



# Workers Compensation vs. Group Health: A Comparison of Utilization

Over the last few years, workers compensation medical benefits in NCCI states have increased 9% to 12% per year, nearly double the pace of compensation for lost work time, which has grown 5% to 7% per year. This continues a pattern of dramatic cost increases in workers compensation medical benefits that stretches back over decades and has resulted in workers compensation medical benefits that exceed the compensation for lost work time.

The open-ended nature of workers compensation medical liability underscores the need for effective cost control. While group health insurance in the United States faces many challenges, that system collects an enormous treasure trove of medical experience data. Accordingly, it makes sense to tap into that information source to seek out ideas to help maintain a viable workers compensation benefit delivery system.

NCCI has performed a series of studies comparing medical costs between workers compensation and employer-sponsored group health insurance.

- The first study focused on prices of specific medical services
- The second study identified a dozen common workers compensation injuries and compared their treatment cost between the two benefit delivery systems

The first study found that while prices for individual services were generally similar, workers compensation typically pays higher rates, especially in states without medical fee schedules. The second found that the cost of treating an injury covered by workers compensation is consistently higher than for a comparable injury covered by group health. Somewhat different highly customized data bases were used in the two studies.

Notwithstanding, those cost differences at the injury level were greater than could be explained by price differences at the medical services level. This gave indirect evidence that the higher cost for treating workers compensation injuries is due to differing treatment patterns.

This study, the third of the series, focuses on treatment differences; here we directly confront the most challenging cost component: benefit utilization. By analyzing cost differences into price and utilization components, we not only confirm there are different treatment patterns but quantify how they account for the lion's share of the difference in medical costs between workers compensation and group health insurance.

## Executive Summary

Our findings on the utilization of medical care within three months from injury for workers compensation and group health insurance conclude that:

- Workers compensation pays more than group health to treat comparable injuries
- Utilization differences dominate price differences, explaining 80% of the overall treatment cost difference
- Utilization differences vary principally by type of injury, with all the injuries considered showing higher utilization for workers compensation than for group health
- Traumas to arms or legs consistently have the smaller cost and utilization differences, while chronic pain-related injuries such as bursitis, back pain, and carpal tunnel, have larger differences
- Differences between workers compensation and group health depend on the type of service:

- Evaluation, management, and physical therapy costs are higher in workers compensation due to greater utilization of those services
- Radiology costs more in workers compensation than in group health due both to higher prices and to greater utilization
- Higher workers compensation utilization of physical therapy services is more prominent for acute traumas than for other injuries
- Higher workers compensation utilization of office visits and radiology services is more prominent for chronic pain related injuries than for other injuries
- Group health makes greater and more varied use of prescription drugs

Based on these and other findings, in the Conclusion we identify several ideas for cost containment that may be worth future investigation and consideration.

### Background and Methodology

This study considers medical care provided in 14 states from 1996 to 2004. This extends the time frame of the earlier studies and adds nine states (AL, AZ, CO, CT, IN, KS, MD, OK, and SC) to the five previously considered (FL, GA, IL, KY, and TN). States were selected to include a variety of approaches to workers compensation medical cost containment. These programs vary over time. For example, since our last study, two states that stood out (FL and IL) have both undergone significant reform in their workers compensation statutes, with some changes expected to impact medical costs.

Group Health (GH) medical transaction data for this study was obtained from Medstat, a company that specializes in the collection and analysis of medical experience from employer-sponsored health benefit plans. The Workers Compensation (WC) data is a sample provided to NCCI by property and casualty insurance companies.

The terms “cost,” “price,” and “utilization” are used in a precise manner in these studies. “Cost” signifies the total amount paid for the various services to treat an injury. “Price” refers to the amounts paid for individual services. “Utilization” represents both the quantity (number of services) and the mix of services provided (say, X-ray versus MRI). Costs are a function of prices and utilization:

$$\text{Cost} = \text{Price} \times \text{Utilization}.$$

Because cost has two factors, a difference between costs naturally breaks down into two components<sup>1</sup>

$$\text{WC Cost} = \text{GH Cost} + \text{Utilization Component} + \text{Price Component}$$

$$\text{Cost Difference} = \text{WC Cost} - \text{GH Cost} = \text{Utilization Component} + \text{Price Component}$$

In order to analyze cost differences in this way, we must have the specific service identified in the data. For both GH and WC patients, doctors and other medical professionals use the same HCPCS/CPT<sup>2</sup> coding scheme to identify the services provided. Similarly, prescription medications are identified by a National Drug Code (NDC) common to WC and GH.

Hospitals and other facilities, however, do not use a standardized coding scheme. Neither do they provide a uniform level of detail in their billing. Consequently, our cost analysis of utilization and price differences excludes many facility charges. The introduction of WC hospital fee schedules in some states may improve our ability to investigate WC utilization.

This study looks at each of the 12 injuries listed in Exhibit 1. The injuries studied were chosen for their importance in workers compensation. They also encompass a variety of injury types, from hidden pain-based conditions like bursitis (Brs) to acute conditions such as lacerated fingers and toes (ILE and IUE). These are the same dozen injuries considered in the earlier cost analysis

<sup>1</sup> Appendix 1 details the decomposition formula.

<sup>2</sup> Appendix 2 provides a glossary of acronyms and specialized terminology.

<b>Chronic and Complex</b>	Inguinal hernia (InH)
	Herniated intervertebral disc (HID)
	Carpal tunnel syndrome (CTS)
	Bursitis (Brs)
	Other spinal and back disorders (OSD)
	Injury: spine and spinal cord (SSC)
<b>Acute and Trauma-Related</b>	Fracture or sprain: ankle (FSA)
	Fracture, dislocation, or sprain: humerus or shoulder (FDS)
	Fracture, dislocation, or sprain: wrist, hand, or fingers (FDH)
	Injury, knee, ligamentous (IKL)
	Injury, open wound, or blunt trauma: lower extremity (ILE)
	Injury, open wound, or blunt trauma: upper extremity (IUE)

**Exhibit 1: Medical Conditions Included in Cost Analysis**

We also follow the prior study by grouping six of the injuries into a larger category, “Acute and Trauma-Related.” This helps highlight the fact that WC costs for these injuries are generally closer to GH costs than for the other six “Chronic and Complex” injuries.

The biggest obstacle to comparing WC with GH is that, unlike WC data that assigns a claim number to an injury, GH medical data is not organized by injury. Consequently we must identify the GH services that treat a particular injury. As time passes after the occurrence of an injury, this identification of which GH services belong to what medical condition becomes increasingly difficult and problematic. It is therefore necessary to limit the time window of care. As such, we limited the study to three months from time of injury<sup>3</sup>. The earlier cost analysis developed injury specific algorithms to identify related medical care. Those collection rules were used again here, with some refinements. For consistency, the same rules that are used for GH are also used to identify which WC medical charges are included.

Some refinements to our previous studies apply to prescription drugs, whose data poses unique challenges. For example, as justification for reimbursement, doctor’s bills and other medical transactions typically include diagnosis coding, often in the form of one or more ICD codes. Prescription drug data, however, typically identifies only the NDC code, quantity, price, transaction date, pharmacy, and patient. For GH, that makes it inherently more difficult to identify which drug costs

should be included in the cost of treating a particular injury. Another complicating issue with medication data is the variable relationship between dosage strength and quantity.<sup>4</sup>

We present our comparison of the WC and GH insurance systems in three parts:

- Cost differences among the 14 states
- Treatment differences among the 12 injuries
- Differences among five categories of service

**Comparisons by State**

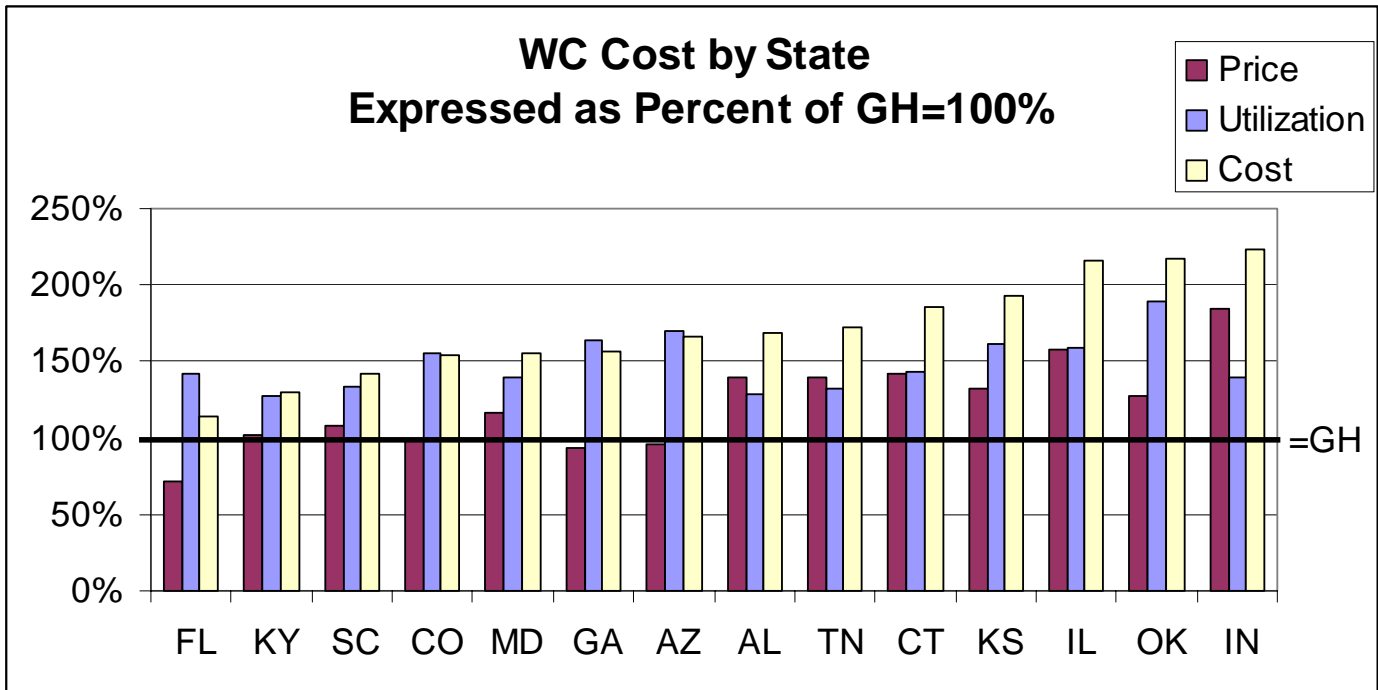
The three bars of Exhibit 2 indicate relative costs for the first three months of care between WC and GH, where the benchmark is GH cost set at 100%. For each state:

- The leftmost bar shows how WC prices compare to GH prices
- The middle bar compares WC utilization with that of the GH benchmark
- The rightmost bar measures the overall cost difference between WC and GH

States are ordered by the overall cost difference, with the state with the smallest cost difference to the left. For the price and utilization bars, the signed differences from the 100% line are the price and utilization components. A price bar below (above) the 100% line indicates a WC price level below (above) that of GH, and similarly for the utilization and cost bars.

<sup>3</sup> Although we restrict to medical services within the first three months, claims are classified into the dozen injuries using diagnosis coding and other information for services over the full term of care. In particular, the injury classification can identify the potential for a chronic condition to later emerge.

<sup>4</sup> Consider: Drug Company A packages one hundred 250 mg. capsules of drug X under the NDC code Y. Rival Company B markets a bottle of three hundred 500 mg. tablets of a generic form of drug X and labeled with NDC code Z.



**Exhibit 2: The WC Versus GH Cost Relativity by State Correlates More With the Price Relativity Than With the Utilization Relativity**

The states on the left half of Exhibit 2 (with the smaller percentage cost differences—FL, KY, SC, CO, MD, GA, and AZ)—have price levels that never climb much above and sometimes fall below those of GH. For these seven states, higher WC utilization is the main reason for higher WC cost. For the other seven states, both price and utilization combine to push WC costs above GH costs. The utilization bar is well above 100% for each state but there is no consistent pattern in utilization differences as you move across the exhibit from left to right. This means that, across states there is no apparent relationship between utilization and cost, even though utilization accounts for most of the cost difference of WC over GH.

On the other hand, the price component does track with cost differences by state. States with smaller cost differences also generally have smaller price differences. Indiana has both the highest price difference and the highest cost difference, while Florida has both the lowest price difference and the lowest cost difference. Oklahoma comes close to being an exception, having the second highest cost difference and a price difference only a little bit greater than Maryland, which is in the lower cost difference group. Oklahoma has the largest utilization difference, and this is the main driver of Oklahoma’s high cost difference.

The range in price differences among the states is greater than the range in utilization differences. This is reasonable, as prices would be expected to respond to

jurisdictional differences, such as fee schedules, as well as to regional variation in the cost of living or accessibility of care.

Among the five states with the highest price components (IN, IL, CT, TN, and AL, in decreasing order), the two with the very highest components, Indiana and Illinois, did not have WC medical fee schedules in effect during the period covered by this study. Tennessee is the only other state in the study that did not have a medical fee schedule. The remaining two states, Connecticut and Alabama, had medical fee schedules based on usual, customary, and reasonable (UCR) prices (along with AZ and GA). By contrast, the three states with the lowest price components (FL, KY, and SC, in increasing order) are the only states in the study that had fee schedules based on a resource based relative value scale (RBRVS) for medical services.<sup>5</sup>

In sum, while there are differences in both price and utilization among the states, there is a pattern of correlation between cost and price when the experience is organized by state. In the next section, we shift perspective from geography to diagnosis, organizing the experience by injury.

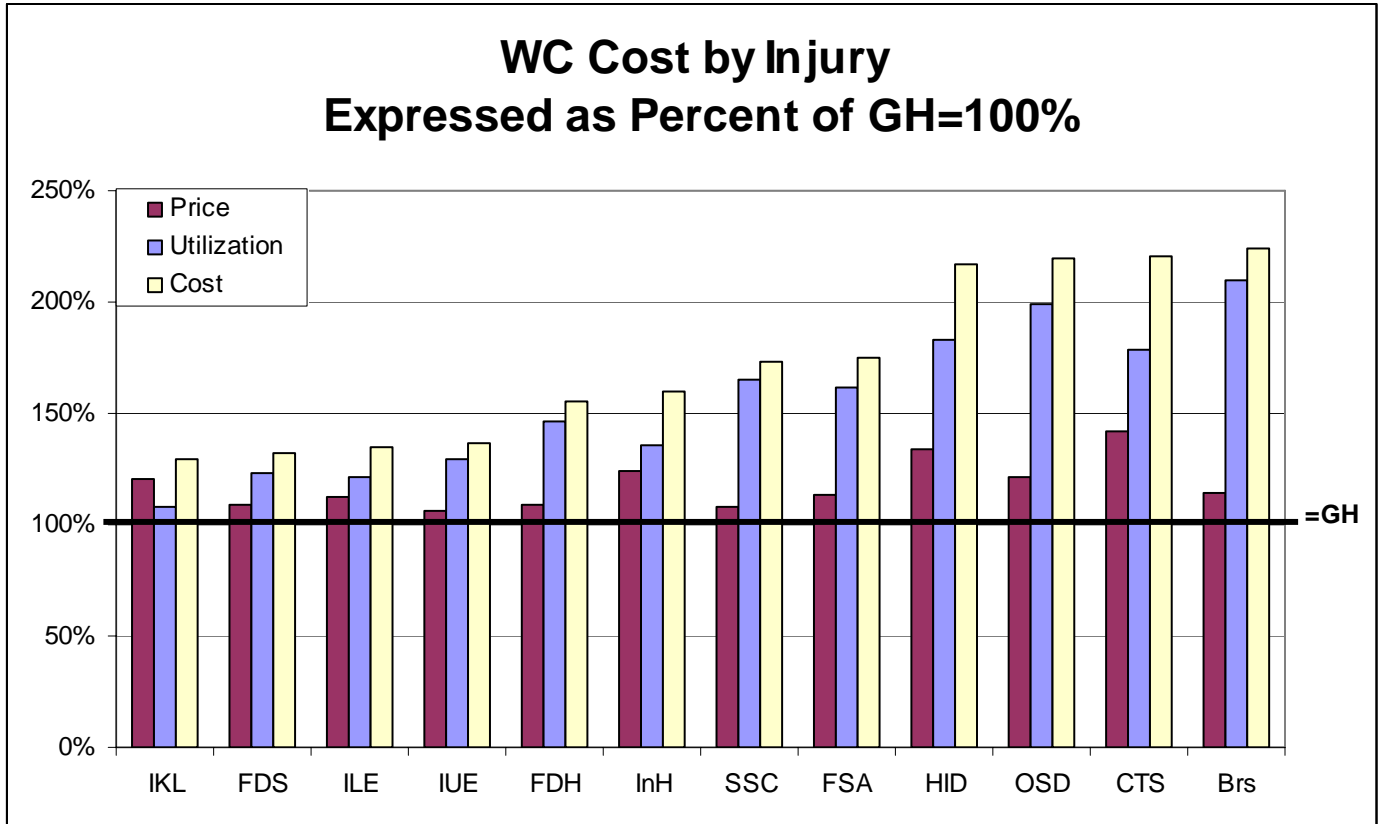
<sup>5</sup> Appendix 3 compares our findings, which use GH experience to benchmark prices, with Medicare reimbursement as benchmark. Medicare is the standard for RBRVS based reimbursement.

### Comparisons by Injury

This section looks at WC versus GH cost difference components for the dozen selected injuries. Exhibit 3 is similar to Exhibit 2 but organized by injury rather than state. Higher cost difference (rightmost bar) injuries are to the right. For all of the selected injuries except knee (IKL), with the smallest cost difference, utilization accounts for most of the cost difference. Consequently, there is a strong correlation between cost and utilization.

There is some correlation between cost and price components, since the rightmost injuries with the highest

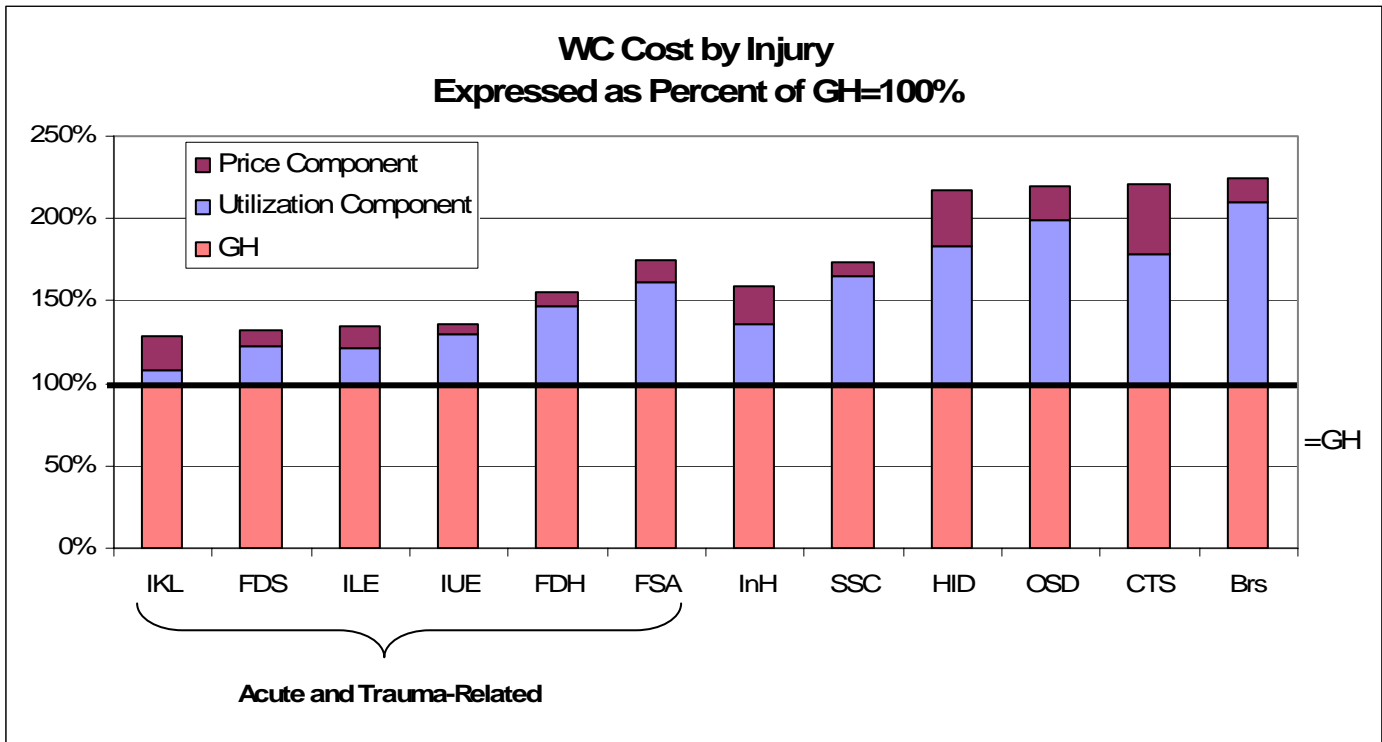
cost difference (Brs, CTS, OSD, and HID) also have some of the highest price differences. Knee injuries (IKL), on the far left, is one exception, since its price component accounts for most of its cost difference. And on the far right, bursitis (Brs) provides another exception, with an unexceptional price component but with the largest utilization component. Bursitis (Brs) does, however, conform to the strong correlation between cost and utilization, with both the highest utilization and the highest cost difference. So does knee injury (IKL), with both the lowest utilization and the lowest cost difference.



**Exhibit 3: The WC Versus GH Cost Relativity by Injury Correlates More With the Utilization Relativity Than With the Price Relativity**

Exhibit 4 presents the same information as Exhibit 3, but uses stacked bars. The heights of the bars represent costs and cost components. The bar for ankle injury

(FSA) has been moved to the left so that the Acute and Trauma-Related injuries are together, as are the Chronic and Complex injuries.



**Exhibit 4: The WC Versus GH Cost Relativity by Injury Correlates More With the Utilization Component Than With the Price Component**

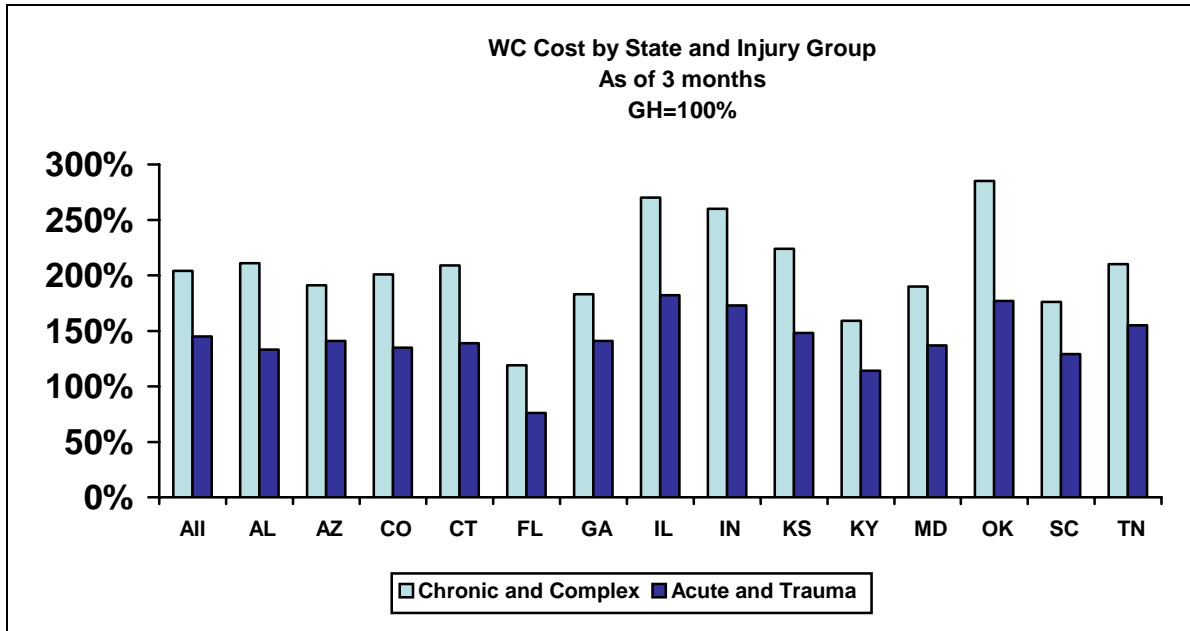
The middle utilization bar in Exhibit 4 dominates the cost difference and typically increases from left to right. This means that utilization dominates price in the cost difference between WC and GH and dictates how one injury’s cost difference relates to the others. This suggests grouping injuries together to see whether they share a cost difference pattern.

While grouping injuries together can be helpful, it is not black and white. Because inguinal hernia (InH) is often treated surgically, that injury is not grouped with the simpler acute and traumatic cases. Technology has

largely standardized the treatment of InH cases, and because of economies of operation, there are facilities that specialize in their treatment. That may help to explain why, within the more complex injuries, the InH cost difference pattern most resembles those for the acute and trauma-related cases. On the other hand, ankle sprains and strains (FSA) are pain-based injuries that can reflect a chronic condition, which might help explain why FSA cases show the biggest cost difference between WC and GH in the Acute and Trauma-Related group. As noted above, the injury grouping is the same as that used in a prior study.

Comparing the two injury groupings, Exhibit 5 charts a very consistent pattern of cost differences by state. For every state, the WC cost differential for the acute and

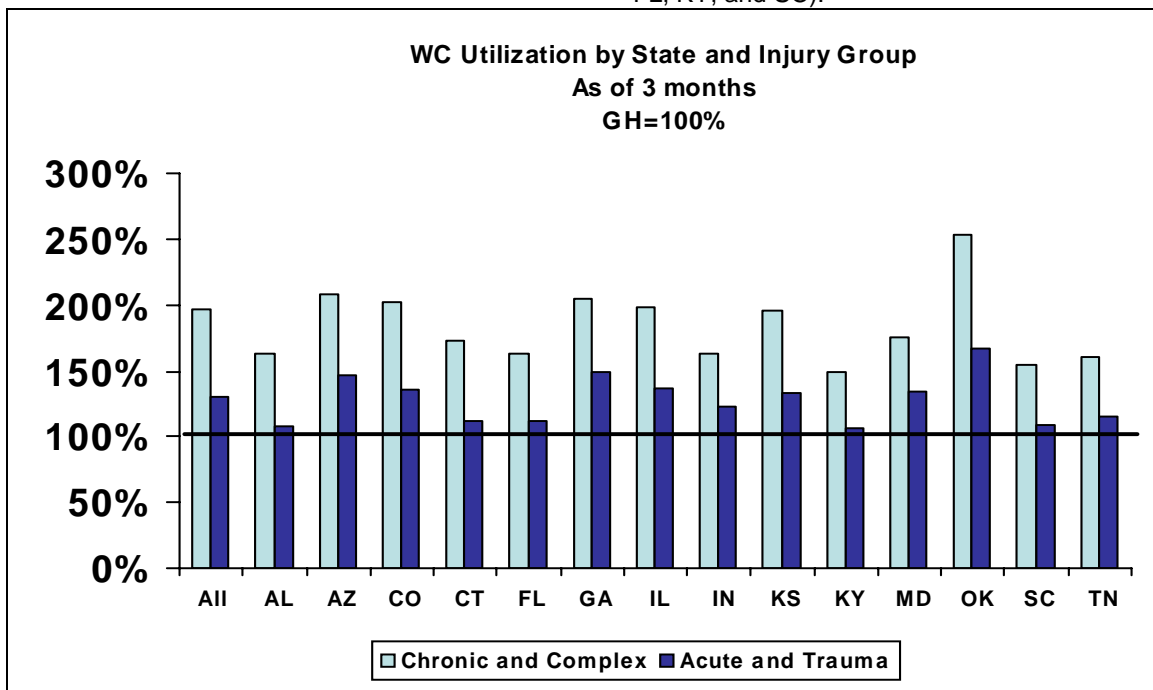
traumatic group of injuries is smaller than for other injuries, using the corresponding GH cost as the benchmark.



**Exhibit 5: For Every State, the WC Cost for Acute and Trauma Injuries Is Lower, as a Percentage of the GH Cost, Than for Other Injuries**

Exhibit 6 similarly charts utilization differences by state and injury grouping. Again the pattern is consistent. For every state, the acute and traumatic injuries have smaller WC utilization differentials than the other injuries, with GH

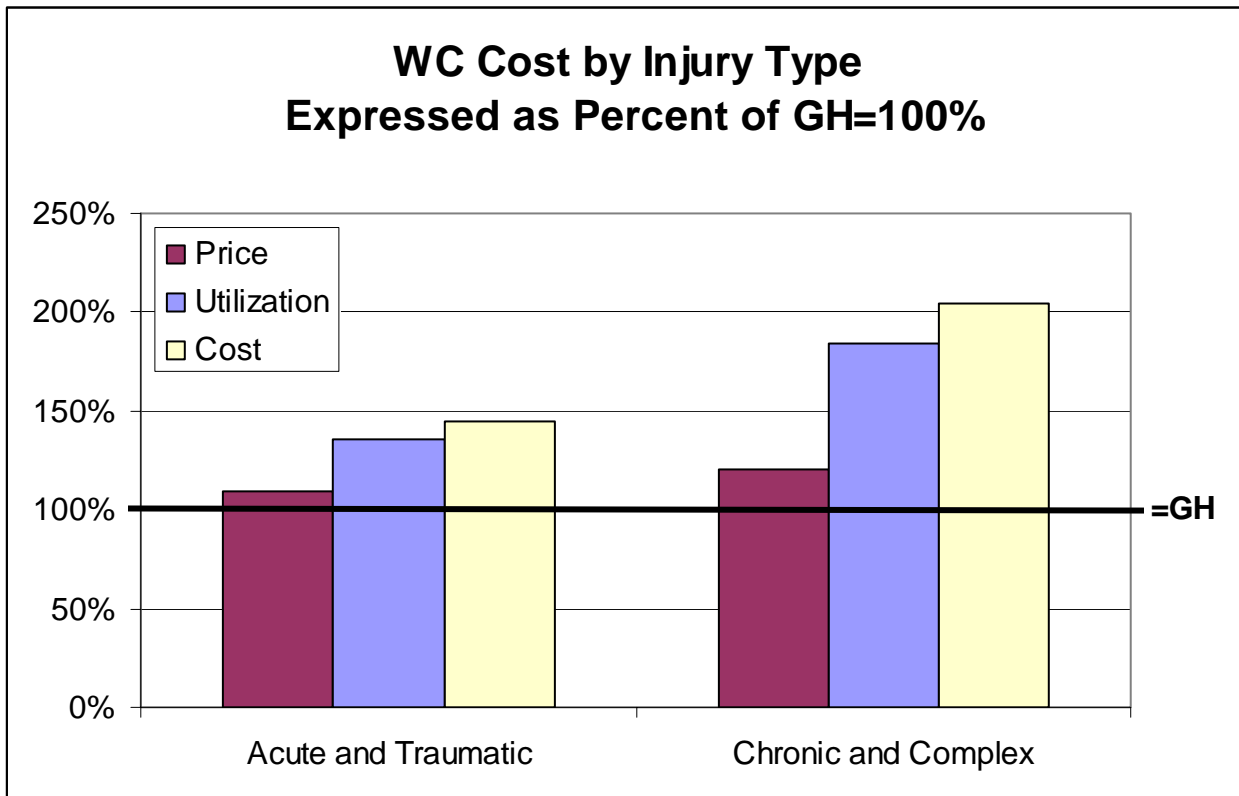
as a benchmark. On the other hand, in each of the 14 states WC utilization exceeds that of GH for both injury groups; although utilization is quite close to GH for the acute and trauma-related group in several states (AL, CT, FL, KY, and SC).



**Exhibit 6: The Utilization Differential Is Greater for Chronic and Complex Than for Acute and Trauma-Related Injuries in Every State Reviewed**

Exhibit 7 summarizes these observations, illustrating that the more straightforwardly-treated cases, represented by the acute and traumatic group, have utilization and price

levels closer to GH than do the more complex cases. We will learn more about this in the next section when we drill down according to the types of medical services provided.



**Exhibit 7: WC and GH Costs are Closer Together for Acute and Trauma Cases**

**Cost Differences by Service Type**

We itemize the cost difference components into the five general service types listed in Exhibit 8:

A: Office Visits	Includes evaluation and management (e.g., consultations in and out of hospital); CPT codes between 99000 and 99999
B: Physical Therapy	Includes physical medicine procedures and supplies, whether performed by MD, chiropractor, or physical therapist; CPT codes between 97000 and 98999
C: Radiology	Includes professional and technical component; CPT codes between 72000 and 73999
D: Prescription Drugs	Includes prescription medication identified via NDC code
E: Surgery and Other Services	Includes all other professional services

**Exhibit 8: Medical Service Categories**

Services are accumulated by patient, procedure code, and date of service to determine the reimbursement for a particular medical procedure. Radiology services, for

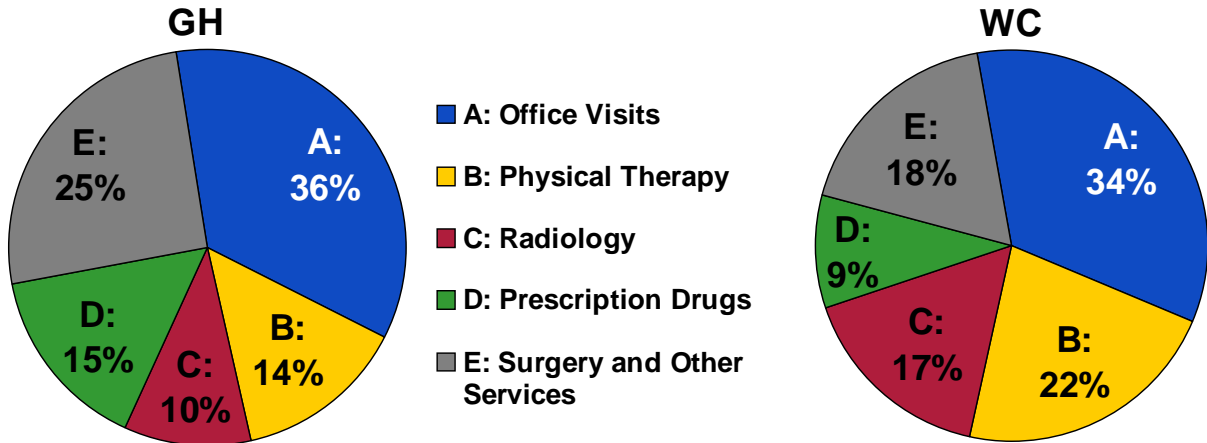
example, are processed as “bundled” procedures whether or not they were submitted as such or “unbundled” with professional and technical components.



Exhibit 9 illustrates differences in the way medical costs break down among these service categories during the first three months of care. After controlling for the injury mix, WC spends a greater share on physical therapy and radiology and a smaller share on medications. This suggests that the care given WC claimants, as compared

with that provided GH patients, is more focused on recuperation and less on treating symptoms. Return-to-work objectives associated with workers compensation might partially explain why workers compensation cases receive more concentrated treatment early on.

### Distributions of Medical Costs First Three Months Following Injury

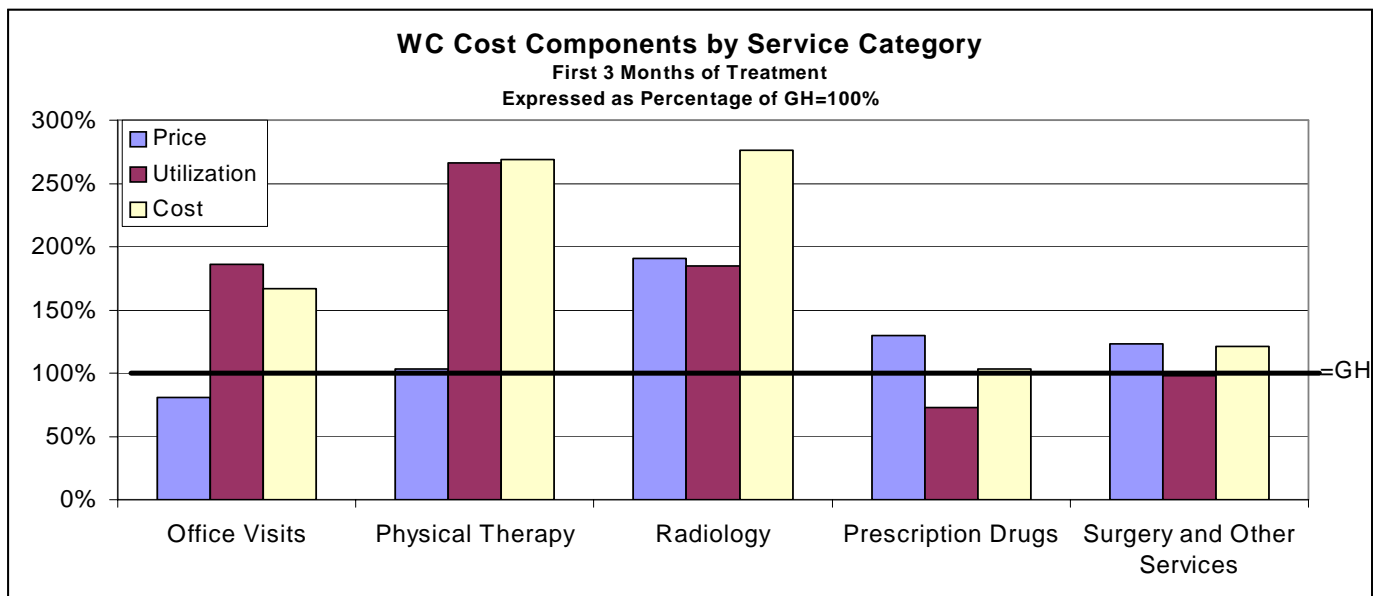


**Exhibit 9: WC Has a Higher Proportion of Costs for Physical Therapy and Radiology Than for GH**

Exhibit 10 shows how the cost component differences between WC and GH vary by service category:

- Radiology and Physical Therapy show the greatest difference, followed by Office Visits
- Higher WC cost for Office Visits and Physical Therapy are driven by greater WC utilization

- Higher WC cost for Radiology is driven equally by greater WC utilization and a higher WC price level
- Prescription medication shows a very small cost difference between WC and GH, with a higher WC price offsetting a lower WC utilization

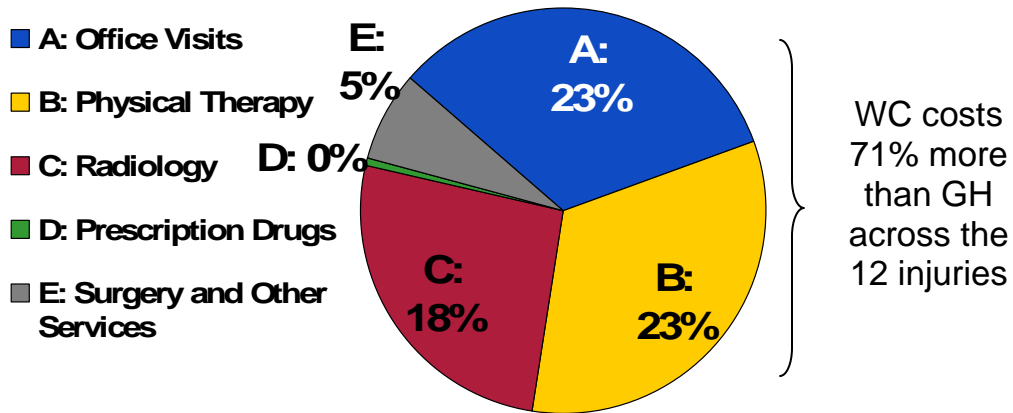


**Exhibit 10: The Cost Difference Varies by Service Category**

Exhibit 11 shows how the difference between WC and GH costs breaks down among these service categories. This difference comes primarily from Office Visits, Physical Therapy, and Radiology with only a small portion from medications and other services. The percentages

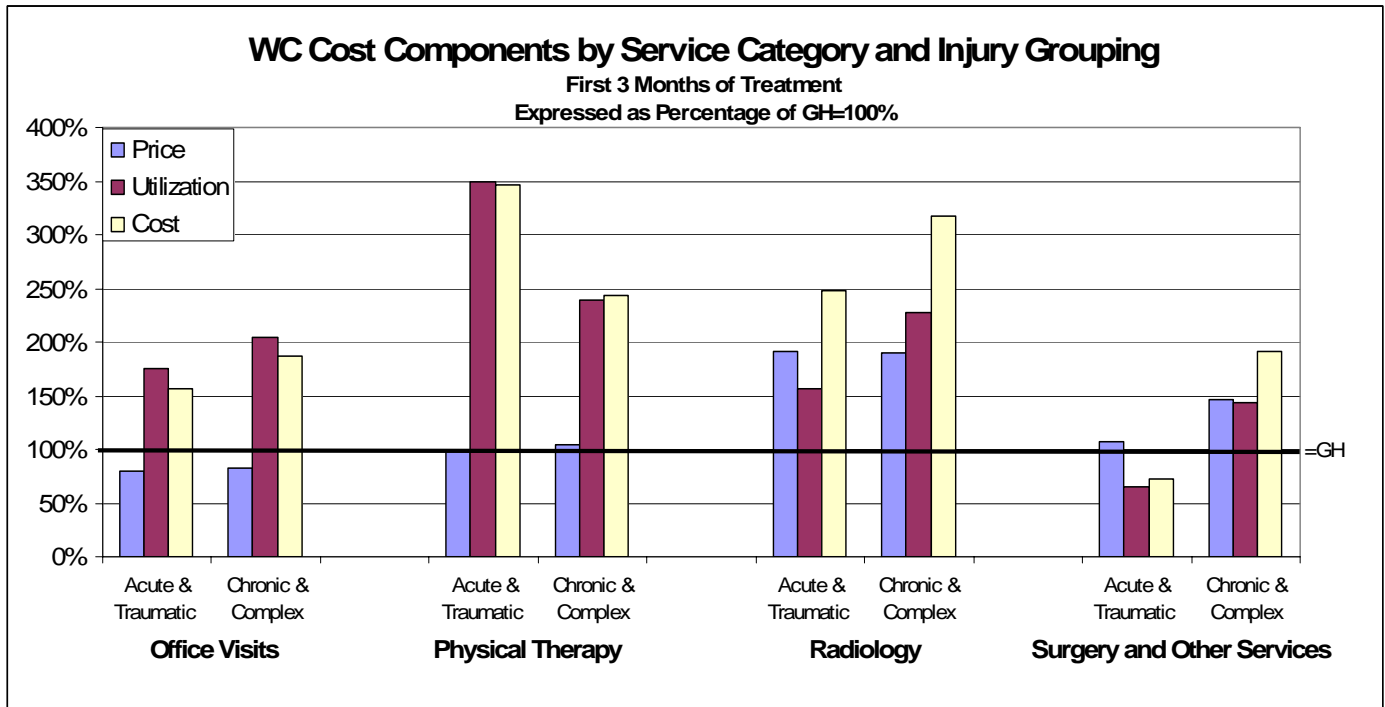
total 71%, as WC costs are 71% greater than for GH over the dozen injuries. Looking back at Exhibit 9, the share of the difference in costs due to Radiology is greater than Radiology's share of costs in either WC or GH, while the opposite holds for Office Visits.

### Contributions to Cost Difference by Service Category First Three Months Following Injury, GH=100%



**Exhibit 11: Office Visits, Physical Therapy, Radiology and, to a Lesser Extent, Surgery and Other Services, Account for the Cost Difference**

Prescription medication has a negligible contribution to the cost difference, so Exhibit 12 itemizes the cost difference for the other four service categories according to the injury grouping. This refines Exhibit 10.



**Exhibit 12: Utilization Accounts for All of the Cost Difference in Physical Therapy, Almost All of the Difference in Office Visits, and About Half of the Difference in Radiology**

From Exhibit 12 we see that:

- Within each of the Office Visits, Physical Therapy, and Radiology service types, the two injury groupings have the same WC versus GH price relativity—lower, equal, and higher, respectively
- Utilization accounts for the difference in Physical Therapy, where price makes little difference
- Utilization accounts for the entire difference in the cost of evaluation and management services (Office Visits) where the WC price level is below GH
- The cost difference for Radiology comes from a combination of higher WC prices and greater WC utilization
- For Office Visits, chronic and complex injuries show greater differences in utilization and cost, WC above GH, than do acute and trauma cases

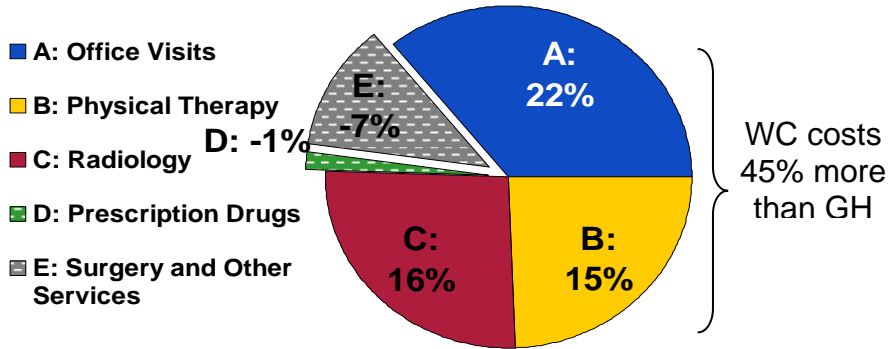
- For Physical Therapy, the acute and trauma cases show a greater cost difference—all due to utilization
- For Radiology, price is the greater contributor for the acute and trauma injuries but utilization accounts for more on the chronic and complex injuries
- Surgery and Other Services contribute to higher WC costs for the chronic and complex cases, due to both higher prices and greater utilization

With the exception of Surgery and Other Services on acute and trauma cases, all injury groupings and service categories show higher utilization for WC than for GH. The higher WC utilization of Surgery and Other Services on chronic and complex injuries is evidence of a tendency toward more invasive treatment in WC.

For the acute and trauma-related injuries, Exhibit 13 shows how the WC costs in excess of GH break down among the service categories. WC costs are 45% greater for GH over the acute and trauma-based injuries. Costs for Prescription Drugs and Surgery and Other Services

are lower for WC than for GH, as depicted by the two negative removed pie slices. Evaluation and management services account for nearly half of the higher WC cost for acute and trauma related injuries, with the rest split evenly between Physical Therapy and Radiology.

### Cost Difference for Acute and Trauma-Related Injuries by Service Category First Three Months Following Injury, GH=100%

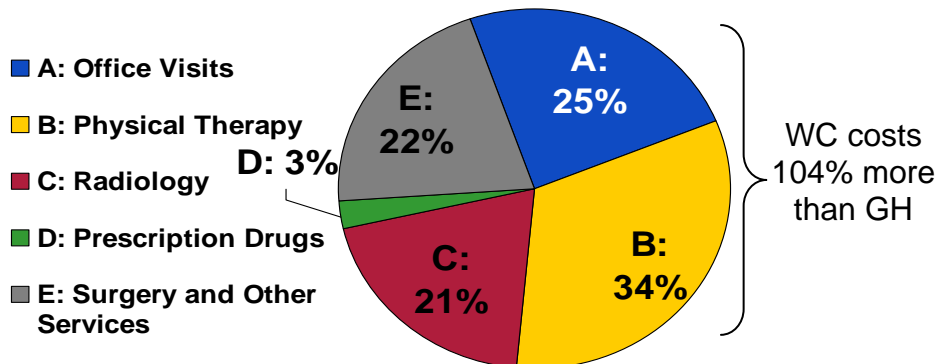


**Exhibit 13: Office Visits Account for Nearly Half of the Higher WC Costs for Acute and Trauma-Related Injuries**

Exhibit 14 itemizes WC costs in excess of GH for the more complex injuries. WC costs are 104% greater than, or a little more than double, those of GH over the first

three months of treatment. Physical medicine accounts for about a third of that difference, with the remainder fairly evenly divided between Office Visits, Surgery and Other Services, and Radiology.

### Cost Difference for Chronic and Complex Injuries by Service Category First Three Months Following Injury, GH=100%



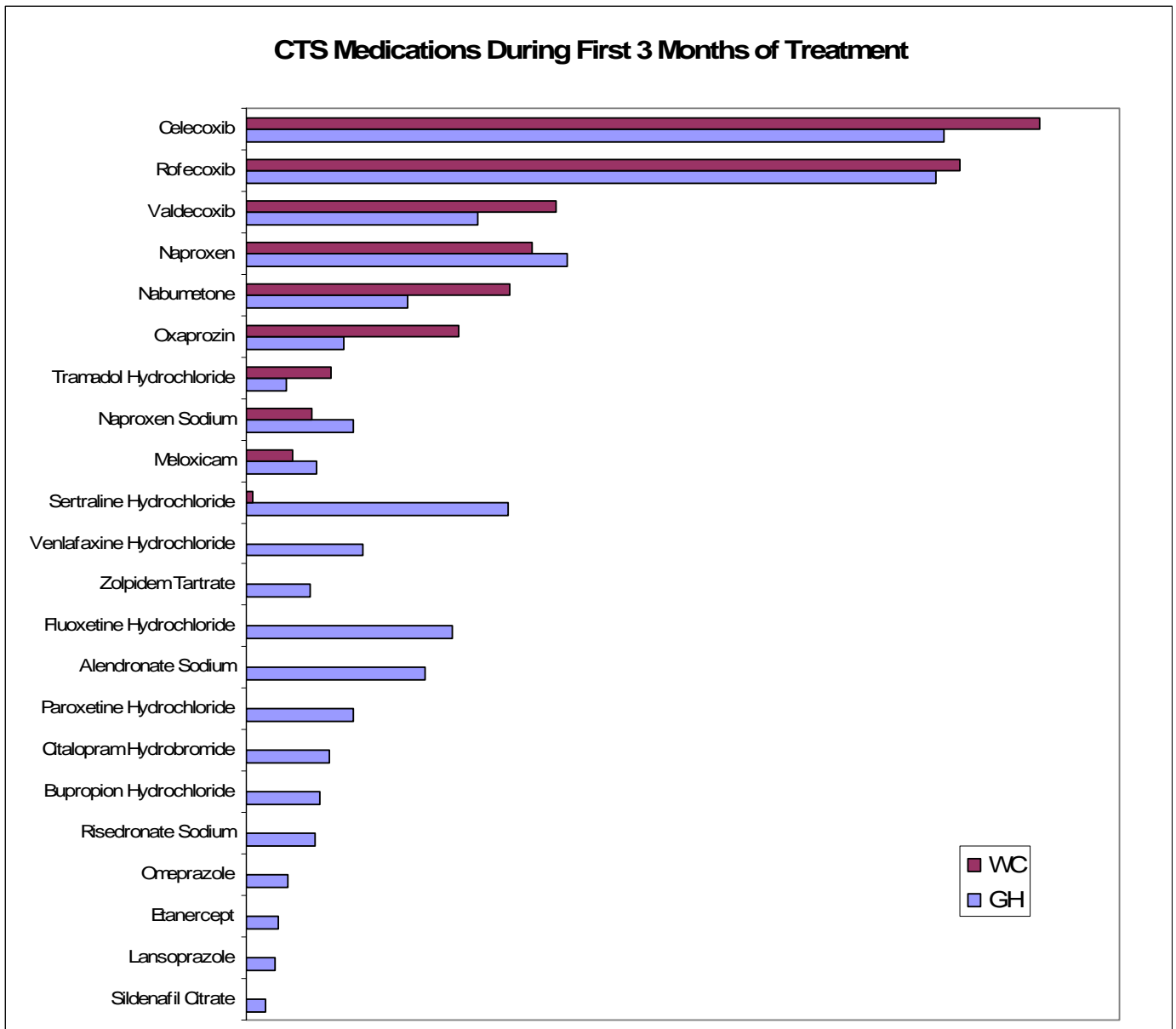
**Exhibit 14: Physical Medicine Accounts for About a Third of the Higher WC Costs for Chronic and Complex Injuries**

As time passes post-injury, medications account for a growing proportion of the cost of medical care. Prescription medication plays a small role in cost differences for the first three months. In general, the first

three months of treatment is too soon for patterns of medication usage to emerge. We have noted some inherent difficulties of assigning GH care to specific injuries, especially for medications, beyond a short time window.

However, even within the first three months, the utilization profiles are revealing. They show that GH care has both a greater percentage of its cost going to medications than does WC (15% versus 9%, see Exhibit 9), and a greater variety of medications. Exhibit 15 contrasts WC and GH medication use during the first three months of treatment for Carpal Tunnel Syndrome (CTS). The pattern is typical of the dozen injuries.

- The length of the bar is a relative value that accounts for dosage and packaging differences—this holds true both within and between each drug
- While all the medications commonly prescribed in WC are used in GH, only about half of the common GH drugs are used in WC
- The WC medications are mostly for pain while many of the GH medications treat complications, including psychological problems

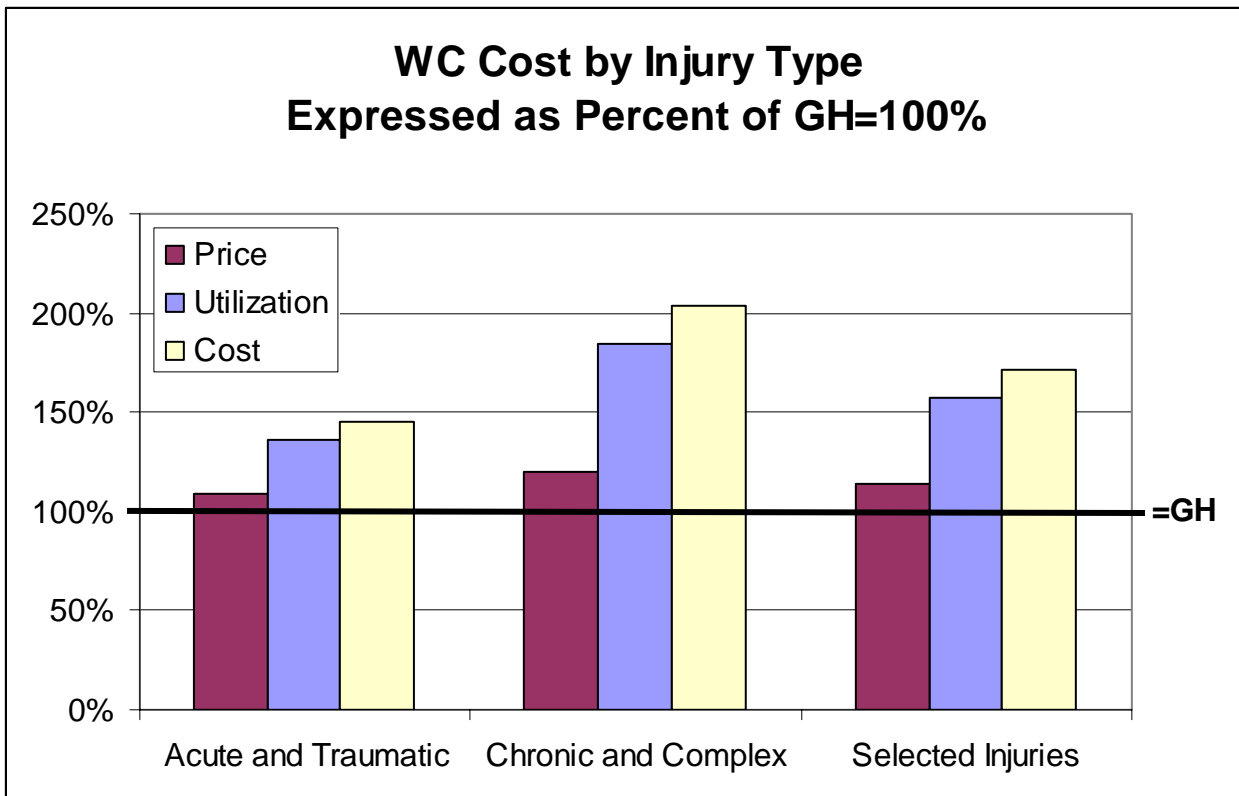


**Exhibit 15: A Greater Variety of Medications are Used in GH Than Is Observed for WC**

**Conclusion: Implications for Cost Containment**

The cost to treat an injury is the product of prices paid per service and the utilization of medical services. We discussed the challenges of comparing costs between the two systems as treatment duration increases, especially as regards medications. This study quantifies the cost impact of utilization differences during the first three

months of treatment. Utilization is the major factor contributing to WC medical costs being greater than costs for the same injuries covered under GH. Utilization is a function of the injury. This highlights the potential value of injury specific cost controls aimed directly at over-utilization, such as the application of evidence based medicine guidelines to WC. The more straightforwardly-treated injuries have WC treatment costs nearer to those of GH, but still well above them, as shown in Exhibit 16.



**Exhibit 16: Utilization Accounts for 80% of the Overall Cost Difference and Is Greater for Chronic and Complex Injuries**

Exhibit 16 summarizes much of what was reported regarding cost components:

- WC costs more than GH to treat comparable injuries in the first three months following injury
- Utilization dominates price, accounting for 80% of the overall cost difference
- Traumas to arms or legs consistently have the smaller cost and utilization differences, while chronic pain related injuries such as bursitis, back pain, and carpal tunnel have larger differences

We saw in Exhibits 2 and 3 that:

- Price differences vary principally by state of jurisdiction, with most states having higher prices for WC than for GH

- Utilization differences vary principally by type of injury, with all the injuries considered showing higher utilization for WC than for GH, within the first three months of care

Exhibits 11 through 15 show how medical services provided within the first three months of treatment exhibit distinct patterns by service category:

- Evaluation, management, and physical therapy costs are higher in WC due to greater utilization of those services
- Radiology services cost more in WC than in GH due both to higher prices and greater utilization
- GH makes greater and more varied use of prescription drugs

And refining that analysis by grouping injuries into traumas and chronic-pain related cases, we found that:

- For each of the Office Visits, Physical Therapy, and Radiology service categories, the two injury groupings have the same WC versus GH price relativity—lower, equal, and higher, respectively
- The difference in utilization of physical therapy services is greater for acute traumas than for other injuries
- The difference in utilization of consultations and radiology services is greater for chronic pain-related injuries than for other injuries

The study reveals an opportunity to lower WC medical costs by controlling the utilization of physical medicine and consultative services. GH is more effective at identifying and discouraging redundancy for those services. GH has many operational advantages over WC, as GH insurers can tailor their plans to limit the number of certain procedures, such as manipulations or cold packs, covered within a year. While this specific kind of limitation may not be suited to WC, a few states have implemented some treatment guidelines for WC.

Compared to GH, the study also reveals that WC radiology services are more expensive and raises the

concern that they may sometimes be used less efficiently. This and other studies have observed WC fee schedules that are more generous for radiology than for medical services generally. That alone may prompt some WC over-utilization of those services. Also, the complication of having both professional and technical fees makes radiological services harder to regulate with a simple fee schedule. Investigating the application of WC fee schedules to radiology may be worthwhile, especially if it's combined with expertise drawn from GH, where the study found more effective price containment. Our study showed more WC radiology services for the same CPT code on the same date of service than for GH. More aggressive WC treatment may demand more detailed diagnostic imagery; however, if GH is doing a better job at curbing services, then WC can improve its performance on the utilization front as well as for the price of radiological services.

Moving forward, NCCI will continue to examine areas of market interest such as workers compensation versus group health and to report our findings to the industry. For a complete review of ongoing NCCI research projects, please visit [ncci.com](http://ncci.com).

### APPENDIX 1: Decomposition of Cost Difference

Because cost has two factors, a difference between costs naturally breaks down into two components. One way to see this is to represent cost as the area of a rectangle with price and utilization represented as the lengths of the horizontal and vertical sides. The following diagram depicts a change from the smaller GH cost rectangle to the bigger WC cost rectangle. This is achieved in the picture first by increasing utilization (vertical sides of the rectangles) and then by increasing price (horizontal sides), yielding two added cost components:

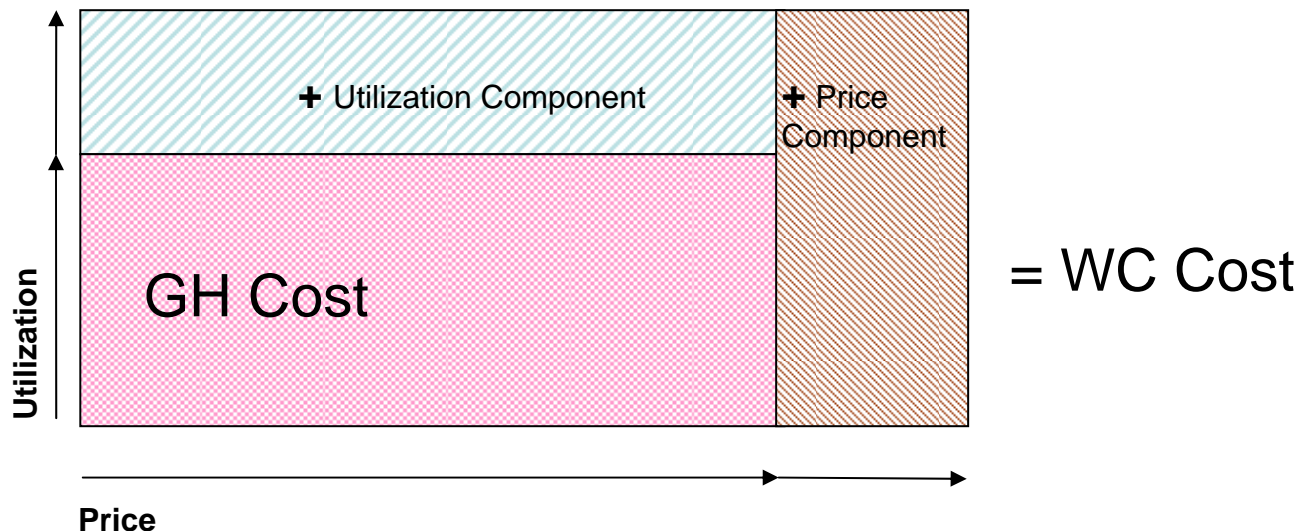


Exhibit 17: Decomposing a Cost Difference Into Components

We use this idea to itemize cost differences into price and utilization components:

$$WC\ Cost = \sum WC\ Price_s \times WC\ Units_s$$

$$GH\ Cost = \sum GH\ Price_s \times GH\ Units_s$$

in which the sums are over medical services identified by the subscript *s*. This equation calculates the differences:

$$Cost\ Difference = WC\ Cost - GH\ Cost$$

$$= \sum WC\ Price_s \times WC\ Units_s$$

$$- \sum GH\ Price_s \times GH\ Units_s$$

$$= \sum (WC\ Price_s - GH\ Price_s) \times WC\ Units_s$$

$$+ \sum GH\ Price_s \times (WC\ Units_s - GH\ Units_s)$$

$$= Price\ Component + Utilization\ Component$$

The utilization component is determined by multiplying differences in WC and GH utilization of a medical service (*s*) times the corresponding GH price for the service (*s*), and then adding up the result over the applicable services. Similarly, the price component is determined by multiplying the difference between the WC and GH price for a service times the corresponding WC utilization of the service, and again adding up over the applicable services. A common coding scheme for medical services is needed to match the WC and GH terms within these sums.

The price component assigns the WC units of service as weights for the price difference. So the price comparisons reflect the WC mix of medical services. For comparing utilization, the best weight to assign to a service is its fair market value. Because GH dominates WC, the average GH price for the service is the weight in the utilization component.

## APPENDIX 2: Glossary of Acronyms

**CPT:** Current Procedural Terminology—coding scheme for medical procedures

**GH:** Group Health

**HCFA:** Health Care Financing Administration

**HCPCS:** HCFA Common Procedure Coding System

**ICD:** International Classification of Diseases—refers to the standard numeric coding scheme for identifying the diagnoses of an injury (NB: Sometimes alternatively refers to a coding for medical procedures)

**NDC:** National Drug Code—refers to the standard numeric identifier the FDA assigns to prescription medications; in addition to the drug, it identifies manufacturer and packaging

**RBRVS:** Resource Based Relative Value Scale—used to assign a fair relative cost between charges for medical services; most common is that in use by Medicare

**UCR:** Usual, Customary and Reasonable—refers to reimbursement levels geared toward what is commonly paid

**WC:** Workers Compensation

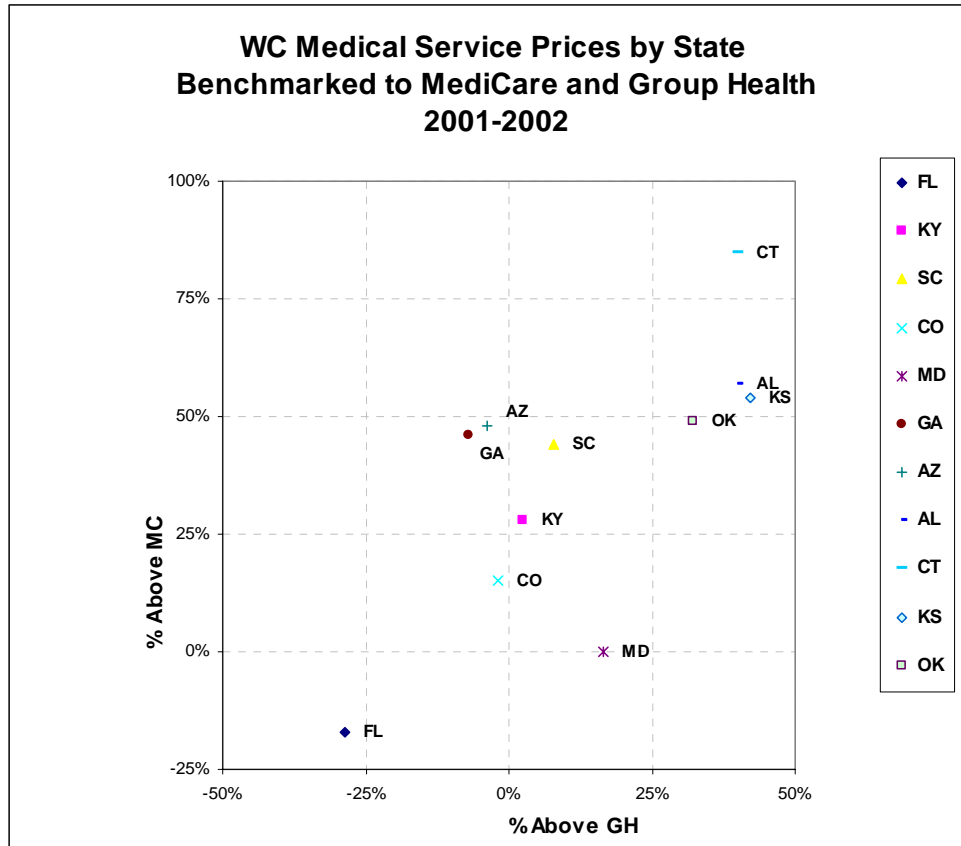
**WCRI:** Workers Compensation Research Institute—research organization headquartered in Cambridge, MA, dedicated to producing studies about public policy issues involving workers compensation systems



### APPENDIX 3: Price Differences: WC Versus Medicare

The Workers Compensation Research Institute (WCRI) performed a nonempirical comparison of state WC fee schedules in effect during 2001–2002 with Medicare reimbursement rates in the state. Of the 11 states in Exhibit 2 that had fee schedules, WCRI found that

Alabama and Connecticut had the two highest fee schedules relative to Medicare. Exhibit 18 (below) is a plot by state of the WCRI estimates of the ratios of WC prices to Medicare reimbursement rates against the price components from Exhibit 2. The correlation between the WCRI-estimated ratios and the price components is more than 70%; this suggests that GH and Medicare are reasonably consistent benchmarks for comparing WC price levels by state.



**Exhibit 18: The WC Versus GH Price Relativity by State Correlates With the Price Relativity of WC Versus Medicare**

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