The LEWIN GROUP
an INGENIX company

Adapting the RBRVS Methodology to the California Workers' Compensation Physician Fee Schedule

First Report

Prepared for:

California Division of Workers' Compensation

Prepared by:

The Lewin Group, Inc.
Dobson|DaVanzo, LLC
KNG Health Consulting, LLC

May 5, 2008

Adapting the RBRVS Methodology to the California Workers' Compensation Physician Fee Schedule

First Report

Prepared for:

California Division of Workers' Compensation

Prepared by:

The Lewin Group, Inc.
W Pete Welch, Ph.D.
Audrey El-Gamil
Jeannine Dollard, M.P.A.
Ushma Patel

Dobson|DaVanzo, LLC
Al Dobson, Ph.D.
Joan DaVanzo, Ph.D., M.S.W.

KNG Health Consulting, LLC
Lane Koenig, Ph.D.

May 5, 2008

Table of Contents

Figures

Tables

ACKNOWLEDGEMENTS

We wish to thank our project officer, Anne Searcy, M.D. for her thoughtful and helpful guidance throughout this project. We also wish to thank other members of the DWC staff—Jarvia Shu, Jacqueline Schauer, Suzanne Honor, Lisa Dasinger, Martha Jones, Liza Dizon—for assisting us. We benefited from the assistance of Nancy Woods and her colleagues at Robert Penny Enterprises for their assistance in reviewing other states' experiences in paying physicians under workers' compensation. We thank CWCI for providing access to their database. We greatly appreciated the assistance of Alex Swedlow and other staff at CWCI in helping us further understand the data, as well as their continued hospitality.

LIST OF ABBREVIATIONS

AMA	American Medical Association
AWW	Average Weekly Wage
BR	By Report
CCI	Correct Coding Initiative
CF	Conversion Factor
CMS	Centers for Medicare and Medicaid Services
COLA	Cost of Living Adjustment
CPI	Consumer Price Index
CPT	Current Procedural Terminology
CRVS	California Relative Value Scale
CWCI	California Workers' Compensation Institute
CWCS	California's Workers' Compensation System
DLSR	Division of Labor Statistics and Research
DWC	Division of Workers' Compensation
E&M	Evaluation and Management
GAF	Geographical Adjustment Factor
GDP	Gross Domestic Product
GPCI	Geographic Practice Cost Index
HPSA	Health Professional Shortage Area
HRSA	Health Resources and Services Administration
ICIS	Industry Claims Information System
MAR	Maximum Allowable Reimbursement
MEI	Medicare Economic Index
MFS	Medicare Fee Schedule
NCCI	National Correct Coding Initiative
NP	Nurse Practitioner
OMFS	Official Medical Fee Schedule
PA	Physician Assistant
PPI-P	Producer Price Index for Physician Offices
PSPSMF	Physician/Supplier Procedure Summary Master File
RBRVS	Resource Based Relative Value Scale
RVU	Relative Value Units
SAWW	State Average Weekly Wage
SB	Senate Bill
SGR	Sustainable Growth Rate
SMS	Socioeconomic Monitoring System
UCR	Usual and Customary Rates

WCIRB	Workers' Compensation Insurance Rating Bureau of California
WCIS	Workers' Compensation Information System

EXECUTIVE SUMMARY

A. Study Purpose

The purpose of this study is to provide the analytic framework and associated impact studies required to assess the change in physician payment methodology from the Official Medical Fee Schedule (OMFS) currently used by the California Workers' Compensation System (CWCS) to a Resource-Based Relative Value Scale (RBRVS) system. Over the last decade, the CWCS has faced several challenges associated with the provision of medical care to injured workers, including rising costs of care. Between 1997 and 2003, payments to physicians increased 157 percent—volume of services accounted for most of this increase.[1] A major driver of high medical costs was the volume of professional services. This was mitigated by the enactment of several legislative reforms in 2002 - 2004, which created utilization controls such as caps on the number of chiropractic and physical therapy visits, and allowed the creation of Medical Provider Networks.

B. Background

CWCS pays physicians using its OMFS. Fee schedules typically categorize physician services using the American Medical Association (AMA) current procedural terminology (CPT). Most of the current OMFS uses the codes and descriptors of the 1997 edition of the AMA Current Procedural Terminology (CPT) nomenclature for reporting medical services and procedures. The physical medicine subsection of the OMFS is based on the 1994 CPT. (Neither the 1994 nor 1997 CPT are currently supported by the AMA.) The use of outdated codes makes it difficult for providers and payers to understand and use the current OMFS and adds administrative costs.

Medicare and many other payers use a RBRVS, under which the payment rate for a service is proportionate to the estimated resources required for the delivery of that service. RBRVS[2] was originally developed for the Medicare Payment System and represented a marked departure from previous charge based systems, which had based payments on physician charges as opposed to physician resource use. The RBRVS may include four components:

- Relative Value Units (RVUs) of the CPT code (e.g., X-ray of the spine),
- Conversion factor (CF) that converts RVUs to payments (i.e., dollars per RVU),
- Geographic Practice Cost Index (GPCI), which measures the relative cost of producing a physician service in a local area, and
- Ground rules (e.g., discounts for multiple surgeries performed on the same day).

---

[1] Wynn B, Bergam G, Shaw R, et al. (2007). Medical Care Provided California's Injured Workers: An Overview of the Issues. RAND: WR-394-ICJ. Report submitted to Commission on Health and Safety and Workers' Compensation and Division of Workers' Compensation, California Department of Industrial Relations, p. viii.

[2] See the following three Lewin reports:
Dobson A., DaVanzo J., Koenig L., et al. (2002). California Workers' Compensation RBRVS Study. California Industrial Medical Council/Department of Industrial Relations.
Dobson A., DaVanzo J., Koenig L., et al. (2003). A Study of the Practice Expenses Associated with Provision of Evaluation and Management Services. California Industrial Medical Council/Department of Industrial Relations.
Dobson A., DaVanzo, J. Koenig, L. et al. (2003) A Study of the Relative Work Content of Evaluation and Management Codes. California Industrial Medical Council/Department of Industrial Relations.

Medicare payment for a given CPT code is the product of RVUs, CFs, and GPCIs, all within the framework of a series of payment ground rules.

Were the Division of Workers' Compensation (DWC) to adopt an RBRVS system, it would face several key policy issues, including the following:

- Whether to implement the new system at one time or to have a multi-year transition,
- Whether overall costs to the system should be changed,
- Whether to use multiple or single conversion factors,
- Whether to adjust for geographic location, and
- How to update the conversion factor for inflation.

C. Data and Methods

The change from the current OMFS to a RBRVS will change reimbursement for each service and may change payment rates differently both across services and medical specialties. To estimate the magnitude of these shifts, we obtained a database of medical claims from the California Workers' Compensation Institute (CWCI). This database includes all of the claims for 55 percent of the insured firms as well as some of the large self-insured firms.

To examine the extent to which CWCI data are representative of all workers' compensation claims in California, we compared the CWCI data to those from the California DWC Workers' Compensation Information System (WCIS) and to the Workers' Compensation Insurance Rating Bureau of California (WCIRB). Claims administrators are required by law to submit data to WCIS, which the DWC uses to manage the CWCS. WCIS started to collect medical bill data in September of 2006, but has been collecting first report of injury and benefit information since 2000. Therefore, the representativeness of the CWCI data could be ascertained by comparing their characteristics to those in WCIS.

The three analyses conducted suggested that important subcategories of injured workers—whether measured in terms of industry, body part, or injury type—are represented in the CWCI database. Therefore, we conclude that the CWCI database is broadly representative of the universe of claims for injured workers in CWCS and is a reliable database for the analysis of the impact of changes in payment methodology, in particular those impacting specialties.

For each medical claim, we first modeled payments under the current OMFS. We then developed a baseline RBRVS model assuming budget neutrality and a single CF. Budget neutrality means that RBRVS expenditures are set at the level of OMFS expenditures for a given volume of CPT codes. By assuming budget neutrality, we can separate the effects of an adoption of RBRVS from the effect of any overall increase or decrease in payment levels. A single conversion factor would maintain relativity between CPT codes. These baseline modeling assumptions should be considered preliminary, as they are not necessarily reflective of eventual DWC policy.

A geographic adjustment RBRVS model was also developed, so this option could be explored in greater depth. This differs from the baseline model only in that it includes Medicare's two types of adjustments for geographic location. First, it pays more in counties with above-average cost of

delivering physician services, as measured by the GPCI. The highest-cost areas tend to be the core of metropolitan areas. Second, it pays a ten percent bonus in designated Health Professional Shortage Areas (HPSAs), which are disproportionately in rural areas. The motivation for paying more in certain locations than in others is to increase the likelihood that sufficient numbers of physicians are willing to treat Medicare beneficiaries regardless of location.

We analyzed the impact of our baseline RBRVS model along three dimensions:

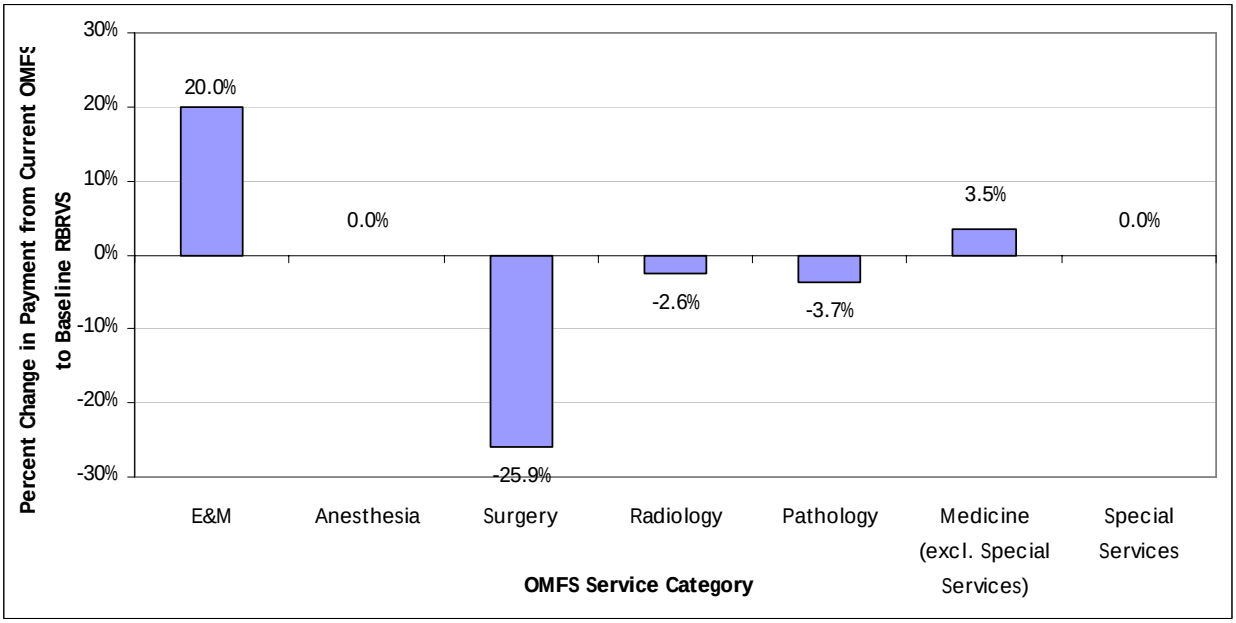
- Service category (e.g., evaluation and management (E&M)),
- Provider specialty (e.g., surgical specialties), and
- Geography (i.e., county and HPSA status).

D. Results

Under the budget neutral baseline RBRVS model, the conversion factor would be $44.57.

Figure ES-A shows the impact of a budget neutral RBRVS adoption by service category. Payment for E&M services would be increased under a budget neutral RBRVS system while surgical services would be decreased. This is not surprising: when RBRVS was first implemented under Medicare, the expectation was that payments for E&M services would increase and payments for surgical procedures and diagnostic tests decrease; which, in fact, actually occurred.

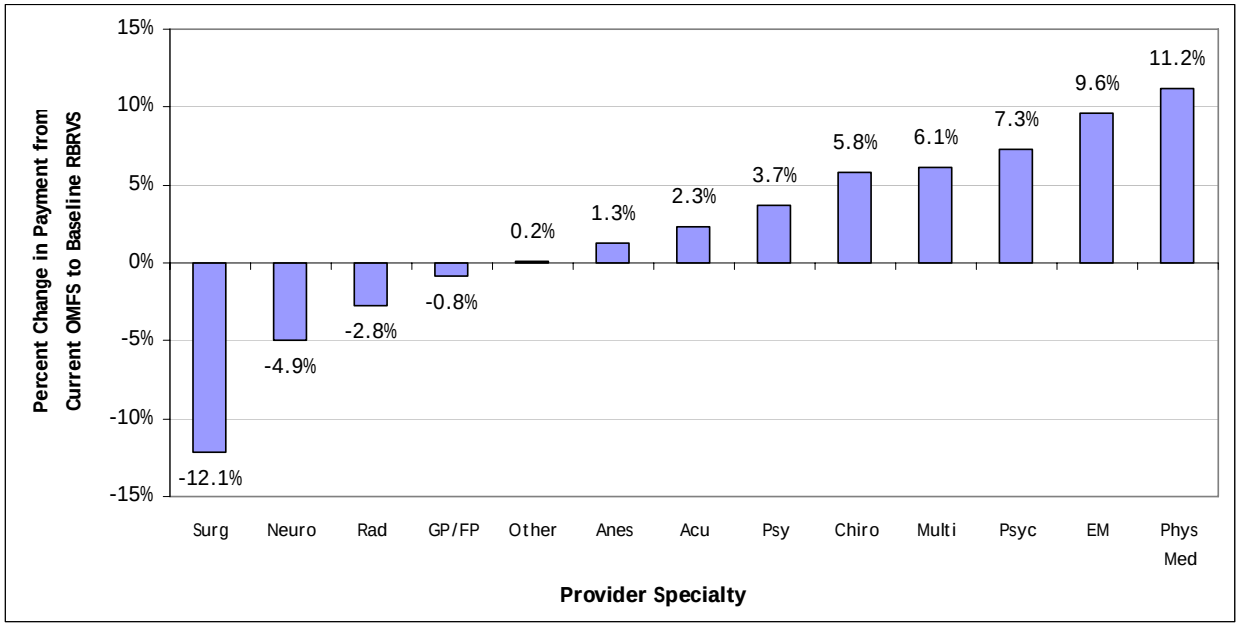
Figure ES-A: Percent Change in Payment from Adoption of Budget Neutral Baseline RBRVS Model, by OMFS Service Category



Source: Lewin analysis of CWCI data. See Chapter IV, Table 4.2.

Figure ES-B shows the impact of a baseline budget neutral RBRVS adoption by provider specialty. Surgeons would experience an overall 12.1 percent payment decrease. Radiologists would also experience a payment decrease under RBRVS. Several specialties would experience an increase in payment: physical medicine, chiropractors, and multi-specialty groups. General and family practitioners (as a group) would experience virtually no change in their payment levels.

Figure ES-B: Percent Change in Payment from Adoption of Baseline Budget Neutral RBRVS Model, by Provider Specialty



Surg = Surgery
Neuro = Neurology
Rad = Radiology
GP/FP = General and Family Practice
Other = Other or Undefined
Anes = Anesthesia
Acu = Acupuncture
Psy = Psychiatry
Chiro = Chiropractor
Multi - Multi-Specialty (Med/Surg)
Psyc = Psychology
EM = Emergency Medicine
Phys Med = Physical Medicine

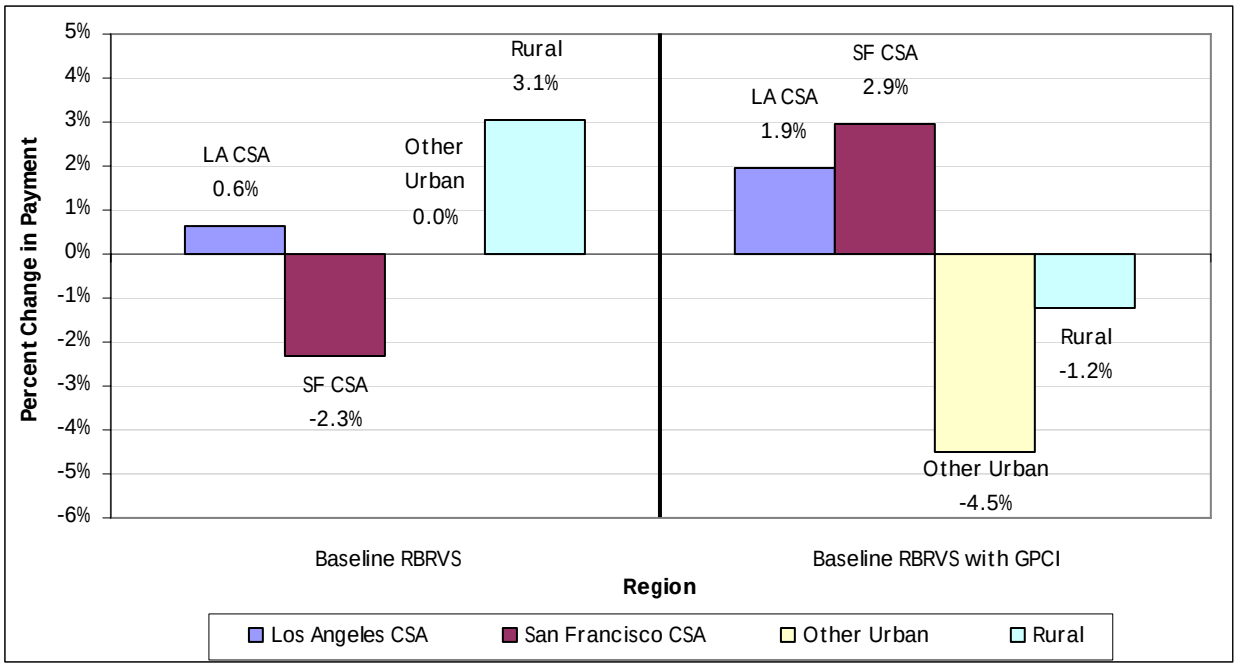
Source: Lewin analysis of CWCI data. See Chapter IV, Table 4-2.

These results by specialty were not materially affected by adjustments for geographic location.

Figure ES-C shows the impact of a budget neutral RBRVS adoption under two analyses: baseline and baseline with GPCIs. Geographic adjustments would increase payment to providers in regions (e.g., San Francisco) with high GPCIs and decrease payments in regions with low GPCIs (e.g., other urban and rural).[3]

[3] While Centers for Medicare and Medicaid Services (CMS) provide for geographic adjustment in the HPSAs through a 10-percent add-on payment, this adjustment is not specifically shown because the GPCIs exert a much stronger effect in the geographic adjustment process. As HPSAs represent only one tenth of one percent of the payment for physician services under OMFS, bonus payments for services delivered in HPSAs will not have a major impact on total payments.

Figure ES-C: Percent Change in Payment from Adoption of Baseline Budget Neutral RBRVS and Baseline RBRVS with GPCI, by Region



Source: Lewin analysis of CWCI data. See Chapter IV, Table 4-4.
CSA = Combined Statistical Area

E. State Comparison

We compared workers' compensation programs in 14 states. The selected states represent 61 percent of the U.S. population (excluding California), and include ten of the 12 most populated states (excluding California and North Carolina, for which information was not available). Four additional states were chosen due to their proximity to California or for their recent implementation of the RBRVS methodology.

Nine of the 14 states—Texas, Pennsylvania, Michigan, Florida, Maryland, Ohio, Tennessee, Minnesota, and Oregon—use RBRVS as a basis for workers' compensation payment, two states have a fee schedule not based on RBRVS (New York and Illinois), and three states base payment on usual and customary rates (Georgia, New Jersey, and Virginia). New York uses a fee schedule that is based on an analysis of their claims, while Illinois bases payment on a fixed percent of charges.

The five largest states (three of which use RBRVS) adjust payment according to geographic location, whereas the other nine states do not. The three that adjust RBRVS-based payment geographically do so using Medicare's geographic definitions.

Of the nine RBRVS states, two use a single conversion factor (as does Medicare), three use dual factors, and four use three or more factors. When dual conversion factors are used, one pertains to surgical services and the other pertains to all other services. When three or more factors are used, surgical services are usually delineated from the remaining categories. In all states using multiple conversion factors, surgical services have the highest conversion factor. On average

across the six states with multiple conversion factors, the conversion factors for surgical services were a third higher than for E&M services.

All RBRVS states update payment for inflation on an annual basis, except for Maryland, which does so biennially.[4] No single inflation index is widely used in states studied.

When implementing their RBRVS systems, most states did not use a transition. Even in states that underwent a transition, much of the institutional knowledge of the transition has not been maintained, so we were not able to obtain information on the process or form the transitions took.

Among all 50 states, CWCS payment rates are among the lowest.[5] In 2006 California ranked sixth from the bottom for all services. This low ranking applies to both surgical and E&M services.

F. Policy Options

1. Transition Policies Using Conversion Factors

Our analysis found that budget neutral RBRVS adoption would increase payment to certain specialties (especially physical medicine) and decrease payments to others. Physician participation in workers' compensation programs is influenced by payment levels relative to those of other payers. To mitigate the possibility of decreasing injured workers' access to medical care, DWC might consider several transition options, one of which is to use multiple conversion factors.

Although Medicare uses a single conversion factor, the workers' compensation programs in the states we reviewed typically use multiple conversion factors. In its simplest form, this involves two conversion factors, one for surgical services and one for all other services. Conversion factors could be set so there was no redistribution of payment across specialties or there was some predetermined amount of redistribution, for instance, 50 percent of the redistribution under RBRVS. Table ES-1 shows the conversion factors from our impact analysis.

Table ES-1: Transition Policies Based on Conversion Factors, Examples of Budget Neutral Policies

Service Category (SC)	Single-CF Option	Dual-CF Option		Five-CF Option	
		Budget Neutral by Surgery & others	50/50 blend	Budget Neutral by SC	50/50 blend
Surgery	$44.57	$60.37	$52.47	$60.37	$52.47
E&M	$44.57	$40.55	$42.56	$37.10	$40.84
Radiology	$44.57	$40.55	$42.56	$45.77	$45.17
Pathology	$44.57	$40.55	$42.56	$56.18	$50.38
Medicine	$44.57	$40.55	$42.56	$42.90	$43.74

[4] Inflation can represent either an increase or a decrease in prices.

[5] Source: Eccleston, S.M., and Liu, T. (2006). Benchmarks for designing workers' compensation medical fee schedules: 2006. *Workers' Compensation Research Institute.* November. (WC-06-14).

Under the single-CF option, the CF would be $44.57. In the other options, budget neutral means that a service category (e.g., surgery) would receive the same payments under RBRVS as it currently does under OMFS.

2. Adjustments for Geographic Location

We describe the Medicare GPCI system as applied to California and offer several options for delineating payment areas for GPCIs. We also analyzed HPSAs, and found some inconsistencies as to why parts of some rural areas are in HPSAs and others are not. Furthermore, the selection and number of zip codes that are entirely in HPSAs has been volatile in the last two years.

An overarching motivation for these two geographic adjustments is to direct payment to geographic areas in which injured workers' access to care would otherwise be problematic. In a recent UCLA survey, CWCS claim administrators indicated that finding providers is most difficult in North Coast/North Inland/Sierras, San Joaquin Valley, and Central Coast.[6] Because these areas would have the lowest cost as measured by Medicare's GPCI, using the GPCI would lower the payment rate and could exacerbate access issues. Parts, but not all, of these regions are in HPSAs.

3. Inflation Updates

This report explores four possible indices that could be used to update payment for inflation:

- Medicare Economic Index (MEI), which is designed to update physician payment;
- Medicare update, which is the MEI adjusted by the growth of Medicare physician expenditures and Congressional decisions;
- Consumer Price Index (CPI) for the Western Region; and
- State Average Weekly Wage (SAWW) in physicians' offices in California.

Using the Medicare update is not advisable, because it is affected by factors that are not relevant to CWCS. The CPI is not as specific to medical care as the MEI. The SAWW has the advantages of being specific to California. However, it is considerably more volatile than the MEI, which more comprehensively measures the cost of delivery of physician services, albeit at the national level. Thus, the MEI appears to be a reasonable alternative.

4. Key Issues Facing Policymakers

This report provides the technical background for a change to a RBRVS for physician payment in the CWCS. Several policy decisions will need to be made for this effort to be undertaken. For instance:

- How quickly should an RBRVS system be implemented? If there is a transition, should it be at the service category level (e.g., surgical vs. E&M) or at the individual CPT code level?
- At the end of the transition, will multiple conversion factors be necessary to preserve physician participation in the system? In particular, is a higher conversion factor needed for surgical services than for other services?

[6] Kominski, G, et al. (2006). Access to medical treatment in California workers' compensation system. *UCLA Center for Health Policy Research.*, p. 127 and Appendix C.

- Should the RBRVS-based payment reflect geographical differences in the cost of service delivery or in injured workers' access to physicians?
- How should the conversion factor be adjusted for inflation over time?
- Finally, should the new RBRVS system be budget neutral to the current OMFS payments or should total payments to physicians increase?

There is an intrinsic tradeoff among three broad goals: 1) maintaining or improving access of injured workers to necessary medical services; 2) containing costs to payers; and 3) moving toward a more equitable relative value scale. The above policy decisions need to be made in light of this three-way tradeoff.

I. INTRODUCTION AND BACKGROUND

This study uses a variety of analytic approaches to examine the effects of adopting RBRVS. The impact analysis was conducted using workers' compensation claims data. Chapter I presents a history and description of RBRVS. Chapter II discusses our data, Chapter III our methodology, and Chapter IV our results. Chapter V describes the arrangements that workers' compensation programs in other states use to pay physicians. Information was obtained for Chapter V through literature review and web searches, as well as a series of structured interviews conducted by Lewin staff and Robert Penny Enterprises (a subcontractor). Chapter VI discusses policy options, including transition strategies, geographic adjustment, and ways to update the fee schedule on an ongoing basis.

A. Recent History and Regulations of California's Workers' Compensation System

The *Workers' Compensation Official Medical Fee Schedule* (OMFS) is used to determine reimbursement rates for medical services under California's Workers' Compensation System (CWCS). The physician fee schedule component of the OMFS establishes reasonable maximum fees for medical services provided by physician and non-physician healthcare providers to injured workers. The relative value scale of the OMFS for physician services is based on the California Relative Value Scale (CRVS), which is a charge based system developed by the California Medical Association in 1956 and adopted by the Division of Workers' Compensation (DWC) in 1965. The CRVS was last revised in 1974 and used historic physician charges to develop its relative values for services. The last major revision to the physician OMFS was completed in April 1999.

In 1999, the Industrial Medical Council (IMC) undertook the groundwork for a major restructuring of the physician fee schedule and a migration to the RBRVS. The IMC was a state-appointed board of physicians that existed until 2003 pursuant to Labor Code Section 139 (which was repealed in 2003 by SB 228). Its mandates included advising the administrative director on revision of the physician fee schedule. Adoption of the RBRVS was supported by a study commissioned by the Industrial Medical Council to evaluate alternatives for replacing the CRVS. The study was authored by UCLA and concluded that migration to a RBRVS would improve fairness of payments, and that adopting the RBRVS offered advantages over other alternatives.[7]

The Lewin Group next conducted a series of studies for the California Division of Workers' Compensation and the IMC to support the proposed transition.[8] The first Lewin Group study modeled the impact of the proposed migration to RBRVS. The study found that Evaluation & Management (E&M), Psychology, and Pathology and Laboratory would receive higher payments under the RBRVS-based OMFS, while Surgery would receive lower payments. Physician

---

[7] Kominski, G., Pourat, N., & Black, J. (1999). The use of relative value scales for provider reimbursement in state workers' compensation programs. *UCLA Center for Health Policy Research.*

[8] See the following three Lewin reports:

- Dobson A., DaVanzo J., Koenig L., et al. (2002). California Workers' Compensation RBRVS Study. California Industrial Medical Council/Department of Industrial Relations.
- Dobson A., DaVanzo J., Koenig L., et al. (2003). A Study of the Practice Expenses Associated with Provision of Evaluation and Management Services. California Industrial Medical Council/Department of Industrial Relations.
- Dobson A., DaVanzo, J. Koenig, L. et al. (2003). A Study of the Relative Work Content of Evaluation and Management Codes. California Industrial Medical Council/Department of Industrial Relations.

specialties that would experience the largest changes in payment, however, accounted for a relatively small proportion of paid dollars. When the RBRVS was first implemented for the Medicare program, payments for most E&M services increased 15 to 45 percent, while payments for invasive services and diagnostic tests decreased 20 to 30 percent.[9]

Subsequent Lewin Group studies evaluated reimbursement of E&M services within CWCS. These studies found that physician work and practice expenses were higher when treating injured workers than they were for comparable patients in other California payment systems. The passage of Senate Bill 228 (SB 228) in 2003, however, halted the adoption of an RBRVS for the CWCS and prohibited the DWC from changing physician payment levels until January 1, 2006. SB 228 also reduced payment for most services under the OMFS by five percent. SB 228, together with several other pieces of legislation that were enacted around the same time, addressed both service volume and provider payment growth. In addition, Assembly Bill 749 (AB 749), which was signed into law on February 15, 2002, partially eliminated the physician's presumption of correctness.

AB 227 and SB 228, which became effective on January 1, 2004, mandated the adoption of a medical treatment utilization schedule and capped the number of chiropractic and physical therapy visits at 24. (Occupational therapy visits were later capped as well by Senate Bill 899 (SB 899)). A second opinion process was also put into place for disputes about spinal surgery. The ACOEM Practice Guidelines were put into place until the DWC Administrative Director permanently adopted evidence-based, peer-reviewed, nationally-recognized guidelines as a way to standardize care, improve quality, and control costs. Furthermore, SB 228 required an annual survey to determine whether access to quality care for injured workers is adequate.

SB 899 reforms enacted in 2004 allowed the creation of Medical Provider Networks that provide employers with more control over the medical care obtained by injured workers. Employers could now require that the injured worker seek all care from within a pre-approved network of providers for the life of the claim.

Since the reforms were enacted, a number of studies have been conducted that examine the cost and access to care in the CWCS. For example, according to one study, the approved insurance rate in the CWCS decreased by 46 percent from July 1, 2003 to January 1, 2006.[10] Moreover, the study estimated claims cost savings of $8.1 billion in comparison to 2003 costs. Almost half of these cost savings were due to changes in medical fees, caps on physical medicine visits, and implementation of the medical treatment utilization schedule. A separate study compared pre- and post-reform claims by medical service to determine the reforms' impact. These investigators found that in five of six treatment categories, declines in medical service utilization during the first two years after injury were associated with reforms' implementation. E&M was the only category in which medical utilization increased between 2002 and 2005.[11]

---

[9] Hsiao, W.C., Braun, P., Becker, E.R., et al. (1992). Results and impacts of the resource-based relative value scale. *Medical Care*, *30* (11), NS61-NS79.

[10] Bickmore Risk Services. (2006). *A study of the effects of legislative reforms on California workers' compensation insurance rates.*

[11] Swedlow, A. & Ireland, J. (2007). Analysis of California workers' compensation reforms. *California Workers' Compensation Institute.*

Although the reforms have reduced the financial cost of the program, their impact on injured workers' access to quality medical care is also important.[12] A recent study surveyed injured workers, providers, and claims administrators concerning worker access to medical care after the introduction of the various reforms. The study found that among the nearly 1,000 injured workers surveyed between May and October of 2006, the vast majority reported they were able to see a doctor right away, did not have to travel far to see their doctor and were able to get specialty care, physical therapy and prescriptions they needed.

In contrast, the study also found that the majority of providers did not believe injured workers have adequate access to care and reported that access to care had declined since 2004. They reported dissatisfaction with California's OMFS, citing inadequate payment or fee schedule payment levels as the most common reason for non-participation in the CWCS.[13]

In summary, the underlying reasons to move to a resource-based fee schedule are to update to new CPT codes and to use an RBRVS scale that is nationally developed, while maintaining injured workers' access to quality care. To reach this objective, the payment system must provide the appropriate incentives to healthcare providers by reflecting the relative resources required to perform different medical procedures, while at the same time not causing an excessive amount of physician attrition by changing the proportional amounts paid to the various provider specialty groups.

B. RBRVS: Background and Key Features

The RBRVS, which consists of a set of relative value units (RVUs) for over 7,000 medical procedures, was originally adopted by the Medicare program in 1992 with publication of the Medicare Fee Schedule (MFS).[14] The system of relative values was developed by researchers from the Department of Health Policy and Management at Harvard University over the course of several years and was revised by the Centers for Medicare and Medicaid Services (CMS)[15] before it was used in the MFS.[16] CMS has made major revisions to the system since its implementation and is required to conduct a comprehensive review of its relative values every five years.

In the MFS, each procedure is represented by a five-digit CPT code developed by the American Medical Association. For each CPT code, the MFS includes three RVUs corresponding to the following resource categories: physician work, practice expenses, and malpractice insurance. Payments for each procedure are determined by first multiplying the RVUs associated with each component by the appropriate geographic practice cost index (GPCI). The GPCIs are used to adjust payments to reflect geographical variation in the cost of providing medical care due to

[12] Wynn, B., Bergamo, G., Shaw, R., et al. (2007). Medical care provided California's injured workers: an overview of the issues. *RAND*.

[13] Kominski, G, et al. (2006). Access to medical treatment in California workers' compensation system. *UCLA Center for Health Policy Research.*

[14] *Federal Register*. November 25, 1991, Volume 56, pg. 59502, U.S. Government Printing Office.

[15] The Health Care Financing Administration changed its name to the Centers for Medicare and Medicaid Services on July 1, 2001.

[16] For an overview of the initial development of RBRVS, see Hsiao, W.C., et al. (1992). An overview of the development and refinement of the resource-based relative value scale. *Medical Care*, *30* (11), Supplement.

differences, for example, in office rent or clinical labor costs. These values are then summed and multiplied by a single conversion factor.

When the MFS was originally implemented by the Medicare program, only the work RVUs were based on estimates of the actual resources required to provide medical services and, hence, were truly resource-based. The practice expense and malpractice RVUs were based on charges, which were thought to have only a limited and indirect relationship to resource costs.

To correct for the inaccuracies associated with charge-based RVUs, CMS developed methods to construct practice expense and malpractice RVUs using actual cost data and began implementing these changes in 1999. CMS developed the resource-based practice expense RVUs using data from a series of consensus panel meetings (i.e., Clinical Practice Expense Panel (CPEP)) and the American Medical Association's (AMA) Socioeconomic Monitoring System (SMS). The CPEPs provided data on the relative expenses associated with the direct inputs used in performing individual medical procedures, such as medical supply costs. Total practice expenses by specialty were obtained from an analysis of the SMS survey data.[17] CMS began a four-year transition to the original resource-based practice expense RVUs in 1999, and fully implemented these RVUs on January 1, 2002.[18] For malpractice RVUs, the charge-based values had been replaced with resource-based RVUs on January 1, 2000. These RVUs were based on malpractice premium data collected from each state's Department of Insurance. In total, the data contained premium information for 46 companies that sold malpractice insurance.[19] CMS did not use a transition period for the malpractice RVUs, choosing, instead, to implement them at one time.

The RBRVS offers a number of advantages as a resource-based payment system. Specifically, it has gone through an extensive process of external validation and public rule making. In addition, CMS is required to review and update the MFS relative values periodically, thereby providing California with an opportunity to update OMFS relative values with future revisions of the MFS.[20] Because of these favorable attributes, a number of diverse payers have adopted the Medicare RBRVS or systems based on it. In fact, an early survey of public and private payers in 1998 indicated that 87 percent of Blue Cross/Blue Shield and 69 percent of managed care payers had implemented or were in the process of implementing RBRVS.[21]

---

[17] For a detailed description of the methodology used to develop the resource-based practice expense RVUs, see Chapter 2 in Dobson, A., et al. (2001). The resource-based practice expense methodology: an analysis of selected topics. *The Lewin Group.* Prepared for The Centers for Medicare and Medicaid Services.

[18] Subsequent changes in practice expense RVU methodology include a four year transition ending in 2010.

[19] For more detailed information on the development of the resource-based malpractice RVUs, see Addendum G—Technical Addendum to the April 1999 Report on the Development of Resource Based Malpractice Relative Value Units. Prepared by KPMG. *Federal Register*, November 1, 2000, p. 65589.

[20] For example, on June 8, 2001, CMS published a notice on its most recent five-year review of the work RVUs under the MFS. CMS conducted a five-year review of the practice expense RVUs in 2007. In addition, the transition period for practice expenses encompassed a refinement process during which CMS made modifications to the complex methodology used to determine practice expense RVUs.

[21] American Medical Association. (1999). Non-Medicare use of the RBRVS. Report to the Council on Medical Service. CMS Report 12-A-99, June.

In 1999, approximately 20 states used the RBRVS to determine payments to physicians in state workers' compensation programs. [22] Nine of the fourteen states examined in our study use a RBRVS. Of the seven largest states (after California), five use RBRVS in their workers' compensation programs.

Basing payments on the actual resources used is a more accurate and fair way to pay physicians than a charge-based system. The adoption of the RBRVS to pay providers for treating injured workers in California would move toward this objective. There are, however, important services that are unique to a workers' compensation environment. Prior work by The Lewin Group demonstrated that the RBRVS may not cover the full cost of the inputs required to deliver E&M services, because treating injured workers entailed 27 percent more physician work than treating their counterparts under other payers.[23] These additional resources could be paid for through separate reimbursement for services that are unique to workers' compensation or higher payment rates for E&M services.

C. Study Purpose and Objectives

The State of California is revising its OMFS to incorporate the methodology of RBRVS maintained by CMS in its MFS. The purpose of this study is fourfold:

1. to provide the DWC with data analyses that can help it to understand the impact of this change in physician payment methodology;
2. to develop a set of policy options around baseline implementation, and help determine the need for a transition;
3. to help the DWC to determine whether to incorporate regional geographic adjustors in the revised fee schedule; and
4. to present options for using economic indicators to update the conversion factor(s) in future revisions.

The decision to revise the OMFS and adopt an RBRVS is of interest to employees, employers, insurers, payers, and providers in California. Access to quality care should not be jeopardized because of a change in the fee schedule. The payment system should provide the appropriate payments to healthcare providers by reflecting the relative resources required to perform different medical procedures while at the same time reflecting the unique nature of the workers' compensation program. Workers' compensation is complex, in that it focuses on work-related injury, return to work, and wage replacement from both the clinical and legal perspectives.

Most of the current OMFS uses the codes and descriptors of the 1997 edition of the AMA Current Procedural Terminology (CPT) nomenclature for reporting medical services and procedures. The physical medicine subsection of the fee schedule is based on the 1994 CPT. (Neither the 1994 nor

[22] Kominski, G., Pourat, N., & Black, J. (1999). The use of relative value scales for provider reimbursement in state workers' compensation programs. *UCLA Center for Health Policy Research.*

[23] Dobson A., DaVanzo, J. Koenig, L. et al. (2003). A Study of the Relative Work Content of Evaluation and Management Codes. California Industrial Medical Council/Department of Industrial Relations.

1997 CPT are currently supported by the AMA.) The use of outdated codes makes it difficult for providers and payers to understand and use the current OMFS and adds administrative costs.

II. DATA

A. Source

Analysis of the impact of adopting a RBRVS system required a database consisting of a large, representative sample of medical services provided to injured workers in California. These data were used to construct frequencies by CPT code, provider specialty, and region. However, workers' compensation claims in California are processed and compiled by a number of different insurance carriers and entities. Consequently, no single database exists that includes all workers' compensation medical records or the distribution of medical services for California. To conduct our analysis, we obtained data from the California Workers' Compensation Institute's (CWCI) Industry Claim Information System (ICIS).

The CWCI is a non-profit organization of insurers and self-insured employers conducting research and analysis to improve the operation of the California workers' compensation system. The ICIS is a database system with more than 2.5 million California workers' compensation claimants. It includes information for over 200 million policy and benefit transaction level payments and medical procedures for dates of injury as far back as January 1993. For the ICIS, CWCI receives medical services data that are voluntarily submitted by national and regional payers operating in the California market, some of whom are among the biggest insurers and employers in the state. Each contributor submits data on all of its claims for all of its active policies. The CWCI data have a number of useful features including the specific elements required to complete our analyses.

The CWCI data received by The Lewin Group contained 3.4 million unique CPT-level records with dates of service between January 1, 2006 and December 31, 2006. This database of medical bills was compiled from 187,000 unique workers' compensation claimants (injured workers). These data were not pre-selected and include all service records processed by CWCI as of April 30, 2007. The key data elements are as follows:

- Provider Specialty
- Date of Service
- CPT Code
- CPT Modifier Code
- Provider Zip Code
- Fee Schedule or Contract Allowed Amount
- Paid Amount

B. Representativeness

The medical data compiled by CWCI for our analysis was drawn from payers representing 55 percent of the total premium collected in 2006 , as well as several large self-insured payers doing business in California in 2006.[24]

To examine how representative the CWCI data are of all workers' compensation claims in California, we compared the distribution of CWCI data to two other data sources: 1) the Workers' Compensation Insurance Rating Bureau of California (WCIRB data), and, 2) The California DWC Workers' Compensation Information System (WCIS).

The WCIRB is a licensed rating organization and the designated statistical agent of the California Insurance Commissioner. It is an unincorporated, non-profit association comprised of over 400 member companies. To accurately measure the cost of providing workers' compensation insurance, the WCIRB performs a number of functions, including the collection of premium and loss data on every workers' compensation insurance policy, examination of policy documents, inspections of insured businesses, and test audits of insurance companies. Each of these activities helps ensure the quality of the WCIRB data.

The WCIS, mandated by Labor Code section 138.6, contains comprehensive data from claim administrators to aid the DWC in managing the CWCS. WCIS serves three essential purposes: 1) to help evaluate the system, 2) to measure the adequacy of benefits for injured workers, and 3) to provide statistical data for research. Having collected first report of injury and benefit information since 2000, WCIS started to collect medical bill data in September of 2006.

For purposes of this study, "representativeness" is determined by the frequency distribution of services across CPT codes.[25] The frequency distribution of all services provided under workers' compensation is unknown. We assessed the representativeness of the CWCI data by comparing it to WCIRB data and WCIS in terms of three characteristics:

- Industry (CWCI data and WCIRB data);
- Body part (CWCI data and WCIS); and
- Type of injury (CWCI data and WCIS).

For all three analyses, CWCI data were compared to the most current available WCIRB data and WCIS. Later data were available from WCIS, but for comparison purposes, 2006 data were used.

---

[24] Based on discussions with Alex Swedlow, Executive Vice President of Research and Development of the California Workers' Compensation Institute, personal communication, April 15, 2008. The total premium figures (for both the numerator and the denominator) were obtained from the Workers' Compensation Insurance Rating Bureau of California. The percentage of the premium of all payers (both insured and self-insured) represented in our database could not be calculated, because self-insured payers do not pay premiums.

[25] If the distribution across CPT codes of the CWCI data approximates the distribution across all services provided to injured workers in California, our results could be generalized to all California workers' compensation cases. Data on submitted and allowed charges and paid amounts are not relevant for our study, because we simulate paid amounts under both the current OMFS and the proposed RBRVS. Therefore, we are not concerned with the representativeness or quality of the data in these respects.

Table 2-1 shows the percentage of 2004 injured workers by industry in the CWCI and WCIRB databases. WCIRB 2004 accident year data were the most complete data available at the start of this project.

Table 2-1: Distribution of Injuries by Industry,[26] Sample (CWCI data) versus Universe (WCIRB data), 2004

Industry Category	Sample	Universe	Ratio, Sample: Universe	Absolute Value of Difference
Construction or Erection	14.6%	14.8%	0.99	0.2%
Manufacturing - Metal Products	3.4%	2.2%	1.55	1.2%
Manufacturing - Wood Products	1.7%	0.8%	2.13	0.9%
Manufacturing - Plastic & Rubber	1.3%	0.3%	4.33	1.0%
Manufacturing - Paper Products	1.2%	0.5%	2.40	0.7%
Manufacturing – Textiles	1.8%	1.9%	0.95	0.1%
Manufacturing - Food Products	2.5%	0.7%	3.57	1.8%
Manufacturing – Electronics	2.6%	1.0%	2.60	1.6%
Manufacturing – Others	1.2%	0.8%	1.50	0.4%
Agriculture	5.9%	4.9%	1.20	1.0%
Mercantile	12.3%	12.5%	0.98	0.2%
Aircraft Operations	0.3%	0.2%	1.50	0.1%
Professional and Clerical Services	29.7%	35.0%	0.85	5.3%
Other	21.3%	24.4%	0.87	3.1%
Grand Total	**100%**	**100%**	NA	NA

Source: CWCI data and WCIRB data.

As Table 2-1 shows, the distribution of injuries for most industry categories across the two data sets is similar. Of the categories with at least two percent of the universe, all have a ratio of sample to universe between .70 and 1.30, with the exception of the "metal product" category, which has a ratio of 1.55.

Another test for representativeness is a comparison of the injury mix contained in the CWCI database to that contained in the universe. A similar mix of injuries would suggest a similar mix of medical treatments across databases.

Table 2-2 presents the distribution of injuries by body part. Both of these databases represent claims with dates of injury in 2006. Only subcategories consisting of at least one percent of the WCIS injuries are reported here. We present two metrics to compare the distribution: the ratio of the sample to the universe and the absolute value of the difference. Most of the subcategories have sample to universe ratios between .70 and 1.3, and most have differences whose absolute

[26] Workers' Compensation Insurance Rating Bureau of California, "California Workers' Compensation Uniform Statistical Reporting Plan—1995, Including Miscellaneous Regulations for the Recording and Report of Data and Supplements, Effective January 1, 2008." The 14 industry groups were created by the WCIRB classification staff. David Bellusci, Senior Actuary, WCIRB, email of May 1, 2008.

value is less than 0.5 percent. In fact, excluding the very small subcategories (e.g., with less than 2 percent of the universe), all subcategories have ratios within this range. All sizeable subcategories are well represented in the sample.

Table 2-2: Distribution of Injuries by Body Part, Sample (CWCI data) versus Universe (WCIS), 2006[27]

Body Part Category/Subcategory	Sample	Universe	Ratio, Sample: Universe	Absolute Value of Difference
Head				
Eye(s)	4.8%	4.2%	1.13	0.5%
Multiple Head Injury	1.0%	1.2%	0.85	0.2%
Soft Tissue	0.7%	1.6%	0.42	0.9%
Others	2.1%	2.6%	0.82	0.5%
Subtotal	8.6%	9.7%	0.89	1.1%
Lower Extremities				
Knee	5.8%	6.1%	0.96	0.3%
Lower Leg	2.0%	1.9%	1.05	0.1%
Ankle	3.7%	3.7%	0.98	0.1%
Foot	2.8%	3.1%	0.92	0.2%
Others	2.6%	3.2%	0.83	0.5%
Subtotal	16.9%	18.0%	0.94	1.0%
Neck				
Neck	2.7%	1.8%	1.50	0.9%
Subtotal	2.7%	1.8%	1.50	0.9%
Trunk				
Multiple Trunk	1.7%	1.0%	1.77	0.7%
Low Back Area (incl. Lumbar and Lumbo-Sacral)	13.2%	12.3%	1.07	0.9%
Upper Back Area (Thoracic Area)	1.5%	1.8%	0.84	0.3%
Chest (incl. Ribs, Sternum and Soft Tissue)	1.4%	1.4%	1.04	0.0%
Abdomen (incl. Groin)	1.7%	1.6%	1.09	0.1%
Others	2.6%	2.5%	1.04	0.1%
Subtotal	22.1%	20.5%	1.08	1.6%

[27] The source of the part of body and nature of injury codes is the ASWG (Advisory Statistical Work Group) of the National Council on Compensation Insurance. These codes are part of the electronic data transmission standards published by the IAIABC (International Association of Industrial Accident Boards and Commissions) in the IAIABC EDI Implementation Guide for First, Subsequent, Acknowledgment Detail, Header, & Trailer Records, Release 1, issued February 15, 2002, and used by DWC for the transmission of data by claim administrators to the DWC WCIS (Workers' Compensation Information System). WCIS is mandated to use the standards for electronic data reporting of IAIABC.

Table 2-2: Distribution of Injuries by Body Part, Sample (CWCI data) versus Universe (WCIS), 2006 (continued)

Body Part Category/Subcategory	Sample	Universe	Ratio, Sample: Universe	Absolute Value of Difference
Upper Extremities				
Multiple Upper Extremities	1.9%	2.5%	0.77	0.6%
Upper Arm (excluding Clavicle and Scapula)	1.3%	1.3%	1.02	0.0%
Elbow	1.9%	1.9%	1.03	0.1%
Lower Arm	2.5%	2.8%	0.89	0.3%
Wrist	4.5%	4.3%	1.03	0.1%
Hand	6.5%	6.2%	1.04	0.3%
Finger(s)	10.7%	9.0%	1.19	1.7%
Thumb	2.8%	2.8%	1.00	0.0%
Shoulder(s)	4.6%	4.8%	0.97	0.2%
Others	0.9%	0.9%	0.98	0.0%
Subtotal	37.7%	36.5%	1.03	1.1%
Multiple Body Parts				
Insufficient Info to Properly Identify	2.8%	1.7%	1.62	1.1%
No Physical Injury	0.5%	1.0%	0.48	0.5%
Multiple Body Parts	8.3%	9.7%	0.85	1.4%
Others	0.3%	1.0%	0.32	0.7%
Subtotal	11.9%	13.5%	0.88	1.6%
Grand Total	100.0%	100.0%	NA	NA

Note: Only subcategories constituting at least one percent of the WCIS injuries are reported here. Body part categories may not sum to the exact subtotals due to rounding.

Source: CWCI data and WCIS.

Table 2-3 presents data by type of injury. Here again, once the very small subcategories are excluded, all subcategories have sample-to-universe ratios within the .70 to 1.3 range.

Table 2-3: Distribution of Injuries by Nature of Injury, Sample (CWCI data) versus Universe (WCIS), 2006[28]

Nature of Injury	Sample	Universe	Ratio, Sample: Universe	Absolute Value of Difference
Multiple Injuries				
Multiple Physical Injuries Only	1.8%	2.5%	0.73	0.7%
Other	0.1%	0.3%	0.46	0.2%
Subtotal	2.0%	2.8%	0.70	0.8%
Occupational Disease or Cumulative Injury				
Mental Stress	0.7%	1.2%	0.56	0.5%
Other	8.8%	7.0%	1.26	1.8%
Subtotal	9.5%	8.2%	1.15	1.3%
Specific Injury				
Burn	1.7%	1.6%	1.06	0.1%
Contusion	10.2%	11.6%	0.88	1.4%
Foreign Body	3.4%	2.8%	1.23	0.6%
Fracture	3.6%	2.9%	1.26	0.7%
Inflammation	2.4%	3.0%	0.80	0.6%
Laceration	14.2%	12.0%	1.19	2.2%
Puncture	4.2%	3.4%	1.21	0.7%
Sprain	7.4%	9.2%	0.81	1.8%
Strain	29.6%	30.0%	0.99	0.3%
Other	11.9%	12.6%	0.95	0.7%
Subtotal	88.6%	89.0%	1.00	0.4%
Grand Total	100.0%	100.0%	NA	NA

Note: Only subcategories constituting at least one percent of the WCIS injuries are reported here.

Source: CWCI data and WCIS.

All three analyses suggest that the important subcategories of injured workers are well represented in the CWCI database. Therefore, we conclude that the CWCI database is broadly representative of the universe of claims for injured workers in CWCS and is a reliable database for the analysis of the impact of changes in payment methodology.

[28] The source of the part of body and nature of injury codes is the ASWG (Advisory Statistical Work Group) of the National Council on Compensation Insurance. These codes are part of the electronic data transmission standards published by the IAIABC (International Association of Industrial Accident Boards and Commissions) in the IAIABC EDI Implementation Guide for First, Subsequent, Acknowledgment Detail, Header, & Trailer Records, Release 1, issued February 15, 2002, and used by DWC for the transmission of data by claim administrators to the DWC WCIS (Workers' Compensation Information System). WCIS is mandated to use the standards for electronic data reporting of IAIABC.

III. METHODS

This chapter describes the methodology used to model payments under both the OMFS and an RBRVS-based fee schedule. The chapter briefly reviews the components of an RBRVS. With a few exceptions, these components are similar to those under the OMFS physician fee schedule. The rest of the chapter discusses the major analytic steps involved in estimating the impact of adopting the RBRVS for the OMFS physician fee schedule.

A. Possible Components of a Fee Schedule using RBRVS

An RBRVS-based fee schedule may include four components:

1. **Relative value units** (RVUs) of the CPT code (e.g., X-ray of the spine);
2. **Conversion factor** (CF) that converts RVUs to payments (i.e., dollars per RVU);
3. **Geographic Practice Cost Index** (GPCI) that measures the relative cost of producing a physician service in a local area,
4. **Ground rules** (e.g., discounts for multiple surgeries performed on the same day);

Analyzing the impact of RBRVS adoption involves a comparison of payment under the current OMFS system and the RBRVS system for the same set of services. This analysis requires estimating payment under both systems. For comparability purposes, our analyses are budget neutral using the maximum fee schedule amounts (e.g., aggregate RBRVS system payments are set equal to the OMFS aggregate payment amounts).

Many of the same elements that make up an RBRVS-based fee schedule are used in the current OMFS. The OMFS includes a single RVU for each service, specific ground rules for paying for those services, and a conversion factor for each section of its fee schedule. These sections include 1) Anesthesia; 2) Evaluation & Management Services; 3) Surgery; 4) Radiology; 5) Pathology and Laboratory; and 6) Medicine (including subsections: Physical Medicine, Manipulative Treatment, and Special Services).

Maximum allowed payments for CPT code *j* in section *c* are calculated using the following formula:

$$P_{jc} = RVU_{jc} \times CF_c$$

For example, consider the calculation of payment for an office visit in Los Angeles County in 2008 under the OMFS. For the CPT code 99243 (office consultation for a new or established patient, level 3, 40 minutes), the RVU was 16.3. As an E&M service, its conversion factor is $8.50. SB 228 reduced payment for most services under the OMFS by five percent. Thus, the maximum allowed payments under the OMFS for this code was $131.62 (16.3 x $8.50 x 0.95).

Payments for services in each of the sections of the OMFS are similarly calculated using the corresponding conversion factor. For example, consider the surgery service 27130, total hip replacement with 18.6 RVUs. The surgery conversion factor is $153 and this code was discounted by 5.0 percent by SB 228 resulting in an OMFS reimbursement of $2703.51 (18.6 x $153 x 0.95)

Current OMFS payments were calculated for 2008. These payments incorporated all discounts required under SB 228 as well as the February 2007 payment increases for ten office visit codes.

Calculating Medicare payment is complicated by the fact that Medicare adjusts its payment for each geographic location, which are termed "localities." Separate RVUs are used for each of the three input categories of physician work, practice expense, and malpractice liability premiums. Each component is adjusted by a geographic practice cost index (GPCI). The GPCIs are indices (centered around 1.0) that adjust payments for differences in the costs of providing care across geographic areas. We modeled HPSAs add-on payments by increasing payments in HPSAs by ten percent.[29] Because the current physician fee schedule in the OMFS does not adjust for these geographic differences, there is no need to delineate separate RVUs by the three input categories.

Setting aside the role of ground rules and the HPSA add-on payment, the payment amount for CPT code j in geographic area g (which is called a "locality" in Medicare) is calculated as

$$P_{jg} = RBRVU_{jg} \times CF$$

where $RBRVU_{jg} = \Sigma\ [RBRVU_{ji} \times GPCI_{ig}]$

$RBRVU_{ji}$ = the RBRVU of input category i (i = physician work, practice expense, and malpractice insurance) of CPT code j,

$GPCI_{ig}$ = geographic practice cost index of input i in geographic area g, and

CF = conversion factor (defined in terms of dollars per RVU).

For example, again consider the calculation of payment for an office consultation (CPT code 99243) in Los Angeles County. Under the RBRVS used by the Medicare program, the RVUs would be 1.88 for physician work, 1.42 for practice expenses, and 0.13 for malpractice insurance. The GPCIs in Los Angeles County are 1.04, 1.19, and 0.87, respectively.

$$RBRVU_{jg} = (1.88 \times 1.04) + (1.42 \times 1.19) + (0.13 \times 0.87) = 3.76$$

Given Medicare's CF of $38.087 in the first half of 2008, the payment amount would be

$$3.76 \times \$38.087 = \$143.21.$$

[29] Medicare applies the ten percent to its own payment but not to the copayment. Modeling this would have necessitated estimating copayment, which would have required aggregating a worker's claims over time.

B. Work with Claims-Level Data

1. Obtain Claims-Level Data from CWCI

We contracted with CWCI to obtain their workers' compensation medical billing data for dates of service in 2006. The CWCI data include all required elements to model the impact of adopting an RBRVS-based fee schedule, with the exception of a site-of-service indicator.[30] These elements include: type of service (CPT code), physician specialty, date of service, patient and physician identifiers, zip codes of the provider, and billed and paid amounts.

2. Exclude Outpatient Facility Claims

When a patient receives surgery in a hospital outpatient department or a free-standing facility, the facility and the physician submit separate claims. Although the CWCI medical services database includes primarily claims for physician services, it does include some claims for outpatient facility services. This project models physician payment; thus, we excluded the outpatient facility claims from the database.[31]

There is no exact approach to identifying outpatient facility claims in the CWCI data. Following guidance from CWCI staff, we excluded facility claims using two screens. For non-radiology claims (mostly surgical), we excluded all claims for which the paid amount exceeded 125 percent of the modeled OMFS amount. The 125 percent threshold was chosen, because it appeared to balance the need to identify outpatient facility claims and the desire not to exclude highly-reimbursed physician bills. CWCI used this methodology on a sample of surgery services and found that it effectively eliminated most facilities as identified by the facility name. However, facility fees for radiology are generally paid no more than the OMFS amount, so we excluded those radiology claims with the name of the provider being a "hospital" or "medical center." These two screens for facility claims together eliminated about three percent of the claims.

3. Model Ground Rules under Both the OMFS and RBRVS

To model payments under the OMFS and a baseline RBRVS system, we needed to specify ground rules. Table 3-1 presents the ground rules we modeled for the OMFS and RBRVS systems.

Each of these ground rules was incorporated into the summary files by reducing the value of a service as appropriate in constructing the service counts. For example, a multiple procedure discount applies when more than one surgical procedure is performed during a single operation. Suppose a physician billed for three surgical services on the same patient on the same day. Under the current OMFS, the first service (highest valued) was paid 100 percent of the fee schedule amount and was counted as one service in constructing the summary files. The second service (second-highest valued) was paid 50 percent of the fee schedule amount and was counted as half

[30] When a physician performs a service "out of office" (e.g., in a hospital outpatient department), Medicare makes separate payments to the facility and the physician. When he or she performs a service in the office, Medicare pays only the physician. Medicare's payment to a physician is higher when the service is performed in the office, because it, in effect, incorporates a facility payment. However, the payment to the physician is lower "out of office" because the practice expense component is reduced to account for services and supplies provided to the physician by the facility.

[31] CWCI captures inpatient facility bills in a separate file from the medical services file used here. Therefore, we were only concerned with excluding outpatient facility claims from our analytic file.

a service. The third service (lowest valued) was paid 25 percent of the fee schedule amount and was counted as a quarter of a service in aggregating total number of services.

A similar discounting was applied to multiple surgical procedures performed by the same provider on the same patient and the same day under the baseline RBRVS model. The cascade used in the Medicare program, however, was applied to calculate discounted payments. In the RBRVS case for our example, the first service (highest valued) was paid 100 percent of the fee schedule amount and was counted as one service in constructing the summary files. The second and third services were paid at 50 percent of the fee schedule amount and were each counted as half a service.

Table 3-1: Ground Rules Used in Estimating Payments

Fee Schedule Section	Ground Rule	OMFS	Medicare System	Baseline RBRVS Model	Modeling Discussion
All	Site-of-service payment differential (facility/non-facility)	None	Practice expense RVUs depend on site of services	Same as Medicare	CWCI does not have site-of-service indicator. Modeled using Medicare data
	Geographic adjustments to fee schedule amounts	None	Adjustments made based on GPCIs and health professional shortage areas (HPSAs)	None	None[32]
Physical Medicine (PM)	Cascade payments for multiple procedures	Cascade: 100%, 75%, 50%, 25%	No cascade	Eliminate cascade	None
	Reimbursement limited to one hour of procedures	Applies to PM modality and PM and acupuncture procedures	No time limit	Eliminate the one hour time limit	None
	Limits on number of chiropractic procedures per visit	Modality-only billing, limited to no more than two modalities No more than four PM procedures and/or modalities	Physical, occupational, and speech therapies each capped at $1,780 per beneficiary per year	Limit to one modality and three procedures	None
Radiology	Multiple imaging discount	None	Apply 25% discount for 2nd and additional imaging services provided at the same time and within family	Same as Medicare	Families defined by CMS for RBRVS[33]
Surgery	Cascade payments for multiple procedures	Cascade: 100%, 50%, 25%, BR	Cascade: 100%, 50% (2nd-5th), BR	Same as Medicare	None
	Assist at surgery	Assistant – 20% value payments for multiple procedures Non-MD Assistant – 10% value	Assistant – 16% of global surgery amount	Same as OMFS	None
E&M	Interpreter	Pay 10% more if an interpreter is required	No additional payment provided	Same as OMFS	None

[32] Medicare GPCIs for work, practice expense, and malpractice were used. HPSA were paid 10 percent more than fee schedule amount
[33] Groups of codes clustered together by imaging service and body part.

C. Work with Intermediate File

1. Crosswalk Old CPT Codes to New CPT Codes

The OMFS is based primarily on 1997 CPT codes, whereas the most current Medicare RBRVS is defined in terms of 2008 CPT codes. Due to additions and deletions in CPT codes, there are codes that are in the OMFS but not in the 2008 Medicare RBRVS and visa-versa. We created a crosswalk between the discontinued CPT codes and new CPTs (see Appendix A) using the following rule:

- 1-to-1 Mapping: Assign the services for a discontinued code to its replacement code. For example, all of the services for code 28030 (neurectomy of intrinsic musculature of foot) were allocated to code 28055 (neurectomy, intrinsic musculature of foot).
- Many-to-1 Mapping: Allocate the services for the discontinued code to the new code. For example, all of the services for codes 16040, 16041, and 16042 (16040 - excision burn wound, without skin grafting, employing alloplastic dressing, any anatomic site, up to one percent total body area, 16041 – greater than one percent and up to nine percent total body surface area, 16042 – each additional nine percent total body surface area) were allocated to code 15000 (surgical preparation or creation of recipient site by excision of open wounds, burn eschar, or scar).
- 1-to-Many Mapping: Allocate the services for the discontinued code to the new codes based on the distribution of services across new codes in Medicare data. We used the most current version (i.e., 2006) of the Physician/Supplier Procedure Summary Master File (PSPSMF), which CMS created. For example, the services for code 13300 (repair, unusual, complicated, over 7.5 cm, any area) were allocated as follows: 34 percent to 13102, 35 percent to 13122, 28 percent to 13133, and 3 percent to 13153 (repair, complex, for each additional 5 cm or less more than 7.5 cm). [34]
- Many-to-Many Mapping: For this infrequent scenario, we expanded our approach for mapping one code to many. We mapped the services for the discontinued codes to the new codes based on the distribution of services across the new codes in the Medicare data. For example, codes 17100, 17101 and 17102 (destruction by any method of benign or premalignant lesions) were allocated to 17000, 17003 and 17004, (17000 - destruction of benign or premalignant lesions, first lesion, 17003 – 2-14 lesions, 17004 – 15+ lesions) based on this methodology.

2. Attach Both OMFS and RBRVS Relative Value Units

a. Use Medicare RBRVS for Most Codes

In the last five years, CMS implemented two major changes: 1) phasing in the new practice expense RVUs over a four-year period ending in 2010, and 2) a five-year review of work RVUs that resulted in significant increases in the RVUs for E&M services. (To maintain budget neutrality, CMS reduced work RVUs for all other codes.)

[34] PSPSMF indicated that 34 percent of the Medicare services in California for these four codes was for code 13102, 35 percent for code 13122, 28 percent for code 13133, and 3 percent for code 13153. We assume that the distribution is the same in OMFS.

Most of our analyses use these relative value units:

- Practice expense RVUs, fully phased-in (2010), and
- Work RVUs, without applying Medicare's budget-neutrality factor. This budget-neutrality factor was developed to make Medicare payment budget neutral under the Medicare RBRVS. We were able to use the non-budget neutral work RVUs because the Medicare program reports the budget neutrality factor separately from the work RVUs.

Under the RBRVS, the practice expense RVUs are less for services provided in facilities (e.g., hospital outpatient departments) than for services provided in non-facility settings (i.e., offices). Lacking data on the distribution of services in CWCI by site of service, we used California-specific Medicare data from the 2006 Physician/Supplier Procedure Summary Master Files (PSPSMF) to determine the percent that each service is provided in facility and non-facility settings. We applied these percentages to the CWCI data at the CPT level to develop estimates of the impact of adopting a RBRVS-based fee schedule.

b. Impute RBRVS RVUs for California-Specific Codes

The current OMFS contains a number of California-specific codes that are not in the 2008 Medicare RBRVS and hence lack resource-based RVUs.[35] For these codes, we imputed RVUs using the OMFS RVUs and the ratio of the average RBRVS and RVUs for the same type of service (e.g., surgery). Let

$RBRVU_{js}$ = resource-based RVUs for CPT j, which is in service category s,

RVU_{js} = OMFS RVUs for CPT j, and

Q_j = quantity of CPT j (under RBRVS ground rules).

Although we do not know the resource-based RVUs for a given code, we do know them for many other codes in the service category. So we use the general relationship between resource-based RVUs and OMFS RVU to impute resource-based RVUs for the specific code. More precisely, RBRVUs are imputed as follows: First we calculate the ratio of resource-based RVUs to OMFS RVUs for each service category:

$$R_s = \Sigma_s (RBRVU_{js} \times Q_j) / \Sigma_s (RVU_{js} \times Q_j)$$

Then we use this ratio to adjust the OMFS RVUs for CPTs within the service category:

$$RBRVU_j = RVU_j \times R_s$$

[This formulation does not recognize the three payment inputs within RVUs.]

Consider physical medicine CPT 97612 (individualized instruction), which lacks resource-based RVUs but which has 5.4 RVUs in the current OMFS. In the physical medicine section, the

[35] The codes used by RBRVS also pertain to 2008 and hence are the most current codes available, but their practice expense RVUs pertain to 2010 and subsequent years.

average resource-based RVU is 0.381 and the average OMFS RVU is 6.28, yielding a ratio of 0.061. The product of this ratio and 5.4 RVUs is 0.33 resource-based RVUs.[36]

This approach maintains the same relative payment for a California-specific code in the current OMFS and in an RBRVS-based system.

c. Handling of Special Services

Many of the services in the Special Services section of the OMFS serve a role unique to the workers' compensation environment. For example, CPT 99080 (i.e., Special Report or Forms) is used by providers to document injured workers' recovery and eligibility for returning to work. In the Medicare RBRVS, many of these services are not separately paid but rather are bundled into other services. We assumed for modeling purposes, however, that these services would continue to be paid at their current OMFS-rate.

Some services in the OMFS do not have specified RVUs or payment amounts. These services are designated as "By Report" and reimbursement is determined on a case-by-case basis using the information contained in special documentation. For our modeling, we assumed that these services would be paid as they are under the current OMFS.

3. Attach Geographic Adjustment Factors

We modeled two types of geographic adjustment factors: the GPCI and the add-on payment for services delivered in health professional shortage areas (HPSA). For services provided in HPSAs, we increased payment to these areas by ten percent. We include both the GPCI and HPSA in all estimates that modify payments by geographic location.

D. Calculate Payment-Neutral Conversion Factor(s)

An RBRVS system, of course, could be adopted in conjunction with an increased or decreased total payment to providers. To isolate the effect of adoption, one usually first analyzes the impact of adoption under the condition that total payment under the proposed system is constant with total payments under the current system, that is, the adoption is payment or budget neutral. While such a policy change would have no impact on providers in the aggregate (or payers in the aggregate), it is likely to redistribute payment among groups of providers.

Analysis of a payment-neutral policy requires a payment-neutral conversion factor, which we calculated using the formula described in Appendix B. There are multiple payment-neutral policies (e.g., with and without geographic adjustment factors), and a conversion factor must be calculated for each one that is analyzed.

E. Model of Anesthesia Services

The RBRVS used by Medicare has, in fact, two fee schedules: one for anesthesia services and one for other physician services. Because the fee schedules were developed with different

[36] This example pertains to work RVUs only.

methodologies, their RVUs are not comparable; metaphorically, they are apples and oranges. So each fee schedule has its own conversion factor.

Under the RBRVS used by Medicare and other fee schedules, payment for anesthesia varies by the unit of time. Because CWCI lacks data on the time units, we were unable to precisely model payment for those services. CWCI, however, has data on the number of services by CPT code, and we have data on the average number of time units in Medicare by CPT code. Thus, we modeled payment in CWCS using the number of services as reported by CWCI and the average number of time units from Medicare.

IV. RESULTS: IMPACT OF A RBRVS-BASED SYSTEM

A. Introduction

Discussions of the impact of alternative policies are clearest if one model is designated as the "baseline." We developed a baseline RBRVS model that has the following characteristics:

- Budget neutrality;
- Medicare's fully-phased in practice expense RVUs; and
- A single conversion factor (CF).

By assuming budget neutrality, we can separate the effects of an adoption of RBRVS–based system from the effect of any overall increase or decrease in payment levels. For 2010 and beyond, Medicare will be using the new practice expense RVUs. RBRVS was designed to be used with a single conversion factor. To maintain relativity between CPT codes, we define the baseline model to have a single CF. These baseline modeling assumptions should be considered preliminary, as they are unlikely to be reflective of eventual DWC policy.

A geographic-adjustment RBRVS model was also developed. This differs from the baseline RBRVS model only in that it includes Medicare's adjustments for geographic location (i.e., GPCI and HPSA add-on payment).

This chapter analyzes the impact of transitioning from the current physician fee schedule in the OMFS to our baseline RBRVS model by three dimensions:

- Service category;
- Provider specialty; and
- Geography (e.g., the impact by county).

Our model assumes no change in the behavior of providers and assumes that insurers will not discount their payment rates:

- Behavioral response: When faced with changes in either payment rates or ground rules, providers may change the number and/or complexity of services delivered. For instance, in response to a decrease in their payment rate, providers might encourage patients to increase the quantity of services they receive (e.g., an increased number of visits).
- Discounting of OMFS payment rates: Insurers rarely pay more than the OMFS rate and often pay less. In our modeling of cost under either OMFS or RBRVS, we use the fee schedule rate.

Modeling either behavioral response or discounting of payment rates was not within the scope of this project.

B. Budget Neutral Conversion Factors

In part because CFs are a necessary component of a RBRVS system, a key product of this study is a set of budget neutral CF estimates. Chapter VI discusses three CF policy options for physician services:

- Single CF: This policy option is consistent with Medicare - that is, one CF for physician services excluding anesthesia. (As noted, the count of CFs excludes a CF for anesthesia alone.)
- Dual CFs: This policy option has one CF for surgical services and one for other services.
- Multiple CFs: This methodology has separate CFs for several service categories (i.e., E&M, Radiology, etc.).

This section includes discussion of the single CF option. We estimate both physician services excluding anesthesia (labeled as "CF") and anesthesia alone (labeled "Anesthesia CF").

1. Physician Services (Except for Anesthesia)

The Medicare premium (i.e., the percentage by which worker's compensation payment is above Medicare) is commonly reported when comparing workers' compensation fee schedules.[37] To determine this figure, both the workers' compensation CF and the Medicare CF must be calculated. Based on the analysis in Chapter IV, the single CF under the baseline RBRVS model would be $44.57.

The published national CF for Medicare in the first half of 2008 is $38.09. In part because Medicare payment is the product of RVUs, GPCIs, and the CF, the published figure needs to be adjusted in two ways. First, it needs to be adjusted downward by 6.3 percent to recognize Medicare's "budget neutrality adjustor" for work RVUs.[38] Second, it needs to be adjusted upward by 8.1 percent to recognize the high Medicare payment in California due to high GPCIs.[39] As presented in Table 4-1, when both adjustments are made, the Medicare CF is $38.58.

[37] Medicare premium is the ratio of OMFS payment to Medicare payment. Medicare payment—technically "the allowed amount"—includes a component that is the responsibility of the beneficiary.

[38] In 2007, Medicare increased its RVUs for the work component. To avoid confusion, it did not directly adjust the CF; rather it applied a "budget neutrality adjustor" of 0.8806 to the work RVUs. Because work RVUs have a weight of .52466, the adjustor lowers payment, on average, by 6.3 percent (.52466*(1-0.8806) = 6.3 percent). Because Medicare budget neutrality is not relevant to CWCS, we did not incorporate this adjustor in our analysis. If Medicare were to not implement this adjustor, its published CF would need to be adjusted downward by 6.3 percent.

[39] Given the distribution of physician services under CWCS across the state, CWCS would pay 8.1 percent more if it used the Medicare GPCIs than if it did not adjust for geographic location.

Table 4-1: Percentage by which CWCS Payment Exceeds Medicare Payment, Current OMFS vs. Baseline RBRVS Model

CF for Medicare	
$38.09	Medicare CF, published
-6.3%	adjustment for RVUs for work ("budget neutrality adjustor")
8.1%	adjustment for California's high GPCIs
$38.58	adjusted (A)
CF for Baseline RBRVS model	
$44.57	as calculated (B)
$46.33	calculated using WCRI weights (C)
Medicare premium for California	
21.0%	published by WCRI for 2006
23.2%	adjusted for E&M fee increase in 2007
15.5%	baseline RBRVS model [(B-A)/A]
20.1%	baseline RBRVS model, using WCRI weights [(C-A)/A]

WCRI reported that the Medicare premium in California was 21 percent in 2006. After our adjusting for the 2007 increase in OMFS payments for the ten E&M codes (using the WCRI methodology), the Medicare premium increases to 23.2 percent.[40]

For the baseline RBRVS model, the Medicare premium would be 15.5 percent, as shown in Table 4-1. The difference between the two premium estimates (15.5 percent and 23.2 percent) is largely due to the weighting of service categories. E&M services have a weight of 15 percent in the WCRI methodology,[41] and 35.5 percent in our baseline RBRVS methodology; that is, 35.7 percent of the nonanesthesia RVUs pertain to E&M.[42] Using the set of weights that reflect the distribution of RVUs found in our study, the weighted average of the service category-specific CFs (see Table 6-3 below) equals the single CF of $44.57. Using the WCRI weights, the weighted average is $46.33, implying a Medicare premium of 20.1 percent, which is about three percentage points below the premium calculated by WCRI (23.2% - 20.1% = 3.1%).[43]

2. Anesthesia Conversion Factor

Because RVUs for anesthesia services are not comparable to the RVUs for other services, Medicare has a separate conversion factor for anesthesia. We calculated a budget neutral conversion factor for the baseline RBRVS model.

[40] In aggregating fees across service categories, WCRI uses weights based on data from 13 states.

[41] WCRI derived its weights from data from 13 states (including California), applying those weights to prices in each state. WCRI, 2006, p. 36.

[42] When anesthesia RVUs are included (see Table 4-2), E&M constitutes a slightly lower percentage.

[43] The difference is probably due to two factors. WCRI analysis is based on codes that represent three-quarters of payments across its database, whereas our analysis is based on all codes in California. Although we have adjusted for differences in weights across service categories, we have not adjusted for differences within service categories. Here we use more current data (2006) than WCRI (2002-2003).

The estimated budget neutral conversion factor for anesthesia is $33.96.[44] The equivalent figure for Medicare in California ranges from $19.64 to $21.43, depending on location. Thus, the Medicare premium for anesthesia ranges from 58 to 73 percent.

C. Impact by Service Category

Table 4-2 shows the impact of the adoption of a budget neutral baseline RBRVS model on the payments by OMFS service category. Payment for E&M services would be increased under an RBRVS system while surgical services would be decreased. This is not surprising, as a major rationale for the development of Medicare's RBRVS was the judgment that surgery services were overpaid relative to E&M services. As noted, when RBRVS was first implemented under Medicare, payments for E&M services increased and payment for invasive procedures and diagnostic tests decreased.

Table 4-2: Percent Change in Payment from Adoption of Budget Neutral Baseline RBRVS Model, by OMFS Service Category

OMFS Service Category	Current OMFS		RBRVS Based Fee Schedule				
	Imputed		Baseline		w/ GPCI	Baseline	w/ GPCI
	Dollars (A)	%	Dollars (B)	%	(C)	[(B-A)/A]	[(C-A)/A]
Total	**$207,030,559**	**100%**	**$207,030,559**	**100%**	**$207,030,559**	**0.0%**	**0.0%**
E&M	$59,323,668	28.7%	$71,169,450	34.4%	$70,829,352	20.0%	19.4%
Anesthesia	$7,414,375	3.6%	$7,414,375	3.6%	$7,414,375	0.0%	0.0%
Surgery	$50,129,287	24.2%	$37,150,478	17.9%	$36,316,216	-25.9%	-27.6%
Radiology	$24,448,204	11.8%	$23,807,600	11.5%	$24,911,333	-2.6%	1.9%
Pathology	$1,870,026	0.9%	$1,800,028	0.9%	$1,810,216	-3.7%	-3.2%
Medicine (except Special Services)	$52,148,719	25.2%	$53,994,130	26.1%	$54,054,063	3.5%	3.7%
Special Services	$11,696,281	5.6%	$11,694,498	5.6%	$11,695,005	0.0%	0.0%

Note: All physician services are contained within these service categories. Only durable medical equipment, prosthetics, orthotics, and drugs are excluded from this analysis.

The baseline RBRVS model contains no adjustment for geographic location. The "w/GPCI" analysis entails Medicare's two adjustments for geographic location (GPCI and HPSA).

Source: CWCI data

There is minimal impact on payment to special services, because we modeled most (but not all) of special service codes as being paid under current OMFS arrangements. There is no impact on payment to anesthesia services, because we modeled their CF as being budget neutral for those services alone.

[44] The published OMFS conversion factor is $34.50, but a 5 percent reduction is applied due to a statutory mandate, so that the adjusted conversion factor is effectively $32.78. The RVUs for anesthesia are very similar in OMFS and Medicare. Anesthesia codes have two types of RVUs, those pertaining to base units and those pertaining to time units. Eighty-nine percent of the codes have the same base units. Medicare measures time in terms of 15 minute increments. OMFS also does so but only up to four hours. Above four hours, it uses ten minute increments. As long as some anesthesia events take more than four hours, Medicare measures fewer time units and hence has a higher conversion factor. The differences in the measurement of time RVUs increase the CF by 3.6 percent, from $32.78 to $33.94.

Except in the case of radiology, the impact of a RBRVS adoption by service category is only slightly affected by geographic payment policies (i.e., use of GPCIs and HPSAs). A measure of the impact is the absolute value of the difference between the two impacts. For instance, radiology payment would decrease 2.6 percent in the baseline RBRVS model and would increase 1.9 percent with the two geographic adjustments, so the impact of the geographic adjustments is 4.5 percent, that is, the absolute value of 1.9 minus -2.6. This differential reflects the fact that a high proportion of radiology RVUs pertain to practice expense, which is the input whose cost varies the most geographically.[45]

D. Impact by Provider Specialty

Table 4-3 presents the impact of a baseline RBRVS adoption by billing provider specialty.[46] Surgeons would experience an overall 12.1 percent payment decrease. This category mainly includes orthopedic surgeons, neurosurgeons, and general surgeons, as well as plastic, vascular and thoracic surgeons. Radiologists and neurologists would also experience decreases. Several specialties would experience increases in payment: physical medicine, chiropractors, emergency medicine, and multi-specialty groups. When anesthesiologists deliver services ***not*** on the anesthesia fee schedule, they too would experience a payment increase.[47] General and family practitioners (as a group) would experience virtually no change in their payment levels.

[45] The RVUs for practice expense constitute on average 44 percent of RVUs for all services but 78 percent of RVUs for radiology. (The RVUs for malpractice are only four percent in both cases.) That is, for the typical CPT code, 44 percent of the RVUs pertain to practice expense, 52 percent to work, and 4 percent to malpractice. For the typical radiology code, the distribution is 78, 18, and four percent, respectively. In California, the GPCI for practice expense varies from 1.055 to 1.543, whereas the GPCI for work varies only from 1.007 to 1.083. (See Table 6-4) Hence, it is not surprising that payments for radiology are sensitive to adjustment for geographic location.

[46] The CWCI medical specialty data, which was provided by payors along with the medical service data, are the most current data available at the time the project started. Alex Swedlow, Executive Vice President of Research and Development of the California Workers' Compensation Institute, personal communication, April 17, 2008. As in our 2002 report, a substantial proportion of the payment is for claims for which specialty is unclear or imprecise. In particular, 19 percent of the OMFS payment is to multispecialty groups and 16 percent is to "other" or undefined specialties.

[47] Under baseline RBRVS model, anesthesia services ($4.5 million) constitute only 35 percent of the services delivered by anesthesiologists. Their non-anesthesia services are distributed as follows: E&M visits and pain management (45 percent), general medicine (24 percent), surgery (17 percent), and radiology services (14 percent). Anesthesiologists deliver 61 percent of the anesthesia services, while general practitioners deliver 17 percent, multi-specialty groups and undefined specialties together deliver 16 percent, and other specialties deliver six percent.

Table 4-3: Percent Change in Payment from Adoption of Baseline Budget Neutral RBRVS Model, by Provider Specialty

Provider Specialty	Current OMFS		RBRVS Based Fee Schedule				
	Imputed		Baseline		w/ GPCI	Baseline	w/ GPCI
	Dollars (A)	%	Dollars (B)	%	(C)	[(B-A)/A]	[(C-A)/A]
Total	**$207,030,559**	**100%**	**$207,030,559**	**100%**	**$207,030,559**	**0.0%**	**0.0%**
Surgery	$32,966,676	15.9%	$28,971,836	14.0%	$28,696,051	-12.1%	-13.0%
Neurology	$4,822,077	2.3%	$4,584,595	2.2%	$4,594,865	-4.9%	-4.7%
Radiology	$8,421,988	4.1%	$8,186,415	4.0%	$8,587,484	-2.8%	2.0%
General and Family Practice	$55,084,882	26.6%	$54,626,214	26.4%	$54,328,906	-0.8%	-1.4%
Other or Undefined	$28,958,454	14.0%	$29,003,437	14.0%	$28,946,134	0.2%	0.0%
Anesthesiology	$12,803,760	6.2%	$12,964,585	6.3%	$13,083,048	1.3%	2.2%
Acupuncture	$845,628	0.4%	$864,897	0.4%	$883,580	2.3%	4.5%
Psychiatry	$1,179,854	0.6%	$1,223,784	0.6%	$1,208,873	3.7%	2.5%
Chiropractor	$8,684,253	4.2%	$9,190,219	4.4%	$9,171,832	5.8%	5.6%
Multi-Specialty Group (Med/Sur)	$34,175,794	16.5%	$36,252,549	17.5%	$36,622,414	6.1%	7.2%
Psychology	$424,707	0.2%	$455,708	0.2%	$451,611	7.3%	6.3%
Emergency Medicine	$3,170,505	1.5%	$3,473,665	1.7%	$3,400,190	9.6%	7.2%
Physical Medicine	$15,491,981	7.5%	$17,232,656	8.3%	$17,055,571	11.2%	10.1%

Note: Within the "other or undefined" category, undefined specialties represent 78 percent of the payment. The undefined specialties represent 11 percent of the payment across specialties. Each remaining specialty represents less than half of one percent.

The baseline RBRVS model contains no adjustment for geographic location. The "w/GPCI" analysis entails Medicare's two adjustments for geographic location (GPCI and HPSA).

Source: CWCI data

The impacts of RBRVS by specialty are less dramatic than the impacts by service category. In particular, the impact on surgical specialties (12.1 percent) is less than half of the impact on surgical services (25.9 percent). Similarly, payments to general and family practitioners do not increase even though these primary care specialties are associated with E&M services. In general, each specialty performs services in more than one service category: surgical specialties perform some E&M services, while primary care specialties perform some surgical services.

The impact of geographic adjustments on payments is similar for radiology services (4.5 percent in Table 4-2) and radiologists (4.8 percent in Table 4-3). Two other specialties had impact of greater than two percent when comparing the baseline model with GPCIs to the baseline model without GPCIs—acupuncture and emergency medicine. Payment to acupuncturists would be greater with geographic adjustments and payments to emergency medicine physicians would be less.

E. Impact by Geographic Location

In considering the geographic impact of alternative RBRVS policies, it is advantageous to first consider a policy with geographic adjustment—under which the impacts are most pronounced—and then consider the baseline RBRVS model, which has no such adjustments. The details of GPCI and HPSA adjustments are discussed in Chapter VI and Appendix D. Table 6-5 presents the GPCIs by county and the standard summary measure of the three GPCIs, called "Geographic Adjustment Factor" (GAF). For simplicity, we sometimes speak of a county

having high or low GPCIs, which are technically measured in terms of GAF. HPSAs typically are smaller than counties. In Appendix D, three maps of selected parts of California show zip codes that are entirely in HPSAs, which are disproportionately but not exclusively in rural counties. Figure 6-4 presents the counties by urban-rural status. Our discussion of the impact of these two adjustments for geographic location pertains primarily to GPCIs, because GPCIs would redistribute much more payment than HPSAs.[48]

1. Baseline RBRVS Model with Geographic Adjustments

As shown in Table 4-4, an RBRVS model with geographic adjustments would have a sizeable impact in certain counties.[49] Because San Francisco, San Mateo, and Santa Clara Counties have the highest GPCIs, it is not surprising that those counties would experience large increases (seven to 12 percent) in payments. The model indicates that San Benito County would experience an 11.9 percent increase in payment, the second highest increase. However, given that San Benito County has substantially smaller OMFS payment than any other county listed, the modeled impact in the county is probably an artifact of a small sample and cannot be relied upon.

Not all of the impacts are immediately explicable. Some of the largest impacts are found in Sonoma, Kings, and Santa Barbara Counties, all of which are in the Medicare's Rest of California locality, where the GPCIs are lowest. However, payments to Kings County would increase by 8.6 percent and payments to Sonoma and Santa Barbara Counties would decrease by 12.1 and 10.4 percent, respectively.

[48] In Table 4-4 below, HPSA add-on payment redistributes only about $250,000 into HPSAs (ten percent of $2,552,245 in the baseline without GPCIs). In contrast, San Francisco County—which has high GPCIs but few HPSAs—receives about $750,000 more when GPCIs and HPSAs are used ($7,542,888 - $6,792.230). GPCIs redistribute payment in a number of other counties.

[49] Differential impact of an RBRVS model by county has two components: the impact of the adjustments for geographic location and the impact of changes in the RVUs. The latter impact varies according to the proportion of services in a county by type of service. For instance, most of the counties with a high proportion of surgery presumably will experience a decrease in payment.

Table 4-4: Percent Change in Payment from Adoption of Baseline Budget Neutral RBRVS and Baseline RBRVS with GPCI, by County/Region

County/Region	Current OMFS	RBRVS Based Fee Schedule			
	Imputed (A)	Baseline (B)	w/ GPCI (C)	Baseline [(B-A)/A]	w/ GPCI [(C-A)/A]
Total	**$207,030,559**	**$207,030,559**	**$207,030,559**	0.0%	0.0%
Los Angeles Combined Statistical Area					
Los Angeles	$63,222,600	$64,240,453	$65,463,573	1.6%	3.5%
Orange	$19,546,022	$19,092,632	$19,803,870	-2.3%	1.3%
San Bernardino	$7,825,783	$8,351,150	$7,974,667	6.7%	1.9%
Riverside	$6,991,005	$6,762,454	$6,425,268	-3.3%	-8.1%
Ventura	$6,057,475	$5,868,090	$5,990,943	-3.1%	-1.1%
Subtotal	*$103,642,885*	*$104,314,779*	*$105,658,321*	*0.6%*	*1.9%*
San Francisco Combined Statistical Area					
Alameda	$5,787,870	$5,625,754	$5,883,665	-2.8%	1.7%
Contra Costa	$4,959,635	$4,831,395	$5,055,869	-2.6%	1.9%
Marin	$936,558	$942,509	$970,748	0.6%	3.7%
Napa	$728,226	$761,670	$787,701	4.6%	8.2%
San Benito	$52,389	$57,097	$58,646	9.0%	11.9%
San Francisco	$6,944,368	$6,792,230	$7,542,888	-2.2%	8.6%
San Mateo	$1,456,770	$1,490,502	$1,636,290	2.3%	12.3%
Santa Clara	$6,321,730	$6,230,830	$6,761,163	-1.4%	7.0%
Santa Cruz	$1,447,924	$1,468,258	$1,400,991	1.4%	-3.2%
Solano	$1,229,551	$1,220,981	$1,252,826	-0.7%	1.9%
Sonoma	$4,033,460	$3,693,366	$3,545,360	-8.4%	-12.1%
Subtotal	*$33,898,479*	*$33,114,593*	*$34,896,148*	*-2.3%*	*2.9%*
Other Urban Counties					
Butte	$1,202,278	$1,217,548	$1,155,737	1.3%	-3.9%
El Dorado	$430,775	$442,563	$422,529	2.7%	-1.9%
Fresno	$7,623,339	$7,579,570	$7,215,612	-0.6%	-5.3%
Imperial	$720,032	$743,624	$764,206	3.3%	6.1%
Kern	$6,478,764	$6,622,167	$6,449,154	2.2%	-0.5%
Kings	$887,946	$1,012,775	$964,175	14.1%	8.6%
Madera	$238,061	$251,111	$244,906	5.5%	2.9%
Merced	$951,522	$1,036,328	$986,984	8.9%	3.7%
Monterey	$2,943,110	$2,964,648	$2,822,162	0.7%	-4.1%
Placer	$2,760,735	$2,693,302	$2,571,339	-2.4%	-6.9%
Sacramento	$7,124,211	$6,999,800	$6,675,558	-1.7%	-6.3%
San Diego	$15,472,132	$15,222,622	$14,510,542	-1.6%	-6.2%
San Joaquin	$2,772,952	$2,834,729	$2,702,992	2.2%	-2.5%
San Luis Obispo	$1,774,274	$1,780,242	$1,696,529	0.3%	-4.4%
Santa Barbara	$4,082,206	$3,862,153	$3,658,272	-5.4%	-10.4%
Shasta	$2,154,623	$2,115,017	$2,006,733	-1.8%	-6.9%
Stanislaus	$4,554,740	$4,639,023	$4,399,003	1.9%	-3.4%
Sutter	$353,840	$364,504	$346,881	3.0%	-2.0%
Tulare	$2,323,465	$2,478,631	$2,353,616	6.7%	1.3%
Yolo	$653,232	$653,376	$618,035	0.0%	-5.4%
Yuba	$485,449	$478,776	$451,871	-1.4%	-6.9%
Subtotal	*$65,987,684*	*$65,992,510*	*$63,016,834*	*0.0%*	*-4.5%*

Table 4-4: Adoption of RBRVS System, Baseline RBRVS Model, Changes in Payment by County/Region, continued

County/Region	Current OMFS	RBRVS Based Fee Schedule			
	Imputed (A)	Baseline (B)	w/ GPCI (C)	Baseline [(B-A)/A]	w/ GPCI [(C-A)/A]
Rural Regions					
North Coast	$1,642,941	$1,705,109	$1,630,571	3.8%	-0.8%
Northern	$1,190,866	$1,234,029	$1,184,213	3.6%	-0.6%
Mother Lode	$667,704	$669,539	$644,472	0.3%	-3.5%
Subtotal	*$3,501,510*	*$3,608,677*	*$3,459,256*	*3.1%*	*-1.2%*
HPSAs					
Total	**$207,030,559**	**$207,030,559**	**$207,030,559**	**0.0%**	**0.0%**
Health Professional Shortage Area (HPSA)	$2,572,005	$2,552,245	$2,620,784	-0.8%	1.9%
Non-HPSA	$204,458,554	$204,478,314	$204,409,776	0.0%	0.0%

Combined statistical areas are defined by the U.S. Office of Management and Budget. Rural regions are used by the California Employment Development Department.

The baseline RBRVS model contains no adjustment for geographic location. The "w/GPCI" analysis entails Medicare's two adjustments for geographic location (GPCI and HPSA) to the baseline RBRVS model. Results of "0.0%" (i.e. Non-HPSA row) may reflect rounding.

Source: CWCI data

The payments in Los Angeles County would increase with the adoption of RBRVS. Payments in the other four counties in the Los Angeles area would change modestly, except in the case of Riverside County, where payments would fall substantially.

Outside of the San Francisco and Los Angeles areas, the two major metropolitan counties are Sacramento and San Diego, both of which would experience drops in payment of about six percent. Two medium-sized counties—Sonoma and Santa Barbara—would experience a drop of at least ten percent.

In rural California, payment rates would largely be unaffected by RBRVS adoption. Surprisingly, payment rates would increase only 1.9 percent in HPSAs.[50]

2. Baseline RBRVS Model (i.e., without Geographic Adjustments)

In the typical county, the change in payment relative to the status quo would be less under the baseline RBRVS model than under a model with GPCI and HPSA adjustments. Of the high GPCI counties, San Mateo, San Francisco and Santa Clara would experience little change. Sacramento and San Diego Counties would also experience little change. Other urban counties increase by 4.5 percent

[50] The adjustments for geographic location increase payments in HPSAs by only 2.6 percent (i.e., 1.8 – (-0.8)), because the impact of a ten percent add-on payment in HPSAs is largely cancelled out by a lower-than-average GPCI.

Two medium-sized counties (Sonoma and Santa Barbara) would experience decreases in payment of more than five percent under a RBRVS model without geographic adjustments. Those counties may have a higher-than-average proportion of services that are for surgery.

On average, the percentage change from the status quo for the geographic adjustment model is 69 percent higher than the percentage change from the status quo without such adjustments (baseline RBRVS model). This is because the baseline RBRVS model more nearly reflects the current OMFS, which does not adjust for geography.[51]

F. Conclusion

The impact analyses reveal that the baseline RBRVS model would result in substantial shifts in payment. Most importantly, payment to surgeons would drop 12.3 percent, while payment for many other specialties would increase. The advisability of implementing such changes needs to be carefully considered.

[51] To calculate a summary measure of percentage change, we took the product of the absolute value of the percentage and the sum of OMFS payments, for each county. These products were summed across counties.

V. EXPERIENCES OF OTHER STATES

A. Methodology

The project team compared workers' compensation programs in 14 states. Selected states represent 61 percent of the U.S. population (excluding California), and include ten of the 12 most populated states.[52] Four additional states were chosen due to their recent implementation of the RBRVS methodology (i.e., Tennessee, Maryland, and Minnesota) or their proximity to California (Oregon). These 14 states illustrate the various ways states have implemented their workers' compensation programs.

Robert Penny Enterprises, our subcontractor, contacted workers' compensation representatives for each state initially via phone and then by email, asking a set of questions regarding their program. Additionally, a web search was conducted to review each state's fee schedule, payment methodology and transition parameters. Internet sources are listed in Appendix C.

We focused on these aspects of each state's workers' compensation program:

1. Type of fee schedule
2. Use of geographic adjustment factors
3. Use of multiple CFs across service category and basis for updating
4. Use of transitions in implementation of RBRVS system
5. Payment level (measured relative to Medicare's)

All information presented reflects the programs' requirements for 2007, except for Texas, which is presented for 2008.

B. State Comparison

States vary in the design of their workers' compensation programs. Even states that use the RBRVS system incorporate aspects of the methodology differently. To be considered an RBRVS system, the state must base their payment on the RVUs assigned by Medicare for services performed in physician offices. States, however, can choose how they want to incorporate the methodology and values into their system. For example, they can determine which year of RVUs to use, when to update them and how to calculate a CF. In all selected RBRVS states, Medicare values are used to determine the "maximum allowable reimbursement" (MAR) for workers' compensation claims and are considered to be "guidelines."[53] Table 5-1 shows the payment methodologies of the 14 states. We discuss each of the program elements as applied to physician

[52] In addition to California, North Carolina was excluded because of lack of information.

[53] Actual payment is often based on the lesser of several payment methodologies. Texas, for example, bases 2008 payments on the lesser of the three following methodologies: 1) MAR calculated as the CF of $52.83 ($66.23 for surgery services performed in a facility) times the RVUs set forth in their fee schedule; 2) health care provider's usual and customary charge; or 3) health care provider's workers' compensation negotiated or contracted amount. This methodology is very similar to Maryland, Oregon, Tennessee, and Michigan. States decide which portions of the RBRVS system they use in calculating the MAR.

services (excluding anesthesia) in detail below. Due to the different methodology for calculating anesthesia payments under Medicare RBRVS, we excluded these services from this section.

Table 5-1: Physician Payment Methodologies, Workers' Compensation Programs, Selected States, 2007-2008 (By population in descending order)

State	Payment Methodology	Year Implemented RBRVS	Geographic Adjustment	Single, Dual or Multiple CF; Formulation of the CF	Inflation Update: Frequency and Index	Transition to RBRVS
Texas	RBRVS	2003	Yes	Dual; Dollar Rate†	Annually, MEI	No
New York	Other Fee Schedule	N/A	Yes	Multiple; Dollar rate	Annually, Update RVUs based on data; CFs not updated in almost 10 years	No
Florida	RBRVS	1997	Yes	Dual*; Percent of Medicare Allowed Reimbursement	Annually, Percent of Medicare or 3-person panel	No
Illinois	Other Fee Schedule	N/A	Yes	N/A; Reimbursement as Percent of Charges	Annually, CPI for All Urban Consumers	N/A
Pennsylvania	RBRVS	1995	Yes	Single; Percent of Medicare Allowed Reimbursement	Annually, Percent of Medicare prior to 1995, AWW after	No
Ohio	RBRVS	1997	No	Multiple; Dollar rate	Annually, Based on numerous inputs	No
Michigan	RBRVS	1996	No	Single; Dollar rate	Annually, Update Medicare RVUs, not CF	Yes
Georgia	UCR	N/A	No	N/A	Annually, MEI, Hospital Market Basket and RBRVS updates	N/A
New Jersey	UCR**	N/A	No	N/A	N/A	N/A
Virginia	UCR	N/A	No	N/A	N/A	N/A
Tennessee	RBRVS	2005	No	Multiple; Dollar rate	Annually, Medical CPI	No
Maryland	RBRVS	2001	No	Dual; CF as a Percent of Medicare	Biennially, MEI and COLA	No
Minnesota	RBRVS	1993	No	Multiple; Dollar rate	Annually, PPI-P, not to exceed AWW	No
Oregon	RBRVS	1999	No	Multiple; Dollar rate	Annually, Trends of WC RVUs, private insurance CF, public input, and CPI	Yes

Note: Information pertains to 2008 for Texas and to 2007 for the other states.

* Florida calculates a different payment for surgical services and for all other services based on a specified percent of total Medicare payments, not by specifically altering the CF. For more information, see Table 5-2 below.

** Reimbursement for workers' compensation services in New Jersey are set in advance in managed care arrangements negotiated directly between the physician or service provider and insurer. Disputes are handled in a UCR situation.

† Beginning March 1, 2008, the conversion factor and inflation update will no longer be based on a percent of Medicare, rather it will be based on a fixed dollar amount and the update to the MEI. E&M services, general medicine, physical medicine and rehabilitation, radiology, pathology, anesthesia, and surgery when performed in an office setting, have a conversion factor of $52.83. Surgery performed in a facility setting, however, has a conversion factor of $66.32.

UCR = usual and customary rates; PPI-P = Producer Price Index for Physician offices; AWW = Average Weekly Wage; N/A = Not Applicable

1. Type of Fee Schedule

Nine of the 14 states[54] use RBRVS as a basis for workers' compensation payment, while three states (Georgia, New Jersey and Virginia) base payment on usual and customary rates. The remaining two states base payment on a fixed percent of charges derived by claims analysis (Illinois) and on their own fee schedule derived by claims analysis (New York).

When incorporating RBRVS into their fee schedule, states can also choose which Medicare policies to incorporate. On the one hand, almost all RBRVS states accept Medicare's policies in determining payment for services. These often include the policies on procedures' global periods and regulations pertaining to follow-up care, the use of modifiers and payment reductions for multiple procedures, and the use of National Correct Coding Initiative (NCCI) edits, which were not modeled in our analysis. Oregon, on the other hand, only adopts the RVUs, modifiers, and global periods, but does not include the NCCI edits, definitions, status indicators, or processes, policies or philosophies of CMS.[55]

2. Geographical Adjustment Factors

The cost of providing a service may vary across areas within a state for reasons not under the control of the physician. Recognizing this, the five largest states vary payment geographically. Logically, such a system entails defining geographic areas and assigning an index – a GPCI – to each area. Of the five states that vary payment geographically, three states (Texas, Florida and Pennsylvania) use Medicare's methodology – Medicare locality and GPCI. Two others (New York and Illinois) define areas by aggregating zip codes that are contiguous and have similar procedure usage rates.

3. Multiple Conversion Factors and Basis for Update

A conversion factor – defined in terms of dollars per RVU – converts RVUs to dollars. Of the 14 states, seven explicitly use a CF and three use the algebraic equivalent of a CF. For instance, for surgical services Florida pays 140 percent of Medicare, which is the equivalent of a CF of $53.06 (i.e., 1.4 times Medicare CF of $37.8975). For simplicity, we speak of all ten states as using CFs to calculate payment rate for workers' compensation services.[56] Five of the ten states use multiple CFs for different types of services, while three states use dual conversion factors (Texas, Florida and Michigan) and two states (Pennsylvania and Michigan) have a single CF as Medicare does now.

There are two dimensions to consider when comparing CFs across states: the number of CFs and the methodology to incorporate those CFs into payment. Consistent with Medicare terminology, our count of CFs excludes a separate CF for anesthesia services.[57] Table 5-2

---

[54] Nine states are Texas, Florida, Pennsylvania, Ohio, Michigan, Tennessee, Maryland, Minnesota and Oregon.

[55] Oregon Medical fee Payment Rules, Oregon Administrative Rules, Chapter 436, Division 009, Effective July 1, 2007. http://www.cbs.state.or.us/wcd/rdrs/mru/fee_sched.html.

[56] Ten states are Texas, New York, Florida, Pennsylvania, Ohio, Michigan, Tennessee, Maryland, Minnesota and Oregon. New York is the only one that does not use the RBRVS system, but it uses multiple conversion factors at a set dollar rate.

[57] Medicare has a separate conversion factor for anesthesia, because the RVUs for anesthesia and other services are not comparable.

categorizes each RBRVS state by these two dimensions. States that do not use RBRVS were excluded from this table, because their CFs (if applicable) are based on alternate methodologies.

Table 5-2: CF Methodologies for RBRVS States, 2007-2008

Number of Conversion Factors	CF Methodology	
	Percent of Medicare	Dollar Amount
1	Pennsylvania	Michigan
2	Florida, Maryland	Texas
3+	-	Ohio, Tennessee, Minnesota, Oregon

Note: The number of CFs excludes one for anesthesia services. Information pertains to 2008 for Texas and 2007 for the other states.

Three states (Pennsylvania, Florida and Maryland) set their payment as a fixed percent of Medicare (either percent of payment rate or percent of CF), while six others implement a fixed dollar amount for the CF (Texas, Michigan, Ohio, Tennessee, Minnesota and Oregon). Florida, Maryland and Texas are the only states that have a dual CF, based on whether or not the service is surgical or non-surgical[58]. Florida set its payment level at 110 percent (non-surgical) or 140 percent (surgical) of the Medicare payment amount, while Maryland set its payment level at 109 percent (non-surgical) or 144 percent (surgical) of the Medicare CF times RVUs.

Table 5-3: CFs by Service Category, States with Multiple CFs, 2007-2008

Service Category	Dual Conversion Factor			Multiple Conversion Factors			
	Florida*	Maryland *	Texas	Ohio	Tennessee	Minnesota	Oregon
Surgical	$53.06 (140%)	$54.57 (144%)	$66.23 (175%)	$79.10 (209%)	$75.80 (200%)	$77.56 (205%)	$93.66 (247%)
E&M	$41.69 (110%)	$41.31 (109%)	$52.83 (139%)	$44.27 (117%)	$60.64 (160%)	$77.56 (205%)	$59.79 (158%)
Radiology	$41.69 (110%)	$41.31 (109%)	$52.83 (139%)	$55.00 (145%)	$75.80 (200%)	$77.56 (205%)	$68.00 (179%)
Pathology/Lab Services	$41.69 (110%)	$41.31 (109%)	$52.83 (139%)	Historical and other payer data	UCR	$64.77 (171%)	$60.00 (158%)
Physical Medicine	$41.69 (110%)	$41.31 (109%)	$52.83 (139%)	$51.00 (135%)	$37.90 - 56.85 (100% - 150%)	$67.24 (177%)	$65.79 (174%)
General Medicine	$41.69 (110%)	$41.31 (109%)	$52.83 (139%)	$44.27 (117%)	$60.64 (160%)	$77.56 (205%)	$75.04 (198%)

Note: The numbers in parentheses indicate the percent the CF is of Medicare, calculated based on the 2007 CF of $37.8975. . Information pertains to 2008 for Texas and 2007 for the other states.

* Florida and Maryland's multiple CFs were converted from percentages to dollar amounts for comparative purposes, based on the 2007 Medicare CF of $37.8975.

[58] In Texas, surgical services performed in a facility have a conversion factor of $66.23. If a surgical procedure is performed in the office setting, the conversion factor remains $52.83, consistent with the remaining services in the office setting.

As Table 5-3 shows, the four RBRVS states with more than two CFs define their CFs in terms of dollar amounts that vary by service category. Some states have additional regulations pertaining to the specialty, or licensure, of the provider.[59]

To update for inflation, states adjust either their CF, or the fee schedule amounts. While the CFs and payments based on a percent of Medicare are automatically updated each year with the implementation of the Medicare Final Rule, the fee schedules that use dollar amounts for the CFs or fee schedule - regardless of whether they are part of the RBRVS system - need to be updated periodically to account for inflation. Nearly all states with CFs update their CFs annually or biennially. New York and Michigan update their RVUs instead and maintain a consistent CF. Eight states (Texas, Illinois, Pennsylvania, Georgia, Tennessee, Maryland, Minnesota and Oregon) base their CF updates on price indices.

These indices include:

a. Consumer Price Index (CPI);
b. Average Weekly Wage (AWW);
c. Producer Price Index for Physicians (PPI-P);
d. Medicare Economic Index (MEI); or
e. Cost of Living Adjustment (COLA).

Ohio uses a myriad of price level inputs to update its CF.

4. Transition

Michigan and Oregon are the only states we identified that used a transition when implementing their RBRVS system. Their transition process was far less complicated than the Medicare transition, which was implemented over four years starting in 1992. In Pennsylvania and Maryland, the representatives we spoke to could not verify if there was a transition, and if there was, how it was implemented.

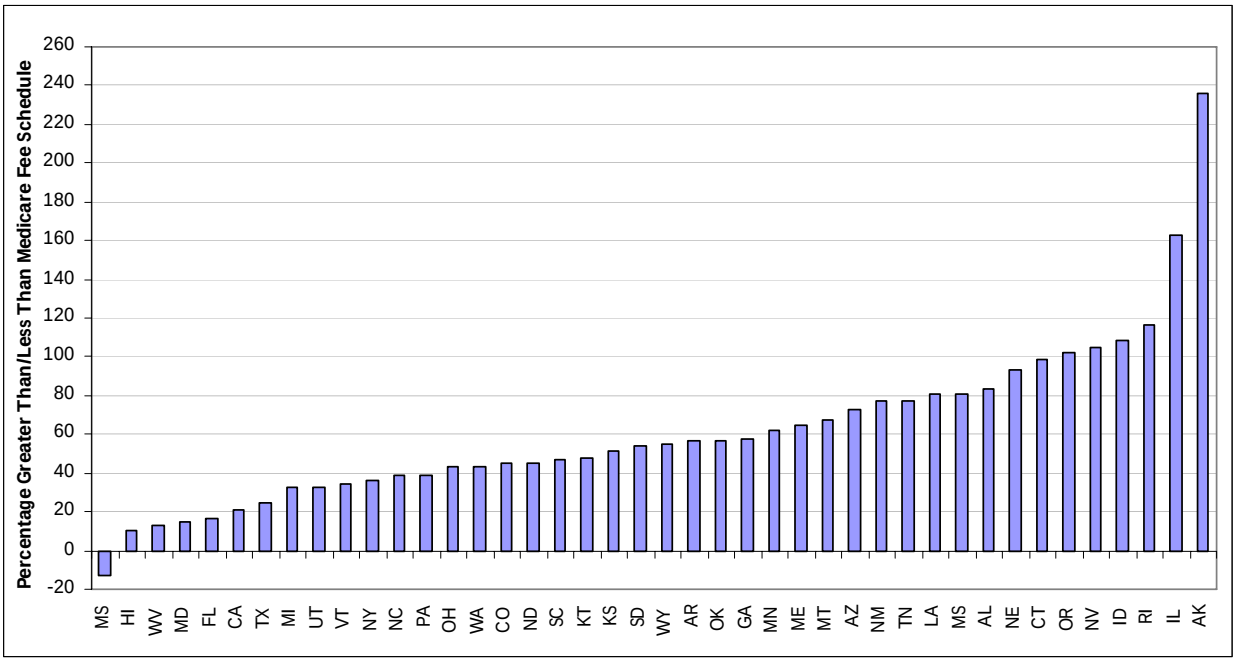
Currently, Michigan updates their RVUs each year – using the Medicare RVUs from the prior year - rather than updating the conversion factor. In implementing the RBRVS system in 1996, Michigan adapted modified RVUs and only incorporated select codes into the system. The new conversion factor was based on the prior CF (used to generate prior fees) increased 3 percent over three years. Oregon transitioned from using an alternate fee schedule to the RBRVS system while ensuring relative budget neutrality, based on data analyses.

[59] Tennessee offers additional reimbursement for Neurosurgery and Orthopedic surgery if the service is provided by a board-eligible or certified physician. Reimbursement increases from 200 percent of Medicare to 275 percent of Medicare. Maryland explicitly requires specific licensed/certified providers to comply with the billing, reimbursement and MAR policies.

5. Payment Level

Regardless of payment methodology, the level of physician payment is a key aspect of the payment system. Payment levels across states are typically compared in terms of fees as a percentage of Medicare fees in a state. (The percentage increase above Medicare is termed "the Medicare premium.") By this metric, California fees are among the lowest in the country, as of July 2006,[60] and ranked sixth from the bottom. California paid 21 percent above Medicare in 2006, whereas the median state paid 55 percent above Medicare in 2006. The fifth state from the bottom, Florida, paid 17 percent above Medicare, and the fifth state from the top, Nevada, paid 105 percent above Medicare.

Figure 5-A: Percent by which Workers' Compensation Payment Exceeds Medicare Payment, 2006



Note: The Medicare premiums have been adjusted for each individual state's GPCI.

Source: Eccleston, S.M., and Liu, T. (2006). Benchmarks for designing workers' compensation medical fee schedules: 2006. *Workers' Compensation Research Institute.* November. (WC-06-14).

For surgical services, California has the ninth lowest Medicare premium. California paid 56 percent above Medicare, whereas the median state paid 106 percent above Medicare (that is, about twice as much as Medicare).

For E&M services in 2006, California was ranked third from the bottom, paying 13 percent *below* Medicare, whereas the median state paid 23 percent above. This means that most states pay proportionately more for surgery than they do for E&M, as does California.

[60] Eccleston, S.M., and Liu, T. Benchmarks for designing workers' compensation medical fee schedules: 2006. *Workers' Compensation Research Institute.* November 2006. (WC-06-14).

VI. DISCUSSION OF RBRVS-BASED FEE SCHEDULE IMPLEMENTATION OPTIONS

In this chapter, we present a discussion of a variety of policy options relevant to adopting a RBRVS-based physician fee schedule in the California Workers' Compensation System. Section A presents options for easing the redistributional impact of adopting an RBRVS. Section B contains a discussion of GAFs. Finally, Section C contains a discussion of ways to keep the system current through updating the CF. We begin the discussion by presenting a framework that can be used to inform decision making on implementation issues.

A. Adapting and Transitioning RBRVS to Workers' Compensation

Three major issues are important for transitioning the current physician fee schedule in the OMFS to a physician fee schedule based on an RBRVS. They are:

- Deciding which payment policies to use;
- Transitioning to the RBRVS system; and
- Updating the new payment system to keep it current.

Our simulation of the baseline RBRVS model embodies many ground rules as to how an RBRVS-based fee schedule can be constructed for the CWCS.[61] While our baseline RBRVS model incorporates initial decisions on some of these aspects of RBRVS based on input from the DWC, these decisions were preliminary and made for modeling purposes only.

The use of an RBRVS fee schedule has many practical advantages. The Medicare program has developed the RBRVS fee schedule over 20 years at great expense. The continued oversight by government agencies and constituency groups is substantial, and this scale of effort is not easily replicated at the state level. For these reasons, many state-level payers (and private payers) use the Medicare RBRVS system or variants of it. However, the Medicare RBRVS system is not wholly adaptable to workers' compensation programs and there is no single variant of the RBRVS that is appropriate for application across the various state workers' compensation programs. Nine of the fourteen workers' compensation programs we reviewed use versions of the RBRVS customized to meet the needs of their specific programs. The issues presented below provide a context for understanding how much of the Medicare RBRVS system- with all of its technical complexity - can be used, while at the same time being sensitive to the unique aspects of the CWCS environment.

Before considering how an RBRVS-based physician fee schedule could be phased in for CWCS, a series of analytic and conceptual points need to be considered.

1. Characteristics of CWCS

Occupational medicine, with its focus on injuries sustained on the job and return to work, is practiced in a more complex setting than is either general medical care or Medicare. First, workers' compensation involves a wide range of interested parties--injured workers, employers, claims administrators, providers, attorneys, labor unions, and state workers' compensation regulators. Second, the clinical issues associated with a worker's ability to return to work are

[61] These technical issues pertain to, for instance, use of CPT code modifiers and global periods for surgery.

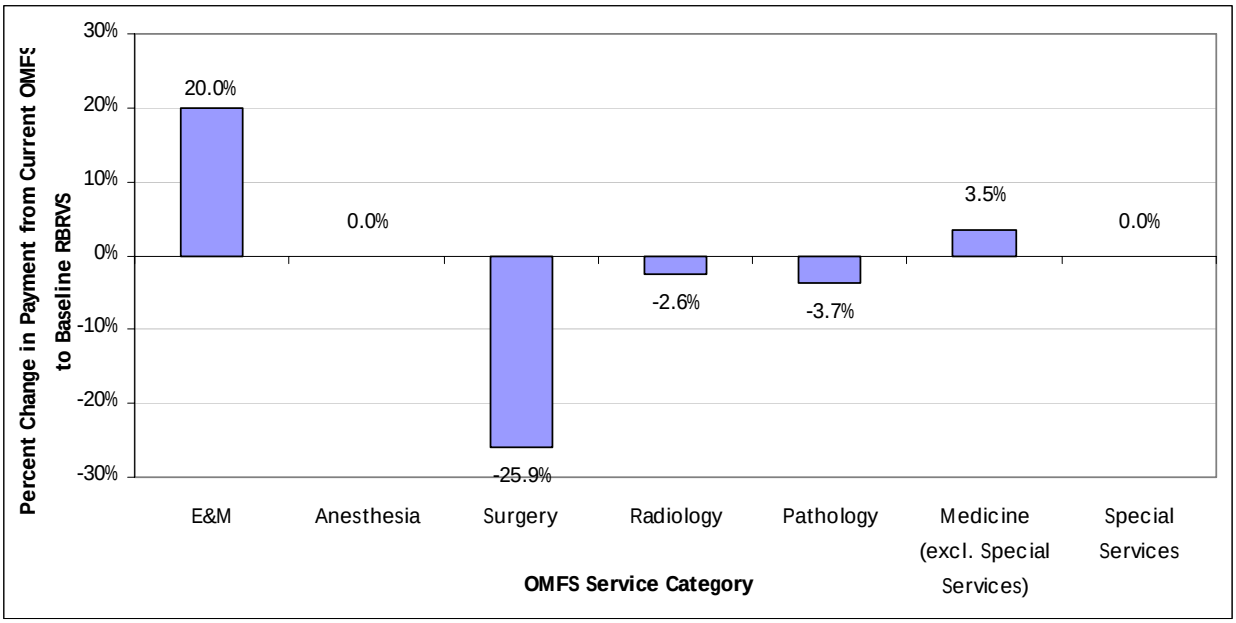
distinctive, and require specialized expertise as well as additional time and effort to treat. Disorders such as lower back pain and tendonitis of the hands are common, yet determining industrial causation is difficult.[62] CWCS cases are also more clinically intense than typical medical cases as they are characterized by more visits per injured worker.[63] An adaptation of RBRVS to the CWCS setting has to be sensitive to these characteristics of the CWCS.

CWCS cases tend to be more intense administratively (due to legal complexities associated with wage replacement) and clinically (due to return to work assessment and other issues). As a result, the RBRVS relative fee schedule amounts may not be entirely appropriate, if certain services (e.g., E&M) require more physician and office staff time. Because of these differences, a higher overall CF (relative to Medicare) may be appropriate for workers' compensation cases, or services unique to CWCS might need to be reimbursed in other ways.

2. Payment

Figure 6-A shows the changes in payment by service category due to the adoption of the baseline RBRVS system. While E&M services would be paid more, surgery would be paid considerably less than the current physician fee schedule in the OMFS. The extent of their gains and losses suggests that a transition to RBRVS payments needs careful consideration.

Figure 6-A: Percent Change in Payment from Adoption of Baseline RBRVS Model, by OMFS Service Category



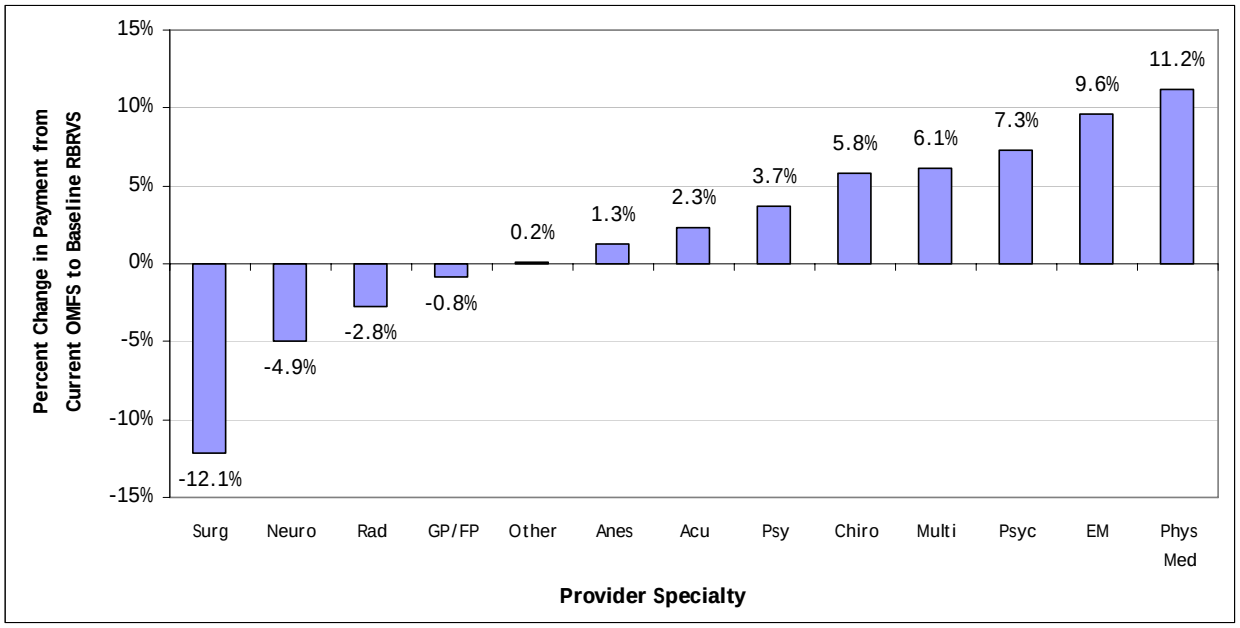
Source: Lewin analysis of CWCI data. See Chapter IV, Table 4-2.

[62] Dembe, A.E. & Harrison R.J. (2006). Access to medical care for work-related injuries and illnesses: Why comprehensive insurance coverage is not enough to assure timely and appropriate care. Proceedings from Research Colloquium on Workers' Compensation Medical Benefit Delivery and Return to Work. *RAND Institute for Civil Justice*, p. 38.

[63] Dembe, A.E., (2005). Understanding workers' compensation medical care in California. *California Health Care Foundation*, p. 17.

As previously shown in Figure 5-A, CWCS pays less for surgical services than comparable programs in most states, and implementation of RBRVS with a single budget-neutral CF would further reduce that payment level.

Figure 6-B: Percent Change in Payment from Adoption of Baseline RBRVS Model, by Specialty

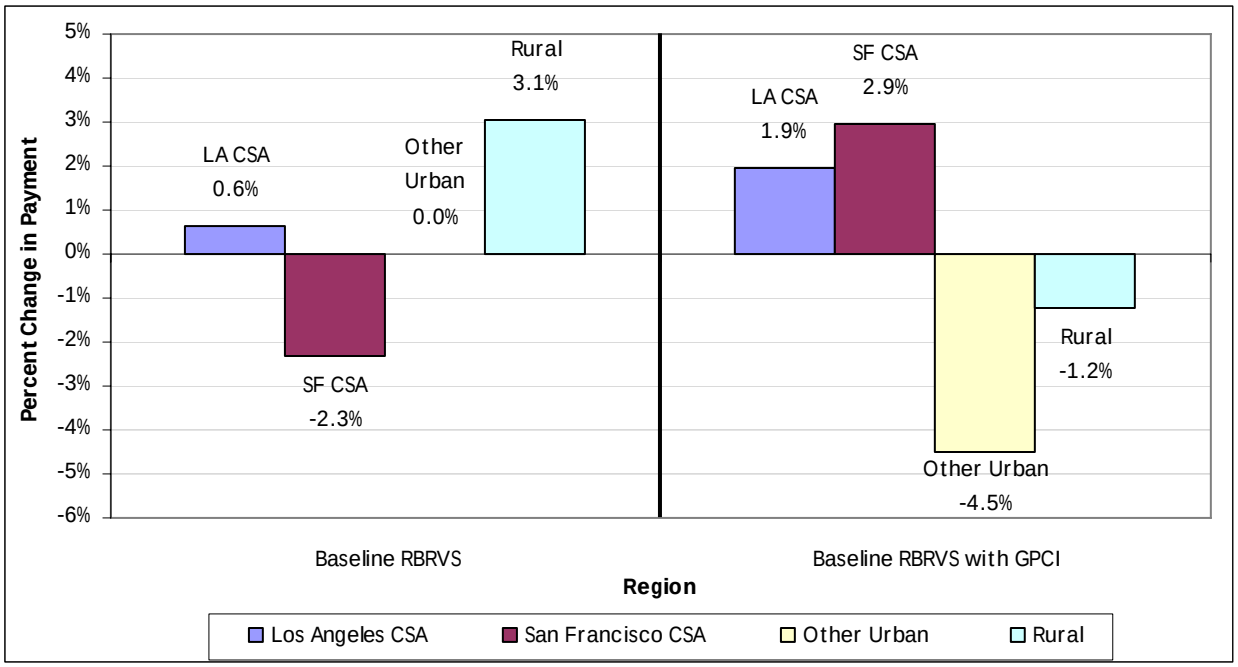


Surg = Surgery
Neuro = Neurology
Rad = Radiology
GP/FP = General and Family Practice
Other = Other or Undefined
Anes = Anesthesia
Acu = Acupuncture
Psy = Psychiatry
Chiro = Chiropractor
Multi - Multi-Specialty (Med/Surg)
Psyc = Psychology
EM = Emergency Medicine
Phys Med = Physical Medicine

Source: Lewin analysis of CWCI data. See Chapter IV, Table 4-3.

The impacts by specialty are less than the impacts by service category. In particular, the impact on surgical specialties (12.1 percent) is less than half of the impact on surgical services (25.9 percent). Radiologists would also experience a payment decrease under RBRVS. Several specialties would experience an increase in payment: physical medicine, chiropractors, and multi-specialty groups. General and family practitioners (as a group) would experience virtually no change in their payment levels. In terms of the impact on specific providers, the impact by specialty is more relevant.

Figure 6-C: Percent Change in Payment from Adoption of Baseline RBRVS and Baseline RBRVS with GPCI, by Region



Note: CSA = Combined Statistical Area;

Source: Lewin analysis of CWCI data. See Chapter IV, Table 4-4.

Figure 6-C presents the impact of adoption of the baseline RBRVS model on four regions. Without a GPCI adjustment and a rural add-on payment, payment would increase 0.6 percent for the Los Angeles CSA and 3.1 percent in rural areas. It would decrease 2.3 percent in the San Francisco CSA and not change in other urban areas. Making those geographic adjustments would increase payment in the two CSAs and lower it in other urban areas and rural areas.

Chapter IV quantified the amount of redistribution, finding it greater when the geographic adjustments are applied. Related to this, the maximum decrease in payment is greater with geographic adjustments (a decrease of 4.5 percent for other urban areas) than with no such adjustments (a decrease of 2.3 percent for San Francisco CSA).

The impact by geography (at least at the region level) is less than the impact by specialty. The largest specialty impacts are a decrease of 12.1 percent for surgery and an increase of 11.2 percent for physical medicine. The largest geographic impacts are a decrease 4.5 percent for other urban areas (with a GPCI) and an increase of 3.1 percent for rural areas (without a GPCI).

3. Utilization

Physicians and other medical providers may respond to lower fees by increasing the number of visits per injured worker they treat.[64] However, recent policy changes in California have lessened this possibility. In the past, CWCS injured workers had higher medical services per visit and more medical visits per worker than injured workers in other states.[65] However, CWCS providers' opportunity to increase volume was reduced by provisions of SB 228 (effective as of 2004) that require every employer to establish utilization review plans, mandated a 24-visit limit of physical therapy and chiropractic services, and various other utilization controls, such as the use of evidence-based, nationally recognized medical treatment guidelines. In addition, SB 899 (signed April 2004) authorizes employers to establish medical provider networks and instituted a 24-visit cap for occupational therapy.

Table 6-1 indicates that these reforms have had a sizeable impact on visit volume, especially for physical therapy and chiropractic manipulation. In this table, each row represents a service category and indicates the percent of claimants (injured workers) that received at least one service in the designated category. These results suggest that providers' ability to increase volume in response to decreases in payment levels has lessened.

Table 6-1: Medical Utilization by Service Category – Percent of All Injured Workers – Pre-Reform vs. Post-Reform[66]

OMFS Service Category	Pre-Reform		Post-Reform		Relative Change '02 - '05
	2002	2003	2004	2005	
E&M	94.6%	94.0%	96.7%	97.2%	2.8%
Surgery (excluding injections)	39.6%	39.7%	41.4%	40.7%	2.8%
Radiology	58.8%	58.8%	57.8%	54.9%	-6.6%
Medicine Special Services	27.6%	29.0%	28.3%	27.6%	-0.2%
Physical Therapy	39.2%	40.8%	36.6%	33.9%	-13.5%
Chiropractic Manipulation	10.5%	11.1%	7.2%	4.4%	-58.5%

Note: Service Categories are not mutually exclusive, and therefore columns do not add to 100%.

4. Physician Participation

In general, when a single program has substantially lower rates than other programs, a physician plausibly may refuse to see that program's patients, especially if those patients represent a small proportion of the physician's caseload. The program could be Medicaid, managed care organization, or workers' compensation. There may be thresholds of payment that could potentially lead to the departure of physicians from CWCS. A substantial number of physicians leaving CWCS could result in access problems for injured workers.

---

[64] Marron, D.B. (2006). Medicare's physician payment rates and the sustainable growth rate. Congressional Budget Office, testimony before the Subcommittee on Energy and Commerce, U.S. House of Representatives, July 25, 2006.

[65] Dembe, A.E., (2005). Understanding workers' compensation medical care in California. *California Health Care Foundation*, p. 17.

[66] Swedlow, A. and Ireland, J. (2007). *Analysis of California workers' compensation reforms.* California Workers' Compensation Institute, p. 7.

Most of the sophisticated analyses on physician participation contained in the literature pertain to Medicaid. A number of articles have found modest impacts of payment levels on participation. For instance, in 2001, 52 percent of physicians participated in Medicaid in states with low Medicaid fees, but 67 percent participated in moderate-fee states.[67] (The participation rate was essentially the same in high-fee states as compared to moderate-fee states.) Based on regression results, a one percent increase in payment levels increases participation rates by about half of one percentage point.[68] In economics terminology, physicians have an elasticity of supply of 0.5.

An October 2002 report by the HJH Group shows that Oregon, which under its workers' compensation fee schedule paid its neurologists and orthopedists nearly 250 percent of Medicare, had physician participation ranging from 93 to 95 percent. Other states with lower relative payment rates, especially for neurologists, had physician participation under 50 percent.[69]

The degree to which physicians refuse to participate in workers' compensation is not solely linked to fee schedule amounts. The "administrative complexities and the medical-legal exigencies" associated with occupational medicine are widely perceived as burdensome. Other reasons for nonparticipation include "delays" in payment for services, outright nonpayment, the time-consuming nature of workers' compensation cases, excessive paperwork, and distrust of the workers' compensation legal system.[70] For these and other reasons, workers' compensation fee schedules tend to be well above the Medicare payment levels, not just for specialists, but for all physicians.

5. Potential Tradeoffs

The RBRVS, if fully implemented without consideration of the complexities of the CWCS, could reduce physician participation in the program if fees are substantially reduced. In turn, this could delay or reduce access of injured workers to qualified providers. The RBRVS-related shifts in payment from procedural care (e.g., surgery) to cognitive care (i.e., E&M) could disrupt the current physician payment economics of CWCS.

As of 2006, CWCS appears to face no major problems in access, despite physician dissatisfaction with the program. The UCLA study, "Access to Medical Treatment in the California Workers' Compensation System 2006," which was mandated by SB 228, reported (as related to this issue):[71]

- Most injured workers have access to care. Eighty-two percent of injured workers reported access to quality medical care (based on a survey fielded in 2006).

---

[67] Zuckerman, S., McFeeters, J., Cunningham, P., and Nichols, L. (2004). Changes in Medicaid physician fees, 1998-2003: Implications for Physician Participation. *Health Affairs.* W4, 374-384.

[68] Calculated from Perloff, JD, Kletke, P., and Fossett, WJ. (1995). Which physicians limit their Medicaid participation, and why. *Health Services Research.* 30, 7-26.

[69] HJH Group. (2002). RBRVS-based fee schedules in workers' compensation: Implications for California. p. 20. Retrieved on February 6, 2008, from http://www.csims.net/HJH-Report-2002.pdf

[70] Dembe, A.E. & Harrison, R.J. (2006). Access to medical care for work-related injuries and illnesses: Why comprehensive insurance coverage is not enough to assure timely and appropriate care. Proceedings from Research Colloquium on Workers' Compensation Medical Benefit Delivery and Return to Work. *RAND Institute for Civil Justice*, p. 38.

[71] Kominski, G, et al. (2006). Access to medical treatment in California workers' compensation system. *UCLA Center for Health Policy Research.*

- Chiropractors, acupuncturists and orthopedic surgeons, however, were among the most dissatisfied.
- About half of claims administrators report difficulty contracting with selected specialties. Of relevance to this project, contracting with orthopedic surgeons and neurosurgeons was problematic, while contracting with general internists was not.
- The most frequently cited reason for stopping participation in the CWCS was payment level, especially for those who were paid more than 15 percent below the OMFS.

Several issues present themselves:

Most importantly, how sensitive is physician participation to payment levels? Is the participation rate a continuous function of the payment level—as the economist's concept of an elasticity would suggest—or is there a payment level at which a sizeable proportion of physicians suddenly leave the program?

What is an "adequate" payment level for CWCS? Although the median state pays physicians 55 percent more than Medicare does, the implications of this are not straightforward. The greater payment levels in other states may represent accumulated experience regarding the relationship between payment levels and access or it may represent the relative political strengths of physicians.

CWCS could set relative payment rates to specialties based on resources as expressed in the RBRVS or based on market conditions. Given budget neutrality, moving from the present system to a resource-based system may increase payment equity among physician specialties as to work effort, but decrease access for injured workers.

In sum, CWCS faces tradeoffs among three goals: worker access, specialty payment equity, and budgetary cost.

B. Transition Options

RBRVS implementation would shift payment across service categories, thereby redistributing payments across physician specialties. Transition options should be considered from the perspective of both preserving the relative values of RBRVS, while at the same time, reflecting market prices that are required to maintain access to care for injured workers. These objectives are conflicting to the extent that the market prices required to preserve access may not be consistent with RBRVS relative values. The policy judgments required to balance these conflicting objectives are among the most important aspects of RBRVS implementation.

We have developed three transition options at two levels:

Conversion factor level

- Blending CFs at the service category or CPT code level
- Blending the old and new RVUs
- Stop-loss: for each code, limiting the change in the fee schedule amount under RBRVS in a given year

Each option can be either budget neutral to current aggregate OMFS payments or can increase aggregate OMFS above current levels. Additional payments that would allow for increasing E&M code payments, while also providing payments that would protect service categories from projected initial losses, would not be budget neutral. Another policy that would not be budget neutral would be to preserve the current relative values of RBRVS but to add additional payments to those services unique to the workers' compensation program in order to preserve access to these services.

All transition policies should be periodically reviewed to see that they do not produce unintended consequences, such as reduced access to care for injured workers.

1. Conversion Factor Options

Workers' compensation programs in most states that use RBRVS have implemented multiple CFs. For instance, Florida has a higher CF for surgical than for other service categories (see Table 5-3). The payment level for a CPT code is the product of the code's RBRVS RVUs and the CF for the code's service category.

Policies involving multiple CFs can be modified along several lines:

- Number of CFs and how their services are defined;
- The phase-in rate and whether full implementation of RBRVS relative weights is ever achieved; and
- Whether the policy change is budget neutral or not.

Of the states reviewed in Chapter V, three have a single CF, two have two CFs (surgical vs. all other services), and four have more than two CFs (see Table 5-2).

Given that a single-CF budget neutral RBRVS implementation would decrease payment by more than five percent only for surgical services, having two CFs would create a policy tool to protect access to all services while applying RBRVS to the extent possible. As presented in Table 6-2, if one wanted to apply RBRVS without decreasing payment for surgery, the CF for surgery would be $60.37 and the CF would be $40.55 for other services. If one wanted to move halfway toward an RBRVS system with two CFs, the two CFs would $52.47 and $42.56. If one fully implemented the RBRVS system, there would be a single CF of $44.57 (if it were budget neutral). Table 6-2 also presents the CFs for a five-CF policy.

Table 6-2: Transition Policies Based on Conversion Factors, Examples of Budget Neutral Policies[72]

Service Category (SC)	Single-CF Option	Dual-CF Option		Five-CF Option	
		Budget Neutral by Surgery & others	50/50 blend	Budget Neutral by SC	50/50 blend
Surgery	$44.57	$60.37	$52.47	$60.37	$52.47
E&M	$44.57	$40.55	$42.56	$37.10	$40.84
Radiology	$44.57	$40.55	$42.56	$45.77	$45.17
Pathology	$44.57	$40.55	$42.56	$56.18	$50.38
Medicine	$44.57	$40.55	$42.56	$42.90	$43.74

Even within a budget neutral set of policy options, having two CFs gives policymakers an additional tool for making the tradeoff between resource-based payment and access to care. One could phase in RBRVS either in steps (e.g., one quarter in each of four years) or could make a one-time change (e.g., 33 percent or 60 percent of the way) in a given year, without additional changes in subsequent years.

If access to care is a concern regarding certain nonsurgery service categories but not others, DWC might consider a five-CF option. However, the more CFs, the less the resulting payment system is truly an RBRVS system.

Multiple CFs are administratively simpler than CPT-code-based transition policies. Under the multiple CFs transition option, the RVUs for a specific code would completely change from the current OMFS values to the new RBRVS values in the first year of implementation. After that, administration of this option entails changing the two (or more) CFs (and, of course, ensuring that the code-level RVUs are consistent with current Medicare updates).

To facilitate the formulation of various policy options, Table 6-3 presents the RVUs and payment amounts that will be made under current OMFS arrangements, by service category. About ten percent of the payments are for CPT codes which lack resource-based RVUs. The payment under a given CF for each service category is calculated as the number of RVUs in the category times its CF, plus the current-OMFS amount.

[72] Under the five-CF option, the percent change from the budget neutral column to the full-RBRVS column is usually close to the impacts reported in Table 4-2. However, it can differ because Table 4-2 includes codes that are not in RBRVS but this table excludes them.

Table 6-3: Resource-Based RVUs and Current OMFS Payment, Baseline RBRVS Model, by Service Category

Service Category	Services with RVUs			Other Services	All services
	Current OMFS Payment	RVUs (A)	Distribution of RVUs	Current OMFS Payment* (B)	Payment under RBRVS ([A*CF]+B)
Total	**$187,863,631**	**NA**	**NA**	**$19,166,928**	**$207,030,559**
Services under Single CF	$180,449,256	4,048,578	100.0%	$19,166,928	$199,616,184
Surgery	$49,594,030	821,503	20.3%	$535,257	$37,150,478
E&M	$58,824,394	1,585,564	39.2%	$499,274	$71,169,450
Radiology	$24,364,133	532,264	13.1%	$84,070	$23,807,600
Pathology	$338,640	6,027	0.1%	$1,531,386	$1,800,028
Medicine (except Special Services)	$47,212,802	1,100,675	27.1%	$4,935,917	$53,994,130
Special Services	$115,256	2,546	0.1%	$11,581,024	$11,694,498
Anesthesia	$7,414,375	218,448	NA	$0	$7,414,375

This table assumes a single conversion factor (CF) of $44.57 for all services except anesthesia, which has its own conversion factor of $33.94. Both CFs are budget neutral.

* The payment for services without resource-based RVUs is the same under the current OMFS and the baseline RBRVS model.

NA = not applicable, because RVUs for anesthesia and other services are not comparable.

If E&M codes are paid at RBRVS levels (or perhaps even higher to account for WC administrative activities) and losses in surgical and other categories are protected, the entire system would not be budget neutral.[73] The decision to pay above budget neutral levels would be based on equity (i.e., paying for WC administrative duties) and access (i.e., retaining medical provider program participation) considerations. Initial attempts to maintain a "pure" RBRVS system under budget neutral payment levels might lead to reductions in access. In response, DWC might decide to end the transition—letting multiple CFs become a permanent part of the system—or it might increase the dollars in the system.

2. CPT Code Level Options

Although other states have not used CPT code-level blends, Medicare used this strategy when it implemented its fee schedule starting in 1992. For the first three years of implementation, the fee for a code was the weighted sum of the new fee and old fees. In the first year, the weights were 25-75; in the second year, 50-50; and in the third year, 75-25. In the fourth year, the fee was based entirely on the new system.

The "blending" option would ease the impact of adopting RBRVS at the individual CPT code level, providing an opportunity for providers to adjust to the new payment system over time. Nevertheless, the change in payments for some codes could still be significant. This result could be especially important for individual specialists who use very few codes in their practices.

Another option is to limit the amount of gain or loss for any given code. This approach evens out the effect of RBRVS at a code by code level. The stop-loss option is more complex than the

[73] Dobson A., DaVanzo J., Koenig L., et al. (2003). A Study of the Relative Work Content of Evaluation and Management Codes. Report submitted to California Industrial Medical Council/Department of Industrial Relations.

"blending" approach, in that not all codes would be transitioned over the same time period. To mitigate this problem, the transition could be limited to a fixed time period. This approach would offer temporary protection for specific procedure codes for which payments under the new system would be significantly reduced. However, the approach is unlikely to be budget neutral.

A stop-loss option might set a limit to the percentage change in the RVUs for a code. For instance, no code would increase or decrease by more than five percent in any one year. The advantage of such a policy would be the protection of providers from rapid changes in payment. However, this would largely affect only providers who bill a handful of codes. A disadvantage of a stop-loss policy would be the lengthening of the transition period, which would be determined by the single code with the largest percentage change.

Finally, the annual study of access and quality mandated by Labor Code section 5307.2 can serve as a check and balance on system implementation. Careful implementation of RBRVS should be able to maintain access, especially if mid-course corrections are made to longer term plans, based on access and quality study feedback.

C. Adjustments by Geographic Location

1. Context and Policy Issues

In large states, health insurers often pay physicians more in certain locations than in others. As in any market, health insurers want to pay only enough to ensure a sufficient supply of high-quality services.

In the market for physician services, there are two types of geographic concerns.

- Physicians in the core of large metropolitan areas (e.g., San Francisco) face higher input prices than physicians in the suburbs. These prices take the form of higher rents either directly or indirectly. That is, the office rents tend to be higher, and, because physicians and their employees must pay more for their personal housing, salaries tend to be higher.
- Certain areas, especially very rural ones, have difficulty attracting physicians, for various reasons.

Measuring the extent to which injured workers access care is multifaceted. A survey of 20 CWCS claims administrators was conducted by the UCLA Center for Health Policy Research.[74] Of the 20 surveyed, 12 reported difficulty finding providers to contract with for workers' compensation care in certain regions. Of the nine regions surveyed, the ones most frequently identified as problematic were the North Coast/North Inland/Sierras, San Joaquin Valley, and Central Coast.

Thus, DWC faces two geographic policy issues:

- Should claims administrators pay above-average rates in the core of large metropolitan areas such as San Francisco because of high input prices?

[74] Kominski, G, et al. (2006). Access to medical treatment in California workers' compensation system. *UCLA Center for Health Policy Research*., p. 127 and Appendix C.

- Should claims administrators pay above-average rates in areas with physician shortages (e.g., rural areas)?

In all of the five largest states (excluding California), the workers' compensation programs adjust payment by geographic location. In descending order by population, those states are Texas, New York, Florida, Illinois, and Pennsylvania, as shown in Table 5-1. None of the smaller states listed in the table adjust payment by geographic location.

2. Medicare as a Point of Comparison

Medicare is a natural point of comparison for payment to physicians for two reasons. First, Medicare is the largest payer for physician services. When copayments are included, a quarter of expenditures for physician services are paid under the Medicare fee schedule.[75] Second, the development of the Medicare fee schedule, which was implemented in 1992, was public and very visible. While not the central focus of policy debates over the fee schedule, adjustment for geographic location was also a major topic of debate.

Medicare has two geographic adjustors. First, the GPCI, which captures the cost of rent and other input costs, is highest in the core of large metropolitan areas. Payment based on the GPCI serves to direct payment to physicians in those areas. Second, the Health Professional Shortage Areas (HPSAs) are disproportionately (but not exclusively) located in rural areas. An HPSA add-on payment serves to direct payment to physicians in designated shortage areas.[76] This subsection discusses both of these adjustment mechanisms.

a. GPCI

Any geographic adjustment mechanism must have at least two components: geographic areas must be delineated and then relative prices must be assigned to each area. This is usually done through the use of a formula.

[75] Catlin, A., Cowan, C., Hartman, M., et al. (2008). National health spending in 2006: A Year of Change for Prescription Drugs, *Health Affairs,* January/February, vol. 27, p. 27. Medicare itself makes 20.5 percent of U.S. payment for physician services ($92 billion out of $448 billion). Medicare pays (a maximum of) 80 percent of allowed charges and the beneficiary (or his/her supplemental insurance) pays the 20 percent copayment, which is also made under the Medicare fee schedule. So 25.7 percent of U.S. payment for physician services is made under the Medicare fee schedule (20.5/80%).

[76] Starting in 2005, Medicare also made a bonus payment for services delivered in physician scarcity areas (PSAs). These payments, however, were eliminated at the end of 2007.

Relative Prices

As discussed in Chapter III, the payment for CPT code j in geographic area g is calculated as

$$P_{jg} = CF \times \Sigma \ [RBRVU_{ji} \times GPCI_{ig}]$$

where

CF = conversion factor,

$RBRVU_{ji}$ = RBRVU of input category i
(i = physician work, practice expense, and malpractice insurance) of CPT code j, and

$GPCI_{ig}$ = geographic practice cost index of input i in geographic area g.

The impact of each of the three GPCIs on payment in a locality varies by CPT code, because the RBRVU of its input category varies.

Without a summary measure, comparisons of the size of the geographic adjustment are awkward. Relative to one locality, another locality may have a higher GPCI for one input (e.g., practice) but a lower GPCI for another input (e.g., physician's time). To create a summary measure across codes, CMS defines GAF as

$$GAF_g = \Sigma \ [w_i \times GPCI_{ig}]$$

where w_i = national average cost of input i as a percentage of total cost and

$$\Sigma \ w_i = 1.0.$$

The national weights are 52.5 percent for physician work, 43.6 percent for practice expense, and 3.9 percent for malpractice. As shown in Table 6-4 below, for Los Angeles county,

GAF = [52.5% x 1.041] + [43.6% x 1.191] + [3.9% x 0.867] = 1.099.

By law the physician work GPCIs reflect only one-quarter of the difference between the cost of work—measured in terms of wages, salaries, and benefits—and the national average. For instance, if the measured cost of work in a locality were 40 percent above the national average, the work GPCI would be only 1.10—that is, ten percent above average.

Geographic Areas

The geographic areas that Medicare uses to adjust physician payment are termed "localities." In many states, Medicare has only a single locality—that is, payment is the same statewide. In California, Medicare has nine localities, as listed in Table 6-4.

Table 6-4: Medicare Localities and their GPCIs, California (in descending order by GAF)

Locality name	Geographic Practice Cost Index (GPCI)			
	Work	PE	Malpractice	GAF
National	1.000	1.000	1.000	1.000
San Francisco Combined Statistical Area				
Santa Clara	1.083	1.543	0.595	1.265
San Mateo	1.072	1.485	0.508	1.230
San Francisco	1.059	1.493	0.524	1.227
Oakland/Berkeley	1.053	1.329	0.529	1.153
Marin/Napa/Solano	1.034	1.303	0.533	1.132
Los Angeles Combined Statistical Area				
Anaheim/Santa Ana	1.034	1.253	0.870	1.123
Los Angeles	1.041	1.191	0.867	1.100
Ventura	1.027	1.222	0.746	1.101
Rest of California	1.007	1.055	0.631	1.013

PE = practice expense

Sources:
GPCI: CMS, 2008 Physician Fee Schedule Relative Value Files, http://www.cms.hhs.gov/PhysicianFeeSched/PFSRVF/list.asp#TopOfPage

Weights used to calculate GAF: Federal Register, 2007, Volume 72, p. 66374.

Each locality in California is a single county or an aggregate of counties—no county is subdivided into two or more localities. Six localities have a single county: Santa Clara, San Mateo, San Francisco, Orange (Anaheim/Santa Ana), Ventura, and Los Angeles. One locality (Oakland/Berkeley) has two counties (Alameda and Contra Costa), one has three (Marin/Napa/Solano), and one has the remaining counties in the state.

With the exception of the "Rest of California" locality, all of the localities have a GPCI that is well above the national average. The three localities to the west and south of the San Francisco Bay (Santa Clara, San Mateo, and San Francisco) have GPCIs that are at least 22 percent above the national average. The other two localities in the San Francisco area are at least 13 percent above the national average, and the three localities in the Los Angeles area are at least ten percent above the national average. The Rest of California locality has a GPCI very close to the national average.

Across localities, GPCIs in California are above the national average largely because of the practice expense component. The malpractice component is below the national average and the work component is only slightly above average, because much of the measured physician work component is not recognized, per Congressional decision. However, except for the Rest of California locality, the practice expense component is approximately one-fifth to one-half higher than the national average. This reflects the higher office rents and employee salaries that physicians must pay.

In thinking about the delineation of payment areas such as localities, a useful distinction is between urban and rural counties, as delineated by the U.S. Office of Management and Budget with the assistance of the Bureau of the Census. Figure 6-D presents counties in California by urban-rural status. Except for the Rest of California locality, all of the localities contain only urban counties, but not all urban counties are contained in these localities. Despite their large geographic area, rural counties only have three percent of California's population.

Figure 6-D: Counties by Urban-Rural Status, California

In 2005, CMS proposed removing Santa Cruz and Sonoma Counties from the Rest of California locality and creating two new localities.[77] These two counties were selected over others, because their county-specific GPCIs would be higher than other counties in the Rest of California locality. The Santa Cruz GPCIs are approximately ten percent above the Rest of California GPCIs and the Sonoma GPCIs, approximately eight percent above it. If a high-GPCI county were removed from the Rest of California locality, the average GPCI in the Rest of California locality would fall, as would payments to physicians there.

CMS' policy is to modify localities only when supported by county and state medical societies. Not surprisingly, physicians in Santa Cruz and Sonoma Counties supported the CMS proposal, but physicians remaining in the Rest of California locality opposed it. CMS withdrew its proposal.

b. HPSAs

Policy and Administration

Medicare provides a ten percent bonus payment to physicians providing services in HPSAs - where there are not enough health care professionals to care for the area's population. This bonus payment is ten percent of the Medicare payment, excluding what the beneficiary pays. The payment is made on a quarterly basis. Eligibility is determined by where the service is provided, not by the location of the physician's office or beneficiary's residence. [78]

In addition, in order to be eligible for the bonus payment, services must be provided in a zip code that is entirely in a county designated as a full-county HPSA, entirely in a county through United States Postal Service determination, or entirely in a partial county HPSA.[79] CMS identifies the zip codes eligible for the bonus payment on an annual basis and provides a list on their website.[80] Providers may then look up the zip code in which they rendered the services and receive a bonus payment accordingly. These CMS-identified zip codes will be known as Medicare HPSAs throughout the report.

For HPSAs to be a viable option for paying physicians, HPSAs need to have at least two characteristics. The rationale for their geographic delineation must be clear, and delineations must be reasonably stable over time. Frequent year-to-year changes in delineation undercut the rationale for a bonus payment, because physician shortages are unlikely to change that rapidly. In addition, frequent changes are difficult to administer.

---

[77] *Federal Register*. November 21, 2005, Volume 70, pp. 70150-53, U.S. Government Printing Office.

[78] Centers for Medicare and Medicaid Services, HPSA/PSA Physician Bonus Overview. Retrieved October 2, 2007 from http://www.cms.hhs.gov/HPSAPSAPhysicianBonuses/.

[79] HPSA/PSA Physician Bonus Overview. Retrieved October 2, 2007 from http://www.cms.hhs.gov/HPSAPSAPhysicianBonuses/.

[80] CMS classifies the zip codes that are eligible for the bonus payment based on whether they are fully contained in a HRSA designated geographic-based HPSA. A zip code is considered fully contained if 99 percent of the zip code is in a HPSA. Hence, the maps in Appendix B indicate only zip codes that are entirely in HPSAs. Physicians providing services in zip codes that are not fully contained in HPSAs (i.e., less than 99 percent) must use a modifier on their claims in order to be paid the bonus.

HPSAs in California: Delineation

HPSAs represent only 1.6 percent of the payment for physician services under OMFS, which does suggest that bonus payments for services delivered in HPSAs will not have a major impact on total payments.

HPSAs represent 11 percent of the rural population and less than three percent of urban population. But because California's population is so heavily urban, more than 85 percent of the population in HPSAs is in urban counties. A county is designated "urban" if it has a city (over a certain size) even though the county may also have substantial rural areas. For instance, San Bernardino County is classified as urban because of its southwest corner, which includes suburbs of Los Angeles, but the county also includes Death Valley. Still, HPSAs should not be thought of as only rural. Given these characteristics of HPSAs in California, the rationale for using HPSAs for payment is not intuitive. For specific maps of HPSAs in California, please see Appendix D.

HPSAs in California: Stability

We also examined the stability of HPSAs over time and found significant fluctuation from year to year. The variations in HPSAs in California from 2006-2008 can be found in Appendix D. The instability in the count and location of HPSAs make payments based on them unpredictable and difficult to explain.

3. Policy Options for Urban Core

This subsection lays out several policy options for paying more in the urban core than in the suburbs. We exclude options that subdivide counties, because of the difficulty of justifying a particular subdivision. Medicare does not subdivide counties in California or other states.[81]

In part because OMFS currently has no geographic delineations, we do not consider delineations more complex than Medicare's nine-locality approach. (For comparison purposes, we include CMS' proposal to create new localities comprising of Santa Cruz and Sonoma.)

Table 6-5 presents the GAFs (i.e., average of GPCIs) by counties (or groups thereof) for four options:

- No geographic delineation (CWCS status quo, one locality).
  This is presented as option 1.
- Medicare localities (nine localities).
  This is presented as option 2.
- CMS' 2005 proposal to delineate two new localities (11 localities).
  This is presented as option 3.
- Consolidation of the Medicare localities (three localities).
  Presented as options 4 and 5, this involves combining the three localities in the Los Angeles area into one locality and the five localities in the San Francisco area into another. The Rest of California locality is not modified.

[81] Government Accountability Office. (2007). *Geographic areas used to adjust physician payments for variation in practice costs should be revised (* GAO-07-466). Washington, DC: US Government Printing Office.

The Medicare GPCIs represent prices relative to the *national* mean, whereas OMFS needs GPCIs that represent prices relative to the *statewide* mean. Hence, we proportionally decrease GPCIs downward so that the statewide mean is 1.00.

Table 6-5: Average of GPCIs (i.e., GAFs) by County, Options Involving Medicare Localities

County or Combination of Counties	Policy Option				
	Baseline RBRVS Model	Current Medicare Localities	2005 CMS Proposal	Consolidated Localities	
				No Bonus	Rural 10% Bonus
Option #	**1**	**2**	**3**	**4**	**5**
Statewide mean	1.000	1.000	1.000	1.000	1.000
Rest of urban California	1.000	0.940	0.935	0.940	0.939
Rural areas	1.000	0.940	0.935	0.940	1.032
Los Angeles Combined Statistical Area					
Los Angeles	1.000	1.021	1.021	1.025	1.024
Orange	1.000	1.042	1.042	1.025	1.024
Riverside	1.000	0.940	0.935	0.940	0.939
San Bernardino	1.000	0.940	0.935	0.940	0.939
Ventura	1.000	1.022	1.022	1.025	1.024
San Francisco Combined Statistical Area					
Alameda	1.000	1.070	1.070	1.112	1.110
Contra Costa	1.000	1.070	1.070	1.112	1.110
Marin	1.000	1.051	1.050	1.112	1.110
Napa	1.000	1.051	1.050	1.112	1.110
San Benito	1.000	0.940	0.935	0.940	0.939
San Francisco	1.000	1.139	1.139	1.112	1.110
San Mateo	1.000	1.141	1.141	1.112	1.110
Santa Clara	1.000	1.174	1.174	1.112	1.110
Santa Cruz	1.000	0.940	1.034	0.940	0.939
Solano	1.000	1.051	1.050	1.112	1.110
Sonoma	1.000	0.940	1.015	0.940	0.939

Shaded cells indicate that a county is either in the rest of urban California or a rural area (with no bonus).

Combined statistical areas are defined by the U.S. Office of Management and Budget.

Sources:

GPCI: CMS, 2008 Physician Fee Schedule Relative Value Files, http://www.cms.hhs.gov/PhysicianFeeSched/PFSRVF/list.asp#TopOfPage

Weights used to calculate GAF: Federal Register, 2007, Volume 72, p. 66374.

Federal Register, 2005, Volume 70, pp. 45783-45784.

GAFs have been adjusted (i.e., normalized) so that their statewide mean is 1.00. The adjustment involved weighing a county's GAF by the county's payment under the baseline RBRVS policy. See Table 4-4.

Use of the current Medicare localities has the advantage of being familiar to providers who are also paid under Medicare. However, as noted in Chapter IV, because CWCS does not currently

vary payment geographically, this option (in conjunction with an HPSA bonus) would substantially increase the redistribution of payment across counties.

Relative to the baseline RBRVS model, using GPCIs for the current Medicare localities would lower the GPCIs in the Rest of California locality—rural areas, several counties in the Los Angeles and San Francisco Combined Statistical Areas, and other urban areas. That is payment would fall by six percent.[82]

To illustrate the possibilities for a more complex system (not necessarily better), we present CMS' proposal to delineate two new localities (option 3). While increasing payment in two counties, it would lower payment by half a percentage point in the Rest of California locality.

Relative to the baseline RBRVS option, the three-locality option (option 4) would increase payment 2.5 percent in parts of the Los Angeles area and 11.2 percent in most of the San Francisco area but reduce it by six percent elsewhere. If a ten percent rural bonus was included (option 5), rural areas would experience a 3.2 percent increase over the baseline RBRVS option. Most of the San Francisco area would receive an increase, parts of the Los Angeles area would experience little change in payment, and the rest of state would experience a decrease in payment.

4. Payment Options for Rural Areas

We consider three payment options for rural areas:

1. Bonus payment of ten percent in HPSAs;
2. Bonus payment of ten percent in rural counties; and
3. No bonus payment.

The HPSA option has the advantage that Medicare provides a policy precedent. However, the policy has several difficulties. First, insurers may find payment based on zip code of the service location problematic. Physician claims do not necessarily provide information on the zip code of the site of service. Second, the rationale for the HPSAs is unclear. Although there is some face validity for the HPSAs in the southeastern part of the state, there is little in the northern part of the state and the Central Coast, both of which have reported access issues. Part (but not all) of the far north is designated as a HPSA, and most of the Central Coast is *not* in a HPSA. Third, HPSAs need to be stable over time for both conceptual and administrative reasons. However, the number of HPSAs increased rapidly in the 2006 to 2008 period, and some HPSAs that existed in 2006 did not exist two years later. (See Appendix D).

An alternative approach would be a ten percent bonus for rural counties. This option and the HPSA option have a different set of strengths and weaknesses. The rural county bonus does not have Medicare as a precedent. It is stable, because counties are rarely reclassified. And it may be easier to administer. Although most rural counties are arguably at risk for access issues, so are rural areas of "urban counties," such as those that constitute the Central Coast and San Joaquin Valley. (See Figure 6-4, a map distinguishing urban and rural counties.)

[82] In contrast to the "w/ GPCI" analysis of Table 4-4, this analysis does not include a HPSA bonus and does not calculate payment for each claim.

A ten percent bonus for services delivered in rural counties would increase payment in those areas by about ten percent and decrease it by one-fifth of one percent in the rest of the state, as shown in options 3 and 4 in Table 6-5. A HPSA bonus would lower payment in non-HPSAs by slightly more, by one-quarter of one percent (not shown in Table 6-5).

The final option involves no bonus. This is probably unacceptable if Medicare GPCIs are used, because payment in rural areas would fall by about seven percent without any bonus. The difficulty of focusing payment on rural areas with access issues (including those in "urban" counties) is an additional argument against adjusting payment using GPCIs.

D. Updating the Conversion Factor

Due to changes in economic factors, fee schedules need to be updated periodically and modified as needed. Medicare updates its CF on an annual basis. In most states with RBRVS, the workers' compensation program updates its CF annually, but not necessarily using the same index.

1. Criteria for Selection of an Update Factor

Prior to selecting an index, it is useful to identify the selection criteria:

- Conceptually relevant: An index should measure the costs that physicians face in producing their services. As their costs change over time, the payment should change proportionately.
- Well-understood and administrable: The more familiar physicians and claims administrators are with an index, the better. An index should be easy to administer. Ideally, administration would only entail taking the current value of the selected index directly from another source (probably federal) and incorporating that number into its fee schedule.
- Stable (i.e., without unnecessary volatility): Although an index should not be constant in the face of changing economic conditions, it also should not have volatility that is unrelated to those underlying conditions.
- Specific to California: Ideally, an index would be specific to California.

With this set of criteria in mind, we selected four possible indices that could serve as update factors:

- Medicare Economic Index (MEI),
- Medicare update for physicians, which incorporates the MEI,
- Consumer Price Index (CPI) for the Western Region, and
- State Average Weekly Wage (SAWW) for offices of physicians for California.

2. Possible Update Indices

a. Medicare Economic Index

Medicare has been using the MEI to control spending on physician services since 1975.[83] Starting in 1992 with the implementation of the Medicare fee schedule, the MEI has been used to update the CF, although other factors also play a role. The most recent update of the MEI was applied to payments in 2004.[84]

The MEI has two components—a traditional price index and an adjustment for productivity. A traditional price index is the sum of several component indices, with each component weighted by its share of total cost in some base period. For instance, the consumer price index comprises several differentially weighted components such as food and housing.

In simplified form, here are the MEI's components and their weights:

Table 6-6: MEI Components and Weights

MEI components	Weights
Physician time—wages, salaries, and benefits	**52.5**
Physician practice expense	**47.5**
Nonphysician employee compensation	18.7
Office expenses (e.g., rent)	12.2
Malpractice expense	3.9
Medical equipment and supplies	6.4
Other expenses	6.4
Total	**100**

Because physician time constitutes 52.5 percent of the cost of physician services, the index for the cost of physician time has a weight of 52.5 percent.[85]

Although the cost of producing physician services increases to the extent that these inputs become more expensive, that increase might be mitigated by increased productivity within the physician's office. Productivity gain could be the result of increased use of information technology, decreasing the amount of time that physicians, nurses, and administrative staff need to spend to deliver the same number of services.

To recognize this, CMS adjusts the MEI based on the increase in productivity over much of the U.S. economy, averaged over a decade. For instance, for the 2008 fee schedule, CMS calculated that input prices increased 3.2 percent.[86] The U.S. economy increased its productivity by 1.4 percent per year over the previous decade. Thus, adjusted for productivity, the MEI increased 1.8 percent for 2008 (i.e., 3.2% – 1.4% = 1.8%).

---

[83] Freeland, MS., Chulis, GS., Arnett, RH., and Brown, AC. (1991). Measuring the input prices for physicians: The revised Medicare economic index. *Health Care Financing Review* 12, 61-73.

[84] *Federal Register.* November 7, 2003, Volume 68, pp. 63239-63248, U.S. Government Printing Office.

[85] As discussed in the previous section in this chapter, these weights (or sums thereof) are also used to calculate the GAF for each geographic area.

[86] *Federal Register.* November 27, 2007, Volume 72, p. 66374, U.S. Government Printing Office.

b. Medicare Update for Physician Services

The design of Medicare's update is driven by two beliefs generally held by policymakers: 1) payment to physicians should increase with increases in their costs, and 2) Medicare expenditures on physician services are growing too fast. Physician expenditures per Medicare beneficiary can be thought of as the product of the price paid per service and the number of services. The Medicare fee schedule controls prices; controlling number of services provided (i.e., volume) is much more difficult under the Medicare system.

In 1997 Congress enacted legislation providing for Medicare sustainable growth rate (SGR) targets. Congress, in essence, decided that the Medicare program cannot afford a large rate of increase in expenditure due to volume. It set a target equal to the increase in the real gross domestic product (GDP) per capita. Whenever expenditures are projected to exceed this target, the update factor will be decreased to the point where expenditures are projected to equal the target.[87]

Starting in 2001, the actual expenditure has exceeded the target, threatening physicians with the imposition of a negative update factor. Starting in 2003, every year Congress has overridden the formula by increasing the update factor. Despite this, from 2002 onward, the physician update has been less than the MEI.

Because of the impact of the SGR targets, Medicare's update is not a reliable measure of the change in the cost of physician services.

c. Consumer Price Index

The CPI, a third possible update factor, has the same general form as the MEI, but is conceptually different. Whereas the MEI measures the costs of physician service inputs, especially physician and nonphysician employee compensation, the CPI measures the costs of goods and services purchased by consumers.

Produced by the Bureau of Labor Statistics, the CPI is widely used by government and the private sector and hence is well understood. It is available for the four regions of the country and for the largest metropolitan areas, but it is not available at the state level.[88] The variant of the CPI that is most promising in this context pertains to the Western Region, where California constitutes approximately half of the Western Region's population.[89]

d. State Average Weekly Wage

The Bureau of Labor Statistics of the U.S. Department of Labor collects wage data through its Quarterly Census of Employment and Wages (QCEW) program. These data are derived from quarterly tax reports submitted by employers subject to unemployment compensation laws as well as federal agencies subject to the Unemployment Compensation for Federal Employees

---

[87] The algebra of the SGR target is more complicated than this, involving changes in the number of enrollees and changes due to legislation and regulation.

[88] U.S. Department of Labor, Bureau of Labor Statistics. Guide to Available CPI Data. Retrieved February 6, 2008 from http://www.bls.gov/cpi/cpifact8.htm.

[89] An alternative would be to construct a composite index based on the three metropolitan areas for which BLS reports the CPI: Los Angeles, San Francisco, and San Diego.

program. The data pertain to more than 99 percent of wage and salary civilian employment.[90] The weekly wage is calculated by dividing quarterly total wages by the average of the three monthly employment levels of employees covered by unemployment insurance programs. This average is divided by 13 (the number of weeks in a quarterly) to yield the average weekly wage, which is reported by geographic area (e.g., state) and by industry.

Starting in 2007, the annual increase to the CWCS temporary disability rate is set equal to the increase in the SAWW. Hence, CWCS is already using this possible index. More relevant to physician payment is the SAWW for the offices of physicians.[91] This is the only index discussed here that is specific to California.

The SAWW for the office of physicians captures most but not all inputs to physician services, such as rent and malpractice insurance. Unlike the MEI, it does not adjust for increases in productivity in a physician's office.

3. Historical Performance of Possible Indices

A review of the historical performance of possible update factors yields insights along two dimensions: the typical rate of increase and the volatility (measured as the standard deviation). As presented in Table 6-7, over the last decade the Medicare update has lagged the increase in the MEI, due to the policy of sustainable growth rate. The change in the update factor would often have been negative except for specific Congressional action.

Not only is the update factor smaller than the MEI but it is much more volatile. In part because of the uncertainty of Congressional action, the update factor was about eight times as volatile as the MEI.

The MEI and CPI have increased, on average, at roughly the same rate, 2.6 percent and 2.8 percent respectively from 2001 to 2008. The CPI rate of increase, although having approximately twice the standard deviation as the MEI change, is still small.

The SAWW has increased about one percentage faster than the MEI and CPI, both of which reflect only increases in prices. SAWW reflects increases in both prices and real productivity. It is substantially more volatile, probably because it is reflective of business cycles.

[90] U.S. Department of Labor, Bureau of Labor Statistics. Retrieved May 2, 2008, http://www.bls.gov/cew/cewfaq.htm.

[91] The North American Industry Classification System (NAICS) code for offices of physicians is 6211.

Table 6-7: Four Possible Update Indices, Performance in 1999-2008 Period

Year	Change in MEI	Medicare Update	Change in CPI, West	Change in SAWW
2001	2.1%	5.0%	2.8%	-0.1%
2002	2.6%	-4.8%	4.3%	2.4%
2003	3.0%	1.7%	2.3%	NA
2004	2.9%	1.5%	2.3%	3.7%
2005	3.1%	1.5%	1.5%	-0.1%
2006	2.8%	0.2%	2.7%	3.9%
2007	2.1%	0.0%	3.7%	5.5%
2008*	1.8%	-4.8%	3.0%	4.7%
Average	2.6%	0.0%	2.8%	2.8%
Standard Deviation	0.5%	3.3%	0.9%	2.2%

MEI = Medicare Economic Index ; CPI = Consumer Price Index for the Western Region; and SAWW = State Average Weekly Wage, offices of physicians, California.
To allow for a time delay in implementation, the figures for CPI and SAWW are lagged. For instance, the change in CPI between 2006 and 2007 is reported as 2008.
*For the first half of 2008, the Medicare update is 0.5 percent and in the second half, -10.1 percent.
NA = not available because of an interruption in the data series.
Sources:

MEI and Update: accessed February 5, 2008, http://www.cms.hhs.gov/SustainableGRatesConFact/Downloads/sgr2007f.pdf

Medicare Update: accessed February 5, 2008, http://www.cms.hhs.gov/physicianfeesched/

CPI: accessed February 5, 2008, http://www.bls.gov/cpi/
SAWW: accessed May 2, 2008, http://www.bls.gov/cew/home.htm#data, "Get Detailed QCEW Statistics."

4. Comparison of Possible Indices

Of these possible update factors, the least attractive is the Medicare update factor. It has increased much less rapidly than the MEI, and is much more volatile than the others. Using this as the CWCS update factor would tie physician payment to the issues facing Congress in the budget process. Most recently, the update factor for 2008 was enacted by the Congress after the normal administrative process had been completed (i.e., after the final rule had been published in the *Federal Register*). As of the beginning of 2008, payment to physicians is scheduled to drop by approximately ten percent on July 1, 2008.

The choice between the MEI and CPI is less dramatic and could have little impact on physician payment over a multiple-year period. The advantage of the CPI is that it is more closely associated with California. However, the MEI is designed for the specific purpose of measuring changes to the cost of producing physician services. It has been used for a third of a century by Medicare and thus, physicians and claims administrators are familiar with it in this context. Although the practical impact may be small, the MEI appears to be the conceptually more appropriate option.

The SAWW has the administrative advantage of already being used in the CWCS, although only the physician component would be used for physician payment. It has the conceptual

advantage of being specific to the state, but it is not designed for adjusting physician payment, as it does not capture all inputs and productivity gains. The SAWW also has the disadvantage of more than four times the volatility of the MEI.

E. Key Issues Facing Policymakers

This report provides the technical background for a major CWCS initiative in the form of adopting the RBRVS-based fee schedule for physician payment. Policy decisions will need to be made in order for this initiative to be undertaken. These decisions include:

- How quickly should the RBRVS be implemented? If there is a transition, should it be at the service category level (e.g., surgical vs. E&M) or at the code level?
- At the end of the transition, will it be necessary to preserve physician participation in the system by having multiple conversion factors, in particular, higher factor for surgical services?
- Should the RBRVS payment reflect geographical differences in the cost of service delivery or in physician shortages?
- How should the conversion factor be adjusted over time?
- Finally, should the new system be budget neutral to the current OMFS payments?

There is an implicit tradeoff among three broad goals: 1) maintaining or improving access of injured workers to necessary medical services, 2) containing costs to payers, and 3) moving toward a more equitable relative value scale. The above decisions need to be made in light of this three-way tradeoff.

Appendix A:
Crosswalk of Discontinued CPT Codes to New CPT Codes

Mapping Algorithm	Unique OMFS Codes
1-1: one-to-one	240
1-M: one-to-many	99
M-1: many-to-one	35
M-M: many-to-many	56
Total	430

OMFS Code	Mapping Algorithm	RBRVS Code
00420	1-1	00300
00544	1-1	00542
00850	1-1	01961
00855	1-1	01963
00857	1-M	01968
00857	1-M	01969
00884	1-1	01930
00900	1-M	00300
00900	1-M	00400
00946	1-1	01960
00955	1-1	01967
01000	1-1	00400
01110	1-1	00300
01240	1-1	00400
01300	1-1	00880
01460	1-1	00400
01600	1-1	00400
01700	1-1	00400
01784	1-M	01770
01784	1-M	01780
01800	1-1	00400
01900	1-1	00400
01902	1-1	00400
01904	M-1	01905
01906	M-1	01905
01908	M-1	01905
01910	M-1	01905
01912	M-1	01905
01914	M-1	01905
01918	1-1	01916
01921	1-M	01924
01921	1-M	01925
01921	1-M	01926
11050	1-M	11055
11050	1-M	11056

OMFS Code	Mapping Algorithm	RBRVS Code
11050	1-M	11057
11050	1-M	17000
11050	1-M	17001
11050	1-M	17002
11050	1-M	17003
11050	1-M	17004
11051	1-M	11055
11051	1-M	11056
11051	1-M	11057
11051	1-M	17000
11051	1-M	17001
11051	1-M	17002
11051	1-M	17003
11051	1-M	17004
11052	1-M	11055
11052	1-M	11056
11052	1-M	11057
11052	1-M	17000
11052	1-M	17001
11052	1-M	17002
11052	1-M	17003
11052	1-M	17004
11731	1-1	11732
13300	1-M	13102
13300	1-M	13122
13300	1-M	13133
13300	1-M	13153
15000	1-M	15002
15000	1-M	15003
15000	1-M	15004
15000	1-M	15005
15350	1-M	15300
15350	1-M	15320
15350	1-M	15330
15350	1-M	15335
15580	1-1	15574
15625	1-1	15620
15831	1-M	15830
15831	1-M	17999
16010	1-M	16020
16010	1-M	16021
16010	1-M	16022
16010	1-M	16023
16010	1-M	16024
16010	1-M	16025

OMFS Code	Mapping Algorithm	RBRVS Code
16010	1-M	16026
16010	1-M	16027
16010	1-M	16028
16010	1-M	16029
16010	1-M	16030
16015	1-M	16020
16015	1-M	16021
16015	1-M	16022
16015	1-M	16023
16015	1-M	16024
16015	1-M	16025
16015	1-M	16026
16015	1-M	16027
16015	1-M	16028
16015	1-M	16029
16015	1-M	16030
16040	M-1	15000
16041	M-1	15000
16042	M-1	15000
17001	1-1	17003
17002	1-1	17004
17100	M-M	17000
17100	M-M	17003
17100	M-M	17004
17101	M-M	17000
17101	M-M	17003
17101	M-M	17004
17102	M-M	17000
17102	M-M	17003
17102	M-M	17004
17104	M-M	17000
17104	M-M	17003
17104	M-M	17004
17105	M-M	17000
17105	M-M	17003
17105	M-M	17004
17200	1-M	11200
17200	1-M	11201
17201	1-M	11200
17201	1-M	11201
17304	M-M	17311
17304	M-M	17312
17304	M-M	17313
17304	M-M	17314
17304	M-M	17315

OMFS Code	Mapping Algorithm	RBRVS Code
17305	M-M	17311
17305	M-M	17312
17305	M-M	17313
17305	M-M	17314
17305	M-M	17315
17306	M-M	17311
17306	M-M	17312
17306	M-M	17313
17306	M-M	17314
17306	M-M	17315
17307	M-M	17311
17307	M-M	17312
17307	M-M	17313
17307	M-M	17314
17307	M-M	17315
17310	M-M	17311
17310	M-M	17312
17310	M-M	17313
17310	M-M	17314
17310	M-M	17315
19140	M-M	17311
19140	M-M	17312
19140	M-M	17313
19140	M-M	17314
19140	M-M	17315
19160	M-M	17311
19160	M-M	17312
19160	M-M	17313
19160	M-M	17314
19160	M-M	17315
19162	M-M	17311
19162	M-M	17312
19162	M-M	17313
19162	M-M	17314
19162	M-M	17315
19180	M-M	17311
19180	M-M	17312
19180	M-M	17313
19180	M-M	17314
19180	M-M	17315
19182	M-M	17311
19182	M-M	17312
19182	M-M	17313
19182	M-M	17314
19182	M-M	17315

OMFS Code	Mapping Algorithm	RBRVS Code
19200	M-M	17311
19200	M-M	17312
19200	M-M	17313
19200	M-M	17314
19200	M-M	17315
19220	M-M	17311
19220	M-M	17312
19220	M-M	17313
19220	M-M	17314
19220	M-M	17315
19240	M-M	17311
19240	M-M	17312
19240	M-M	17313
19240	M-M	17314
19240	M-M	17315
24350	M-M	24357
24350	M-M	24358
24350	M-M	24359
24351	M-M	24357
24351	M-M	24358
24351	M-M	24359
24352	M-M	24357
24352	M-M	24358
24352	M-M	24359
24354	M-M	24357
24354	M-M	24358
24354	M-M	24359
24356	M-M	24357
24356	M-M	24358
24356	M-M	24359
25611	1-1	25606
25620	1-M	25607
25620	1-M	25608
25620	1-M	25609
26504	1-1	26390
26585	1-1	26587
27315	1-1	27325
27320	1-1	27326
28030	1-1	28055
29815	1-1	29805
29894	1-M	29894
29894	1-M	29899
29909	1-1	29999
32000	1-1	32421
32002	1-1	62422

OMFS Code	Mapping Algorithm	RBRVS Code
32005	1-1	32560
32020	1-1	32551
33242	1-M	33218
33242	1-M	33220
33247	1-1	33216
33253	1-M	33254
33253	1-M	33255
33253	1-M	33256
33918	1-M	33925
33918	1-M	99326
33919	1-M	33925
33919	1-M	99326
35161	M-1	37799
35162	M-1	37799
35381	1-M	35302
35381	1-M	35303
35381	1-M	35304
35381	1-M	35305
35381	1-M	35306
35507	1-1	35506
35541	1-M	35537
35541	1-M	35538
35546	1-M	35539
35546	1-M	35540
35641	1-M	35637
35641	1-M	35638
36488	M-M	36555
36488	M-M	36556
36488	M-M	36568
36488	M-M	36569
36488	M-M	36580
36488	M-M	36584
36489	M-M	36555
36489	M-M	36556
36489	M-M	36568
36489	M-M	36569
36489	M-M	36580
36489	M-M	36584
36490	M-M	36555
36490	M-M	36556
36490	M-M	36568
36490	M-M	36569
36490	M-M	36580
36490	M-M	36584
36491	M-M	36555

OMFS Code	Mapping Algorithm	RBRVS Code
36491	M-M	36556
36491	M-M	36568
36491	M-M	36569
36491	M-M	36580
36491	M-M	36584
36493	1-1	36597
36520	1-M	36511
36520	1-M	36512
36530	1-1	36563
36531	1-M	36576
36531	1-M	36578
36531	1-M	36581
36531	1-M	36582
36531	1-M	36584
36531	1-M	36585
36531	1-M	36757
36532	1-1	36590
36533	1-M	36557
36533	1-M	36558
36533	1-M	36559
36533	1-M	36560
36533	1-M	36561
36533	1-M	36565
36533	1-M	36566
36533	1-M	36570
36533	1-M	36571
36534	1-M	36575
36534	1-M	36576
36534	1-M	36577
36534	1-M	36578
36534	1-M	36581
36534	1-M	36582
36534	1-M	36583
36534	1-M	36585
36535	1-1	36589
37730	1-M	37718
37730	1-M	37722
38231	1-M	38025
38231	1-M	38206
43750	1-1	43246
44152	1-1	44799
44153	1-1	44799
47134	1-1	47140
47716	1-1	47719
48005	1-1	48105

OMFS Code	Mapping Algorithm	RBRVS Code
48180	1-1	48548
49085	1-1	49402
49200	M-M	49203
49200	M-M	49204
49200	M-M	49205
49200	M-M	58957
49200	M-M	58958
49201	M-M	49203
49201	M-M	49204
49201	M-M	49205
49201	M-M	58957
49201	M-M	58958
51000	1-1	51100
51005	1-1	51101
51010	1-1	51102
52335	1-1	52351
52336	1-1	52352
52337	1-1	52353
52338	1-1	52354
52339	1-1	52355
52340	1-1	52400
53443	1-1	53431
53670	1-M	51701
53670	1-M	51702
53675	1-1	51703
54152	1-1	54150
54402	1-M	54415
54402	1-M	54416
54407	1-M	54406
54407	1-M	54408
54407	1-M	54410
54409	1-1	54408
54510	1-1	54512
54820	1-1	54865
55859	1-1	55875
56300	1-1	49320
56301	1-1	58670
56302	1-1	58671
56303	1-1	58662
56304	1-1	58660
56305	1-1	49321
56306	1-1	49322
56307	1-1	58661
56308	1-1	58550
56309	1-1	58551

OMFS Code	Mapping Algorithm	RBRVS Code
56311	1-1	38570
56312	1-1	38571
56313	1-1	38572
56315	1-1	44970
56316	1-1	49650
56317	1-1	49651
56320	1-1	55550
56322	1-1	43651
56323	1-1	43652
56324	1-1	47570
56340	1-1	47562
56341	1-1	47563
56342	1-1	47564
56343	1-1	58673
56344	1-1	58672
56350	1-1	58555
56351	1-1	58558
56352	1-1	58559
56353	1-1	58560
56354	1-1	58561
56355	1-1	58562
56356	1-1	58563
56362	1-1	47560
56363	1-1	47561
56720	1-1	56442
57108	1-1	57106
57820	1-1	57558
60001	1-1	60300
61712	1-1	69990
61855	1-1	61862
61865	1-1	61862
62274	1-M	62310
62274	1-M	62311
62275	1-1	62310
62276	M-M	62318
62276	M-M	62319
62277	M-M	62318
62277	M-M	62319
62278	1-1	62311
62279	1-1	62319
62288	M-M	62310
62288	M-M	62311
62289	1-1	62311
62298	1-1	62310
63690	M-M	95970

OMFS Code	Mapping Algorithm	RBRVS Code
63690	M-M	95971
63691	M-M	95970
63691	M-M	95971
64440	1-M	64479
64440	1-M	64483
64441	1-M	64480
64441	1-M	64484
64442	1-1	64475
64443	1-1	64476
64820	1-M	64820
64820	1-M	64821
64820	1-M	64822
64820	1-M	64823
64830	1-1	69990
67350	1-1	67346
70540	1-M	70540
70540	1-M	70542
70540	1-M	70543
70541	1-M	70544
70541	1-M	70545
70541	1-M	70546
70541	1-M	70547
70541	1-M	70548
70541	1-M	70549
71036	1-1	76003
71038	1-1	31628
71550	1-M	71550
71550	1-M	71551
71550	1-M	71552
72196	1-M	72195
72196	1-M	72196
72196	1-M	72197
73220	1-M	73218
73220	1-M	73219
73220	1-M	73220
73221	1-M	73221
73221	1-M	73222
73221	1-M	73223
73720	1-M	73718
73720	1-M	73719
73720	1-M	73720
73721	1-M	73721
73721	1-M	73722
73721	1-M	73723
74181	1-M	74181

OMFS Code	Mapping Algorithm	RBRVS Code
74181	1-M	74182
74181	1-M	74183
74350	1-1	49440
74405	1-M	74400
74405	1-M	74410
74405	1-M	74415
75552	M-M	75557
75552	M-M	75558
75552	M-M	75559
75552	M-M	75560
75552	M-M	75561
75552	M-M	75562
75552	M-M	75563
75552	M-M	75564
75553	M-M	75557
75553	M-M	75558
75553	M-M	75559
75553	M-M	75560
75553	M-M	75561
75553	M-M	75562
75553	M-M	75563
75553	M-M	75564
75554	M-M	75557
75554	M-M	75558
75554	M-M	75559
75554	M-M	75560
75554	M-M	75561
75554	M-M	75562
75554	M-M	75563
75554	M-M	75564
75555	M-M	75557
75555	M-M	75558
75555	M-M	75559
75555	M-M	75560
75555	M-M	75561
75555	M-M	75562
75555	M-M	75563
75555	M-M	75564
75556	M-M	75557
75556	M-M	75558
75556	M-M	75559
75556	M-M	75560
75556	M-M	75561
75556	M-M	75562
75556	M-M	75563

OMFS Code	Mapping Algorithm	RBRVS Code
75556	M-M	75564
76003	1-1	77002
76020	1-1	77072
76040	1-1	77073
76061	1-1	77074
76062	1-1	77075
76065	1-1	77076
76066	1-1	77077
76070	1-1	77078
76075	1-1	77080
76086	1-1	77053
76088	1-1	77054
76090	1-1	77055
76091	1-1	77056
76092	1-1	77057
76093	1-1	77058
76094	1-1	77059
76095	1-1	77031
76096	1-1	77032
76355	1-1	77011
76360	1-1	77012
76365	1-M	76360
76370	1-1	77014
76400	1-1	77084
76778	1-M	76775
76778	1-M	76776
76934	1-M	32000
76934	1-M	76942
76938	1-M	76942
76960	1-1	76950
76986	1-1	76998
77419	M-1	77427
77420	M-1	77427
77425	M-1	77427
77430	M-1	77427
78017	1-1	78018
78205	1-M	78205
78205	1-M	78206
78615	1-1	78610
78704	M-M	78707
78704	M-M	78708
78704	M-M	78709
78707	1-M	78707
78707	1-M	78708
78707	1-M	78709

OMFS Code	Mapping Algorithm	RBRVS Code
78715	M-M	78707
78715	M-M	78708
78715	M-M	78709
78726	1-1	78799
78727	1-M	78700
78727	1-M	78701
78727	1-M	78702
78727	1-M	78703
78727	1-M	78704
78727	1-M	78705
78727	1-M	78706
78727	1-M	78707
78760	1-1	78761
78810	1-M	78811
78810	1-M	78812
78810	1-M	78813
79000	M-1	79005
79001	M-1	79005
79020	M-1	79005
79030	M-1	79005
79035	M-1	79005
79100	M-1	79101
79400	M-1	79101
79420	1-1	79445
80058	1-1	80076
80059	1-1	80074
80072	1-M	84550
80072	1-M	85651
80072	1-M	86255
80072	1-M	86430
82130	1-M	82131
82130	1-M	82136
82130	1-M	82139
82250	1-M	82247
82250	1-M	82248
82251	1-M	82247
82251	1-M	82248
82273	1-1	82271
83715	1-M	83700
83715	1-M	83701
83717	1-1	83716
85023	1-M	85007
85023	1-M	85027
85024	1-1	85025
85029	M-M	85021

OMFS Code	Mapping Algorithm	RBRVS Code
85029	M-M	85022
85029	M-M	85023
85029	M-M	85024
85029	M-M	85025
85029	M-M	85026
85029	M-M	85027
85030	M-M	85021
85030	M-M	85022
85030	M-M	85023
85030	M-M	85024
85030	M-M	85025
85030	M-M	85026
85030	M-M	85027
85031	1-M	85014
85031	1-M	85018
85031	1-M	85032
85095	1-1	38220
85102	1-1	38221
85535	1-1	85536
85585	1-1	85008
85590	1-1	85032
85595	1-1	85049
86287	1-1	87340
86289	1-1	86704
86290	1-1	86705
86291	1-1	86706
86293	1-1	87350
86295	1-1	86707
86296	1-1	86708
86299	1-1	86709
86302	1-1	86803
86303	1-1	86804
86306	1-1	87380
86311	1-M	87390
86311	1-M	87391
86313	1-1	87449
86315	1-1	87450
86585	1-1	86580
86586	1-M	86356
86586	1-M	86486
86588	1-M	86403
86588	1-M	87081
86588	1-M	87430
86588	1-M	87880
86915	1-M	38210

OMFS Code	Mapping Algorithm	RBRVS Code
86915	1-M	38211
86915	1-M	38212
86915	1-M	38213
87060	1-M	87070
87060	1-M	87081
87072	1-M	87076
87072	1-M	87077
87082	M-1	87081
87083	M-1	87081
87085	1-1	87086
87087	1-1	87088
87117	1-1	87015
87151	1-1	87147
87155	1-1	87147
87163	1-M	87076
87163	1-M	87077
87178	1-1	87797
87179	1-1	87798
87192	1-M	87181
87192	1-M	87184
87192	1-M	87186
87192	1-M	87187
87192	1-M	87188
87211	1-1	87177
88151	1-1	88141
88156	1-1	88164
88157	1-1	88141
88170	1-1	10021
88171	1-1	10022
88180	1-M	88182
88180	1-M	88189
88250	1-1	88248
88260	1-1	88261
89350	1-1	89220
89355	1-1	89225
89360	1-1	89230
89365	1-1	89235
89399	1-1	89240
90724	1-M	90657
90724	1-M	90658
90724	1-M	90659
90724	1-M	90660
90726	1-M	90675
90726	1-M	90676
90728	1-M	90585
90728	1-M	90586
90730	1-M	90632
90730	1-M	90633
90730	1-M	90634
90737	1-M	90645
90737	1-M	90646
90737	1-M	90647
90737	1-M	90648
90741	1-M	90281
90741	1-M	90282
90741	1-M	90283
90742	1-M	90287
90742	1-M	90288
90742	1-M	90291
90742	1-M	90296
90742	1-M	90371
90742	1-M	90375
90742	1-M	90376
90742	1-M	90379
90742	1-M	90384
90742	1-M	90385
90742	1-M	90386
90742	1-M	90389
90742	1-M	90393
90742	1-M	90396
90742	1-M	90399
90780	M-M	90760
90780	M-M	90761
90780	M-M	90765
90780	M-M	90766
90780	M-M	90767
90780	M-M	90768
90781	M-M	90760
90781	M-M	90761
90781	M-M	90765
90781	M-M	90766
90781	M-M	90767
90781	M-M	90768
90782	1-1	90772
90783	1-1	90773
90784	1-1	90774
90788	1-1	90772
90799	1-1	90779
90820	1-1	90802
90825	1-1	90885

OMFS Code	Mapping Algorithm	RBRVS Code
90835	1-1	90865
90842	1-M	90808
90842	1-M	90809
90842	1-M	90821
90842	1-M	90822
90843	1-M	90804
90843	1-M	90805
90843	1-M	90816
90843	1-M	90817
90844	1-M	90806
90844	1-M	90807
90844	1-M	90818
90844	1-M	90819
90855	1-M	90810
90855	1-M	90811
90855	1-M	90812
90855	1-M	90813
90855	1-M	90814
90855	1-M	90815
90855	1-M	90823
90855	1-M	90824
90855	1-M	90825
90855	1-M	90826
90855	1-M	90827
90855	1-M	90828
90855	1-M	90829
91032	1-1	91034
91033	1-1	91035
92525	1-M	91611
92525	1-M	92610
92573	1-1	92700
92599	1-1	92700
93536	1-1	33967
93607	1-1	93622
93737	1-M	93741
93737	1-M	93743
93738	1-M	93742
93738	1-M	93744
94160	1-M	94010
94160	1-M	94150
94656	M-M	94002
94656	M-M	94003
94656	M-M	94004
94656	M-M	94005
94657	M-M	94002

OMFS Code	Mapping Algorithm	RBRVS Code
94657	M-M	94003
94657	M-M	94004
94657	M-M	94005
96100	1-M	96101
96100	1-M	96102
96100	1-M	96103
96115	1-1	96116
96117	1-M	96118
96117	1-M	96119
96117	1-M	96120
96400	1-M	96401
96400	1-M	96402
96408	1-1	96409
96410	1-1	96413
96412	1-1	96415
96414	1-1	96416
96520	1-1	96521
96530	1-1	96522
97020	1-1	97024
97114	1-1	97530
97118	1-1	97032
97120	1-1	97033
97122	1-1	97140
97126	1-1	97034
97128	1-1	97035
97145	1-M	97110
97145	1-M	97112
97145	1-M	97113
97145	1-M	97116
97145	1-M	97124
97145	1-M	97139
97220	M-1	97036
97221	M-1	97036
97240	M-M	97036
97240	M-M	97113
97241	M-M	97036
97241	M-M	97113
97250	M-1	97140
97260	M-1	97140
97261	M-1	97140
97500	M-1	97504
97501	M-1	97504
97504	1-1	97760
97520	1-1	97761
97521	1-1	97761

OMFS Code	Mapping Algorithm	RBRVS Code
97531	1-1	97530
97540	M-M	97535
97540	M-M	97537
97541	M-M	97535
97541	M-M	97537
97610	1-1	97140
97616	1-1	97140
97630	1-1	97150
97660	1-1	97750
97670	1-1	97750
97680	1-1	97537
97690	1-1	97750
97691	1-1	97750
97700	M-1	97703
97701	M-1	97703
97703	1-1	97762
97720	M-1	97750
97721	M-1	97750
97752	1-1	97750
97780	1-M	97810
97780	1-M	97811
97781	1-M	97813
97781	1-M	97814
97800	1-1	97780
97801	1-1	97781
99065	1-M	99281
99065	1-M	99282
99065	1-M	99283
99065	1-M	99284
99065	1-M	99285
99261	1-M	99231
99261	1-M	99232
99261	1-M	99233
99261	1-M	99307
99261	1-M	99308
99261	1-M	99309
99261	1-M	99310
99262	1-M	99231
99262	1-M	99232
99262	1-M	99233
99262	1-M	99307
99262	1-M	99308
99262	1-M	99309
99262	1-M	99310
99263	1-M	99231

OMFS Code	Mapping Algorithm	RBRVS Code
99263	1-M	99232
99263	1-M	99233
99263	1-M	99307
99263	1-M	99308
99263	1-M	99309
99263	1-M	99310
99297	1-1	99296
99351	1-1	99347
99352	1-1	99348
99353	1-1	99349
99358	1-M	99358
99358	1-M	99359
99361	M-M	99366
99361	M-M	99367
99361	M-M	99368
99362	M-M	99366
99362	M-M	99367
99362	M-M	99368
99371	M-M	99441
99371	M-M	99442
99371	M-M	99443
99372	M-M	99441
99372	M-M	99442
99372	M-M	99443
99373	M-M	99441
99373	M-M	99442
99373	M-M	99443
99376	1-M	99375
99376	1-M	99378
99376	1-M	99380

Appendix B:
Calculating Payment-Neutral Conversion Factor(s)

This appendix describes how we calculate a payment-neutral conversion factor. Let

$RBRVU_{jg}$ = sum of the geographically-adjusted RBRVS RVUs across input categories (i.e., work, practice expenses, malpractice) for CPT j in geographic area g,

RVU_j = OMFS RVUs for CPT j,

Q_{jg} = number of times CPT j was performed (adjusted for RBRVS ground rules) in geographic area g, based on the CWCI data for 2006,

Q_j = same as Q_{jg} except adjusted for OMFS ground rules and undifferentiated by geographic area,

TP = total payment under OMFS across all CPT codes,

CF_j = OMFS conversion factor for CPT j, and

CF^* = payment-neutral conversion factor under a RBRVS system.

We first calculated the total payment under OMFS by summing over CPT codes and counties:

$$TP = \Sigma(RVU_j \times Q_j \times CF_j) \qquad \text{(equation 1)}$$

Note that there is no geographic adjustment in the OMFS.

Payment neutrality requires that total payment remains unchanged under RBRVS relative to current levels.

$$CF^* \times \Sigma\Sigma(RBRVU_{jg} \times Q_{jg}) = TP, \qquad \text{(equation 2)}$$

where the left-hand side is the total payment in the Workers' Compensation system under a RBRVS system and the right-hand side is the total payment under the current system.

We solve equation 2 for the payment-neutral conversion factor:

$$CF^* = TP / [\Sigma\Sigma(RBRVU_{jg} \times Q_{jg})] \qquad \text{(equation 3)}$$

The payment-neutral conversion factor is used to model the impact of a shift to a RBRVS system.

Appendix C:
Sources for State Comparison

In performing a comparison of workers' compensation programs, our subcontractor, Robert Penny Enterprises (RPE), contacted workers' compensation representatives for each state. Initially contacting via phone and then by email if necessary, RPE asked a standard set of questions regarding their program. Additionally, a web search was conducted to review each state's fee schedule, payment methodology, and transition parameters.

This appendix contains the contact information for each state representative contacted and Internet sources that are available for comparing the states' programs.

State interviews were conducted between November and December, 2007.

Florida

- Interview with personnel from Division of Workers' Compensation, Office of Data Quality and Collection
- Florida Workers' Compensation Health Care Provider Reimbursement Manual, 2007 Edition: http://www.fldfs.com/wc/publications.html
- 2007 Florida Statutes - http://www.leg.state.fl.us/statutes

Georgia

- Interview with personnel from State Board of Workers' Compensation
- Medical Fee schedule, April 1, 2007: http://sbwc.georgia.gov/00/channel_modifieddate/0,2096,11394008_34361078,00.html
- Index to 2007 Legislative Updates and Rules: http://sbwc.georgia.gov/00/channel_modifieddate/0,2096,11394008_11400545,00.html

Illinois

- Interview with personnel from Illinois Workers' Compensation Commission;
- Illinois Workers' Compensation Act, Section 20 ILCS 305: http://www.iwcc.il.gov/8.2ff.pdf

Maryland

- Interview with personnel from Workers' Compensation Commission, State of Maryland
- The Maryland Workers' Compensation Commission Amendment of Guide of Medical and Surgical Fees, Revised June 5, 2006: http://www.wcc.state.md.us/PDF/MFG/MFG_6_2006.pdf

Michigan

- Interview with personnel from Michigan's Department of Labor and Economic Growth, Workers' Compensation Agency
- Department of Labor & Economic Growth, Workers' Compensation Agency, 2007 Health Care Services Rules: http://www.michigan.gov/wca/0,1607,7-191-26922-163186--,00.html

Minnesota

- Interview with personnel from Benefit Management and Resolution Unit Workers' Compensation Division; Minnesota Department of Labor and Industry
- Minnesota Dept of Labor and Industry Minnesota Rules: 5221.4020: Determining Fee Schedule Payment Limits: http://www.revisor.leg.state.mn.us/bin/getpub.php?pubtype=RULE_CHAP_SEC&year=current&section=5221.4020

New Jersey

- Interview with personnel from Department of Labor

New York

- Interview with a contractor to NY Worker's Compensation Agency
- New York State Workers' Compensation Board website: http://www.wcb.state.ny.us/content/main/Reform/About.jsp

North Carolina

- Interview with personnel from North Carolina Industrial Commission, Medical Billing Section
- 2006 and 2007 CPT Code updates to the Workers' Compensation Medical Fee Schedule, North Carolina Industrial Commission: May 1, 2007: http://www.comp.state.nc.us/ncic/pages/050107mf.htm
- Changes to "New Mandatory Medical Billing and Reimbursement Procedures," Adopted June 15, 2006: North Carolina Industrial Commission; June 15, 2007; http://www.comp.state.nc.us/ncic/pages/061506me.htm

Ohio

- Interview with personnel from Ohio's Bureau of Workers' Compensation

Oregon

- Interview with personnel from Workers' Compensation Division
- Oregon Medical Fee and Payment Rules, Oregon Administrative Rules, Chapter 436, Division 099: http://www.cbs.state.or.us/wcd/rdrs/mru/fee_sched.html

Pennsylvania

- Interview with personnel from Chief Bureau of Workers' Compensation

Tennessee

- Interview with personnel from Tennessee Department of Labor & Workforce Development, Division of Workers' Compensation
- Rules of Tennessee Department of Labor and Workforce Development Division of Workers' Compensation, Chapter 0800-2-18 Medical Fee Schedule: http://www.state.tn.us/sos/rules/0800/0800-02/0800-02-18.pdf.
- Medical Cost Containment Program Rules, Chapter 0800-2-17: http://www.state.tn.us/sos/rules/0800/0800-02/0800-02-17.pdf

Texas

- Interview with personnel from Texas Workers' Compensation
- Current Workers' Compensation Rules, Workers' Compensation Fee Guidelines, Chapter 134: http://www.tdi.state.tx.us/wc/rules/tableofcontents/rulesoptions.html
- General Information for Medical Fee Guidelines, 28 T.A.C. §§134.2, Changes for 2008: http://www.tdi.state.tx.us/wc/policy/documents/mfginfo2008.pdf

Appendix D:
Health Professional Shortage Areas (HPSAs)

Medicare has made a bonus payment for services provided in HPSAs for almost two decades. Effective 1989, physicians were entitled to a five percent bonus payment for providing services in certain classes of rural HPSAs. In 1991, the payment was raised from five to ten percent and urban HPSAs were added.

HPSA designations are determined by the Bureau of Primary Health Care's Division of Shortage Designation, part of the Health Resources and Services Administration (HRSA), within the U.S. Department of Health and Human Services. The following may be designated as an HPSA: 1) a geographic area; 2) a population group (e.g., low-income populations with access barriers or homeless populations); or 3) facilities (i.e., correctional facilities, state mental hospitals, and public or nonprofit private medical facilities that are accessible to and serving a HPSA designated geographic area or population group). HRSA uses data from local, state, and national resources in order to establish these designations or an agency or individual may request that certain areas be designated.[92] Geographic-based HPSAs are defined by several boundaries including counties, county subdivisions, and Census tracts.

Medicare makes bonus payments only for services provided in geographic-based HPSAs, of which there are three types: primary medical care, mental health, and dental health. Medicare makes bonus payments to physicians providing services in primary medical care and mental health HPSAs, but not in dental health HPSAs.[93,94] Almost all physician specialties are eligible for the bonus payment.[95]

In California, some rural counties have no HPSAs and some urban counties have HPSAs. We present maps of HPSAs in three parts of the state:

- Southeastern California (which has geographically large counties),
- Far north California, and
- Central coast.

The UCLA survey reported some claims administrators had difficulty contracting physicians for workers' compensation care in the second two regions. These maps are designed to help readers—especially those with knowledge of the problems of physician shortages in these areas—to assess the appropriateness of using HPSAs for payment.

Figure D-A displays HPSA zip code areas in Southeastern California. The urban population is primarily along the Pacific coast, north to the southwestern corner of San Bernardino County. (Small zip code areas are usually indicative of relative high density.) There are few HPSA zip codes in these areas. Rather, most of the HPSAs are in eastern parts of San Diego and Imperial

[92] Health Resource and Services Administration. Health Professional Shortage Area Designation Criteria. Retrieved on October 19, 2007 from http://bhpr.hrsa.gov/shortage/hpsacrit.htm.

[93] Originally, bonus payments were only available to physicians providing services in primary medical care HPSAs. However, psychiatrists are also now eligible for the bonus payment for services provided in mental health HPSAs for claims with a service date on or after July 1, 2004.

[94] Centers for Medicare and Medicaid Services, HPSA/PSA Physician Bonus Overview. Retrieved October 2, 2007 from http://www.cms.hhs.gov/HPSAPSAPhysicianBonuses/.

[95] Specifically, eligible health professions for an HPSA bonus payment include doctors of medicine, osteopathic medicine, dental surgery, chiropractic medicine, podiatric medicine, and optometry.

Counties. These sections are farthest from small cities. However, eastern parts of Riverside and San Bernardino Counties are also low density. It is not immediately clear why those areas do not also have HPSAs.

Figure D-A: HPSAs in Southeastern California, by Zip Code

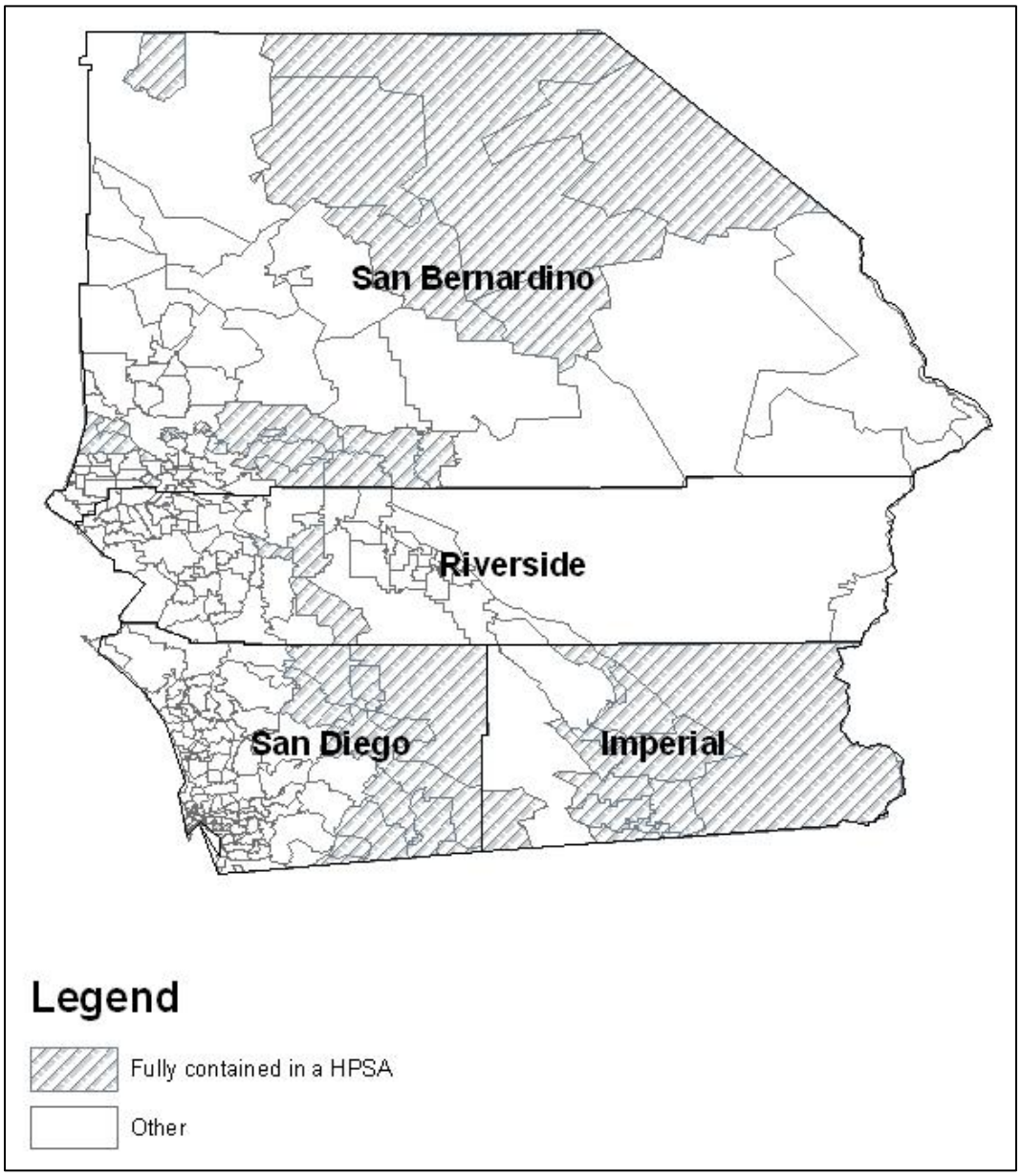
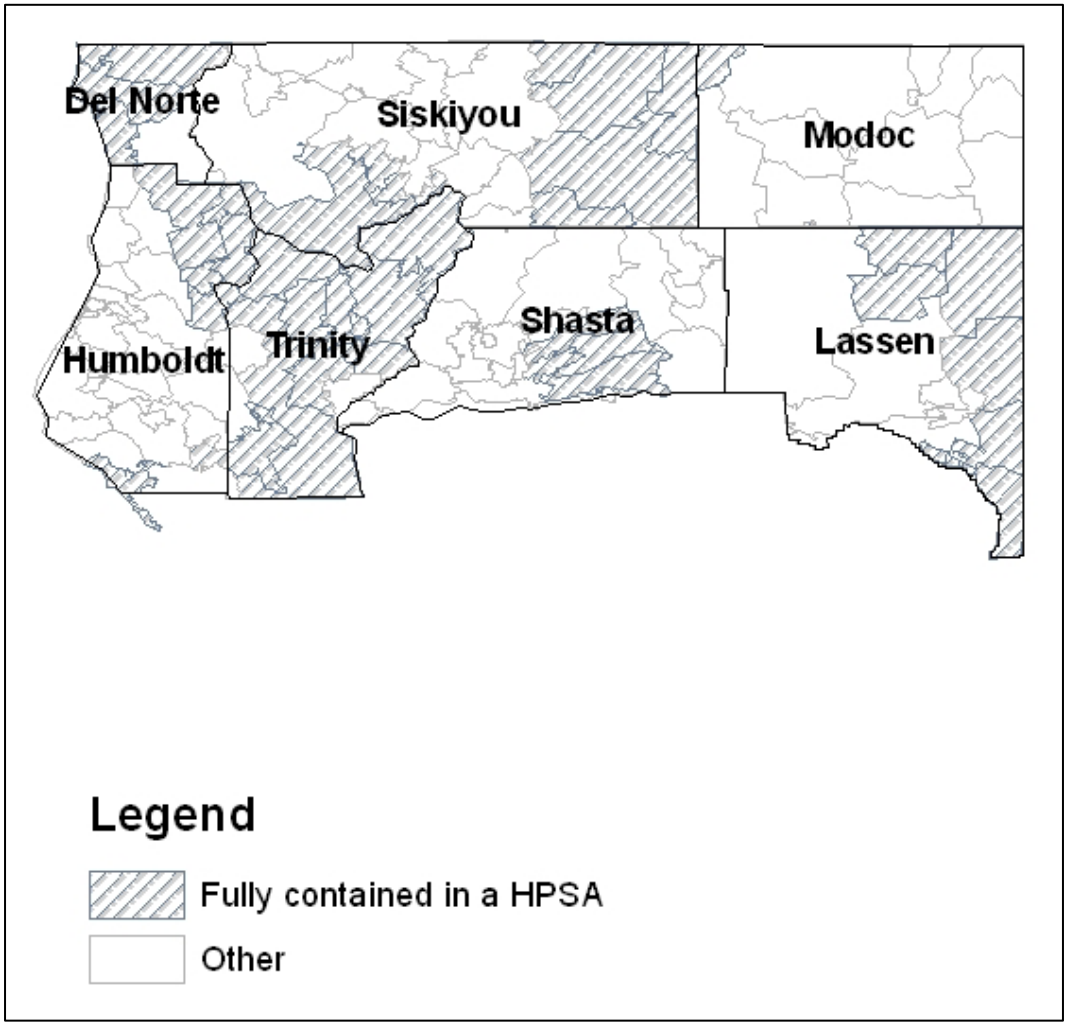


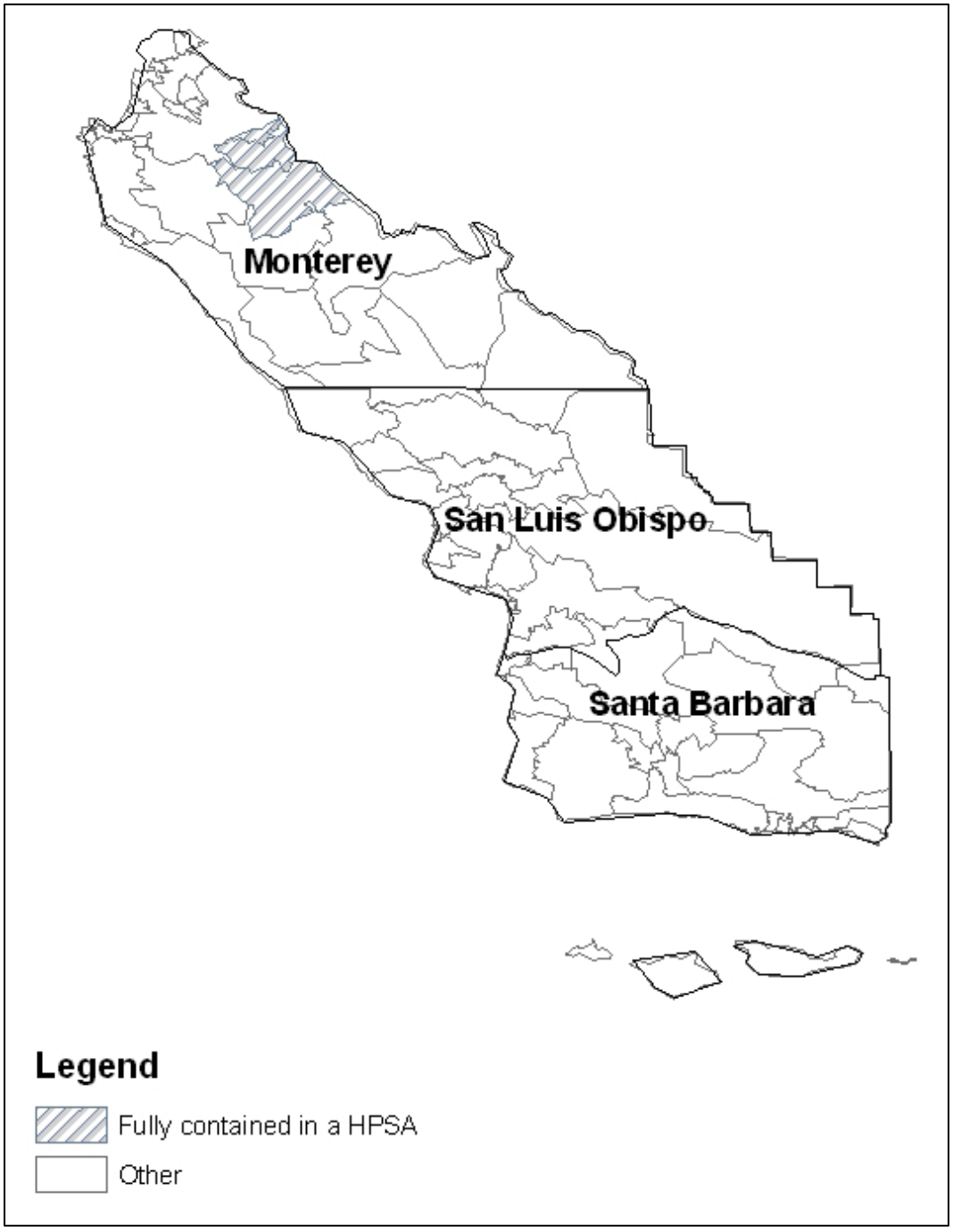
Figure D-B includes the state's seven most northern counties, where access is problematic for CWCS. As in the southeastern part of the state, the justification for the configuration of HPSAs is not clear.

Figure D-B: HPSAs in Far North California, by Zip Code



The central coast also has access issues. All three of the counties—Monterey, San Luis Obispo, and Santa Barbara—include some urban areas and so are classified as urban counties, but they also include substantial rural areas. Except for a small proportion of Monterey County, the central coast lacks HPSAs, as shown in Figure D-C.

Figure D-C: HPSAs in the Central Coast of California, by Zip Code



HPSAs in California: Stability over Time

To analyze the stability of HPSAs across years, we obtained counts of HPSAs by county for the 2006-2008 period. As reported in Table D-1 (bottom right hand side), the number of HPSAs in California increased by 154 percent over this period, from 107 in 2006 to 216 in 2007 to 272 in 2008.[96] Of greater concern is that some HPSAs were dropped at a time of an increase in the overall HPSA count. The number of HPSAs in Los Angeles (an urban county) increased from two in 2006 to six in 2007 before dropping to one in 2008. In Humboldt (a rural county), the number increased from seven to 13 before dropping to six. The instability in the count and location of HPSAs make payments based on them unpredictable and difficult to explain to physicians.

[96] According to the CMS contractor who manages HPSA-designated zip codes, a zip code is considered to be in a HPSA if at least 99 percent of the zip code overlaps with HPSAs. The increase in zip codes in 2007 was due to lowering the minimum overlap percentage from 99.99 percent to 99 percent. The increase in 2008 was due to changes in HRSA's designation of HPSAs.

Table D-1: Count of Medicare HPSA Zip Codes by County, California, 2006-2008

Urban Counties	# of HPSA zip codes within county		
	2006	2007	2008
Alameda	0	1	0
Butte	0	3	2
Contra Costa	0	0	0
El Dorado	3	2	3
Fresno	14	19	21
Imperial	2	7	16
Kern	14	17	14
Kings	2	3	3
Los Angeles	2	6	1
Madera	5	9	9
Marin	0	7	7
Merced	2	5	7
Monterey	1	3	3
Napa	0	0	0
Orange	0	0	0
Placer	0	10	13
Riverside	1	4	5
Sacramento	0	0	2
San Benito	0	3	5
San Bernardino	3	13	31
San Diego	3	12	17
San Francisco	0	1	1
San Joaquin	0	0	1
San Luis Obispo	0	0	0
San Mateo	0	0	0
Santa Barbara	0	0	0
Santa Clara	0	1	3
Santa Cruz	0	0	0
Shasta	8	10	4
Solano	0	0	0
Sonoma	4	0	5
Stanislaus	0	0	0
Sutter	0	0	0
Tulare	14	2	5
Ventura	0	0	0
Yolo	0	0	0
Yuba	0	0	0
Total	78	138	178

Rural Counties	# of HPSA zip codes within county		
	2006	2007	2008
Alpine	0	0	0
Amador	0	0	0
Calaveras	0	12	21
Colusa	7	0	0
Del Norte	0	0	6
Glenn	0	0	0
Humboldt	7	13	6
Inyo	4	5	5
Lake	0	0	0
Lassen	0	4	6
Mariposa	0	7	8
Mendocino	2	5	4
Modoc	1	1	1
Mono	0	0	0
Nevada	0	0	6
Plumas	0	0	0
Sierra	3	4	4
Siskiyou	4	11	7
Tehama	0	0	0
Trinity	1	8	11
Tuolumne	0	0	0
Unidentified County	0	8	9
Total	29	78	94

Summary			
	2006	2007	2008
Urban	78	138	178
Rural	29	78	94
Total	**107**	**216**	**272**