. Four of those regions participated in all three years of the TCOC comparison: Maryland, Minnesota, Oregon, and Utah. These four regions provide an opportunity to assess the stability of the measure over time and across regions. One of the complexities of making comparisons between years is the variation of available commercially insured members in each region. Through the years, there have been some substantial changes in the amount of available data for some of the regions. Notably, in 2016 the Supreme Court’s decision in *Gobeille vs Liberty Mutual*¹² severely impacted the availability of self-funded Employee Retirement Income Security Act (ERISA) data contributions. Other factors that impacted data availability include timeliness and quality of the data submitted to each region.

¹² For more information about *Gobeille vs Liberty Mutual* and the impact on APCDs, please see the APCD Council’s statement: <https://www.apcdouncil.org/news/2016/03/apcd-council-statement-scotus-decision-gobeille-v-liberty-mutual-case>

In spite of these changes in the amount of data available, Table 9 demonstrates the consistency in the TCOC measures. Of particular note, Minnesota was the only region whose data store did not change significantly from year to year.

TABLE 9: COMPARING TCOC MEASURES FROM 2014 TO 2016 WITH COMMON PARTICIPANTS IN ALL THREE YEARS

| | Maryland | Minnesota | Oregon | Utah |
|------------------|----------|-----------|--------|------|
| 2014 TCI | 0.84 | 1.11 | 1.07 | 1.00 |
| 2015 TCI | 0.88 | 1.11 | 1.04 | 1.00 |
| 2016 TCI | 0.83 | 1.14 | 1.07 | 0.99 |
| 2014 RUI | 0.91 | 1.08 | 0.94 | 1.10 |
| 2015 RUI | 0.99 | 1.08 | 0.94 | 0.99 |
| 2016 RUI | 0.97 | 1.11 | 0.93 | 0.99 |
| 2014 Price Index | 0.93 | 1.03 | 1.14 | 0.91 |
| 2015 Price Index | 0.88 | 1.03 | 1.11 | 1.00 |
| 2016 Price Index | 0.85 | 1.03 | 1.14 | 1.00 |

Maryland’s sample fundamentally changed from 2014 to 2016. Maryland no longer includes any data from self-funded employers with ERISA health plans, and changes in the individual market (ACA-compliant and non-compliant plans) introduced more high risk patients. Utah had changes in its data store from 2014 to 2015 that increased accuracy in the detailed data on inpatient claims and improved the precision of the TCRRV. This change in the data store and TCRRV output specifically drove down the RUI in 2015 which also impacts the Price Index.

[Table 10](#) shows all participants for all three years of the project. It should be remembered that the HealthPartners measures are relative only to those regions that participate. Comparing Table 9 and [Table 10](#) demonstrates how including different regions in the benchmark can impact the measures; this is due to the fact that any measure based on a small number of contributors can be influenced by the inclusion or exclusion of just a single participant. The indexes fluctuate between 0.01 and 0.04 depending on whether all regions are used or only the four regions with data for all three years are used.

TABLE 10: COMPARING TCOE MEASURES FROM 2014 TO 2016 WITH ALL PARTICIPANTS

| | Colorado | Maryland | Minnesota | Oregon | St. Louis, MO | Utah |
|------------------|----------|----------|-----------|--------|---------------|------|
| 2014 TCI | - | 0.86 | 1.14 | 1.10 | 0.90 | 1.02 |
| 2015 TCI | 1.17 | 0.84 | 1.07 | 1.00 | - | 0.96 |
| 2016 TCI | 1.19 | 0.80 | 1.11 | 1.04 | 0.94 | 0.96 |
| 2014 RUI | - | 0.88 | 1.05 | 0.93 | 1.08 | 1.07 |
| 2015 RUI | 1.11 | 0.97 | 1.05 | 0.92 | - | 0.97 |
| 2016 RUI | 1.05 | 0.93 | 1.07 | 0.90 | 1.10 | 0.95 |
| 2014 Price Index | - | 0.98 | 1.09 | 1.18 | 0.83 | 0.96 |
| 2015 Price Index | 1.06 | 0.87 | 1.01 | 1.09 | - | 0.99 |
| 2016 Price Index | 1.13 | 0.86 | 1.04 | 1.16 | 0.85 | 1.01 |

CONCLUSION

Phase III Year Two of the RWJF Total Cost of Care project advances healthcare cost and utilization transparency in several important ways. First, a greater understanding of how cost and utilization vary between regions is achieved. Cost was analyzed by price and utilization to identify cost drivers in different regions. The utilization metrics then build upon this by showing regional differences in healthcare practices and use. Finally, the project highlights that although there may be changes in payer mix and data availability for a region, the differences among regions are, at a high level, more consequential than the potential differences caused by these data changes. These findings advance the national conversation regarding healthcare cost and utilization in the search for a solution to the healthcare cost crisis.