



## Wisconsin Physician Value Study

### Access to the Wisconsin Physician Value Study Results

Organizations providing direct health care services to patients can contact the Wisconsin Health Information Organization (WHIO) to learn more about how to access your organization's results from the Wisconsin Physician Value Study. Inquiries may be addressed to Dana Richardson at [dana.richardson@whio.org](mailto:dana.richardson@whio.org) or 608-442-3877. Members of the BHC Group, please contact Jeff Kluever at [jkuever@bhcgwi.org](mailto:jkuever@bhcgwi.org) or 262-875-3312 for more information about the Physician Value Study.

### Executive Summary

A top priority of the Business Health Care Group of Wisconsin (BHC Group) and its member employers is to purchase high-value health care. To that end, BHC Group, with generous support from the Greater Milwaukee Business Foundation on Health (GMBFH), commissioned a study from GNS Healthcare – a leading provider of artificial intelligence (AI) applications in health care – to evaluate the value of care provided by physicians throughout Wisconsin. GNS Healthcare performed this groundbreaking study using the claims data available through the WHIO.

Wisconsin executive health care leaders gathered to attend three separate presentations in the Milwaukee, Madison, and Wausau areas on December 4 (Milwaukee & Madison) and December 5 (Weston) to learn more about Wisconsin Physician Value Study.

The primary goals of the Wisconsin Physician Value Study are to 1) support performance improvements within health systems and 2) inform employer benefit program design and decision-making. As such, the results of this study will not be publicly reported.

### Wisconsin's Value Landscape

The Era of Cost Containment began in the 1980s with the advent of payment structure changes such as the Center for Medicare and Medicaid Services (CMS) Diagnostic Related Groups for inpatient care. Since this time, Wisconsin's health care providers have worked diligently to improve care outcomes anticipating that higher quality would lead to lower costs. In the early 2000s, the CMS and other payers devised payment incentives based on the quality, safety and patient experience of care across multiple care settings, continuing to expand these programs over time. These and other activities have facilitated significant improvement in the quality of care delivered in Wisconsin.

The 2018 National Health Quality and Disparities Report (NHQDR), produced annually by the Agency for Healthcare Research and Quality (AHRQ), indicates that Wisconsin has a "strong" rating based on

multiple measures in priority areas, and the treatment of select diseases and conditions. Additionally, care for priority populations (disparities) is similar to national averages. However, Wisconsin does not have enough data to be rated in the NHQDR on its affordability of care. Other studies have shown that Wisconsin's high quality of care comes at a high price. For example, a 2018 analysis by WalletHub ranked Wisconsin ninth in health care outcomes and 47<sup>th</sup> in cost.

### Purpose of the Study

A top priority of the BHCG and its member employers is to purchase high-value health care. The BHCG member employers have tested multiple strategies to reduce the growth of health care spending in Eastern Wisconsin. Examples include care management support, onsite wellness services, and benefit plan redesign. While these strategies have produced cost savings, it was unclear what the total savings opportunity might be if all physicians in Wisconsin provided high quality, cost effective care or if benefit plan redesign was applied more broadly.

With funding from the GMBFH, the BHCG commissioned GNS Healthcare, a leading provider of artificial intelligence applications, to conduct a study using data obtained from the WHIO, Wisconsin's all-payer claims database. The data mart used for this study contained data on over four million insured lives. The WHIO data was chosen for this study due to its breadth of data, ability to evaluate both primary and specialty care physicians, and capacity to appraise the quality and the cost of care simultaneously. The data also included normalized pricing and risk-adjusted episodes of care which facilitate comparisons.

The study sought to answer specific questions.

1. What is the quality and efficiency of each Primary Care Physician (PCP)?
2. How do quality and efficiency vary across practice groups?
3. What is the savings potential of moving patients to higher efficiency PCPs, improving the performance of lower-performing PCPs, or both?
4. What clinical care patterns differentiate higher and lower performing PCPs?
5. What is the savings potential in select specialty care areas?

### PCP Study Design

The study used the WHIO's 2017 data mart. In total, the study included 456,753 patients with a mean age of 47 years and a nearly even split of males (48%) and females (52%). The study included patients covered by commercial (41%), Medicaid (41%) and Medicare (18%) insurance who met the criteria of having both medical and pharmacy benefits for the entire study year.

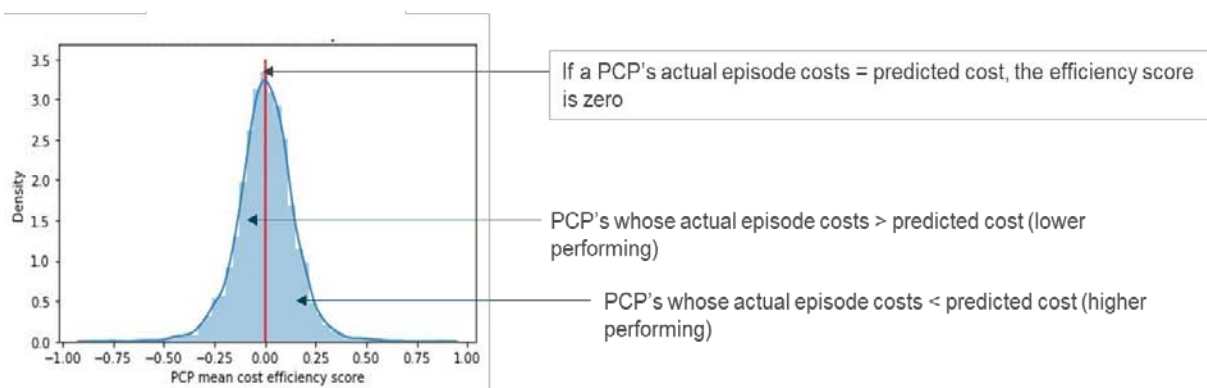
Primary care providers (PCPs) with an assigned specialty of family medicine (60%), internal medicine (26%), or pediatrics (14%) were included in the study. Patients were attributed to a PCP using one of two methods. First, if a patient was assigned to a PCP in the WHIO data, that assignment was used. Second, if no assignment was present in the WHIO data, a patient was attributed to the physician that delivered the most services to the patient based on cost. After attribution, less than one percent of patients had more than one PCP in the data set.

A total of 26 common conditions (see Appendix A for conditions) were selected for performance evaluation using risk-adjusted Episode Treatment Groups (ETGs). Outlier cases were removed from the data set based on the outlier flag in the data mart. For each episode, the results of multiple common evidence-based measures (EBMs) were determined. Average normalized price was used to measure the “cost of care.”

A total of 3,760 PCPs were included in the study after requiring that an individual PCP have at least 100 total observations across the EBM measures. For each PCP, a quality of care score was calculated for each EBM. EBM-specific scores were then aggregated using a weighting methodology that considered the number of patients the physician had treated for each condition. Finally, a ranking of 1-4 was assigned (1-outstanding performer, 4-below average performer) to each PCP based on a requirement that there be 80% confidence that the PCP was categorized correctly. This high confidence interval was selected to improve the accuracy and stability of the ratings over time.

The cost ranking was modeled using the GNS Healthcare machine learning platform REFS (Reverse Engineering Forward Simulation) to predict the cost of each patient for each disease episode. The model adjusted for potential confounders and risk factors outside of the control of the physician, such as patient age, gender, complications, number of and specific comorbidities, severity, and insurance line of business. A cost-efficiency score for each patient episode was calculated as the model’s predicted cost divided by the actual episode cost. An overall physician cost-efficiency score was calculated based on a weighted average of episode-specific cost-efficiency scores, using the number of disease-specific episodes attributed to the physician. As shown in Figure 1 below, if a PCP’s actual episode cost was equal to the predicted cost, the efficiency score was zero. When actual cost was greater than predicted cost, the cost-efficiency score was less than 0. When actual cost was less than predicted cost, the cost-efficiency score was greater than 0.

**Figure 1.**



As with the quality ranking, a cost-efficiency rank was assigned to each physician (1-outstanding performer, 4-below average performer) based on a requirement that there be 80% confidence that the physician was categorized correctly. This high confidence interval was selected to improve the accuracy and stability of the ratings over time. The results of the quality and cost ranking of PCPs included in the study are listed in Table A.

Table A.

Rank	Quality PCP Count	Cost PCP Count	Rank Name	Rank Description
1	502 (13%)	260 (7%)	Outstanding Performers	We are 80% confident these providers perform better than the 75th percentile
2	133 (4%)	1 (0%)	Good Performers	We are 80% confident these providers perform better than the 50th percentile, but not better than the 75th percentile
3	1,806 (48%)	2,715 (72%)	Typical Performers	We are neither 80% confident performance is better than the 75th percentile nor 80% confident performance is worse than the 50th percentile
4	1,319 (35%)	784 (21%)	Below Average Performers	We are 80% confident performance is worse than the 50th percentile

Finally, the quality and cost ranking for each PCP were compared on a grid. (See Figure 2.) These results indicate that there is almost no correlation between the quality and cost of care provided by the PCPs in this study. There were only 141 PCPs that ranked better than the 80<sup>th</sup> percentile for both quality and cost-efficiency.

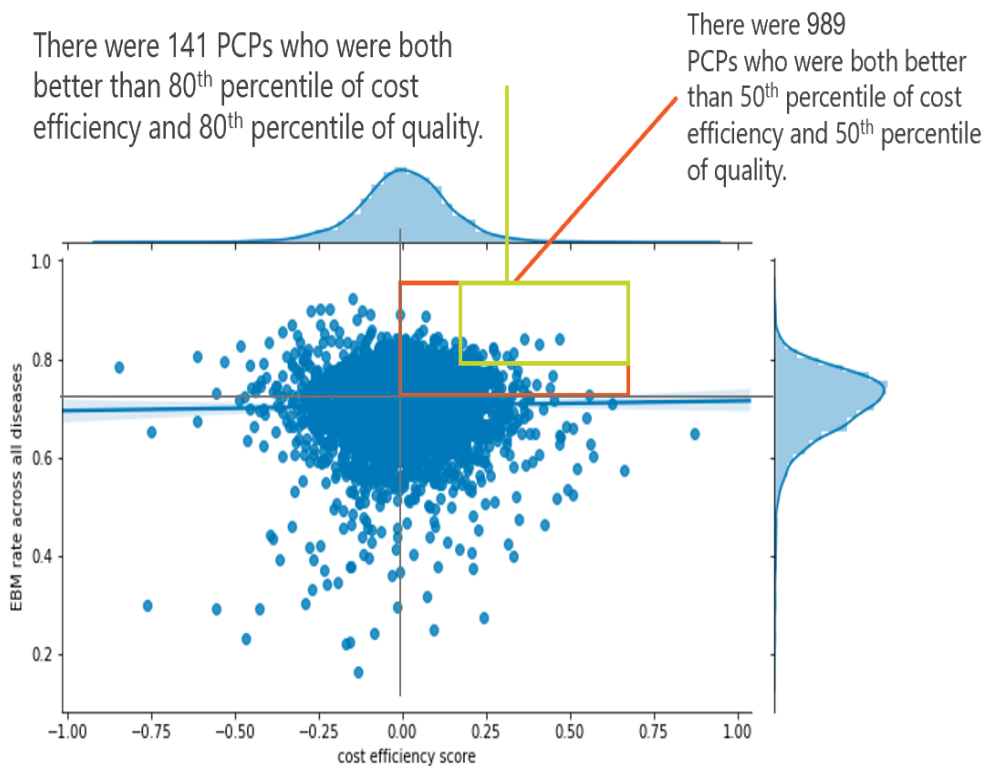


Figure 2.

### Specialist Study Design

In addition to the PCP evaluation, GNS Healthcare performed a cost-efficiency analysis on specialists who perform the following procedures:

- Interventional cardiologists who perform PTCA;
- Orthopedic surgeons who perform Total Hip Replacement;
- Orthopedic surgeons who perform Total Knee Replacement; and
- Obstetricians who perform Deliveries.

The same methodology used to calculate cost-efficiency of PCPs was used to calculate cost-efficiency for the specialists that perform each of these procedures. Results are shown in Table B.

**Table B.**

<b>Episode Treatment Group</b>	<b>Specialist</b>	<b>Procedure</b>	<b># of Episodes</b>	<b># of Providers</b>
Ischemic Heart	Interventional Cardiologist	≥1 PTCA	4,047	114
Joint degeneration, localized - thigh, hip & pelvis	Orthopedic Surgeon	≥1 hip replacement	3,807	305
Joint degeneration, localized - knee & lower leg	Orthopedic Surgeon	≥1 arthroplasty knee	5,912	355
Pregnancy	Obstetrician	≥1 delivery	17,384	627

### Potential Annual Cost Savings

The GNS causal learning platform was used to perform simulations to estimate the potential cost savings that would be realized if patients were steered to providers that perform above the 50<sup>th</sup> percentile for costs or if all of the specialists examined performed similarly to their peers who performed above the 50<sup>th</sup> percentile for costs. As shown in Table C, the total (normalized) cost of care delivered by the PCPs included in this study was \$1,370,000,000. The estimated 2017 potential cost saving if all PCPs in this study performed similarly to their peers who performed above the 50<sup>th</sup> percentile for cost of care or if patients were steered to PCPs that perform above the 50<sup>th</sup> percentile for costs or was \$394,500,000. The aggregate (normalized) cost of care delivered by the specialists who performed the four procedures examined was \$687,000,000. The estimated 2017 potential cost saving if all specialists in this study performed similarly to their peers who performed above the 50<sup>th</sup> percentile for cost of care or if patients were steered to specialists that perform above the 50<sup>th</sup> percentile for costs was \$100,000,000. Of the specialist procedures, the most significant cost savings would be gained by focusing on PTCA (\$43 million) and knee replacement procedures (\$37 million).

**Table C.**

	<b>PCPs</b>	<b>4 Specialist Procedures</b>
Total cost in study group	\$1.37B	\$687M
Savings by Improving Performance above 50 <sup>th</sup> percentile or Steering Patients to providers above 50 <sup>th</sup> percentile	<b>\$394.5M</b>	<b>\$100M</b>

### Key Improvement Areas to Reduce Costs

GNS Healthcare utilized the WHIO cost information to classify the costs for the 26 conditions into the following utilization categories:

- Emergency room;
- Inpatient services;
- Primary care services;
- Specialty care services;
- Laboratory services;
- Pharmacy; and
- Radiology.

For select common conditions, the average cost per episode in each of these utilization categories was calculated for episodes in each of the four cost ranking categories (1-Outstanding Performers, 2-Good Performers, 3-Typical Performers, 4-Below Average Performers) to determine which utilization categories differed the most between cost ranking categories 1 and 2. This information can assist physicians and health systems in identifying the utilization categories that offer the greatest potential for cost savings.

**Appendix A – Diseases for which Primary Care Physicians Were Evaluated**

<b>ETG</b>	<b>ETG Description</b>	<b>ETG</b>	<b>ETG Description</b>
3881	Hypertension	4383	Acute bronchitis
1630	Diabetes	3878	Atrial fibrillation & flutter
1647	Hyperlipidemia, other	2714	Alcohol dependence
4388	Asthma	3868	Congestive heart failure
1648	Obesity	2389	Mood disorder, bipolar
2388	Mood disorder, depressed	3160	Cerebral vascular disease
3865	Ischemic heart disease	2715	Opioid or barbiturate dependence
4029	Otitis media	2716	Other drug dependence
4033	Acute sinusitis	7120	Osteoporosis
3169	Migraine headache	7114	Adult rheumatoid arthritis
3152	Epilepsy	4753	Inflammatory bowel disease
4031	Tonsillitis, adenoiditis or pharyngitis	3871	Heart failure, diastolic
4393	Chronic obstructive pulmonary disease	1301	AIDS