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Final Report on GPCI Malpractice RVUs for the CY 2010 Medicare Physician Fee Schedule Rule

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1 INTRODUCTION

Since January 1, 1992, Medicare has paid for physicians' services under section 1848 of the Social Security Act (the Act), ``Payment for Physicians' Services." The Act requires that physician payments be based on national uniform relative value units based on the relative resources used in furnishing a service. As required by Section 1848(c), the Centers for Medicare and Medicaid Services (CMS) establish resource-based malpractice relative value units (MP RVUs) as part of the Resource-Based Relative Value Scale (RBRVS) method for reimbursing physicians. Section 1848(c)(2)(B)(i) of the Act requires that CMS review all RVUs no less often than every 5 years.

Like the geographic practice cost indices (GPCIs), which are designed to adjust reimbursements for differing regional work, practice and malpractice costs, RVUs are split into three components: the physician work RVU_W, the practice expense RVU_{PE} and the malpractice insurance RVU_{MP}. While the GPCIs adjust payments for geographic variation, RVUs distinguish among services in the cost of providing services. The equation below demonstrates how these three RVU components combine with the GPCIs and a conversion factor (CF) translating between the adjusted RVUs and dollars to establish physician payments under Medicare for service *K* in locality *L*:

$$Payment_{K,L} = \{[GPCI_{W,L} * RVU_{W,K}] + [GPCI_{PE,L} * RVU_{PE,K}] + [GPCI_{MP,L} * RVU_{MP,K}]\} * CF$$

Physician Work | Practice Expense | Malpractice Insurance

Section 1848(c) of the Act requires that national RVUs be established for physician work, practice expense (PE), and malpractice expense. Initially, only the physician work RVUs were resource-based, and the PE and malpractice RVUs were based on average allowable charges. Section 4505(f) of the Balanced Budget Act of 1997 (BBA) amended section 1848(c) of the Act requiring CMS to implement resource-based malpractice (MP) RVUs for services furnished on or after 2000.

The resource-based MP RVUs were implemented in the Physician Fee Schedule (PFS) final rule published November 2, 1999 (64 FR 59380). The MP RVUs were based on malpractice insurance premium data collected from commercial and physician-owned insurers from all the States, the District of Columbia, and Puerto Rico. The first 5-Year Review of the physician work RVUs was published on November 22, 1996 (61 FR 59489) and was effective in 1997. The second 5-Year Review was published in the CY 2002 PFS final rule with comment period (66 FR 55246) and was effective in 2002. The third 5-Year Review of physician work

RVUs was published in the CY 2007 PFS final rule with comment period (71 FR 69624) and was effective on January 1, 2007.

In developing resource-based malpractice RVUs, CMS concluded that premium costs were driven primarily by physician specialty and the level of surgical involvement (2005 Proposed Rules, 70 FR 45784). Since malpractice insurance rates can dramatically shift over the course of several years, including both significant increases and decreases depending on the part of the country and specialty, it is critical to include updated premium costs in calculating the new malpractice RVUs.

Therefore, there are three substantial efforts that must be completed to update the malpractice RVUs. The first is the collection of malpractice (professional liability) insurance premium data by specialty. Using these premiums, the malpractice RVUs are based on the contribution of different physician specialties and surgical involvement to different Medicare procedures in order to determine the contribution of different risk factors based on the physician effort, captured in the physician work RVUs.

This report describes the data sources, methodologies and results for the current update of the malpractice RVUs, scheduled to be implemented in 2010. This report is organized into four main sections: Section 2 describes the collection of malpractice premium data for this update. Section 3 details the steps in calculating the malpractice RVUs, including the assumptions required at different steps. Finally, in Section 4, we explore the impact of the update.

2 MALPRACTICE PREMIUM DATA COLLECTION

This update relies on newly collected data on malpractice insurance premiums among leading insurance underwriters in each state. In this section, we describe the collection of the premium data, which is used in the calculation of MP RVUs. Our general approach to collecting the premium data was largely comparable to that for the last update of the Geographic Practice Cost Index (GPCI) in 2007, except that we sought to collect a broader range of specialties.

2.1 Premium Data Sought

The data collection focused on professional liability/medical malpractice insurance premiums for physicians and surgeons in all 50 states and Puerto Rico. In each state, Acumen attempted to collect data for at least 50 percent of the market share and from at least two operating medical malpractice insurers in each state. Acumen sought data effective for 2006, 2007 and, when available, 2008.[1]

Whenever possible, Acumen collected physician and surgeon medical malpractice premiums with the following characteristics:

- **Claims-made:** Acumen chose claims-made policies because they are the most commonly used malpractice insurance policies in the United States. Claims-made policy rates were used rather than occurrence policies. A claims-made policy covers physicians for the policy amount in effect when the claim is made, regardless of the date of event in question. An occurrence policy covers a physician for the policy amount in effect at the time of the event in question, even if the policy is expired.
- **1 million / 3 million liability (coverage) limits:** Acumen chose one million and three million liability limits because they are the most commonly used liability limits for malpractice insurance policies in the United States. A 1M/3M liability limit policy means that the most that would be paid on any one claim is $1,000,000 and that the most that the policy would pay for several claims over the time frame of the policy is $3,000,000.
- **Mature rates:** Acumen collected mature year rates. Claims-made coverage involves a step process with premium increases over a set number of years of coverage in increments proportional to the claims reporting for that experience. At the mature year, premium adjustments are based only on annual rate changes.

[1] Historically, premium data for the GPCIs has represented a three-year moving average (although in practice, firms do not always update their rates annually). Therefore, Acumen collected the most recent three years of rate filings, including rate filings for 2008.

The number of years that defines a mature claim differed across insurance companies.

- **Regional Variations:** While many rates applied statewide, premiums were adjusted by geography in some states. Each insurance company reported premium data based upon territories composed of one or more counties. The number of territories and territory definitions differed by insurance company and by year. Our dataset broke down company premium rates to the county level.

Acumen identified the top medical malpractice underwriters in each state before requesting medical malpractice premiums. Whenever possible, we identified the top medical malpractice underwriters through market share data published by state insurance departments, available online or by directly contacting the insurance departments. If market share information was not available from the state, Acumen relied upon an annual report published by the National Association of Insurance Commissioners (NAIC). We preferred market share data from state insurance departments because the NAIC reported data primarily at the group level, where a group can be comprised of several different insurance companies. In these cases, the market share value represented the entire group, not just the individual company of interest. Additionally, the NAIC included companies from which state departments did not collect rate filings as consistently, such as surplus lines and risk retention groups (RRGs). Therefore, Acumen could not obtain premium data for these organizations.[2] In some states, the top underwriters primarily insured hospitals. These companies were ultimately excluded because this update, like previous updates, focuses on premiums for physicians and surgeons.

2.2 State Rate Filings Data Collection

The rate filings for malpractice insurance premiums were collected through state Departments of Insurance. We compiled contact information for current State insurance commissioners and staff relevant to this data collection (i.e. analysts in Medical Malpractice, Property and Casualty) by state. The first outreach was an email and accompanying telephone survey to identify the appropriate contact person and preferred method of communication (mail, fax, or email) for more detailed information, and to determine whether data are collected at the state level.

As with the previous malpractice premiums update, virtually all state insurance departments have established mechanisms to release rate filings to the public and required our

[2] Data from risk retention groups and non-profits are typically exempt from state dictated rates and thus do not regularly file rates. Accordingly, Acumen could not request rates for these organizations from state insurance departments.

data collection to follow these established mechanisms. About half of the state insurance departments we contacted processed public records requests internally. For the others, the state insurance departments refer requests to third party vendors who pull rate filings in person. Therefore, in many states, we were required to hire third party vendors to pull rate filings, make copies, and ship the documents to Acumen.

To ensure that data was collected in a comparable manner from all states, Acumen developed a standard data collection protocol. This protocol was based on data collection from the previous GPCI update to maintain consistency, a standard data collection protocol based on the Office of Management and Budget (OMB) cleared data collection instrument. Most rate filings are only available in hard copy, each representing several hundred pages. Acumen staff conducted the data entry from documents received. For incomplete or inconsistent filings, research analysts consulted with state departments and vendors for clarification. The data collection period ran from October 2008 through February 2009.

Table 2.1 presents market share data sources by state and the final market shares collected for each state.

Table 2.1: Market Share and Number of Rate Filings Collected by State, 2006 and 2007

State	2006			2007		
	Market Share Source	# Company Rate Filings	Percent Market Share	Market Share Source	# Company Rate Filings	Percent Market Share
AK	State	2	87%	NAIC	2	71%
AL	State	2	76%	State	2	75%
AR	NAIC	4	76%	NAIC	4	76%
AZ	State	2	80%	NAIC	2	63%
CA	State	3	56%	State	4	62%
CO	State	3	69%	State	4	70%
CT	State	2	49%	State	4	49%
DC	NAIC	1	55%	NAIC	1	48%
DE	NAIC	3	19%	NAIC	4	59%
FL	State	5	59%	State	5	58%
GA	NAIC	3	52%	NAIC	3	55%
HI	NAIC	2	48%	NAIC	2	49%
IA	NAIC	2	72%	NAIC	3	71%
ID	NAIC	4	86%	NAIC	4	85%
IL	NAIC	3	64%	NAIC	3	98%
IN	NAIC	3	60%	NAIC	3	59%
KS	NAIC	4	56%	NAIC	5	66%
KY	NAIC	3	39%	NAIC	4	51%
LA	NAIC	3	66%	NAIC	3	64%
MA	State	2	88%	State	2	88%
MD	State	3	82%	State	4	62%

State	2006			2007		
	Market Share Source	# Company Rate Filings	Percent Market Share	Market Share Source	# Company Rate Filings	Percent Market Share
ME	NAIC	2	78%	NAIC	2	77%
MI	State	2	28%	State	2	29%
MN	State	1	71%	State	1	73%
MO	State	3	43%	State	3	35%
MS	State	0	0%	State	0	0%
MT	NAIC	2	52%	NAIC	2	50%
NC	NAIC	3	52%	NAIC	3	57%
ND	NAIC	2	37%	NAIC	2	36%
NE	NAIC	2	41%	NAIC	2	40%
NH	NAIC	2	58%	NAIC	2	63%
NJ	NAIC	2	52%	NAIC	3	55%
NM	NAIC	1	14%	NAIC	3	63%
NV	State	4	36%	State	4	34%
NY	State	2	86%	State	2	81%
OH	NAIC	4	50%	NAIC	5	61%
OK	NAIC	2	73%	NAIC	2	76%
OR	NAIC	3	78%	NAIC	4	85%
PA	NAIC	4	34%	NAIC	4	34%
PR	NAIC	0	0%	NAIC	0	0%
RI	NAIC	1	44%	NAIC	1	34%
SC	NAIC	2	36%	NAIC	2	53%
SD	NAIC	3	92%	NAIC	3	91%
TN	NAIC	4	90%	NAIC	4	59%
TX	NAIC	4	85%	NAIC	4	85%
UT	NAIC	2	81%	NAIC	2	73%
VA	NAIC	4	41%	NAIC	4	41%
VT	NAIC	3	61%	NAIC	3	82%
WA	NAIC	3	73%	NAIC	3	72%
WI	NAIC	3	66%	NAIC	3	63%
WV	NAIC	3	83%	NAIC	3	70%
WY	NAIC	2	63%	NAIC	2	64%

Acumen successfully collected medical malpractice insurance premium rates from 49 states and the District of Columbia, leaving only Mississippi and Puerto Rico outstanding. Table 2.2 compares states missing in the current data collection to those missing in the previous update. The malpractice data now reflects data for the District of Columbia, Nevada, New Mexico and Wyoming, previously absent in the last malpractice data update. As before, Acumen still lacks malpractice premium data for Mississippi and Puerto Rico. Additional information regarding data collection challenges for specific states is provided in the appendix.

Table 2.2: States that Did Not Provide Rate Filing Data

2006/2007 GPCI Update	2008/2009 Data Collection
District of Columbia	--
Mississippi	Mississippi
Nevada	--
New Mexico	--
Puerto Rico	Puerto Rico
Wyoming	--

2.3 Additional Rate Information

In addition to the core rate filings data described above, Acumen also collected additional information relevant to developing accurate cost information, including costs of patient compensation funds and professional liability insurance for technicians.

Patient Compensation Funds

PCFs are state funds that operate like an excess-layer insurer – that is, if a judgment exceeds the physician's primary policy limit, the PCF pays the amount above the limit (or the amount between the limit and another statutorily-prescribed amount). They are funded by mandatory surcharges that physicians and hospitals pay on their primary-layer policies. These arrangements give primary insurers, physicians, and hospitals an extra cushion against large judgments.[3] Seven states have Patient Compensation Funds (PCFs) that charge physicians a surcharge on top of their malpractice premium. In some states participation is voluntary, in others participation is mandatory.

The states that have patient compensation funds include Kansas, Indiana, Louisiana, Nebraska, New Mexico, Pennsylvania, and South Carolina. For these states, we requested both the rates for the insurance company premium and the PCF surcharge. Acumen also requested background information regarding the PCFs, including whether the state PCF was mandatory or optional, whether there were any requirements to utilize the PCF, the liability limits for the PCF, and the physician participation rate in the PCF. This information is summarized for all active Patient Compensation Funds in Table 2.3.

[3] Michelle M. Mello, "Understanding Medical Malpractice Insurance: a Primer," The Robert Wood Johnson Foundation," January 2006.

Table 2.3: Patient Compensation Fund Overview

State	PCF Name	Mandated	Coverage Required	Liability Limit	Physician Participation Rate
IN	Patient Compensation Fund	Voluntary	$250K/$750K	$1.25M per occurrence	79%
KS	Health Care Stabilization Fund	Mandatory	$200K/$600K	$100K/$300K, $300K/$900K, $800K/$2.4M	100%
LA	Patient Compensation Fund	Voluntary	$100K/$300K	$500K	72%
NE	Excess Liability Fund	Voluntary	$200K/$600K	$1.75M	72%
NM	Patient Compensation Fund	Voluntary	$200K/$600K	No Limit	50%
SC	Patient Compensation Fund	Voluntary	$100K/$300K	$200K/$600K	40%
PA	Mcare (Medical Care Availability and Reduction of Error)	Mandatory	$0.5M/$1.5M	$0.5M/$1.5M	100%
WI	Patient Compensation Fund	Mandatory	1M/3M	No Limit	100%

Technical Component Data

In 2008, the American Association of Physicists in Medicine (AAPM) requested that CMS include additional data into malpractice RVU calculations to reflect the liability insurance traditionally carried by technical medical subspecialties, such as therapeutic radiologists. AAPM explained that medical physicists, due to their key role in the design and quality assurance of high-risk radiation therapy procedures, have a significant liability exposure, and so liability insurance is normally carried by the medical physicist's employer or by the medical physicist if self employed.

In response to these requests, Acumen collected technical component data from Marsh Affinity Group Services, one of the largest association program insurance brokers and administrators in the United States providing malpractice insurance to medical physicists. These premiums, however, suggested a relatively low risk compared to physicians. Comments on the proposed rule suggested that liability risk incurred by practitioners providing technical services

was far greater than what was represented in the proposed rule. In response to these comments, Acumen utilized premium data provided by RBMA for "umbrella non-physician malpractice liability." We further discuss the incorporation of these technical data in Section 3.

2.4 Constructing the Malpractice Premium Data Set

To structure the rate filing information into a data set for use in developing the malpractice RVUs, we needed to develop crosswalks for matching to CMS data sources. Two distinct crosswalks were required: specialty and territory.

The first crosswalk mapped the specialties listed in the rate fillings to specialty codes used in the CMS carrier files. Rather than select a subset of specialties, Acumen entered premium information for all physician and surgeon specialties available in the collected rate filings. Most insurance companies provided their own internal crosswalks from ISO codes to named specialties; Acumen matched these crosswalks to CMS carrier codes.

This crosswalk also preserved information regarding surgery classes, categorizations that impact premium rates. For example, many insurance companies distinguished general practice physicians into non-surgical, minor-surgical and major-surgical classes, each with different malpractice premiums. Some companies provided additional surgical sub-classes; for example, distinguishing general practice physicians that conducted obstetric procedures, which further impacted malpractice rates. Acumen recorded all of this information and standardized the data to CMS carrier codes. The use of these categories is described in Section 3.3 below.

Finally, many companies have different rates within states, representing different coverage territories. Acumen tracked this regional information within each rate filing by county and state FIPS codes. (Acumen also preserved the original territory code terminology specific to individual rate filings to allow easy crosschecking of collected rate filings.)

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3 UPDATING THE MALPRACTICE RVUS

The Malpractice RVUs (Relative Value Units) represent the relative malpractice costs for medical procedures. The update of the malpractice RVUs involved five data sources, listed in Table 3.1 below. In particular, it requires information on malpractice premiums, linked to the physician work conducted by different specialties that provide Medicare services. Because malpractice costs vary by state and by specialty, the malpractice premium information must be weighted geographically and across specialties.

Table 3.1: Data Sources Overview

Dataset Name	Source	Last Update	Observation Level	Data Source Role
Malpractice Premiums (MP File)	State Departments of Insurance	Data effective in 2007 updated by Acumen in February 2009	County, specialty, surgery class, premium rate	Malpractice premiums for determining specialty risk factors.
Locality RVUs and Services (LRS File)	CMS	2008	Phys Zip, Carrier Number, Loc, Specialty	RVUs for creating geographic normalization factor
CPT RVUs and Services (CRS File)	CMS	2008	Carrier Number, Loc, Specialty, CPT/Mod	RVUs for weighting county-level malpractice premiums and national specialty risk factors
Geographic Practice Cost Index (GPCI File)	CMS	2008	Medicare Locality	Geographic Adjustments for Malpractice Premiums
National Physician Fee Schedule Relative Value File (NPFS File)	CMS	2008	CPT/Mod	Physician Work RVUs and impact reference

In this section, we describe the conceptual process behind the recalculation of the malpractice RVUs for each procedure using updated data from the sources listed in Table 3.1. Section 3.1 walks through the calculation of the "raw" malpractice RVUs, working from the basic concept back through the data elements required to calculate the MP RVUs. There are two major complications to this basic approach. First, as noted in Section 2 above, it is common for

insurance carriers to distinguish surgery or obstetrics categories within specialties. Our handling of this issue is discussed in Section 3.2. Second, a number of the procedures have billing split into a professional component and a technical component. Our handling of the technical and professional components is discussed in Section 3.3. CMS imposed a floor of 0.01 on all MP RVUs. This rule and its implementation is covered in Section 3.4. Finally, Sections 3.5 and 3.6 review processes for handling CPTs without observed services in the previous year as well as for calculating MTUS and RVUs for new and revised CPTs.

3.1 Creating Raw Malpractice RVUs

Conceptually, malpractice RVUs for each procedure (CPT/MOD) are calculated by multiplying a procedure level risk factor (RF) by the procedure's physician work RVU, as shown in Equation (1). Physician Work RVUs (PW RVUs), last updated in 2007, reflect the physician time, technical skill and effort involved with a specific procedure. If it is higher, the clinical labor RVU for a procedure replaces the PW RVU in Equation (1). The RF then reflects the relative malpractice liability risk associated with that procedure, based on the specialties of the physicians who perform this service.

(1) $$Raw\,MPRVU_{CPT/MOD} = RF_{CPT/MOD} \times PWRVU_{2007,CPT/MOD}$$

Where:

Raw MP RVU =	Updated Malpractice RVU, before budget neutralization
CPT/MOD =	Current Procedural Terminology / Modifier
RF =	Risk Factor
PW RVU =	Physician Work RVU from the 2007 National Physician Fee Schedule Relative Value File

The resulting MP RVUs are considered "raw" in the sense that they are not yet adjusted to ensure budget neutrality, a topic we discuss below.

In Equation (1), the PW RVU values are drawn from the NPFS file. The calculation of the RF values is the chief task of the malpractice RVU update. In the rest of this discussion, we review the elements that go into calculating these $RF_{CPT/MOD}$ values.

Procedure Level Risk Factors

As shown in Equation (2), the procedure level risk factors are weighted averages of the risk factors associated with each specialty that performs the procedure.

(2) $$RF_{CPT/MOD} = \frac{\sum_S RF_S \times MTUS_{CPT/MOD,S}}{\sum_S MTUS_{CPT/MOD,S}}$$

Where:

RF =	Risk Factor
S =	Specialty
MTUS =	Services Performed (Miles/Times/Units/Service)

The weights shown in Equation (2) are the sums of the number of services performed per specialty per procedure, as reported in the CRS file provided by CMS. The specialty level risk factors RF_s are calculated from the malpractice premium data compiled by Acumen for this purpose. Equations (3) through (6) below outline the basic steps in developing these RF_s values.

Raw Specialty Risk Factors

Specialty risk factors are calculated by dividing the national average premium for each specialty by the national average premium for the physician specialty with the lowest average rate, as shown in Equation (3).

(3) $$RF_S = \left(\frac{Norm\,P_S}{Norm\,P_{LOWEST}} \right)$$

Where:

RF =	Risk Factor
S =	Specialty
Norm P =	Normalized National Average Premium

These national average premiums are normalized using the existing malpractice GPCIs to adjust for regional differences in the provision of services that might affect the calculation of these specialty risk factors. In the next several equations, we show the derivation of the national average premiums by specialty P_S, and then we show the normalization.

National Average Premium for Each Specialty

The underlying malpractice premium data, as compiled in the MP file described in Section 2, are collected at the county level. Thus, the national average premiums used in

Equation (3) above are weighted averages of the county-level premiums for each specialty, weighted using the total RVUs for each specialty in each county (across all procedures).

(4) $$P_S = \sum_C \frac{P_{SC} \times TRVU_{SC}}{TRVU_S}$$

Where:

P =	Premium
S =	Specialty
C =	County
TRVU =	Total RVUs

As noted, the P_{SC} values are derived from the malpractice premium data and calculated using Equation (5) below. The TRVU weights are drawn from specialty-zip code totals on the LRS file summed by county.

County Average Specialty Premiums

To calculate the national average specialty premiums in Equation (4), we first had to calculate an average specialty premium for each county from the county-level insurance carrier data gathered from state DOIs. We use market shares (MS) at the state level for firm F providing coverage in county C. MS_C refers to the total market share for all firms providing coverage in that county. In creating these values, we averaged carrier-county-specialty-premiums, weighted by each carrier's market share in each state (Equation (5)).

(5) $$P_{SC} = \sum_F \frac{P_{SCF} \times MS_{CF}}{MS_C}$$

Where:

P =	Premium
S =	Specialty
C =	County
F =	Insurance Carrier (Firm)
MS =	State-level company Market Share values

Normalized Premiums

Acumen also normalized premiums for geographic differences in malpractice premiums in order to complete Equation (4) (calculating Norm P). This normalization was necessary to

avoid inflated or deflated values due to potential differences in distribution of specialty-provided services across performed by geographic area. Normalization adjusts the national average premiums to account for these geographic differences in costs. (The geographic cost differences are handled through the GPCIs rather than in the RVUs themselves.)

Normalized premiums are calculated by dividing the unadjusted premiums for a given surgery class effective in a given year by the average malpractice geographic practice cost index (MP GPCI).

(6) $$Norm\,P_S = \frac{P_S}{Avg\ MP\,GPCI_S}$$

Where:

Norm P =	Normalized Premium
S =	Specialty
Y =	Year
Avg MP GPCI =	Average Malpractice GPCI
P =	Unadjusted Premium

Average Malpractice Geographic Cost Indices

In order to normalize the unadjusted premiums, we first need to calculate the average malpractice geographic cost indices (MP GPCI). The GPCI reduces geographic variation in Medicare payments by calculating an index distinctly adjusted from RVUs. The MP GPCI reflects geographic differences in premiums for mature claims made policies providing $1 million/$3 million limits of coverage.

National specialty MP GPCIs are calculated by averaging locality MP GPCIs for each specialty, weighted by locality MP RVUs (Equation (6)). The last CMS GPCI update was CY 2008 (phased in over two years).

(7) $$Avg\ MP\,GPCI_S = \frac{\sum_L \left(MPRVU_{SL} \times MPGPCI_L\right)}{MPRVU_S}$$

Where:

MP GPCI =	Average Malpractice GPCI
S =	Surgery
L =	Medicare Locality
MP RVU =	Malpractice RVU
GPCI =	Geographic Practice Cost Index

Budget Neutralized Malpractice RVUs

We started in Equation (1) with the basic formula for the raw or non-budget neutralized MP RVUs, where Equations (2) through (7) describe the calculations required to get the inputs for Equation (1). Once the raw MP RVU values are obtained, there is a final set of calculations required to ensure that the update is budget neutral. Equations (8) and (9) show the two steps in the budget neutralization. The calculation applies an adjustment factor that scales up the new values if the sum of the MP RVUs across all services is higher under the old MP RVUs than under the new and scales down the new values if the sum is lower under the old MP RVUs than under the new. This factor is shown in Equation (8).

(8) $$\text{BN Adj} = \frac{\sum MPRVU_{2007,CPT/MOD} \times MTUS_{CPT/MOD}}{\sum Raw\,MPRVU_{CPT/MOD} \times MTUS_{CPT/MOD}}$$

The final MP RVUs are the raw values multiplied by this adjustment factor, as shown in Equation (9).

(9) $$MPRVU_{CPT/MOD} = Raw\,MPRVU_{CPT/MOD} \times BNAdj$$

3.2 Defining Specialties

Equation (4) above assumes a straightforward definition of specialties, using the CMS carrier specialty codes listed in Table 3.2. In practice, there are two challenges to defining specialties for use in the MP RVUs based on the rate filings received by various carriers. First, there are only a few specialties that are only rarely distinguished from a general physician

Table 3.2: Number of State Rate Filings Collected for Each Specialty
(Independent Risk Factors Not Calculated for Shaded Specialties)

Spec. Code	Specialty Name	% of Total MTUS	States	Spec. Code	Specialty Name	% of Total MTUS	States
2	General Surgery	1.3%	50	66	Rheumatology	0.7%	48
7	Dermatology	3.9%	50	4	Otolaryngology	1.4%	47
8	Family Practice	7.3%	50	25	Physical Med and Rehab	1.3%	47
13	Neurology	1.6%	50	77	Vascular Surgery	0.4%	47
18	Ophthalmology	4.4%	50	92	Radiation Oncology	1.1%	47
20	Orthopedic Surgery	2.9%	50	84	Preventive Medicine	0.0%	45
22	Pathology	2.0%	50	38	Geriatric Medicine	0.2%	44
26	Psychiatry	1.4%	50	81	Critical Care (Intensivists)	0.2%	44
34	Urology	1.8%	50	90	Medical Oncology	0.7%	44
1	General Practice	1.0%	49	78	Cardiac Surgery	0.1%	41
3	Allergy Immunology	1.1%	49	48	Podiatry	3.1%	37
5	Anesthesiology	0.6%	49	71	Registered Diet/Nutr Prof	0.0%	35
10	Gastroenterology	1.4%	49	83	Hematology/Oncology	1.9%	35
11	Internal Medicine	13.3%	49				
14	Neurosurgery	0.2%	49				
16	Obstetrics Gynecology	0.6%	49				
24	Plastic and Recon Surgery	0.2%	49	99	Unknown Physician Specialty	0.0%	35
28	Colorectal Surgery	0.1%	49	94	Interventional Radiology	0.3%	28
29	Pulmonary Disease	2.1%	49	85	Maxillofacial Surgery	0.0%	21
33	Thoracic Surgery	0.1%	49	35	Chiropractic	2.1%	18
36	Nuclear Medicine	0.1%	49	98	Gynecological/Oncology	0.1%	14
37	Pediatric Medicine	0.1%	49	79	Addiction Medicine	0.0%	12
39	Nephrology	1.5%	49	62	Psychologist	0.0%	6
40	Hand Surgery	0.1%	49	91	Surgical Oncology	0.0%	5
46	Endocrinology	0.4%	49	97	Physician Assistant	1.0%	5
72	Pain Management	0.1%	49	49	Ambulatory Surgical Center	0.0%	4
82	Hematology	0.1%	49	41	Optometry	1.1%	3
93	Emergency Medicine	2.2%	49	86	Neuropsychiatry	0.0%	2
6	Cardiology	9.4%	48	12	Osteopathic Manip Therapy	0.1%	1
30	Diagnostic Radiology	10.1%	48	45	Mamm Screening Center	0.0%	1
44	Infectious Disease	0.7%	48	67	Occupational Therapist	0.4%	1

category or are otherwise not included in the malpractice rate filings. Second, there are a number of specialties for which some insurance carriers distinguish classes within the specialty, typically major surgery, minor surgery, no surgery, and obstetrics/no obstetrics. Commonly, some carriers have class distinctions for a specialty while other carriers do not specify classes for the same specialty. In both of these cases, our goal is to keep as complete a list of specialties as possible, and yet ensure that the risk factors for the specialties were based on a robust set of data.[4]

Specialties with Insufficient State Coverage

Although we collected premium data from all states except Mississippi, some specialties do not have distinct risk categories in the rate filings from all states. As shown in Table 3.2, 14 specialties that are coded on the carrier claims were included in rate filings in 35 or fewer states. We did not develop separate risk factors from premium data for these 14 specialties and for specialty code 99, "Unknown Physician Specialty." This leaves 44 specialties, representing 90 percent of the services reported in the CRS file, for which we use the malpractice premium data to develop risk factors.

Table 3.3: Reassigned Specialties

Spec Code	Specialty Name	New Spec Code	New Specialty
09	Interventional Pain Management	72	Pain Management
19	Oral Surgery	24	Plastic Reconstructive Surgery
30	Diagnostic Radiology	30	General Radiology
35	Chiropractic	03	Allergy Immunology
62	Psychologist	03	Allergy Immunology
65	Physical Therapist	03	Allergy Immunology
67	Occupational Therapist	03	Allergy Immunology
68	Clinical Psychologist	03	Allergy Immunology
79	Addiction Medicine	03	Allergy Immunology
85	Maxillofacial Surgery	24	Plastic Reconstructive Surgery
86	Neuropsychiatry	03	Allergy Immunology
91	Surgical Oncology	02	General Surgery
94	Interventional Radiology	30	General Radiology
98	Gynecological/Oncology	2	General Surgery
99	Unknown Physician Specialty	01	General Practice

[4] Risks for audiologists and physician assistants are not used in calculating MP RVUs per CMS's instructions.

For physician provided specialties with insufficient state coverage in the MP file, we initially matched the specialties to a similar specialty – conceptually or by reported premiums – for which we did have data. For example, some of the low cost specialties (addiction medicine, clinical psychology) are assigned the lowest (physician) cost risk factor. Consistent with the last MP RVU update, Acumen reassigned Chiropractic, Physical Therapist and Occupational Therapist to the lowest physician cost risk factor (Allergy Immunology). In response to comments to the proposed rule, we adjusted our mappings to better align risk for certain specialties. For instance, due to similarities identified in comments, both Oral Surgery and Maxillofacial Surgery now map to Plastic Reconstructive Surgery, and Gynecological/Oncology is assigned to General Surgery. Additionally, we blend Interventional Radiology premiums with Diagnostic Radiology to create a single General Radiology class. Table 3.3 lists the recoded specialties. The remaining categories are dropped, meaning they are not included in the weighted averages for calculating the malpractice RVUs in Equation (1).

Specialties with Surgery and Obstetrics Classes

A more complicated issue is the fact that over half of the listed specialties can have premium rates that differ for major surgery, minor surgery, no surgery and obstetrics. These classes are designed to reflect differences in risk of professional liability and the cost of malpractice claims if they occur. The same concept applies to procedures: some procedures carry greater liability risks. These liability risks are grouped by surgery, no-surgery, and obstetrics (Table 3.4). Surgery CPTs range from 10000-69999. Additionally, as per CMS instructions and consistent with current methodology, several other ranges of CPTs listed in Table 3.4 are grouped into the same risk category as surgical procedures. Codes ranging from 59000-59899 identify procedures grouped into the Obstetrics risk category. All remaining CPT codes are treated as no-surgery risk. With risk varying within specialty and procedures, the calculation of Equation (3) requires distinguishing between surgical, non-surgical and obstetrics premiums for the creation of specialty risk factors, which in turn are applied to surgical, non-surgical and obstetrics procedures in Equation (2).

We initially developed a set of rules differentiating between major and minor surgery classifications and their associated premiums to calculate specialty risk factors. In response to comments on the proposed rule, CMS chose not to distinguish risk between major and minor surgery premium categorizations. Instead, we only use major surgery premiums to calculate distinct surgery risk factors, and we only do so when there are sufficient major surgery premium filings. For specialties with distinct surgery and non-surgery risk factors, surgery risk factors are applied to CPT Codes in the 10000-69999 range, and non-surgery risk factors are applied to all other non-surgical and non-obstetrics codes. In instances of insufficient surgery premium data, we blend all available data into a single risk class applicable to both surgery and non-surgery

CPTs. For example, Urology has a single, blended risk factor calculated from both major surgery and non-surgery premiums, which is applied to both surgical and non-surgical procedures.

Table 3.4: CPT Code Surgery Classes

Surgery Class	CPT Code Range
Surgery	10000-69999 92980-92998 93501-93536 92973-92974 93501-93533 93580-93581 93600-93613 93650-93652 92975 93617-93641
Obstetrics (OB)	59000-59899
No Surgery (NS)	All other CPT Codes

In addition to surgical classifications, rate filings also distinguish separate obstetrics classifications for General Practice, Family Practice, and Obstetrics Gynecology specialties. Risk factors calculated from obstetrics-specific premiums for these three specialties are applied to the obstetrics CPTs identified by the CPT Codes in the 59000-59988 range.

3.3 Updating Technical Component Data

Procedural (CPT) data are distinguished as professional component (26), technical component (TC) or global data by modifiers (MOD) and PC/TC Indicators (PC/TC) according to the NPFS file. Professional and technical component modifiers were established for some services to distinguish the portions of services furnished by physicians. The professional component includes the physician work and associated overhead and malpractice insurance costs involved in technical services. The technical component includes the cost of equipment, supplies, technician salaries and malpractice insurance for procedures. Unmodified CPTs are called global data and refer to both components when billed together. Table 3.5 summarizes the differences among professional, technical and global CPT data.

Table 3.5: Professional, Technical and Global CPT Distinction

	Professional Component	Technical Component	Global
MOD Variable	26	TC	None
PC/TC Indicator	2	3	All Other
Description	Physician work, overhead and professional liability	Equipment, supplies, technical salaries and liability	PC and TC billed together

The distinction between PC, TC and global data is important because each modifier has different associated risk factors. As discussed in Section 3.1, these risk factors distinguish relative malpractice liability risk associated with procedures, based on the specialties of the physicians who perform given services. The challenge is determining the associated risk factor for each modified CPT.

In the 2005 MP RVU update, BearingPoint assumed that their collected malpractice premium data represented PC data, yielding the PC risk factor (PC RF_{CPT}). For the purpose of this update, CMS determined that collected malpractice premium data represented global data (*Global* RF_{CPT}).

Basic Methodology to Determine Modifier Risk Factors

Our approach starts from the premise that the global MP RVUs equal the sum of the Professional and Technical Component MP RVUs, as shown in Equation (10) below[5]:

$$(10) \qquad Global\ MP\ RVU_{CPT} = TC\ MP\ RVU_{CPT} + PC\ MP\ RVU_{CPT}$$

Our problem in calculating the MP RVUs for the PC and TC components is that there are two missing pieces of data: the PC risk factor – since we assume the risk factors calculated above correspond to the global risk factors – and any PW RVUs to associate with the technical component as required in Equation (1) in Section 3.1. We outline how we derive the missing components required to calculate these values below. Table 3.6 shows an example for CPT

[5] This relationship does not hold for all PC and TC components. This is the case for PC/TC groups where the associated TC CPT is carrier-priced, in which case there is no associated Global due to the variability in TC pricing. Additionally, some TC CPTs do not have an associated PC component, as in the case of CPT 93005, Electrocardiogram; Tracing Only, without interpretation and report.

74175. The final column lists the final MP RVUs for this PC/TC group. The MP RVU for the TC MOD (0.02) and the MP RVU for the 26 MOD (0.09) add up to the global (unspecified) MP RVU (0.11). Note that there is no PW RVU for the TC component. Because the calculation of a MP RVU (Equation (1)) requires a PW RVU, the MP RVU cannot be directly calculated. Additionally, while the PW RVU can be applied for the calculation of the PC component, specialty risk cannot directly be derived from premiums, thus one of the terms on the right hand side of Equation (1) is missing. The lack of a PW RVU is addressed by the rule discussed in Section 3.1, where the greater of the PW RVU or clinical RVU is used to calculate CPT risk. In this case of TC CPTs, the clinical RVU is always used. The PC CPT risk factor, then, is derived from the TC and Global CPT risk factors.

Table 3.6: Example CPT Code with Modifiers

CPT	MOD	Description	PW RVU	MP RVU
74175		Ct angio abdom w/o & w/dye	1.9	0.11
74175	26	Ct angio abdom w/o & w/dye	1.9	0.09
74175	TC	Ct angio abdom w/o & w/dye	0.0	0.02

In calculating the PC risk factor, we must first assign risk for TC services. As discussed in Section 2.3, Acumen utilized mean premium data supplied by the RBMA for "umbrella non-physician malpractice liability." We treat the premiums as identical for all TC components using a risk factor that accounts for minor differences by geographic area and is calculated using the equivalent of Equation (3):

$$RF_{TC} = \left(\frac{Norm\,P_{TC}}{Norm\,P_{LOWEST}} \right) \tag{11}$$

Where:

RF = Risk Factor
TC = Technical Component
Norm P = Normalized National Average Premium

The premium established by the RBMA data is set at $9,374. As the denominator in Equation (11) refers to the lowest physician premium (Allergy/Immunology), the TC group shows a risk factor below 1, at 0.859.

With the necessary components for calculating raw TC MP RVUs established, we can derive the remaining value required to calculate PC MP RVUs. Based on discussions with CMS, we define the global data as equivalent to the sum of the PC and TC data for any given CPT code. Accordingly, the risk factor for the global code is equal to the sum of the risk factors for the TC and PC. This means that the PC RF is equal to the difference between the global data and the TC data (Equation (10)).

(12) $$PC\ RF_{CPT} = Global\ RF_{CPT} - TC\ RF_{CPT}$$

Where:

Global RF =	Global Component Risk Factor
TC RF =	Technical Component Risk Factor
PC RF =	Professional Component Risk Factor

Since the global RF_{CPT} was derived using the basic approach described in Section 3.1, we can plug the RF_{TC} into Equation (8) to get $RF_{PC.}$ We can then calculate the PC MP RVUs using the standard formula from Equation (1), repeated as Equation (13) below for the professional component. As discussed in Section 3.1, unadjusted MP RVUs are the products of specialty risk factors and physician work RVUs (PW RVUs).

(13) $$Raw\ MPRVU_{PC} = RF_{PC} \times PWRVU_{PC}\ .$$

3.4 MP RVU Floor

Per CMS instructions, we impose a floor value of 0.01 all MP RVUs. Due to restrictions on the relationship between PC, TC and Global MP RVUs, the imposition can require a recalculation of Global MP RVUs. For example, after the raw MP RVUs are budget neutralized, imposing the floor equally across CPT 92587 along with TC and PC components leads to all showing a value of 0.01 because each individually show an actual value below 0.01. Equation (10) does not hold true in this example because the components no longer sum to the Global. To ensure that Equation (10) holds true, the floor is applied to just the PC and TC components. For cases where the imposition of the floor changes one of these values, the Global component is recalculated as the sum of the TC and PC component. Because the application of the floor and the restriction under Equation (10) affects budget neutrality, a second round of budget neutralization is applied.

3.5 Previously Updated CPTs without 2008 MTUS Values

For CPTs with non-zero values in previous MP RVU updates but lacking listed services in the CRS file, we assigned a MTUS value of one and assigned risk factors corresponding to appropriate CPT designations (TC risk factors for TC CPTs, the average risk factor for 26 and single CPTs, and the sum of relevant TC and 26 risk factors for global CPTs).

3.6 New or Revised CPTs

New or revised CPTs pose a problem as there are no MTUS associated with these procedures, nor are there any specialties associated with providing these services. CMS provided an analytical crosswalk for the revised CPTs which allow mapping of specialties, RVUs, and MTUS for these procedures (see Appendix for crosswalk). An analytical ration associated with these CPTs converts the RVUs and MTUS from the associated CPTs to the revised MTUS. An additional 45 new CPTs lacked crosswalks to other CPTs. CMS provided a mapping to specialties likely to be providing these services based on similarities to existing CPTs. Because there are no MTUS associated with these new CPTs, we treated them in the same manner as for CPTs that did not show MTUS for 2008, assigning 1 MTUS to each. Table 3.7 lists these codes along with the specialty mapping.

Table 3.7: Specialty Mapping for New CPTs

CPT	MOD	Assigned Specialty
21932		General Surgery
21933		General Surgery
22904		General Surgery
22905		General Surgery
31626		Pulmonary Disease
31627		Pulmonary Disease
32552		Thoracic Surgery
32553		Thoracic Surgery
33981		Cardiac Surgery
33982		Cardiac Surgery
33983		Cardiac Surgery
43775		General Surgery
46707		Colorectal Surgery (formerly Proctology)
53855		Urology
57426		Obstetrics Gynecology
74261		Diagnostic Radiology
74261	26	Diagnostic Radiology
74262		Diagnostic Radiology
74262	26	Diagnostic Radiology
74263		Diagnostic Radiology
74263	26	Diagnostic Radiology
75565		Cardiology
75565	26	Cardiology
75571		Cardiology
75571	26	Cardiology
75572		Cardiology
75572	26	Cardiology
75573		Cardiology
75573	26	Cardiology
75574		Cardiology
75574	26	Cardiology
G0420		Nephrology
G0421		Nephrology
G0422		Cardiology
G0423		Cardiology
G0424		Pulmonary Disease

4 IMPACT OF THE UPDATE

In this section, we summarize the impact of the update to the MP RVUs for 8,768 procedures (defined by CPT/MOD codes) to be used in 2010. It is important to note that we did not apply the 5% threshold for inclusion of services or specialties as in previous MP RVU updates. Rather, we used the risk factor of the dominant specialty by services for each procedure with MTUS less than 100. This approach reflects the risk factors of the specialties that most frequently perform the procedure and avoids skewing from weighting specialties that rarely perform the procedure. Therefore, this updated threshold includes all specialties for which we have services and risk factors for each CPT code, even if the CPT provides fewer than 100 services or less than 5 percent of the services.

4.1 Overall Impact and Impact by CPT Code Type

To understand the impact of the changes overall and by CPT code type, we present three types of summary statistics. We start with average effects, then present the distribution of MP RVUs under the update compared to the pre-update, and finally report the percentage change.

Average MP RVUs and Distribution of MP RVUs

By construction, the MTUS weighted mean of the updated MP RVUs is the same as the pre-update MP RVUs. Table 4.1 presents the counts of the included procedures overall and by procedure type, associated with the calculations described in Sections 3.2 and 3.3.

The distribution for all updated MP RVUs is presented in the first column of Table 4.1, which the average MP RVUS is 1.01, with the MTUS-weighted average at 0.07. These values range from 0.01 (the imposed floor) to 16.58. Single CPTs show the highest MP RVU values, with a MTUS-weighted mean of 0.9. TC CPTs show the lowest values, with at least 75 percent at the floor of 0.01, with a maximum value of 0.14. The range for PC CPTs, with a maximum value of 1.67, exceeds that of Global CPTs, with a maximum value of 0.76. Even though Global CPTs are the sum of their PC and TC components, the highest PC component does not have an associated Global CPT, thus is above the highest Global value.

Table 4.2 presents the distribution of MP RVUs by Surgery, Surgery with Obstetrics, and Non-Surgery classifications. As expected, Surgery MP RVUs are much higher on average for the two surgery classifications when compared to Non-Surgery CPTs. The highest value, 16.58, occurs for a surgery CPT.

Table 4.1: Distribution of Updated BN MP RVU Values by Mod/Indicator

Statistic	Subset				
	All	Tech	Prof	Global	Single
Non-Empty Values Count	8768	922	1022	851	5973
MTUS Weighted Mean	0.07	0.01	0.03	0.03	0.09
Mean	1.01	0.01	0.07	0.05	1.46
Minimum	0.01	0.01	0.01	0.02	0.01
1st Percentile	0.01	0.01	0.01	0.02	0.01
5th Percentile	0.01	0.01	0.01	0.02	0.03
10th Percentile	0.01	0.01	0.01	0.02	0.07
25th Percentile	0.03	0.01	0.02	0.02	0.27
50th Percentile	0.31	0.01	0.03	0.04	0.82
75th Percentile	1.23	0.01	0.06	0.06	1.84
90th Percentile	2.98	0.02	0.11	0.09	3.80
95th Percentile	4.38	0.02	0.21	0.12	5.27
99th Percentile	7.99	0.06	0.95	0.35	8.82
Maximum	16.58	0.14	1.67	0.76	16.58
Standard Deviation	1.67	0.01	0.15	0.06	1.86

Table 4.2: Distribution of Updated BN MP RVU Values by Surgery Class

Statistic	Subset		
	MAJ	OB	NS
Non-Empty Values Count	5411	65	3292
MTUS Weighted Mean	0.28	1.65	0.05
Mean	1.59	1.43	0.04
Minimum	0.01	0.01	0.01
1st Percentile	0.03	0.01	0.01
5th Percentile	0.09	0.09	0.01
10th Percentile	0.16	0.12	0.01
25th Percentile	0.39	0.33	0.01
50th Percentile	0.95	0.94	0.02
75th Percentile	1.99	2.35	0.05
90th Percentile	3.95	3.34	0.08
95th Percentile	5.44	5.07	0.12
99th Percentile	9.07	6.20	0.33
Maximum	16.58	6.20	2.79
Standard Deviation	1.89	1.50	0.10

Percentage Change in MP RVUs

Tables 4.3 and 4.4 present the percent changes in MP RVUs, as well as the breakdown by type and the distributions of changes by CPT code type. Note that the total non-empty values count in Table 4.3 does not equal the total number of updated CPT values for the 2010 update. To avoid skewing the statistics, we excluded some CPT codes from the percent change statistics when the previous CPT value was zero, including those CPTs that were new for 2010. Examining the impact of the update on all CPTs, we see that MP RVUs drop by an average of 6 percent across 8,614 CPTs, but when change is weighted by MTUS, we see that the impact produces a 12 percent increase for all services included in this analysis. Among the different types of CPTs, TC codes show share of procedures dropping in value, with 75 percent of TC of updated MP RVUs holding no more than 25 percent of their original value. Less than 5 percent of these codes retain more than 35 percent of their earlier values. Most PC codes also experience a decline, though the MTUS-weighted average difference is just -3 percent. The drop in TC RVUs along with a general drop in PC RVUs also produces consistent a considerable drops for Global RVUs, with these RVUs experiencing a MTUS-weighted average drop of nearly 50 percent. Most Single CPTs, on the other hand, show increases in their values, with the average Single MP RVU increasing by 13 percent.

Table 4.4 compares 2010 and 2009 values by the different surgery classifications. While Surgery and Non-Surgery classifications experience average increases, the MTUS-average shows that MP RVUs for Obstetrics CPTs decline by 21 percent. However, there is substantial variation between the 2008 and updated values, with maximum changes between 6 and 10 times greater for the updated figures.

Table 4.3: Percent Change in MP RVU across CPT Codes Values by Mod/Indicator

Statistic	Subset				
	All	Tech	Prof	Global	Single
Non-Empty Values Count	8614	900	1000	829	5885
MTUS Weighted Mean	12%	-67%	-3%	-48%	26%
Mean	-6%	-79%	0%	-67%	13%
Minimum	-99%	-99%	-85%	-97%	-97%
1st Percentile	-98%	-99%	-68%	-94%	-72%
5th Percentile	-91%	-98%	-54%	-92%	-46%
10th Percentile	-82%	-98%	-50%	-89%	-29%
25th Percentile	-38%	-94%	-34%	-85%	-16%
50th Percentile	-4%	-88%	-1%	-73%	2%
75th Percentile	14%	-75%	-1%	-58%	21%
90th Percentile	49%	-50%	68%	-34%	69%
95th Percentile	98%	-50%	98%	-23%	116%
99th Percentile	197%	-1%	197%	-1%	207%
Maximum	971%	98%	791%	98%	971%
Standard Deviation	61%	24%	64%	25%	54%

Table 4.4: Percent Change in MP RVU across CPT Codes by Surgery and Obstetrics Class

Statistic	Subset		
	MAJ	OB	NS
Non-Empty Values Count	5328	65	3221
MTUS Weighted Mean	17%	-21%	12%
Mean	13%	12%	-38%
Minimum	-99%	-90%	-99%
1st Percentile	-68%	-90%	-98%
5th Percentile	-43%	-79%	-97%
10th Percentile	-28%	-79%	-92%
25th Percentile	-16%	-23%	-83%
50th Percentile	3%	-19%	-50%
75th Percentile	22%	-13%	-1%
90th Percentile	72%	-3%	18%
95th Percentile	117%	257%	49%
99th Percentile	206%	971%	126%
Maximum	643%	971%	791%
Standard Deviation	51%	181%	58%

Percentage Change in Total RVU

Next we assess the impact on Total RVUs. To do this, we calculate Total RVUs using 2009 PW and PE RVUs, with the difference resulting from using either 2009 or 2010 MP RVUs. Because the MP RVUs represent the smallest component of the physician payment schedule, when compared to physician work and physician expense components, the overall impact of MP RVUs on Total RVUs is less pronounced; generally speaking, total RVUs did not substantially change as a result of this update. Table 4.5 demonstrates the percent change and absolute percent change for total RVUs after the updated MP RVUs. The weight-average change for all CPTs shows a negligible decline; however TC RVUs drop by about 4 percent and Global RVU show a weighted-average decline of about 2 percent.

Table 4.6 breaks down Total RVU change by surgery classification. Although the weighted mean change for Surgery and Non-Surgery RVUs is negligible, the 65 OB CPTs show a decline of about 3 percent. And although the overall impact is small, the impact of the updated MP RVUs varies substantially, with MP RVU change across CPTs ranging from a drop of more than 66 percent to an increase of over 15 percent.

Table 4.5: Percent Change Total RVU, 2009 to Updated BN Values by Mod/Indicator

Statistic	Subset				
	All	Tech	Prof	Global	Single
Non-Empty Values Count	8614	900	1000	829	5885
MTUS Weighted Mean	0%	-4%	0%	-2%	0%
Mean	-1%	-5%	0%	-4%	0%
Minimum	-66%	-66%	-9%	-28%	-49%
1st Percentile	-15%	-29%	-4%	-18%	-7%
5th Percentile	-6%	-17%	-2%	-11%	-3%
10th Percentile	-4%	-12%	-2%	-7%	-2%
25th Percentile	-2%	-6%	-1%	-4%	-1%
50th Percentile	0%	-4%	0%	-3%	0%
75th Percentile	1%	-2%	0%	-2%	1%
90th Percentile	2%	-1%	2%	-1%	2%
95th Percentile	3%	0%	3%	0%	4%
99th Percentile	5%	0%	5%	0%	6%
Maximum	15%	0%	15%	2%	13%
Standard Deviation	4%	6%	2%	3%	2%

Table 4.6: Percent Change Total RVU, 2009 to Updated BN by Surgery Class

Statistic	Subset		
	MAJ	OB	NS
Non-Empty Values Count	5328	65	3221
MTUS Weighted Mean	0%	-3%	0%
Mean	0%	-3%	-2%
Minimum	-37%	-12%	-66%
1st Percentile	-6%	-12%	-20%
5th Percentile	-3%	-11%	-11%
10th Percentile	-2%	-10%	-6%
25th Percentile	-1%	-3%	-3%
50th Percentile	0%	-2%	-1%
75th Percentile	1%	-2%	0%
90th Percentile	3%	0%	0%
95th Percentile	4%	7%	1%
99th Percentile	6%	13%	3%
Maximum	12%	13%	15%
Standard Deviation	2%	5%	4%

4.2 Impact by Specialty

Table 4.7 summarizes the impact by specialty. The column headed MTUS lists the 2008 MTUS for all 2010 CPTs that also existed in 2009.[6] The next column shows the MTUS-weighted average for updated MP RVUs, followed by the average 2009 MP RVU. The percent change column represented the MTUS-weighted average difference between 2010 and 2009 MP RVUs. In the last three columns we compare the impact on the average Total RVUs by specialty, calculating Total RVUs using the 2009 PW RVU and PE RVU values for both. Examining the impact on Cardiac Surgery specialty, we see that they provided over 1 million MTUS for CPTs, and the average MP RVU rises from 0.68 in 2008 to 0.87 in 2010, with the average difference of 21.7 percent. However, because the MP RVUs still comprise the smallest component of the Total RVUs, the average difference for Total RVUs is only 0.6 percent.

Table 4.7: Impact by Specialty

Spec. Name	MTUS	MP RVUs			Total RVUs		
		Updated	2009	Percent Change	Updated	2009	Percent Change
Allergy/Immunology	11,068,432	0.01	0.01	-4.8%	0.41	0.41	-0.5%
Anesthesiology	6,497,442	0.07	0.08	1.3%	2.44	2.44	-0.3%
Cardiac Surgery	1,101,021	0.87	0.68	21.7%	10.82	10.63	0.6%
Cardiology	81,061,538	0.07	0.07	5.8%	2.41	2.41	-0.5%
Dermatology	744,158	0.29	0.24	29.1%	5.71	5.66	0.7%
Emergency Medicine	2,013,256	0.11	0.09	25.0%	3.31	3.30	0.4%
Endocrinology	39,229,018	0.06	0.04	35.9%	2.01	1.99	0.5%
Family Practice	23,203,497	0.12	0.13	-2.3%	3.02	3.03	-0.3%
Gastroenterology	4,490,178	0.06	0.05	30.5%	2.26	2.25	0.3%
General Practice	75,195,830	0.06	0.05	28.5%	1.94	1.93	0.3%
General Surgery	14,083,095	0.17	0.13	35.1%	4.94	4.90	0.8%
Geriatrics	10,466,465	0.06	0.06	21.1%	1.99	1.98	0.1%
Hematology/Oncology	13,755,863	0.29	0.25	21.2%	5.39	5.35	0.3%
Infectious Disease	2,159,291	0.07	0.06	27.6%	2.26	2.24	0.5%
Internal Medicine	836,612	0.15	0.17	-3.7%	3.21	3.23	-0.5%
Nephrology	27,232,218	0.04	0.05	-5.7%	1.92	1.93	-1.0%
Neurology	6,816,384	0.07	0.05	37.2%	2.25	2.23	0.7%
Neurosurgery	136,204,452	0.06	0.05	27.9%	2.13	2.12	0.3%

[6] MTUS for new 2009 MP RVUs are calculated from an analytical crosswalk provided by CMS.

Spec. Name	MTUS	MP RVUs			Total RVUs		
		Updated	2009	Percent Change	Updated	2009	Percent Change
Obstetrics/Gynecology	4,202,123	0.07	0.07	2.8%	2.51	2.52	-0.5%
Ophthalmology	15,875,693	0.09	0.07	32.0%	3.16	3.14	0.6%
Orthopedic Surgery	16,145,345	0.06	0.07	7.4%	2.40	2.41	-0.2%
Otolaryngology	2,479,251	0.64	0.70	15.1%	7.24	7.29	-0.1%
Pathology	888,722	0.04	0.06	-14.4%	1.71	1.74	-0.8%
Pediatrics	6,542,554	0.11	0.11	8.9%	2.71	2.71	-0.3%
Physical Medicine	43,598,050	0.12	0.06	73.2%	3.24	3.17	1.0%
Plastic Surgery	28,759,813	0.18	0.22	0.8%	3.28	3.32	-0.4%
Psychiatry	13,905,248	0.06	0.07	3.7%	1.91	1.92	-1.1%
Pulmonary Disease	20,395,980	0.02	0.03	-37.4%	1.34	1.35	-1.2%
Radiation Oncology	1,153,559	0.05	0.05	12.2%	1.61	1.60	-0.1%
Radiology	13,132,476	0.05	0.05	11.0%	1.78	1.77	0.1%
Rheumatology	1,634,801	0.29	0.25	29.0%	5.90	5.86	0.5%
Thoracic Surgery	15,443,693	0.05	0.04	37.2%	2.07	2.06	0.6%
Urology	20,343,281	0.07	0.06	24.9%	2.45	2.44	0.3%
Vascular Surgery	11,303,817	0.06	0.13	-45.4%	4.31	4.39	-2.1%
Chiropractor	106,273,623	0.03	0.06	-3.5%	1.62	1.65	-0.3%
Clinical Psychologist	6,590,268	0.05	0.06	10.4%	2.06	2.06	-0.6%
Clinical Social Worker	1,308,451	0.73	0.59	20.0%	9.77	9.62	0.5%
Optometry	17,493,814	0.09	0.10	7.7%	3.41	3.42	-0.8%
Physical/Ocp. Therapy	4,288,891	0.24	0.25	-1.7%	6.89	6.89	-0.8%
Physician Assistant	911,554	0.02	0.09	-72.9%	0.80	0.87	-9.6%
Podiatry	22,348,532	0.02	0.01	60.6%	0.90	0.89	0.6%
Nurse Practitioner	6,658,148	0.04	0.05	11.9%	2.28	2.28	-0.2%
Nurse Anesthetist	4,411,604	0.05	0.04	27.8%	2.29	2.28	0.4%
Audiologist	131,015	0.10	0.10	8.4%	2.62	2.62	0.1%
Diagnostic Testing Facility	14,756,572	0.06	0.05	22.9%	1.96	1.96	0.3%
Independent Laboratory	11,071,570	0.08	0.04	77.2%	2.51	2.47	1.0%
Portable X-Ray Supplier	270,958	0.14	0.16	-4.6%	4.02	4.03	-0.5%
Colon And Rectal Surgery	71,262,741	0.01	0.02	-23.8%	0.74	0.75	-0.6%
Hand Surgery	9,245,578	0.06	0.06	21.0%	1.97	1.96	0.1%
Oral/Maxillofacial Surgery	32,247,745	0.04	0.07	-23.8%	1.54	1.56	-1.6%
Critical Care	5,211,497	0.03	0.26	-72.2%	5.38	5.61	-4.7%
Nuclear Medicine	11,547,912	0.02	0.05	-48.8%	2.37	2.40	-1.1%
Interventional Pain Mgmt	4,814,128	0.01	0.02	-13.0%	0.50	0.51	-0.8%
Other	5,287,846	0.06	0.07	6.4%	2.38	2.39	-0.4%

A. APPENDIX

Section A.1 provides additional details on the data collection process discussed in Section 2. Section A.2 provides additional summary tables showing the impact of the MP RVU update. Section A.3 shows the analytical crosswalk used for new CPTs.

A.1 Data Collection Gaps and Alternative Data Sources

Acumen requested documentation that reflected rates effective in the years 2006 and 2007. Data from all requested years were not always available due to a number of reasons, including:

- State departments do not require annual filings.
- Premium rates remained stable across years, thus companies do not re-file.
- State departments purge their data, keeping only current or recent rate filings.
- Filings are unavailable or misplaced.
- Some states have remarkably balanced malpractice insurance markets with more than five companies reflecting significant market shares

To account for these possibilities, Acumen collected data from a wider time range than required for the three year update, from 2006 to 2008. When possible, Acumen directly contacted specific insurance companies to request rate filings, but Acumen could only contact limited numbers of companies due to time constraints and low success rates with direct appeals to companies. Table A.1 provides explanations for states with particularly low collected market shares.

Table A.1: Explanations for States with Low Collected Market Shares

State	Market Share 2006	Market Share 2007	Explanation
DE	19%	59%	Acumen did not receive a rate filing for the company with top market share in 2006 (ProNational Insurance Co, 43%). A third-party contractor confirmed that rates for the ProNational filing effective 01/2006 are no longer archived by the Delaware DOI.
KY	39%	51%	Acumen did not receive a 2006 rate filing for ProNational Insurance Company (12% market share). Additionally, the Medical Mutual Insurance Company of NC (12% market share) is a risk retention group and is not required to submit filings to the KY Department of Insurance. Additionally, KY is relatively balanced by market share.

State	Market Share 2006	Market Share 2007	Explanation
MI	28%	29%	Legislation PA 664 of 2002 effective 3-31-03 allows medical malpractice underwriters to operate without notifying MI DOI. Accordingly, most companies have not filed a new manual in several years.
MO	43%	35%	MO's mandatory third party vendor did not locate Missouri Hospital Plan (15-20% market share). Additionally, market share in MO is remarkably balanced, with the top five insurance companies only holding 50-65% of the state market share.
MS	0%	0%	None of the top five companies in the state of Mississippi are required to file rates, rules or forms for approval because they are nonprofits and risk retention groups. Acumen contacted the company with greatest market share, the Medical Assurance Company of Mississippi, but was denied the requested information.
ND	37%	36%	Acumen did not receive a rate filing for the top company in North Dakota (MHA Insurance Co, which has ~35% market share).
NE	41%	40%	The NE DOI requires rate filing requests to be conducted in-office. Acumen's third party vendor could not locate current rate filings with adequate information for many of the companies with significant market shares. Upon request, Midwest Medical Insurance Group provided Acumen with their rates.
NM	14%	63%	The NM DOI was only able to provide one rate filing effective in 2006.
NV	36%	34%	Despite following up with the NV DOI, Acumen did not receive rate filings for Nevada Mutual Insurance Co. (25% of the market share). Two of the other six rate filings received are effective in 2008, and are not included in the 06/07 market shares.
PA	34%	34%	Pennsylvania has a remarkably balanced medical malpractice market. Acumen collected four company rate filings effective in 2006 and 2007 after following up with the PA DOI for additional rate filings.
PR	0%	0%	After multiple attempts, Acumen could not successfully contact Puerto Rico's insurance department.
VA	41%	41%	Two of the top five companies in VA, which have at least 20% of market share, are RRGs (Risk Retention Groups) and are not required to file. Four of the top six companies were received for each year.

Medical Liability Monitor Data

Acumen supplemented the collected premium data with data from the Medical Liability Monitor rate survey, an independent study of malpractice premiums. These data are commonly used by researchers and government agencies, including the Government Accountability Office (GAO), to track changes in liability insurance costs. Because they cover only three specialties (internal medicine, general surgery and OB/GYN), these data are of limited use for the malpractice RVUs. However, they can be used to check trends in premiums over time, including projecting growth for states without recent filings available, so they may be used as a secondary resource in the development of the GPCIs in the future.

Physicians Insurance Association of America Data

Acumen investigated the use of data collected from the Physicians Insurance Association of America, a trade association of more than 60 professional liability (medical malpractice) insurance companies. Acumen examined a sample of the PIAA data and determined that PIAA collected the same data as Acumen: individual company rate filings. As of the time of this report, CMS is investigating the possibility of soliciting the PIAA for additional rate filings to supplement states with low collected market shares in the most recent MP RVU update.

A.2 Summary of 2008 MP RVU Data

Table A.2 shows summary data before and after MP RVU calculations for each surgery class – specialty combination using the final methodologies described in Section 3.2. The first two columns identify the specialty, and the third column identifies the classification of the premiums collected for the specialty. The next two columns show the PW RVUs for each specialty and their distribution with each specialty. The next column shows the normalized premiums for the unblended classifications followed by the risk factor for each of these specialty/surgery classifications. The column labeled Final Normalized Premium lists the premium used for the final risk factor calculation, which often is a blend of Non-Surgery and Unspecified premium classification. The Final National Risk Factor is calculated from the final premium, and identifies the specialty risk that is used for MP RVU calculations.

Table A.2: Summary of 2008 MP RVU Data, Base Run

Spec. Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Spec.	Final Normalized Premium	Final National Risk Factor	Final # States with Spec.
01	General Practice	MAJ	777,717	3.2%	$39,264.40	4.17	47	$39,264.40	3.60	47
01	General Practice	MAJ w OB	751	0.0%	$50,458.54	5.36	27	$50,458.54	4.63	27
01	General Practice	NS	11,245,345	46.8%	$16,552.68	1.76	47	$16,552.68	1.52	47
01	General Practice	OB			$30,235.54	3.21	6			
01	General Practice	UNSP	12,023,814	50.0%	$21,491.69	2.28	8			
02	General Surgery	MAJ	23,090,435	54.7%	$64,454.79	6.85	48	$64,454.79	5.91	48
02	General Surgery	NS	19,156,666	45.3%	$13,879.31	1.47	2			
03	Allergy Immunology	BLND						$10,909.72	1.00	49
03	Allergy Immunology	NS	1,608,013	49.6%	$12,432.55	1.32	24			
03	Allergy Immunology	UNSP	1,634,891	50.4%	$9,411.93	1.00	46			
04	Otolaryngology	MAJ	4,962,676	16.7%	$38,817.50	4.12	43	$38,817.50	3.56	43
04	Otolaryngology	NS	9,923,435	33.3%	$15,772.04	1.68	34	$15,772.04	1.45	34
04	Otolaryngology	UNSP	14,886,110	50.0%	$44,039.05	4.68	14			
05	Anesthesiology	MAJ	4,866,930	27.2%	$28,087.63	2.98	18	$24,041.75	2.20	44
05	Anesthesiology	NS	4,088,450	22.8%	$15,616.78	1.66	9	$24,041.75	2.20	44
05	Anesthesiology	UNSP	8,955,581	50.0%	$24,041.75	2.55	44	$24,041.75	2.20	44
06	Cardiology	MAJ	16,973,587	7.6%	$65,918.34	7.00	43	$65,918.34	6.04	43
06	Cardiology	NS	94,893,725	42.4%	$20,308.52	2.16	45	$20,308.52	1.86	45
06	Cardiology	UNSP	111,867,373	50.0%	$25,222.84	2.68	22			
07	Dermatology	MAJ	18,103,644	31.1%	$42,705.29	4.54	31	$42,705.29	3.91	31
07	Dermatology	NS	10,983,612	18.9%	$12,314.66	1.31	47	$12,314.66	1.13	47
07	Dermatology	UNSP	29,087,276	50.0%	$12,545.66	1.33	27			
08	Family Practice	MAJ	2,471,442	1.5%	$41,490.23	4.41	43	$41,490.23	3.80	43
08	Family Practice	MAJ w OB	17,300	0.0%	$51,950.00	5.52	31	$51,950.00	4.76	31
08	Family Practice	NS	81,348,998	48.5%	$17,105.01	1.82	49	$17,105.01	1.57	49

Spec. Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Spec.	Final Normalized Premium	Final National Risk Factor	Final # States with Spec.
08	Family Practice	OB			$33,127.72	3.52	11			
08	Family Practice	UNSP	83,837,741	50.0%	$14,256.96	1.51	7			
09	Interventional Pain Mgmt.	UNSP	3,996,531	100.0%					2.19	
10	Gastroenterology	MAJ	15,174,052	18.7%	$44,356.08	4.71	41	$44,356.08	4.07	41
10	Gastroenterology	NS	25,333,821	31.3%	$22,149.13	2.35	43	$22,149.13	2.03	43
10	Gastroenterology	UNSP	40,507,873	50.0%	$21,583.27	2.29	27			
11	Internal Medicine	MAJ	4,354,624	1.2%	$29,410.00	3.12	8			
11	Internal Medicine	NS	181,175,795	48.8%	$18,968.63	2.02	45	$18,968.63	1.74	45
11	Internal Medicine	UNSP	185,531,015	50.0%	$18,666.54	1.98	23			
13	Neurology	MAJ	663,132	1.1%	$111,899.19	11.89	28	$111,899.19	10.26	28
13	Neurology	NS	30,336,195	48.9%	$24,000.19	2.55	45	$24,000.19	2.20	45
13	Neurology	UNSP	30,999,356	50.0%	$25,089.14	2.67	27			
14	Neurosurgery	MAJ	6,927,496	100.0%	$108,487.45	11.53	46	$108,487.45	9.94	46
16	Obstetrics Gynecology	MAJ	2,874,465	17.6%	$51,026.54	5.42	48	$51,026.54	4.68	48
16	Obstetrics Gynecology	MAJ w OB			$89,805.73	9.54	43	$86,877.16	7.96	38
16	Obstetrics Gynecology	NS	5,018,934	30.7%	$18,458.14	1.96	40	$18,458.14	1.69	40
16	Obstetrics Gynecology	NS w OB			$18,641.79	1.98	13			
16	Obstetrics Gynecology	OB	291,362	1.8%	$86,877.16	9.23	38	$86,877.16	7.96	38
16	Obstetrics Gynecology	UNSP	8,184,762	50.0%	$59,706.06	6.34	9			
18	Ophthalmology	MAJ	32,902,279	23.2%	$20,679.04	2.20	50	$20,679.04	1.90	50
18	Ophthalmology	NS	38,077,268	26.8%	$11,619.30	1.23	49	$11,619.30	1.07	49
18	Ophthalmology	UNSP	70,979,577	50.0%	$16,594.60	1.76	22			
19	Oral Surgery (dental only)	MAJ	153,780	100.0%					5.46	
20	Orthopedic Surgery	MAJ	30,392,963	29.9%	$59,580.98	6.33	48	$59,580.98	5.46	48
20	Orthopedic Surgery	NS	20,363,809	20.1%	$15,672.17	1.67	14			
20	Orthopedic Surgery	UNSP	50,756,777	50.0%	$70,513.30	7.49	26			

Spec. Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Spec.	Final Normalized Premium	Final National Risk Factor	Final # States with Spec.
22	Pathology	NS	14,886,697	49.8%	$18,818.82	2.00	41	$18,818.82	1.72	41
22	Pathology	UNSP	15,000,973	50.2%	$15,950.55	1.69	37			
24	Plastic and Recon. Surgery	MAJ	3,320,628	35.6%	$59,541.47	6.33	41	$59,541.47	5.46	41
24	Plastic and Recon. Surgery	NS	1,339,928	14.4%	$14,454.38	1.54	5			
24	Plastic and Recon. Surgery	UNSP	4,660,556	50.0%	$57,618.41	6.12	32			
25	Phys. Med. and Rehab.	BLND						$12,809.15	1.17	47
25	Phys. Med. and Rehab.	MAJ	1,358,908	4.0%	$26,208.98	2.78	14			
25	Phys. Med. and Rehab.	NS	15,777,126	46.0%	$13,288.97	1.41	28			
25	Phys. Med. and Rehab.	UNSP	17,136,056	50.0%	$11,304.76	1.20	42			
26	Psychiatry	BLND						$13,434.82	1.23	50
26	Psychiatry	NS	23,531,533	50.0%	$15,745.32	1.67	24			
26	Psychiatry	UNSP	23,559,403	50.0%	$11,127.05	1.18	44			
28	Colorectal Surgery	MAJ	1,508,500	31.3%	$43,169.72	4.59	31	$43,169.72	3.96	31
28	Colorectal Surgery	NS	899,160	18.7%	$4,264.29	0.45	4			
28	Colorectal Surgery	UNSP	2,407,660	50.0%	$43,645.74	4.64	30			
29	Pulmonary Disease	BLND						$22,784.03	2.09	47
29	Pulmonary Disease	MAJ	1,143,834	1.4%	$41,312.60	4.39	3			
29	Pulmonary Disease	NS	38,788,306	48.6%	$23,945.01	2.54	35			
29	Pulmonary Disease	UNSP	39,932,140	50.0%	$21,125.56	2.24	37			
30	Diagnostic Radiology	BLND						$28,160.15	2.58	45
30	Diagnostic Radiology	MAJ	7,251,730	5.3%	$42,327.18	4.50	6			
30	Diagnostic Radiology	NS	61,279,826	44.7%	$27,148.84	2.88	36			
30	Diagnostic Radiology	UNSP	68,531,574	50.0%	$27,565.36	2.93	29			
33	Thoracic Surgery	MAJ	5,327,789	71.8%	$70,772.61	7.52	48	$70,772.61	6.49	48
33	Thoracic Surgery	NS	2,089,554	28.2%	$17,996.51	1.91	6			
34	Urology	BLND						$29,381.08	2.69	50

Spec. Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Spec.	Final Normalized Premium	Final National Risk Factor	Final # States with Spec.
34	Urology	MAJ	12,434,250	21.4%	$33,585.75	3.57	36			
34	Urology	NS	16,551,440	28.6%	$21,101.13	2.24	13			
34	Urology	UNSP	28,985,912	50.0%	$32,305.37	3.43	33			
35	Chiropractic	BLND							1.00	
35	Chiropractic	NS	13,719,867	50.0%	$10,826.87	1.15	3			
35	Chiropractic	UNSP	13,719,867	50.0%	$3,803.66	0.40	16			
36	Nuclear Medicine	BLND						$17,927.36	1.64	42
36	Nuclear Medicine	MAJ	10,583	0.6%	$40,854.45	4.34	5			
36	Nuclear Medicine	NS	831,814	49.4%	$19,428.23	2.06	20			
36	Nuclear Medicine	UNSP	842,470	50.0%	$16,157.45	1.72	37			
37	Pediatric Medicine	MAJ	60,013	2.7%	$42,176.08	4.48	17			
37	Pediatric Medicine	NS	1,047,747	47.3%	$16,526.16	1.76	46	$16,526.16	1.51	46
37	Pediatric Medicine	UNSP	1,108,081	50.0%	$17,695.84	1.88	28			
38	Geriatric Medicine	MAJ	21,688	0.3%	$45,580.20	4.84	35	$45,580.20	4.18	35
38	Geriatric Medicine	NS	3,315,913	49.7%	$15,542.83	1.65	40	$15,542.83	1.42	40
38	Geriatric Medicine	UNSP	3,337,606	50.0%	$15,187.25	1.61	15			
39	Nephrology	MAJ	754,181	1.0%	$45,560.25	4.84	31	$45,560.25	4.18	31
39	Nephrology	NS	36,316,731	49.0%	$17,638.66	1.87	42	$17,638.66	1.62	42
39	Nephrology	UNSP	37,070,911	50.0%	$15,881.00	1.69	28			
40	Hand Surgery	BLND						$37,703.19	3.46	48
40	Hand Surgery	MAJ	732,660	28.0%	$49,646.60	5.27	34			
40	Hand Surgery	NS	577,713	22.0%	$4,741.32	0.50	4			
40	Hand Surgery	UNSP	1,310,373	50.0%	$45,557.47	4.84	32			
41	Optometry	NS	10,685,179	47.9%	$17,761.13	1.89	1			
41	Optometry	UNSP	11,643,967	52.1%	$10,636.22	1.13	2			
44	Infectious Disease	MAJ	50,467	0.2%	$37,925.51	4.03	1			

Spec. Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Spec.	Final Normalized Premium	Final National Risk Factor	Final # States with Spec.
44	Infectious Disease	NS	16,161,541	49.8%	$22,526.08	2.39	40	$22,526.08	2.06	40
44	Infectious Disease	UNSP	16,212,011	50.0%	$17,306.36	1.84	31			
45	Mammography Ctr.	MAJ	463	1.2%	$55,953.13	5.94	1			
45	Mammography Ctr.	NS	19,146	48.8%	$14,155.48	1.50	1			
45	Mammography Ctr.	UNSP	19,610	50.0%	$12,133.46	1.29	1			
46	Endocrinology	MAJ	55,420	0.4%	$48,266.00	5.13	29	$48,266.00	4.42	29
46	Endocrinology	NS	7,744,462	49.6%	$16,358.68	1.74	40	$16,358.68	1.50	40
46	Endocrinology	UNSP	7,800,035	50.0%	$20,671.68	2.20	30			
48	Podiatry	BLND						$23,166.19	2.12	32
48	Podiatry	MAJ	12,887,595	27.0%	$22,315.17	2.37	12			
48	Podiatry	NS	10,948,876	23.0%	$16,398.14	1.74	16			
48	Podiatry	UNSP	23,836,471	50.0%	$26,735.09	2.84	24			
49	Ambulatory Surg. Ctr.	NS	6,784	42.7%	$23,075.59	2.45	2			
49	Ambulatory Surg. Ctr.	UNSP	9,085	57.3%	$15,470.67	1.64	1			
62	Psychologist	BLND							1.00	
62	Psychologist	NS	180,371	50.0%	$10,143.09	1.08	1			
62	Psychologist	UNSP	180,393	50.0%	$4,597.33	0.49	2			
65	Physical Therapist	BLND							1.00	
65	Physical Therapist	NS	28,478,298	100.0%	$4,448.47	0.47	1			
66	Rheumatology	BLND						$16,669.21	1.53	47
66	Rheumatology	NS	6,579,282	47.6%	$17,696.97	1.88	34			
66	Rheumatology	UNSP	7,249,452	52.4%	$15,736.46	1.67	32			
67	Occupational Therapist	BLND							1.00	
67	Occupational Therapist	NS	1,731,223	100.0%	$4,126.33	0.44	1			
68	Clinical Psychologist	BLND							1.00	
71	Reg. Dietitian/Nutr. Prof.	BLND						$17,300.44	1.59	29

Spec. Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Spec.	Final Normalized Premium	Final National Risk Factor	Final # States with Spec.
71	Reg. Dietitian/Nutr. Prof.	NS	116,438	50.0%	$22,157.18	2.35	16			
71	Reg. Dietitian/Nutr. Prof.	UNSP	116,440	50.0%	$12,443.77	1.32	20			
72	Pain Management	MAJ	729,294	22.8%	$47,977.94	5.10	13	$23,840.11	2.19	37
72	Pain Management	NS	868,220	27.2%	$30,219.86	3.21	14	$23,840.11	2.19	37
72	Pain Management	UNSP	1,597,514	50.0%	$23,840.11	2.53	37	$23,840.11	2.19	37
74	Radiation Therapy Center	UNSP	23,055	100.0%	$991.98	0.11	20			
77	Vascular Surgery	MAJ	5,453,795	55.9%	$71,764.27	7.62	46	$71,764.27	6.58	46
77	Vascular Surgery	NS	4,310,273	44.1%	$6,071.77	0.65	6			
78	Cardiac Surgery	MAJ	5,310,606	100.0%	$75,566.99	8.03	39	$75,566.99	6.93	39
79	Addiction Medicine	BLND							1.00	
79	Addiction Medicine	UNSP	75,782	100.0%	$15,106.03	1.60	5			
81	Critical Care (Intensivists)	BLND						$22,539.48	2.07	37
81	Critical Care (Intensivists)	NS	4,486,764	48.4%	$23,710.72	2.52	9			
81	Critical Care (Intensivists)	UNSP	4,789,928	51.6%	$21,442.36	2.28	35			
82	Hematology	MAJ	26,179	1.1%	$15,490.85	1.65	2			
82	Hematology	NS	1,158,317	48.9%	$17,876.63	1.90	33	$17,876.63	1.64	33
82	Hematology	UNSP	1,184,496	50.0%	$15,300.38	1.63	28			
83	Hematology/Oncology	BLND						$18,582.36	1.70	29
83	Hematology/Oncology	MAJ	143,237	0.4%	$8,908.17	0.95	1			
83	Hematology/Oncology	NS	18,513,159	49.6%	$18,801.75	2.00	21			
83	Hematology/Oncology	UNSP	18,656,396	50.0%	$18,438.92	1.96	13			
84	Preventive Medicine	BLND						$12,261.51	1.12	37
84	Preventive Medicine	NS	139,577	48.4%	$12,940.67	1.37	26			
84	Preventive Medicine	UNSP	148,942	51.6%	$11,625.05	1.24	26			
85	Maxillofacial Surgery	MAJ	99,064	36.1%	$56,601.25	6.01	10		5.46	
85	Maxillofacial Surgery	UNSP	175,649	63.9%	$44,617.02	4.74	6			

Spec. Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Spec.	Final Normalized Premium	Final National Risk Factor	Final # States with Spec.
86	Neuropsychiatry	BLND							1.23	
90	Medical Oncology	BLND						$19,264.60	1.77	39
90	Medical Oncology	MAJ	45,075	0.4%	$30,570.24	3.25	4			
90	Medical Oncology	NS	6,047,359	49.6%	$19,234.90	2.04	21			
90	Medical Oncology	UNSP	6,092,434	50.0%	$19,210.44	2.04	25			
91	Surgical Oncology	MAJ	535,440	100.0%	$41,968.05	4.46	1		5.91	
92	Radiation Oncology	BLND						$24,853.46	2.28	42
92	Radiation Oncology	MAJ	102,762	0.4%	$17,526.25	1.86	1			
92	Radiation Oncology	NS	14,031,519	49.6%	$27,603.89	2.93	7			
92	Radiation Oncology	UNSP	14,134,282	50.0%	$22,176.30	2.36	40			
93	Emergency Medicine	MAJ	1,990,550	1.9%	$53,247.12	5.66	40	$53,247.12	4.88	40
93	Emergency Medicine	NS	50,244,741	48.1%	$24,817.14	2.64	17	$24,817.14	2.27	17
93	Emergency Medicine	UNSP	52,235,992	50.0%	$35,784.79	3.80	34			
98	Gynecological Oncology	MAJ	579,235	24.9%	$101,939.86	10.83	5		5.91	
98	Gynecological/Oncology	NS	582,475	25.1%	$14,744.57	1.57	4			
98	Gynecological/Oncology	UNSP	1,163,209	50.0%	$38,598.87	4.10	1			
99	Unknown Physician Spec.	MAJ	25,353	16.3%	$41,999.83	4.46	5		3.60	
99	Unknown Physician Spec.	NS	52,334	33.7%	$14,048.46	1.49	13		1.52	
99	Unknown Physician Spec.	UNSP	77,694	50.0%	$18,493.25	1.96	4			

A.3 Analytic Crosswalk

Table A.3 presents the analytic crosswalk discussed in Section 3.6. The first two columns show the source CPTs with their modifiers. The source CPTs are mapped the destination CPT listed in the following columns. The final column lists the analytic ratio. This value is used for calculating RVUs and MTUS for the new codes by multiplying the RVUs and MTUS for the source CPTs with the analytical ratio to produce these values for the new CPTs.

Table A.3: Analytic Crosswalk

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
0064T		94799		1.000
0066T		74263		1.000
0066T	TC	74263	TC	1.000
0066T	26	74263	26	1.000
0067T		74261		0.950
0067T	TC	74261	TC	0.950
0067T	26	74261	26	0.950
0067T		74262		0.050
0067T	TC	74262	TC	0.050
0067T	26	74262	26	0.050
0069T		93799		1.000
0084T		53855		1.000
0086T		93799		1.000
0087T		89398		1.000
0144T		75571		1.000
0144T	TC	75571	TC	1.000
0144T	26	75571	26	1.000
0145T		75572		1.000
0145T	TC	75572	TC	1.000
0145T	26	75572	26	1.000
0146T		75574		1.000
0146T	TC	75574	TC	1.000
0146T	26	75574	26	1.000
0147T		75574		1.000
0147T	TC	75574	TC	1.000
0147T	26	75574	26	1.000
0148T		75572		1.000
0148T	TC	75572	TC	1.000

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
0148T	26	75572	26	1.000
0149T		75572		1.000
0149T	TC	75572	TC	1.000
0149T	26	75572	26	1.000
0150T		75573		1.000
0150T	TC	75573	TC	1.000
0150T	26	75573	26	1.000
0151T		75572		0.500
0151T	TC	75572	TC	0.500
0151T	26	75572	26	0.500
0151T		75574		0.500
0151T	TC	75574	TC	0.500
0151T	26	75574	26	0.500
0170T		46707		1.000
11402		22902		0.020
11402		11402		0.980
11406		22903		0.010
11406		11406		0.990
11422		21013		0.040
11422		21011		0.120
11422		11422		0.840
11443		21014		0.005
11443		21012		0.030
11443		11443		0.965
11444		21014		0.010
11444		11444		0.990
11602		22902		0.002
11602		11602		0.998
11606		22903		0.001
11606		11606		0.999
11622		21013		0.040
11622		21011		0.010
11622		11622		0.950
11643		21014		0.004
11643		21012		0.001
11643		11643		0.995
11644		21014		0.006
11644		11644		0.994
14300		14301		0.870

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
14300		14302		0.130
17999		21011		0.230
17999		21012		0.030
17999		22902		0.120
17999		22903		0.010
17999		17999		0.610
20999		21013		0.100
20999		21014		0.040
20999		21932		0.420
20999		21933		0.160
20999		22904		0.030
20999		22905		0.010
20999		20999		0.240
21015		21016		0.100
21015		21015		0.900
21499		21013		0.160
21499		21014		0.060
21499		21499		0.780
21555		21552		0.100
21555		21555		0.900
21556		21554		0.100
21556		21556		0.900
21557		21558		0.100
21557		21557		0.900
21899		21013		0.180
21899		21014		0.070
21899		21932		0.180
21899		21933		0.180
21899		21899		0.390
21930		21931		0.100
21930		21930		0.900
21935		21936		0.100
21935		21935		0.900
22899		21932		0.900
22899		21933		0.080
22899		22899		0.020
22900		22901		0.100
22900		22900		0.900
22999		22904		0.040

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
22999		22905		0.010
22999		22999		0.950
23075		23071		0.100
23075		23075		0.900
23076		23073		0.100
23076		23076		0.900
23077		23078		0.100
23077		23077		0.900
23221		23220		1.000
23222		23220		1.000
24075		24071		0.100
24075		24075		0.900
24076		24073		0.100
24076		24076		0.900
24077		24079		0.100
24077		24077		0.900
24151		24150		1.000
24153		24152		1.000
25075		25071		0.100
25075		25075		0.900
25076		25073		0.100
25076		25076		0.900
25077		25078		0.050
25077		25077		0.950
26115		26111		0.100
26115		26115		0.900
26116		26113		0.050
26116		26116		0.950
26117		26118		0.050
26117		26117		0.950
26255		26250		1.000
26261		26260		1.000
27047		27043		0.100
27047		27047		0.900
27048		27045		0.100
27048		27048		0.900
27049		27059		0.200
27049		27049		0.800
27079		27078		1.000

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
27327		27337		0.100
27327		27327		0.900
27328		27339		0.100
27328		27328		0.900
27329		27364		0.100
27329		27329		0.900
27615		27616		0.100
27615		27615		0.900
27618		27632		0.100
27618		27618		0.900
27619		27634		0.100
27619		27619		0.900
28043		28039		0.100
28043		28043		0.900
28045		28041		0.050
28045		28045		0.950
28046		28047		0.050
28046		28046		0.950
29220		29799		1.000
29580		29581		0.403
29580		29580		0.597
32560		32561		0.123
32560		32562		0.246
32560		32560		0.631
32999		32552		0.415
32999		32553		0.415
32999		31626		0.148
32999		32999		0.022
33413		33782		0.059
33413		33783		0.059
33413		33413		0.882
33999		93750		0.330
33999		33999		0.670
35585		35585		0.990
36145		36147		0.752
36145		36148		0.248
36834		36832		1.000
37760		37761		0.970
37760		37760		0.030

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
37799		37761		0.020
37799		37799		0.980
39599		21932		0.190
39599		21933		0.050
39599		29599		0.760
43280		43281		0.123
43280		43282		0.079
43280		43280		0.798
43289		43281		0.087
43289		43282		0.072
43289		43289		0.841
43659		43775		0.038
43659		43659		0.962
45170		45171		0.760
45170		45172		0.240
46210		46999		1.000
46211		46999		1.000
46937		45190		1.000
46938		45190		1.000
49999		49411		0.097
49999		49999		0.503
49999		22904		0.360
49999		22905		0.040
51726		51726		0.030
51726	26	51726	26	0.030
51726	TC	51726	TC	0.030
51772		51727		0.470
51772	TC	51727	TC	0.470
51772	26	51727	26	0.470
51772		51729		0.530
51772	TC	51729	TC	0.530
51772	26	51729	26	0.530
51795		51728		0.620
51795	TC	51728	TC	0.620
51795	26	51728	26	0.620
51795		51729		0.090
51795	TC	51729	TC	0.090
51795	26	51729	26	0.090
58999		57426		0.144

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
58999		58999		0.856
63660		63661		0.330
63660		63662		0.070
63660		63663		0.500
63660		63664		0.100
64470		64490		1.000
64472		64491		0.560
64472		64492		0.170
64475		64493		1.000
64476		64494		0.180
64476		64495		0.050
75558		75565		1.000
75558	TC	75565	TC	1.000
75558	26	75565	26	1.000
75560		75565		1.000
75560	TC	75565	TC	1.000
75560	26	75565	26	1.000
75562		75565		1.000
75562	TC	75565	TC	1.000
75562	26	75565	26	1.000
75564		75565		1.000
75564	TC	75565	TC	1.000
75564	26	75565	26	1.000
75790		75791		0.010
75790	TC	75791	TC	0.010
75790	26	75791	26	0.010
77012	TC	49411		0.106
77012	TC	77012	TC	0.894
77334		77338		0.053
77334	TC	77338	TC	0.052
77334	26	77338	26	0.052
77334		77334		0.947
77334	TC	77334	TC	0.948
77334	26	77334	26	0.948
78460		78453		1.000
78460	TC	78453	TC	1.000
78460	26	78453	26	1.000
78461		78454		1.000
78461	TC	78454	TC	1.000

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
78461	26	78454	26	1.000
78464		78451		1.000
78464	TC	78451	TC	1.000
78464	26	78451	26	1.000
78465		78452		1.000
78465	TC	78452	TC	1.000
78465	26	78452	26	1.000
88334		88387		0.161
88334	TC	88387	TC	0.357
88334	26	88387	26	0.169
88334		88334		0.839
88334	TC	88334	TC	0.643
88334	26	88334	26	0.831
88381		88388		0.161
88381	TC	88388	TC	0.357
88381	26	88388	26	0.169
88381		88381		0.839
88381	TC	88381	TC	0.643
88381	26	88381	26	0.831
92541		92540		0.260
92541	TC	92540	TC	0.260
92541	26	92540	26	0.260
92541		92541		0.100
92541	TC	92541	TC	0.100
92541	26	92541	26	0.100
92542		92540		0.260
92542	TC	92540	TC	0.260
92542	26	92540	26	0.260
92542		92542		0.150
92542	TC	92542	TC	0.150
92542	26	92542	26	0.150
92544		92540		0.250
92544	TC	92540	TC	0.250
92544	26	92540	26	0.250
92544		92544		0.150
92544	TC	92544	TC	0.150
92544	26	92544	26	0.150
92545		92540		0.260
92545	TC	92540	TC	0.260

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
92545	26	92540	26	0.260
92545		92545		0.150
92545	TC	92545	TC	0.150
92545	26	92545	26	0.150
92567		92570		0.0165
92567		92550		0.1587
92567		92567		0.6329
92568		92570		0.0442
92568		92550		0.4237
92568		92568		0.02
92569		92570		0.3333
93701	TC	93701		1.000
94010	26	94011		0.001
94010	26	94010	26	0.999
94060	26	94012		0.001
94060	26	94060	26	0.999
94620	26	94013		0.001
94620	26	94620	26	0.999
95900		95905		0.240
95900	26	95905	26	0.240
95900	TC	95905	TC	0.240
95900		95900		0.760
95900	26	95900	26	0.760
95900	TC	95900	TC	0.760
95903		95905		0.160
95903	26	95905	26	0.160
95903	TC	95905	TC	0.160
95903		95903		0.840
95903	26	95903	26	0.840
95903	TC	95903	TC	0.840
95904		95905		0.100
95904	26	95905	26	0.100
95904	TC	95905	TC	0.100
95904		95904		0.900
95904	26	95904	26	0.900
95904	TC	95904	TC	0.900
99241		99201		0.500
99241		99211		0.500
99242		99202		0.500

Source CPT		Destination CPT		Analytic Ratio
CPT Code	Modifier	CPT Code	Modifier	
99242		99212		0.500
99243		99203		0.500
99243		99213		0.500
99244		99204		0.500
99244		99214		0.500
99245		99205		0.500
99245		99215		0.500
99251		99221		0.700
99251		99304		0.300
99252		99221		0.350
99252		99222		0.350
99252		99304		0.150
99252		99305		0.150
99253		99222		0.700
99253		99305		0.300
99254		99222		0.350
99254		99223		0.350
99254		99305		0.150
99254		99306		0.150
99255		99223		0.700
99255		99306		0.300
G0392		35475		1.000
G0393		35476		1.000