Final Report on the CY 2015 Update of the Malpractice Relative Value Units for the Medicare Physician Fee Schedule

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EXECUTIVE SUMMARY

The Centers for Medicare and Medicaid Services (CMS) pays physicians for their services according to the Physician Fee Schedule (PFS), which specifies a set of allowable procedures and payments for each service. Payments for services paid under the PFS are determined based on setting relative value units (RVUs) for each service using a methodology referred to as the resource-based relative value scale (RBRVS). Specifically, each procedure is interpreted as being produced by a combination of three categories of inputs: practitioner work (PW), practice expense (PE), and malpractice insurance (MP). The particular blend of PW, PE, and MP inputs assessed to produce a service specifies its composition of RVUs. A payment for a procedure depends on its assigned RVUs and the input prices assessed for each RVU component.

As mandated under Section 1848(c) of the Social Security Act, CMS is required to establish national RVUs for each of the three categories of inputs. Section 1848(c)(2)(B)(i) of the Social Security Act requires that CMS review, and, if necessary, adjust RVUs no less often than every five years. The MP RVUs, which reflect the relative costs to practitioners of professional liability insurance, were first implemented in the PFS final rule published November 2, 1999.[1] For each subsequent review and update of the MP RVUs, CMS is required to update the malpractice insurance premium data to reflect the amount of professional liability insurance practitioners typically require to supply medical services. CMS last updated the MP RVUs in the CY 2010 PFS final rule with comment period.[2] CMS has scheduled the next round of review and update of the MP RVUs to occur in the CY 2015 PFS final rule with comment period (henceforth "CY 2015 update").

After evaluating both the current data and methods CMS uses to calculate the MP RVUs, Acumen implemented seven modifications to the MP RVU framework for the CY 2015 update. These modifications include updating the datasets used in the calculation of the MP RVUs, including the:

(1) Malpractice premium data;
(2) Locality RVUs and Services (LRS) dataset;
(3) Current Procedural Terminology RVUs and Services (CRS) dataset;
(4) Geographic Practice Cost Index (GPCI) dataset;
(5) National PFS Relative Value (NPFS) dataset;
(6) Clinical RVUs dataset; and
(7) 2014 and 2015 Discounted Utilization for service codes datasets.

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[1] 64 FR 59380
[2] 74 FR 61758

Each modification offers an improvement in the data source used to calculate the MP RVU values.

The remainder of the Executive Summary provides additional information about RVUs and highlights this report's key findings. The first section reviews how Medicare uses RVUs within the PFS. The second section discusses each of the modifications listed above in more detail. Finally, the third section concludes with highlights from the empirical analysis of the impact of the above changes.

How RVUs Affect Practitioner Payments

Under the PFS, Medicare pays for practitioner services based on a list of services and their payment rates. Under the PFS, every practitioner service corresponds to a specific procedure code within the Healthcare Common Procedure Coding System (HCPCS). Since 1992, CMS has relied on the RBRVS system to determine the fee for each procedure. In the RBRVS system, payments for each service depend on the relative amounts of inputs required to perform the procedure. These inputs include the amount of practitioner work needed to provide a medical service, expenses related to maintaining a practice, and malpractice insurance costs. CMS estimates the quantity of inputs required to provide these services under the PFS using PW RVU, PE RVU, and MP RVU, respectively. Higher RVU levels indicate that the service requires more inputs.

Whereas the RVUs measure the level of inputs used for each service, Geographic Practice Cost Indices (GPCIs) measure regional variation in the price of each of the three input categories. In essence, GPCIs increase the price associated with an RVU in high cost regions and decrease the price associated with an RVU in low cost regions. GPCIs are budget neutral and do not affect aggregate payment levels; rather, they reallocate payment rates by locality to reflect regional variation in relative input prices. For instance, a PE GPCI of 1.2 indicates that practice expenses in that area are 20 percent above the national average, whereas a PE GPCI of 0.8 indicates that practices expenses in that area are 20 percent below the national average. The three GPCIs are calculated for 89 localities. The localities are defined alternatively by state boundaries (e.g., Wisconsin), metropolitan statistical areas (MSAs) (e.g., Metropolitan St. Louis, MO), portions of an MSA (e.g., Manhattan), or rest-of-state area which exclude metropolitan areas (e.g., Rest of Missouri).

Using the RVUs, GPCIs, and a conversion factor (CF), one can calculate the PFS payment for any service in any locality. The CF translates the sum of the GPCI-adjusted RVUs from RVUs into dollars. Current legislation mandates that CMS updates the CF every year according to the Sustainable Growth Rate (SGR).[3] Although the SGR is projected to

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[3] For more information on the SGR, see: CMS March 2012.

significantly decrease practitioner compensation over the upcoming years, Congress has reversed the reductions in most years since the SGR was implemented in 2002.[4] Most recently, the Bipartisan Budget Act of 2013 nullifies the SGR and continues current Medicare practitioner payment rates through March 31, 2014.[5] Equation (1) below demonstrates how the PW, PE, and MP GPCIs combine with the three RVUs and the CF to establish a Medicare practitioner payment for any service K in locality L[6]:

(1) $$Payment_{K,L} = \left\{ \left[GPCI_{PW,L} \times RVU_{PW,K} \right] + \left[GPCI_{PE,L} \times RVU_{PE,K} \right] + \left[GPCI_{MP,L} \times RVU_{MP,K} \right] \right\} \times CF$$

Although GPCIs affect payments for each procedure depending on the relative amounts of PW, PE, and MP RVUs, one can summarize the approximate combined impact of the three GPCI components on a locality's practitioner reimbursement levels using the Geographic Adjustment Factor (GAF). The GAF is a weighted sum of the three GPCIs for each locality, where the cost share weights are determined by the Medicare Economic Index (MEI) base year weights. Using the current MEI base year weights[7], one can calculate the GAF as follows in equation (2):

(2) $$GAF_L = \left(GPCI_{PW,L} \times 0.48266 \right) + \left(GPCI_{PE,L} \times 0.47439 \right) + \left(GPCI_{MP,L} \times 0.04295 \right)$$

Calculating the MP RVUs with More Updated Data

There were seven modifications made to update the data sources currently used to calculate the MP RVUs with more recent data. Table 1 below summarizes the data sources for the CY 2015 update and compares them to the CY 2010 MP RVU data sources.

Table 1: CY 2015 MP RVU Update Data Source Overview

Dataset Name	Source	CY 2010 Update	CY 2015 Update
Malpractice Premiums	State Departments of Insurance	2006-2007	2011-2012
Locality RVUs and Services	CMS	2008	2013
Current Procedural Terminology RVUs and Services	CMS	2008	2013
Geographic Practice Cost Index	CMS	2008	2014[8]

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[4] Hahn August 2010.
[5] U.S. Congress December 2013.
[6] The Medicare physician payment calculated using equation 1 may also be adjusted upwards or downwards through payment modifiers. For example, physicians use a modifier to bill for a service when they assist in a surgery; payment for an assistant surgeon is only a percentage of the fee schedule amount for the primary surgeon.
[7] For 2013, the MEI base year weights come from 2006 data.
[8] For the Geographic Practice Cost Index dataset, "2014" refers to the fact that the latest GPCI update (i.e., the Seventh Update) was finalized in the CY 2014 final rule. For the purpose of the CY 2015 MP RVU update, fully-implemented Seventh Update GPCI values for CY 2015 were utilized, as the Seventh Update GPCI values were averaged with the Sixth Update GPCI values for CY 2014,

Dataset Name	Source	CY 2010 Update	CY 2015 Update
National PFS Relative Value File	CMS	2008	2015[9]
Clinical RVUs	CMS	2008	2015[10]
Discounted Utilization Files[11]	CMS	Not Used	2014-2015

Summary of the Predicted Impacts of the CY 2015 Update on Total RVUs

To assess the impact of the CY 2015 update on the total RVUs, we calculated the total RVUs using CY 2014 PW and PE RVUs, with the difference resulting from either the current CY 2014 or the new CY 2015 MP RVUs. Because the MP RVUs represent the smallest component of the practitioner payment schedule, when compared to practitioner work and practice expense components, the overall impact of MP RVUs on Total RVUs is less pronounced; total RVUs did not substantially change as a result of this update. Table 2 demonstrates the percent change for total RVUs after the updated MP RVUs.

Table 2: Percent Change in Total RVUs, 2014 to Updated, Budget Neutral Values by Mod/Indicator

Statistic	Subset				
	All	Tech	Prof	Global	Single
Non-Empty Values Count	8,853	917	997	842	6,097
Miles/Times/Units/Services (MTUS) Weighted Mean	0%	0%	0%	0%	0%
Mean	0%	0%	0%	0%	0%
Minimum	-12%	-2%	-12%	-3%	-12%
1st Percentile	-6%	0%	-3%	-1%	-7%
5th Percentile	-2%	0%	-2%	0%	-2%
10th Percentile	-1%	0%	-1%	0%	-2%
25th Percentile	0%	0%	0%	0%	-1%
50th Percentile	0%	0%	0%	0%	0%
75th Percentile	0%	0%	0%	0%	0%
90th Percentile	1%	0%	2%	0%	1%
95th Percentile	1%	0%	3%	1%	1%
99th Percentile	4%	0%	6%	1%	4%
Maximum	18%	0%	9%	4%	18%
Standard Deviation	1%	0%	2%	0%	2%

Table 3 breaks down Total RVU percent change by surgery classification. The weighted average effect of the MP RVU update on total RVUs is negligible for all categories reported in Table 3. Similarly, the median effects on total RVUs are very modest, rounding down to zero

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[9] For the National PFS Relative Value File dataset, "2015" refers to proposed CY 2015 values.

[10] For the Clinical RVUs dataset, "2015" refers to proposed CY 2015 values.

[11] For the CY 2015 update, the 2015 Discounted Utilization file is used to determine utilization of service codes. The 2014 Discounted Utilization File is used in calculating budget neutrality. The 2015 utilization file is used on 2015 service codes while 2014 utilization file is used on 2014 service codes.

percent in all categories in Table 3 except for a one percent decline for obstetric RVUs. In addition, the update induces minimum and maximum changes that are quite modest. Among all codes, the minimum change in total RVUs owing to this update is a decline of 12 percent and the maximum change is an increase of 18 percent. Section 4 of the full report presents the impact of the CY 2015 update of the MP RVUs by Current Procedural Terminology (CPT) code type, as well as by specialty.

Table 3: Percent Change in Total RVUs, 2014 to Updated, Budged Neutral Values by Surgery Class

Statistic	Subset		
	MAJ	OB	NS
Non-Empty Values Count	5,571	65	3,217
MTUS Weighted Mean	0%	-1%	0%
Mean	0%	-1%	0%
Minimum	-12%	-10%	-12%
1st Percentile	-6%	-10%	-3%
5th Percentile	-3%	-2%	-1%
10th Percentile	-2%	-2%	-1%
25th Percentile	-1%	-1%	0%
50th Percentile	0%	-1%	0%
75th Percentile	0%	-1%	0%
90th Percentile	1%	0%	1%
95th Percentile	2%	0%	1%
99th Percentile	4%	9%	3%
Maximum	18%	9%	9%
Standard Deviation	2%	2%	1%

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1 INTRODUCTION

The Centers for Medicare and Medicaid Services (CMS) pays practitioners for their services according to the Physician Fee Schedule (PFS), which specifies a set of allowable procedures and payments for each service. Payments for services paid under the PFS are determined based on setting relative value units (RVUs) for each service using a methodology referred to as the resource-based relative value scale (RBRVS). Specifically, each procedure is interpreted as being produced by a combination of three categories of inputs: practitioner work (PW), practice expense (PE), and malpractice insurance (MP). The particular blend of PW, PE, and MP inputs assessed to produce a service specifies its composition of RVUs. A payment for a procedure depends on its assigned RVUs and the input prices assessed for each RVU component.

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This report describes the results of updating the MP RVUs in support of CY 2015 Medicare PFS rulemaking. For the CY 2015 update, CMS applied the same MP RVU methodology as the CY 2010 update, but utilized more up-to-date data sources to calculate the MP RVUs. Section 2 provides a brief overview of how CMS calculates MP RVUs and uses them to calculate provider payments. Section 3 describes updating the data sources currently used to calculate the MP RVUs with more recent data. Section 4 concludes with the impacts of the CY 2015 update.

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[12] 64 FR 59380
[13] 74 FR 61758

2 BRIEF OVERVIEW OF THE MP RVU METHODOLOGY

As part of the PFS, MP RVUs reflect the relative cost to practitioners of professional liability insurance. This section provides background information regarding how CMS uses MP RVUs within the Medicare PFS. Section 2.1 describes how RVUs affect Medicare payments to practitioners. Section 2.2 presents the methodology CMS currently uses to calculate MP RVUs.

2.1 How RVUs Affect Practitioner Payments

Under the PFS, Medicare pays for practitioner services based on a list of services and their payment rates. Under the PFS, every practitioner service corresponds to a specific procedure code within the Healthcare Common Procedure Coding System (HCPCS). Since 1992, CMS has relied on the RBRVS system to determine the fee for each procedure. In the RBRVS system, payments for each service depend on the relative amounts of inputs required to perform the procedure. These inputs include the amount of practitioner work needed to provide a medical service, expenses related to maintaining a practice, and malpractice insurance costs. CMS estimates the quantity of inputs required to provide these services under the PFS using PW RVU, PE RVU, and MP RVU, respectively. Higher RVU levels indicate that the service requires more inputs.

Whereas the RVUs measure the level of inputs used for each service, Geographic Practice Cost Indices (GPCIs) measure regional variation in the price of each of the three input categories. In essence, GPCIs increase the price associated with an RVU in high cost regions and decrease the price associated with an RVU in low-cost regions. GPCIs are budget neutral and do not affect aggregate payment levels; rather, they reallocate payment rates by locality to reflect regional variation in relative input prices. For instance, a PE GPCI of 1.2 indicates that practice expenses in that area are 20 percent above the national average, whereas a PE GPCI of 0.8 indicates that practices expenses in that area are 20 percent below the national average. The three GPCIs are calculated for 89 localities. The localities are defined alternatively by state boundaries (e.g., Wisconsin), metropolitan statistical areas (MSAs) (e.g., Metropolitan St. Louis, MO), portions of an MSA (e.g., Manhattan), or rest-of-state area which exclude metropolitan areas (e.g., Rest of Missouri).

Using the RVUs, GPCIs, and a conversion factor (CF), one can calculate the PFS payment for any service in any locality. The CF translates the sum of the GPCI-adjusted RVUs from RVUs into dollars. Current legislation mandates that CMS updates the CF every year according to the Sustainable Growth Rate (SGR).[14] Although the SGR is projected to significantly decrease practitioner compensation over the upcoming years, Congress has reversed

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[14] For more information on the SGR, see: CMS March 2012.

the reductions in most years since the SGR was implemented in 2002.[15] Most recently, the Bipartisan Budget Act of 2013 nullifies the SGR and continues current Medicare practitioner payment rates through March 31, 2014.[16] Equation (2.1) below demonstrates how the PW, PE, and MP GPCIs combine with the three RVUs and the CF to establish a Medicare practitioner payment for any service K in locality L[17]:

$$(2.1) \quad Payment_{K,L} = \left\{ \left[GPCI_{PW,L} \times RVU_{PW,K} \right] + \left[GPCI_{PE,L} \times RVU_{PE,K} \right] + \left[GPCI_{MP,L} \times RVU_{MP,K} \right] \right\} \times CF$$

Although GPCIs affect payments for each procedure depending on the relative amounts of PW, PE, and MP RVUs, one can summarize the approximate combined impact of the three GPCI components on a locality's practitioner reimbursement levels using the Geographic Adjustment Factor (GAF). The GAF is a weighted sum of the three GPCIs for each locality, where the cost share weights are determined by the Medicare Economic Index (MEI) base year weights. Using the current MEI base year weights[18], one can calculate the GAF as follows in equation (2.2):

$$(2.2) \quad GAF_L = \left(GPCI_{PW,L} \times 0.48266 \right) + \left(GPCI_{PE,L} \times 0.47439 \right) + \left(GPCI_{MP,L} \times 0.04295 \right)$$

2.2 MP RVU Data and Methodology

Calculation of the MP RVUs requires information on malpractice premiums linked to the practitioner work conducted by different specialties that provide Medicare services. Because malpractice costs vary by state and by specialty, the malpractice information must be weighted geographically and across specialties. In particular, calculation of the MP RVUs involves seven data sources, which are summarized in Table 2.1 below. The first column lists the names and abbreviations of the datasets used in the MP RVU calculation. The second and third columns present the dataset sources and level of observation within each dataset respectively. The fourth and fifth columns list the role each data source serves in the MP RVU calculation as well as the specific methodological steps associated with each dataset respectively.

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[15] Hahn August 2010.
[16] U.S. Congress December 2013.
[17] The Medicare physician payment calculated using equation (2.1) may also be adjusted upwards or downwards through payment modifiers. For example, physicians use a modifier to bill for a service when they assist in a surgery; payment for an assistant surgeon is only a percentage of the fee schedule amount for the primary surgeon.
[18] For 2013, the MEI base year weights come from 2006 data.

Table 2.1: MP RVU Data Source Overview

Dataset Name	Source	Observation Level	Data Source Role	Methodology Step
Malpractice Premiums (MP File)	State Departments of Insurance	County, Specialty, Surgery Class	Determining specialty risk factors	1
Locality RVUs and Services (LRS File)	CMS	Physician ZIP Code, Carrier Number, Locality, Specialty	Weighting county level malpractice premiums and creating geographic normalization factor	1
Current Procedural Terminology RVUs and Services (CRS File)	CMS	Carrier Number, Locality, Specialty, Current Procedural Terminology, Modifier	Weighting the blended specialties by their respective PW RVU	1
Geographic Practice Cost Index (GPCI File)	CMS	Locality	Geographic adjustments for malpractice premiums	1
National PFS Relative Value File (NPFS File)	CMS	Current Procedural Terminology, Modifier	Risk of service and impact reference	3
Clinical RVUs	CMS	Current Procedural Terminology, Modifier	Risk of service	3
Discounted Utilization Files	CMS	Specialty, Current Procedural Terminology, Modifier	Weighting national specialty risk factors and determining low volume services and calculating budget neutrality	3

The current approach to calculate the MP RVUs largely involves four steps:

(1) Calculating a national average MP premium for each practitioner specialty,

(2) Normalizing specialty premiums against the lowest-cost specialty baseline to create a specialty-specific risk factor,

(3) Calculating the unadjusted MP RVU for each service, based on the share of specialists that typically perform a service, and

(4) Adjusting the RVUs for budget neutrality.

The remainder of Section 2.2 describes each step in greater detail.

2.2.1 Step 1: Calculating the MP RVU National Average Premiums

Because the MP RVUs are national measures and the premiums are collected by state and coverage area within a state, the first step creates national average premiums by specialty and surgery class. The RVU-weighted national average premiums are calculated as national average premiums for each specialty and surgery class, normalized by the average MP GPCI. This normalization is necessary to avoid inflated or deflated values due to potential differences in

distribution of specialty-provided services across geographic areas. Normalization adjusts the national average premiums to account for these geographic differences in cost; as presented in Equation (2.1), the geographic cost differences are handled through the GPCIs rather than in the RVUs themselves. The national average premiums by specialty and surgery class are themselves averages of the most recently available premiums for each county, weighted by the total RVUs in that county. In mathematical notation, the national average premium for specialty and surgery class combination S is given by:

$$Premium_{NS} = \frac{Premium_S}{avgGPCI_{MP,S}}$$

(2.3) where

$$Premium_S = \sum_K \left(P_{SK} \times \text{share of total RVUs for specialty } S \text{ that are in county } K \right)$$

(2.4) and

$$avgGPCI_{MP,S} = \sum_L \left(GPCI_{MP,L} \times \text{share of MP RVUs for specialty } S \text{ that are in locality } L \right)$$

(2.5) .

In these formulas, K indicates the county; S designates the medical specialty and surgery class combination; L indicates the locality; N identifies the nation; and $GPCI_{MP}$ is the MP GPCI value. Total RVU weights are drawn from specialty-ZIP code totals on the LRS file summed by county. To calculate an average specialty and surgery class premium for each county (P_{SK}), market shares at the state level for firm F providing coverage in county K (MS_{KF}) were utilized from the county-level insurance carrier data gathered from State Departments of Insurance. To calculate P_{SK}, insurance carrier's county-level specialty and surgery class premiums (P_{SKF}) were averaged, weighted by each insurance carrier's market share in each state. In mathematical notation, the average specialty premium for each county is given by:

$$P_{SK} = \sum_F \frac{P_{SKF} \times MS_{KF}}{MS_K}$$

(2.6)

where MS_K refers to the total market share for all firms providing coverage in that county K.

After calculating the normalized premiums across specialties and surgery classes, final surgery classes were chosen based on state counts, and remapping of specialties was done based on similarity of specialties and premiums. For some specialties, all surgery classes were blended together by weighting individual surgery classes by their PW RVUs in the CRS file, while for others the values of their surgical, non-surgical, or unspecified premiums were used in the calculations in Step 2.

2.2.2 Step 2: Calculating the MP RVU Risk Factors

The second step calculates relative risk factors (i.e., premium weights) by specialty. Risk factors for the specialties and surgery classes in the malpractice premium data can be calculated

simply by normalizing the national average premium to a standard base. Historically, the standard base has been the lowest premium specialty. Unlike the GPCIs, which norm around 1.0, using a lowest premium base presents all other risk factors as excess risk above the lowest premium specialty, and all values are greater than or equal to 1.0. Mathematically:

$$RF_S = \frac{Premium_{NS}}{Premium_{Nlowest}}$$

(2.7)

In the case where a specialty does not have MP premium data for 35 or more States, the specialty is mapped to a specialty with a comparable level of MP risk. For example, in the CY 2010 MP RVU update, the Oral Surgery and Maxillofacial Surgery specialties were mapped to the Plastic Reconstructive Surgery specialty. Specialties are mapped to the closest Insurance Service Office (ISO) code, or if no ISO code can be identified, the specialty is cross-walked to a specialty for which an ISO code is assigned.

2.2.3 Step 3: Calculating the MP RVUs by Procedure

In the third step, Acumen calculated the MP RVUs by procedure. Each Current Procedural Terminology/Modifier (CPT/MOD) procedure code's MP RVUs ($MP\ RVU_{CPT/MOD}$) is calculated as that procedure's PW RVU ($PW\ RVU_{CPT/MOD}$) multiplied by the average risk factor for the procedure ($avgRVU_{CPT/MOD}$):

$$MP\ RVU_{CPT/MOD} = \text{avg}RF_{CPT/MOD} \times PW\ RVU_{CPT/MOD}$$

(2.8)

PW RVUs reflect the practitioner 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 (2.8). The PW RVU values are drawn from the NPFS file provided by CMS.

The average risk factor reflects the relative malpractice liability associated with that procedure, based on the specialties of the practitioners who perform the service. Specifically, under the current methodology, the average risk factor is a weighted average of the risk factors for each specialty that performs the procedure, weighted by the share of the allowed services count provided by that specialty:

$$\text{avg}RF_{CPT/MOD} = \frac{\sum_S \left(RF_S \times MTUS_{CPT/MOD,S} \right)}{\sum_S MTUS_{CPT/MOD,S}}$$

(2.9)

where the weights $MTUS_{CPT/MOD,S}$ are the sum of the number of services performed per specialty per procedure (Miles/Times/Units/Service (MTUS)), as reported in the 2015 Discounted Utilization File provided by CMS. If the allowed services count for a procedure is less than 100, the risk factor of the claims based dominant specialty is utilized. For 23 low volume services

shown in Appendix A, Acumen overrode the claims based dominant specialty with an assigned specialty as directed by CMS.

2.2.4 Step 4: Calculating the MP RVUs Adjusted for Budget Neutrality

The fourth step adjusts the MP RVUs for budget neutrality so that the sum of the MP RVUs after the update, weighted by the service count, is the same as this sum before the update. Equations (2.10a and 2.10b) and Equations (2.11a and 2.11b) below show the two steps in the budget neutralization. Specifically, the calculation applies an adjustment factor that scales up the new MP RVU values if the sum of the MP RVUs across all services is higher under the previous MP RVUs than under the new MP RVUs and scales down the new MP RVU values if the sum of the MP RVUs across all services is lower under the previous MP RVUs than under the new MP RVUs. The numerator is the summation of the 2014 MP RVUs multiplied by 2014 utilization counts. The denominator is the summation of the 2015 raw MP RVUs multiplied by 2015 utilization counts. This factor is described below by Equation (2.10a):

$$BN_1\ Adj = \frac{\sum MP\ RVU_{CPT/MOD}^{Old} \times MTUS_{CPT/MOD}^{Old}}{\sum MP\ RVU_{CPT/MOD}^{New} \times MTUS_{CPT/MOD}^{New}}$$

(2.10a)

where $BN_1\ Adj$ is the budget neutral adjustment factor for the first round of budget neutralization, $MP\ RVU_{CPT/MOD}^{Old}$ indicates the previous MP RVUs, $MP\ RVU_{CPT/MOD}^{New}$ indicates the newly calculated MP RVUs calculated through Equation (2.8), $MTUS_{CPT/MOD}^{Old}$ indicates the MTUS reported in the 2014 Discounted Utilization File, and $MTUS_{CPT/MOD}^{New}$ indicates the MTUS reported in the 2015 Discounted Utilization File. The current year raw MP RVUs ($MP\ RVU_{CPT/MOD}^{BN_1}$) are the MP RVU values calculated through Equation (2.8) multiplied by this adjustment factor, as shown in Equation (2.10b):

(2.10b) $$MP\ RVU_{CPT/MOD}^{BN_1} = MP\ RVU_{CPT/MOD} \times BN_1\ Adj \ .$$

After scaling the raw MP RVUs, a floor of 0.01 is applied and global codes are forced to be equal to the sum of their professional and technical components (i.e., $MP\ RVU_{CPT/MOD}^{BN_1,frc}$). Then, a second round of budget neutralization is applied using the same approach as above (Equation 2.11a). The numerator is same as that of Equation (2.10a), while the denominator is equal to the post-first round budget neutralized MP RVUs multiplied by the utilization counts. The budget neutral adjustment factor for the second round of budget neutralization, $BN_2\ Adj$, is calculated as:

$$(2.11a) \qquad BN_2\ Adj = \frac{\sum MP\ RVU_{CPT/MOD}^{Old} \times MTUS_{CPT/MOD}^{Old}}{\sum MP\ RVU_{CPT/MOD}^{BN_1,frc} \times MTUS_{CPT/MOD}^{New}}$$

The final budget neutral MP RVUs ($MP\ RVU_{CPT/MOD}^{finalBN}$) are multiplied by this adjustment factor, as shown in Equation (2.11 b):

$$(2.11b) \qquad MP\ RVU_{CPT/MOD}^{finalBN} = MP\ RVU_{CPT/MOD}^{BN_1,frc} \times BN_2\ Adj$$

3 UPDATING THE MP RVUS

To update the MP RVUs for CY 2015, Acumen calculated the MP RVUs using more recent versions of data sources used for previous updates. Table 3.1 shows that the MP RVUs under current regulation (CY 2010 update) rely primarily on six data sources. Table 3.1 below compares the current data sources to the data sources used for the CY 2015 update. The remainder of Section 3 provides an overview of the updates for these data sources. Sections 3.1 through 3.6, in particular, discuss updating the 2006-2007 malpractice premiums currently used to calculate the MP RVUs with more recent 2011-2012 malpractice premiums. Specifically, Section 3.1 describes the CY 2015 malpractice premium data collection process. Section 3.2 details how the malpractice premiums dataset is constructed. In certain cases, malpractice premium data are not available or are only available for earlier time periods. Section 3.3 describes how the CY 2015 update addresses these issues. Section 3.4 discusses how specialties are defined for use in the MP RVUs. Section 3.5 details how the technical component malpractice premium data are updated for CY 2015. Section 3.6 discusses how CPT codes without utilization are crosswalked to CPT codes with similar specialty mixes. Section 3.7 addresses CPT codes whose MP RVU values are taken from other CPT codes for the purpose of maintaining consistency with the PE RVU methodology. Finally, Section 3.8 describes updating the remaining data sources presented in Table 3.1.

Table 3.1: CY 2015 MP RVU Update Data Source Overview

Dataset Name	Source	CY 2010 Update	CY 2015 Update
Malpractice Premiums (MP File)	State Departments of Insurance	2006-2007	2011-2012
Locality RVUs and Services (LRS File)	CMS	2008	2013
Current Procedural Terminology RVUs and Services (CRS File)	CMS	2008	2013
Geographic Practice Cost Index (GPCI File)	CMS	2008	2014[19]
National PFS Relative Value File (NPFS File)	CMS	2008	2015[20]
Clinical RVUs	CMS	2008	2015[21]
Discounted Utilization File[22]	CMS	Not Used	2014-2015

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[19] For the Geographic Practice Cost Index dataset, "2014" refers to the fact that the latest GPCI update (i.e., the Seventh Update) was finalized in the CY 2014 final rule. For the purpose of the CY 2015 MP RVU update, fully-implemented Seventh Update GPCI values for CY 2015 were utilized, as the Seventh Update GPCI values were averaged with the Sixth Update GPCI values for CY 2014,

[20] For the National PFS Relative Value File dataset, "2015" refers to proposed CY 2015 values.

[21] For the Clinical RVUs dataset, "2015" refers to proposed CY 2015 values.

[22] The 2015 Discounted Utilization file is used to determine utilization of service codes. The 2014 Discounted Utilization File is used in calculating budget neutrality. The 2015 utilization file is used on 2015 service codes while 2014 utilization file is used on 2014 service codes.

3.1 Malpractice Premium Data Collection

Acumen collected malpractice data from state departments of insurance, National Association of Insurance Commissioners (NAIC), and other sources. To collect up-to-date malpractice premium data for the CY 2015 update of the MP RVUs and construct a new malpractice premium dataset, Acumen followed several steps, including:

(1) Defining a standard for malpractice policies,

(2) Identifying the medical malpractice underwriters with the larger market shares in each state,

(3) Collecting the rate filings for MP premiums through state departments of insurance, and

(4) Collecting patient compensation fund (PCF) surcharges.

Subsections 3.1.1 through 3.1.4 explain each step in greater detail.

3.1.1 Step 1: Defining a Standard for Malpractice Policies

The first step of the data collection process identifies the specific characteristics of a malpractice insurance policy to determine the rate filings to be collected. Malpractice premiums vary across regions due to a number of factors other than variation in the price of a given level of coverage. Policy characteristics that affect premiums include: whether the policy is claims made or occurrence based, the liability limits, years of coverage, and other factors. By collecting malpractice data for a single malpractice coverage type that is widely used across most regions, regional variation in malpractice premiums will be due entirely to regional variation in malpractice premium prices rather than regional variation in the types of coverage practitioners elect.

The data collection process required malpractice premium rate filings to meet the following criteria:

- **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 practitioners for the policy amount in effect when the claim is made, regardless of the date of the event in question. An occurrence policy covers a practitioner 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 medical 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. 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.

3.1.2 Step 2: Identifying the Primary Medical Malpractice Underwriters

In the second step, Acumen identified the top medical malpractice underwriters in each state based on their 2011 market shares, or share of direct written premiums. Our team used 2011 market shares since 2012 market share reports were generally unavailable. Market share reports for a given year are typically published after the beginning of the next year. Since our data collection efforts extended from November 2012 through January 2013, most departments of insurance had not yet published their 2012 market share data. Whenever possible, our team identified the primary medical malpractice underwriters in a given state through individual company level market share data published by state insurance departments (available on state insurance department websites, the Perr and Knight database,[23] or through direct contact with the state). If market share data were not available from the state, Acumen relied upon an annual report published by the NAIC.

Market share data from state insurance departments are preferable to market share data from NAIC because the state market share data are typically more detailed. NAIC generally reports market share at the group level (i.e., companies with a common NAIC code), whereas state insurance data often contains market shares for individual insurance companies. In most cases, the NAIC market share value represented the entire group of underwriters, not just the individual company of interest. Comparisons of NAIC data with market share data from state insurance departments revealed that medical malpractice underwriters within the same group sometimes have vastly different medical malpractice market shares.

The previous update used the NAIC reports as the source for market share data in three-quarters of the states. For the malpractice GPCI and RVU update, Acumen collected 2011 market share data at the individual company level for all states, the District of Columbia, Puerto Rico, and Guam. Acumen only needed to supplement these market share data with group-level market share data for the Virgin Islands. Market share data for American Samoa was not available through their department of insurance or in the NAIC market share report. In the previous update, NAIC market share data were used for 37 states, the District of Columbia, and Puerto Rico. The previous update did not collect data from American Samoa, Guam, or the

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[23] See https://www.ratefilings.com

Virgin Islands. The third and sixth columns of Table 3.2 show the market share data source by state/territory.

Table 3.2: Source of Market Share Data and Most Recent Data Collected by State[24]

State	2011			2012		
	# of Companies	Percent Market Share	Market Share Source	# of Companies	Percent Market Share	Market Share Source
AL	2	73.29%	State	2	73.29%	State
AK	2	68.16%	PK	2	68.16%	PK
AS	0	0.00%	Unavailable	0	0.00%	Unavailable
AZ	2	92.00%	State	2	92.00%	State
AR	2	50.41%	State	2	50.41%	State
CA	3	46.61%	State	4	73.21%	State
CO	2	61.09%	State	2	61.09%	State
CT	4	36.56%	PK	4	36.56%	PK
DE	3	52.31%	PK	3	52.31%	PK
DC	2	50.48%	PK	2	50.48%	PK
FL	6	53.29%	State	6	53.29%	State
GA	4	23.76%	PK	4	23.76%	PK
GU	0	0.00%	State	0	0.00%	State
HI	2	51.02%	PK	2	51.02%	PK
ID	3	70.22%	State	3	70.22%	State
IL	3	69.86%	State	3	69.86%	State
IN	3	50.96%	PK	3	50.96%	PK
IA	3	50.50%	State	3	50.50%	State
KS	3	61.81%	State	3	61.81%	State
KY	4	51.23%	PK	4	51.23%	PK
LA	2	60.21%	State	2	60.21%	State
ME	2	87.42%	State	2	87.42%	State
MD	3	55.69%	State	3	55.69%	State
MA	2	83.01%	State	2	83.01%	State
MI	3	6.69%	State	3	6.69%	State
MN	3	8.73%	PK	3	8.73%	PK
MS	3	5.62%	State	4	8.20%	State
MO	4	47.55%	State	4	47.55%	State
MT	4	50.11%	State	4	50.11%	State
NE	4	60.45%	State	4	60.45%	State
NV	4	45.74%	State	4	45.74%	State
NH	4	55.07%	State	4	55.07%	State
NJ	3	66.47%	State	3	66.47%	State
NM	3	43.78%	PK	3	43.78%	PK
NY	3	69.80%	NAIC	3	69.80%	NAIC
NC	4	55.72%	State	4	55.72%	State

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[24] North Carolina and Maryland provided Acumen with rate guides which list premium rates by specialty for multiple companies.

State	2011			2012		
	# of Companies	Percent Market Share	Market Share Source	# of Companies	Percent Market Share	Market Share Source
ND	0	0.00%	State	2	65.60%	State
OH	3	51.43%	State	3	51.43%	State
OK	2	65.05%	State	2	65.05%	State
OR	2	71.57%	State	2	71.57%	State
PA	3	25.10%	State	3	25.10%	State
PR	2	47.02%	State	2	47.02%	State
RI	2	35.28%	PK	2	35.28%	PK
SC	3	55.77%	State	3	55.77%	State
SD	2	87.51%	State	2	87.51%	State
TN	2	83.15%	State	2	83.15%	State
TX	4	19.25%	State	5	20.39%	State
UT	4	89.61%	State	4	89.61%	State
VT	2	68.24%	PK	2	68.24%	PK
VI	0	0.00%	NAIC	0	0.00%	NAIC
VA	3	36.76%	State	3	36.76%	State
WA	4	66.27%	State	4	66.27%	State
WV	3	57.44%	State	3	57.44%	State
WI	3	62.70%	State	3	62.70%	State
WY	2	82.00%	State	2	82.00%	State

3.1.3 Step 3: Collecting Malpractice Premium Data

In the third step, Acumen collected rate filings for malpractice insurance premiums through state departments of insurance. Our team employed both email and telephone outreach to identify the appropriate contact person and to determine whether data are collected at the state level. Acumen requested rate filings with effective dates in 2011 and 2012. Our team collected rate filings with earlier effective dates when 2011 and/or 2012 filings were not available. When recent rate filings were unavailable, Acumen collected all filings for the companies identified in the second step with effective dates between 2008 and 2010.

Virtually all state insurance departments have established mechanisms to release rate filings to the public and required our data collection to follow these established mechanisms. About sixty percent 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 obtain data in unresponsive states and to access more complete data in all states, Acumen also used the Perr and Knight rate filings database.[25] Acumen relied on the Perr and Knight database rate

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[25]See https://www.ratefilings.com

filings exclusively in 7 states, and used the database to supplement the rate filings collected in the other 43 states and the District of Columbia.[26]

Compared with the previous update, this update collected rate filings from more states and territories. While the previous update collected rate filings from 49 states and the District of Columbia, our team was able to collect rate filings in all 50 states, the District of Columbia, and Puerto Rico.[27] We collected rate filings of companies representing at least 50% of the medical malpractice market in 36 states and the District of Columbia. In the remaining states and Puerto Rico, we collected rate filings representing a smaller percentage of the market because rate filings for the largest companies were unavailable.

Table 3.2 above also lists the number of companies used and the share of the malpractice insurance market the rate filings from these companies cover for each state. In cases where Acumen was unable to collect individual company data directly from state insurance departments, the Perr and Knight database was used for rate filings data. Perr and Knight derives its data from state insurance departments. All market share calculations in the table are based on the malpractice insurers' market share as of 2011.

3.1.4 Step 4: Collecting Patient Compensation Fund Surcharges

In the fourth step, Acumen collected PCF surcharges, which represent an additional cost to practitioners and surgeons in some states. PCFs are state funds that operate like an excess-layer of insurance. If a judgment exceeds the practitioner's primary policy limit, the PCF pays the amount above the limit (or the amount between the limit and another statutorily-prescribed amount). PCFs are funded by surcharges (paid directly to the PCF) that practitioners and hospitals pay in addition to their primary policy premiums. These arrangements give primary insurers, practitioners, and hospitals an added level of coverage in the event of large judgments. Eight states have PCFs that charge practitioners a surcharge on top of their primary malpractice policy premium. In some states participation is mandatory, in others participation is voluntary.

As part of outreach efforts, our team inquired whether or not each state operates a PCF. For states that responded affirmatively, Acumen requested both the rates for the insurance company premium and the PCF surcharge. The states that have PCFs are Indiana, Kansas, Louisiana, Nebraska, New Mexico, Pennsylvania, South Carolina, and Wisconsin. Acumen also requested background information regarding PCFs, including whether the state's PCF was mandatory or voluntary, the private coverage requirements associated with the PCF, and the liability limits for the PCF. Table 3.3 summarizes this information for all active PCFs. Three of

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[26] The Perr and Knight database does not provide rate filings for the four U.S. territories.
[27] We were unable to collect rate filings from American Samoa, Guam and Virgin Islands.

the eight PCF programs are mandatory. All states with PCFs, whether mandatory or not, require participating practitioners to hold a specific amount of private coverage.

To collect comparable premium data in states operating PCFs and in other states, our team aimed to collect rates for claims-made coverage with total limits of liability (i.e., including private coverage and excess coverage provided by the PCF) equal to $1,000,000/$3,000,000. Our methodology differed depending on whether the PCF was mandatory or voluntary. For the five states with voluntary PCF participation our team did not add the PCF surcharges to the collected premiums; instead, our team utilized the premiums for private coverage with $1,000,000/$3,000,000 liability coverage limits to maintain consistency with non-PCF states.

For the three states with mandatory PCF participation, our team added the PCF surcharge to the primary policy premium to calculate the full cost of obtaining malpractice insurance in these states. Specifically, the mandatory surcharge is added to every weighted premium calculated in Section 2.2.1. If the PCF provided multiple coverage options, our team used surcharges for coverage that would bring the total limit of liability (primary plus PCF) as close to $1,000,000/$3,000,000 as possible. For example, Kansas' PCF requires participants hold primary coverage of $200,000/$600,000. PCF participants can choose from several PCF coverage options, including $800,000/$2,400,000 limits of liability. Our team requested surcharges for this option since it is associated with total coverage (primary plus PCF) of $1,000,000/$3,000,000.

However, it was not always possible to choose surcharges associated with total coverage of $1,000,000/$3,000,000. Practitioners in Wisconsin, for example, must purchase an insurance policy with $1,000,000/$3,000,000 limit of liabilities in the private market to participate in Wisconsin's mandatory PCF. Wisconsin's PCF provides unlimited excess coverage in addition to this private coverage.

Table 3.3: Patient Compensation Funds

State	PCF Name	Mandated	Private Coverage Required	PCF Liability Limit
IN	Patient Compensation Fund	Voluntary	$250K/$750K	$1M per occurrence
KS	Health Care Stabilization Fund	Mandatory	$200K/$600K	$100K/$300K $300K/$900K $800K/$2.4M
LA	Patient Compensation Fund	Voluntary	$100K/$300K	$400K/500K
NE	Excess Liability Fund	Voluntary	$500,000/$1M	$500K /$1.75M

State	PCF Name	Mandated	Private Coverage Required	PCF Liability Limit
NM	Patient Compensation Fund	Voluntary	$200K/$600K	$400K per occurrence (up to $600K)
SC	Patient Compensation Fund	Voluntary	$200K/$600K	$1M/$3M $2M/$4M $3M/$6M $5M/$7M $10M/$12M
PA	Mcare (Medical Care Availability and Reduction of Error)	Mandatory	$0.5M/$1.5M	$0.5M/$1.5M
WI	Patient Compensation Fund	Mandatory	$1M/$3M	No Limit

3.2   Constructing the Malpractice Premium Data Set

To structure the rate filing information into a dataset for use in developing the MP RVUs, Acumen developed crosswalks to match rate filing information to CMS data sources. Two distinct crosswalks were required: specialty and territory. The specialty-crosswalk maps the specialties listed in the rate filings to specialty codes used in the CMS carrier files. Rather than select a subset of specialties, Acumen entered premium information for all practitioner and surgeon and ancillary specialties available in the collected rate filings.

The specialty crosswalk preserved information regarding surgery classes and categorizations that impact premium rates. For example, many insurance companies classified general practice practitioners as non-surgical, minor-surgical, or major-surgical, each with different malpractice premiums. Acumen recorded this information and standardized the data to CMS carrier codes.

3.3   Adjusting for Missing Data

Missing premium data require alternative strategies. Specifically, Acumen classified missing data into two types, including (i) premium data missing in the base year or that became effective mid-year and (ii) no premium data available (i.e., American Samoa, Guam, and Virgin Islands).

3.3.1 Case 1: Premium Data Missing in Base Year or Became Effective Mid-Year

Our team requested rate filings with effective dates in 2011 and 2012, and whenever possible, this update uses rates that were in effect on July 1, 2011 and July 1, 2012. However, in some instances only filings with earlier or later effective dates were available. For most states, rate filings do not have to be submitted on a regular schedule. Therefore, rate filings can become effective midyear and/or remain effective for more than one year. The methodology considers a

rate to be in effect from its effective date until the effective date of a replacement rate from a more recent filing. For example, the 2011and 2012 periods, respectively, could be represented by a filing from January 2010 replaced by one in September 2011.

When recent rate filings were unavailable, it was generally for one or more of the following reasons: (i) the company in question may not have changed its medical malpractice rates recently, (ii) the state in question may have flexible rate filings requirements, and/or (iii) the company in question may be a not-for-profit or risk retention group (RRG).[28] These three cases have different implications for the accuracy of premium rates reported in older filings. The first case arises because underwriters are often not required to file if rates are unchanged from the previous rate filing. In this case, the most recent filing accurately represents current premium rates, even if the most recent filing has an effective date before 2011. The second and third cases arise because some underwriters are not required to file rates, even when rates have changed. In these two cases, the most recent filing does not necessarily accurately represent current premium rates. However, since it is not possible to distinguish between the first case and the second and third cases, our methodology does not make adjustments to premiums filed prior to 2011. This methodology is consistent with past updates.

3.3.2 Case 2: No Premium Data Available from Rate Filings

Acumen's outreach efforts included the four U.S. territories; however we were not able to collect premium data from American Samoa, Guam, or the Virgin Islands. Though our team attempted to contact American Samoa several times, they were unresponsive. Guam provided market share data, but had only recently developed an organized system to categorize rate filings. Since the largest medical malpractice companies in Guam had not filed recently, Guam was not able to provide rate filings for the companies of interest. Virgin Islands informed us they do not provide rate filings to the public.

3.4   Defining Specialties

Equation (2.3) assumes a straightforward definition of specialties, using the CMS carrier specialty codes listed in Table 3.4. 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 practitioner 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

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[28] RRGs are a form of self-insurance. Whereas typical insurance companies are owned by outside investors, RRGs are owned by the policyholders.

specialty. In both of these cases, Acumen's goal is to keep as complete a list of specialties as possible, but ensure that the risk factors for the specialties are based on a robust set of data. Appendix B provides summary data before and after MP RVU calculations for each surgery class – specialty combination using the methodology described in this section.

Table 3.4: Number of State Rate Filings Collected for Each Specialty[29]

Specialty Code	Specialty Name	% of Total MTUS	States
01	General Practice	0.57	48
02	General Surgery	1.09	50
03	Allergy Immunology	1.21	49
04	Otolaryngology	1.38	50
05	Anesthesiology	0.57	49
06	Cardiology	6.83	50
07	Dermatology	3.91	50
08	Family Practice	8.07	50
09	Interventional Pain Management*	0.39	23
10	Gastroenterology	1.28	49
11	Internal Medicine	12.46	50
12	Osteopathic Manipulative Medicine*	0.05	6
13	Neurology†	1.24	50
14	Neurosurgery†	0.23	24
16	Obstetrics Gynecology	0.57	50
17	Hospice and Palliative Care*	0.02	8
18	Ophthalmology	4.34	50
19	Oral Surgery (dental only) *	0.02	7
20	Orthopedic Surgery	2.71	50
22	Pathology	2.18	50
23	Sports Medicine*	0.04	10
24	Plastic and Reconstructive Surgery	0.17	49
25	Physical Medicine and Rehabilitation	1.18	48
26	Psychiatry	1.54	49
28	Colorectal Surgery (formerly Proctology)	0.07	43
29	Pulmonary Disease	1.80	50
30	Diagnostic Radiology	9.44	49
33	Thoracic Surgery	0.10	48
34	Urology	1.61	50
35	Chiropractic*	1.98	32
36	Nuclear Medicine	0.07	44
37	Pediatric Medicine	0.08	50
38	Geriatric Medicine	0.24	41
39	Nephrology	1.55	43
40	Hand Surgery	0.12	48
41	Optometry**	1.15	36
44	Infectious Disease	0.67	41
46	Endocrinology	0.45	41

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[29] Independent risk factors are not calculated for specialties with an asterisk, or dagger.

Specialty Code	Specialty Name	% of Total MTUS	States
48	Podiatry	2.99	44
60	Public Health or Welfare Agency*	0.01	11
62	Psychologist*	0.02	6
65	Physical Therapist*	7.87	2
66	Rheumatology	0.62	43
67	Occupational Therapist*	0.54	19
71	Registered Dietitian/Nutrition Professional**	0.05	38
72	Pain Management*	0.22	33
77	Vascular Surgery	0.43	46
78	Cardiac Surgery	0.09	48
79	Addiction Medicine*	0.01	12
81	Critical Care (Intensivists)	0.22	35
82	Hematology	0.09	36
83	Hematology/Oncology*	1.68	17
84	Preventive Medicine	0.02	42
85	Maxillofacial Surgery*	0.01	19
90	Medical Oncology	0.49	41
91	Surgical Oncology*	0.03	25
92	Radiation Oncology	1.14	46
93	Emergency Medicine	2.52	49
94	Interventional Radiology*	0.21	34
97	Physician Assistant**	1.70	43
99	Unknown Physician Specialty*	0.01	38
C0	Sleep Medicine*	0.01	8

† Specialties with a dagger are partially blended with a similar specialty with a dagger to create a single major surgery risk class and separate non-surgery risk classes; these specialties and the partial blending methodology are discussed further in Section 3.4.3.

* Specialties with one asterisk are reassigned to similar specialties due to insufficient State coverage (i.e., fewer than 35 States).

** Specialties with two asterisks are reassigned to similar specialties due to extreme variation in premium amounts. These specialties are discussed further in Section 3.4.1.

3.4.1 Specialties with Insufficient Coverage, No State Coverage, and Extreme Variation in Premium Amounts

Although Acumen's outreach efforts collected premium data from all states, some specialties do not have distinct risk categories in the rate filings from all states. As shown in Table 3.4, 18 specialties that are coded on the carrier claims were included in rate filings in fewer than 35 States and 3 specialties had extreme variations in premium amounts. This methodology leaves 41 specialties, for which we used the malpractice premium data to develop specialty risk factors.

For practitioner-provided specialties with insufficient state coverage in the MP file, Acumen matched these specialties to a similar specialty – conceptually or by reported premiums

– for which data are available. These specialties are denoted with an asterisk in Table 3.4. For example, some of the low-cost specialties (e.g., Addiction Medicine, Clinical Psychologist) are assigned to the lowest practitioner cost risk factor (Allergy/Immunology).

Similarly, for practitioner-provided specialties with extreme variation in premium amounts, Acumen also matched these specialties to the Allergy/Immunology specialty, the specialty with the lowest practitioner professional liability insurance premium for which we had sufficient and reliable data. These specialties are denoted with two asterisks in Table 3.4; there are three specialties denoted with two asterisks. First, the Registered Dietician/Nutrition Professional specialty premium amounts ranged from $85 to $20,813 (a 24,259 percent difference). Second, the Physician Assistant specialty premium amounts ranged from $614 to $35,404 (a 5,665 percent difference. Third, the Optometry specialty premium amounts ranged from $189 to $10,798 (a 5,614 percent difference).

Additionally, Acumen's outreach efforts did not obtain malpractice premium data for 28 specialties. There are 14 specialties types with utilization under the PFS for which no premium data were collected that are matched to a similar specialty. There are 6 specialties that are assigned the Technical Component risk factor described in Section 3.5. The remaining 8 specialties are dropped.

Table 3.5 lists the recoded specialties discussed in this subsection. The 14 specialties for which no premium data were collected that are matched to a similar specialty are denoted with an asterisk in Table 3.4. Table 3.6 lists the six specialties assigned the TC risk factor. The remaining categories are dropped, meaning they are not included in the weighted averages for calculating the MP RVUs.

Table 3.5: Reassigned Specialties with Insufficient State Coverage, No State Coverage, and Extreme Variation in Premium Amounts

Specialty Code	Specialty Name	New Specialty Code	New Specialty Name
09	Interventional Pain Management	05	Anesthesiology
12	Osteopathic Manipulative Medicine	03	Allergy Immunology
15	Speech Language Pathology*	03	Allergy Immunology
17	Hospice and Palliative Care	03	Allergy Immunology
19	Oral Surgery (dental only)	24	Plastic and Reconstructive Surgery
21	Cardiac Electrophysiology*	06	Cardiology
23	Sports Medicine	01	General Practice
27	Geriatric Psychiatry*	26	Psychiatry
32	Anesthesiologist Assistant*	05	Anesthesiology
35	Chiropractic	03	Allergy Immunology
41	Optometry	03	Allergy Immunology
42	Certified Nurse Midwife*	16	Obstetrics Gynecology
43	Certified Registered Nurse Anesthetist (CRNA)*	05	Anesthesiology

Specialty Code	Specialty Name	New Specialty Code	New Specialty Name
50	Nurse Practitioner*	01	General Practice
60	Public Health or Welfare Agency	03	Allergy Immunology
62	Psychologist	03	Allergy Immunology
64	Audiologist*	03	Allergy Immunology
65	Physical Therapist	03	Allergy Immunology
67	Occupational Therapist	03	Allergy Immunology
68	Clinical Psychologist*	03	Allergy Immunology
71	Registered Dietitian/Nutrition Professional	03	Allergy Immunology
72	Pain Management	05	Anesthesiology
76	Peripheral Vascular Disease*	77	Vascular Surgery
79	Addiction Medicine	03	Allergy Immunology
80	Licensed Clinical Social Worker*	03	Allergy Immunology
83	Hematology/Oncology	90	Medical Oncology
85	Maxillofacial Surgery	24	Plastic and Reconstructive Surgery
86	Neuropsychiatry*	26	Psychiatry
89	Certified Clinical Nurse Specialist*	01	General Practice
91	Surgical Oncology	02	General Surgery
94	Interventional Radiology	30	Diagnostic Radiology
97	Physician Assistant	03	Allergy Immunology
98	Gynecological/Oncology	02	General Surgery
99	Unknown Physician Specialty	01	General Practice
C0	Sleep Medicine	01	General Practice

* Denotes the specialty for which no premium data were collected that are matched to a similar specialty.

Table 3.6: TC Specialties Assigned TC-only Risk Factor

CMS Specialty Code	CMS Specialty Name
45	Mammography Screening Center
47	Independent Diagnostic Testing Facility (IDTF)
63	Portable X-Ray Supplier (Billing Independently)
69	Clinical Laboratory (Billing Independently)
74	Radiation Therapy Centers
75	Slide Preparation Facilities

3.4.2 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, as some procedures carry greater liability risks. These liability risks are grouped by surgery, no surgery, and obstetrics as shown in Table 3.7. Surgery CPTs range from 10000-69999, and also include a list of G codes and cardiology surgical codes provided by CMS that are outside of the 10000-69999 CPT range. 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 (2.7) 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 (2.9).

Table 3.7: HCPCS Code Surgery Classes

Surgery Class	HCPCS Codes
Surgery	10000-69999, invasive cardiology codes treated as surgery and surgical G codes[30]
Obstetrics (OB)	59000-59899
No Surgery (NS)	All Other CPT Codes

Consistent with the methodology under current regulation, Acumen does not distinguish risk between major and minor surgery premium categorizations. Instead, only major surgery premiums are used to calculate distinct surgery risk factors when there are sufficient major surgery premium filings. For specialties with distinct surgery and non-surgery risk factors, as well as substantial data for each surgery class, surgery risk factors are applied to CPT codes in the 10000-69999 range codes, cardiology surgical codes provided by CMS and on the list of G codes. The non-surgery risk factors are applied to all other non-surgical and non-obstetrics codes. In instances where specialties are dominated by surgery classes, only surgery risk factors are applied to CPT codes. When specialties in which the unspecified class dominates the surgery and non-surgery classes, the unspecified risk factor is applied to the CPT codes. For all other CPT codes, all available premium data for a specialty are blended into a single risk class applicable to the corresponding CPT codes. Specifically, the risk factor is calculated as a weighted average based on the percentage of PW RVUs for each surgery class. For example, rheumatology has a single, blended risk factor calculated from surgery, non-surgery, and unspecified class premiums, which is applied to all procedures. Table 3.8 below summarizes the specialty codes that fall under each of these four scenarios.

Table 3.8: Surgery Class Specialty Situations

Situation	Specialty Codes
1. Substantial Data for Each Class	01, 04, 06, 07, 08 (non-OB), 10, 13, 18, 34, 38, 39, 46, 93
2. Major Surgery Dominates	02, 14, 20, 24, 28, 33, 40, 77, 78
3. Unspecified Dominates	03, 05, 16 (non-OB), 25, 26, 36, 81
4. Blend All Available	11, 22, 29, 30, 37, 44, 48, 66, 82, 84, 90, 92

3.4.3 Neurosurgery

The Neurology and Neurosurgery specialties are partially blended to create a single surgery risk class. A separate non-surgery risk class is also created for the Neurology specialty. For the CY 2010 update, independent risk factors were calculated for both the Neurology and Neurosurgery specialties because both specialties had sufficient State coverage. For the CY

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[30] Appendix C shows surgical cardiology codes and surgical G codes outside of the 10000-69999 CPT range.

2015 update, however, the Neurosurgery specialty recorded rate filings in fewer than 35 States. Instead of reassigning the Neurosurgery specialty to Neurology using the methodology described in Section 3.4.1, these specialty types are partially blended, given the close relationship between the two specialties. Specifically, in the partial blending methodology, only the available major surgery premiums are weighted based on the total PW RVUs associated with each specialty using the CRS file. From this point, a single surgical risk factor for both Neurology and Neurosurgery is calculated as a weighted average based on the percentage of PW RVUs for the major surgery class. As shown in Table 3.8, Neurosurgery (Specialty Code 14) falls under the situation where major surgery dominates; as a result, only the blended surgical risk factor is applied to the CPT codes. Neurology, on the other hand, has substantial data for each surgery class, as shown in Table 3.8. Accordingly, the blended surgical risk factor is applied to surgical CPT codes, and a separate non-surgical risk factor is applied to all other non-surgical and non-obstetrics codes.

3.5 Updating the Technical Component Data

CPT data are distinguished as professional component (PC), technical component (TC), or global data by modifiers (MOD) and PC/TC indicators according to the NPFS file. Professional and technical component modifiers were established for some services to distinguish the portions of services furnished by practitioners. The professional component includes the practitioner 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 3.9 summarizes the differences among professional, technical, and global CPT data. Note that whereas the MOD variable for the technical component is "TC," the MOD variable for the professional component is "26."

Table 3.9: Distinction among Professional, Technical, and Global CPT Data

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

The distinction among PC, TC, and global data is important because each modifier has different associated risk factors. As discussed in Section 2.2, these risk factors distinguish relative malpractice liability risk associated with procedures based on the specialties of the practitioners who perform given services. The challenge is determining the associated risk factor for each modified CPT. Consistent with the CY 2010 update, the collected malpractice premium

data are determined by CMS to represent global data, yielding the Global risk factor (*Global RF$_{CPT}$*).

The methodology to determine modified risk factors starts with the premise that the global MP RVU for a given CPT (*Global MP RVU$_{CPT}$*) equals the sum of the PC MP RVU for that CPT (*MP RVU$_{CPT/26}$*) and the TC MP RVU for that CPT (*MP RVU$_{CPT/TC}$*) as shown below in Equation (3.1):

(3.1) $$Global\ MP\ RVU_{CPT} = MP\ RVU_{CPT/26} + MP\ RVU_{CPT/TC}.$$

Table 3.10 shows the MOD, PW RVU, and MP RVU values for CPT 74175 as an example. The first column lists the CPT code, and the second column lists the associated MOD. The third column presents a description of the CPT code, and the fourth column lists the PW RVU associated with each CPT/MOD. The fifth column lists the final, calculated MP RVUs for the PC/TC group. As described in Equation (3.1), the MP RVU for the TC MOD (*MP RVU$_{74175/TC}$* = 0.02) and the MP RVU for the 26 MOD (*MP RVU$_{74175/26}$* = 0.09) add up to the unspecified MOD global MP RVU (*Global MP RVU$_{74175}$* = 0.11).

Table 3.10: 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

The challenge in calculating the MP RVUs for the 26 MOD and TC MOD in the fifth column of Table 3.10 is that there are two missing pieces of data: the PC risk factor – since the risk factors calculated according to Section 2.2.2 are assumed to correspond to the global risk factors – and any PW RVUs to associate with the TC as required in Equation (2.8) in Section 2.2. Note that there is no PW RVU for the TC MOD. Because the calculation of a MP RVU in the fifth column requires a PW RVU according to Equation (2.8), the MP RVU for the TC MOD cannot be directly calculated. The lack of a PW RVU is addressed by the rule discussed in Section 2.2 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 calculation of a MP RVU in the fifth column also requires a risk factor according to Equation (2.8). Mean premium data supplied by the Radiology Business Management Association (RBMA) for "umbrella non-physician malpractice liability" are utilized. The premiums are treated as identical for all TC modifiers using a risk factor that accounts for minor differences by geographic area; as a result, the TC risk factor is identical across CPT codes and is calculated using the equivalent of Equation (2.7):

$$RF_{TC} = \frac{Norm\ P_{TC}}{Norm\ P_{Lowest}}$$

(3.2)

where RF_{TC} is the TC risk factor, $Norm\ P_{TC}$ is the normalized national average TC premium, and $Norm\ P_{Lowest}$ is the lowest normalized national average premium. For the CY 2015 update, the $Norm\ P_{TC}$ utilized is the $Norm\ P_{TC}$ established by RBMA data for the CY 2010 update ($9,374) deflated by 20.41 percent (approximately $7,461), which amounts to the percent change in average non-surgical premiums between the 2006-2007 rate filings utilized in the CY 2010 update and the 2011-2012 rate filings utilized in the CY 2015 update. The average non-surgical premiums for the 2006-2007 period and the 2011-2012 period are $18,538 and $14,754, respectively. As the denominator in Equation (3.2) refers to the lowest physician professional liability insurance premium (Allergy Immunology), the TC group shows a risk factor of 0.91

On the other hand, while the PW RVU can be applied for the calculation of the MP RVU for the 26 MOD, PC specialty risk factors cannot directly be derived from premiums. Because the risk factors calculated according to Section 2.2.2 are assumed to correspond to the global risk factors, one of the terms on the right hand side of Equation (2.8) is missing. The PC risk factor, then, is derived from the TC and Global CPT risk factors. With the necessary components for calculating raw TC MP RVUs established, the remaining value required to calculate PC MP RVUs can be derived. Consistent with the CY 2010 update, the global data is defined 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. As a result, the PC risk factor for a CPT is equal to the difference between the global risk factor for that CPT and the TC risk factor as shown in Equation (3.3):

(3.3)
$$RF_{CPT,26} = Global\ RF_{CPT} - RF_{TC}$$

where $RF_{CPT,26}$ is the PC risk factor for a given CPT, $Global\ RF_{CPT}$ is the global risk factor for that CPT, and RF_{TC} is the TC risk factor calculated in Equation (3.2).

Since the $Global\ RF_{CPT}$ is derived using the basic approach described in Section 2.2, the RF_{TC} can be plugged into Equation (3.3) to get the PC risk factor ($RF_{CPT,26}$). The PC MP RVUs can then be calculated using the standard formula from Equation (2.8), repeated as Equation (3.4) below, for the PC. As discussed in Section 2.2, unadjusted MP RVUs are the products of specialty risk factors and PW RVUs.

(3.4)
$$Raw\ MP\ RVU_{CPT,26} = RF_{CPT,26} \times PW\ RVU_{CPT,26}$$.

Per CMS instructions, Acumen imposes a floor value of 0.01 for 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 modifiers leads to all showing a value of 0.01 because each individually show an actual value of 0.01. Equation (3.3) does not hold true in this example because the components no longer sum to the Global. To ensure that Equation (3.3) holds true, the floor is applied to the just the PC and TC modifiers. 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 (3.3) affects budget neutrality, a second round of budget neutralization is applied.

3.6 Service Codes without Utilization

For new or revised services lacking utilization, listed in Appendix D, Acumen applied a crosswalk created by CMS that assigns the risk factor of a code with a similar specialty mix. Existing services that lacked utilization received the weighted average risk factor of all service codes. The average weighted risk factor of all service codes is 2.11.

3.7 Service Codes with Crosswalked MP RVUs

Acumen applied a crosswalk created by CMS that assigns to several service codes the CY 2015 MP RVU values of other service codes to maintain consistency with the PE RVU methodology. Appendix E provides a list of service codes which were assigned the CY 2015 MP RVU values of other service codes.

3.8 CMS Data Update

In addition to malpractice premiums data, the CY 2015 update of the MP RVUs also relies on six additional datasets that CMS owns and maintains, including the LRS, CRS, GPCI, NPFS, Clinical RVUs files and 2015 and 2014 Discounted Utilization files; the remainder of this section describes each dataset in detail. Table 2.1 provides more details about the observation level and role of each dataset in calculating the MP RVUs.

3.8.1 Locality RVUs and Services (LRS) File

The LRS file contains information on RVUs (total, PW, PE, and MP) and service counts (MTUS) at the Carrier Number, ZIP code, Locality, and County levels. The MP RVU methodology uses the LRS file to weigh county-level malpractice premiums and to create the geographic normalization factor (see Section 2.2). Whereas the CY 2010 update relied on 2008 data, the CY 2015 update relies on 2013 LRS data.[31]

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[31] The LRS file is not available for public download but can be obtained from CMS through a Data Use Agreement (DUA).

3.8.2 Current Procedural Terminology RVUs and Services (CRS) File

The CRS file includes information on RVUs (total, PW, PE, and MP) and service counts (MTUS) at the Carrier Number, Locality, County, Specialty, and CPT/MOD levels. The MP RVU methodology uses the CRS file to weigh the blended specialties by their respective PW RVU (see Section 2.2). In the CY 2010, the utilization count in the CRS file was also used to weigh the specialty risk factor. In the current update, this is replaced by the 2015 utilization file (see Section 3.6.2). The CY 2015 update relies on 2013 CRS data.[32]

3.8.3 Geographic Practice Cost Index (GPCI) File

The GPCI file provides information on the PW, PE, and MP GPCI values assigned to each Medicare locality. The MP RVU methodology uses the GPCI file to adjust the malpractice premiums for geographic differences in professional liability costs (see Section 2.2.1). Whereas the CY 2010 update relied on 2008 GPCI data, the CY 2015 update relies on 2014 GPCI data. [33] Note that "2014" refers to the fact that the latest GPCI update (i.e., the Seventh Update) was finalized in the CY 2014 final rule. For the purpose of the CY 2015 MP RVU update, fully-implemented Seventh Update GPCI values for CY 2015 were utilized, as the Seventh Update GPCI values were averaged with the Sixth Update GPCI values for CY 2014,

3.8.4 National PFS Relative Value (NPFS) File

The NPFS file contains information on services covered by the proposed CY 2015 Medicare Physician Fee Schedule (MPFS). For more than 10,000 practitioner services, the file contains the associated relative value units (RVUs), a fee schedule status indicator, and various payment policy indicators needed for payment adjustment (i.e., payment of assistant at surgery, team surgery, bilateral surgery, etc.). The MP RVU methodology uses the NPFS file to classify CPT data as professional component (PC), technical component (TC), or global data by modifiers (MOD) and PC/TC indicators (see Section 3.5). Whereas the CY 2010 update relied on 2008 NPFS data, the CY 2015 update relies on proposed 2015 NPFS data.[34]

3.8.5 Clinical RVUs File

The Clinical RVUs file contains information on the facility PW clinical RVUs and non-facility PE clinical RVUs associated with a range of HCPCS service codes. As discussed in Section 2.2.3, the MP RVU methodology uses the Clinical RVUs file to determine the associated risk factor for each modified CPT if the Clinical RVU for a procedure is higher than the PW

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[32] The CRS file is not available for public download but can be obtained from CMS through a DUA.
[33] The GPCI file for CY 2014 can be downloaded here: http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/PFS-Federal-Regulation-Notices-Items/CMS-1600-FC.html
[34] The NPFS file for CY 2015 can be downloaded here: http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/PFS-Relative-Value-Files.html?DLSort=0&DLPage=1&DLSortDir=descendingRVY14A.zip

RVU. Whereas the CY 2010 update relied on 2008 Clinical RVUs data, the CY 2015 update relies on the proposed 2015 Clinical RVUs data.[35]

3.8.6 *2014 and 2015 Discounted Utilization Files*

The 2014 and 2015 Discounted Utilization files contain information on service counts (MTUS) at the specialty, and CPT/MOD levels. The MP RVU methodology uses the 2015 Discounted Utilization file to weigh specialty risk factors and to determine low volume services (see Section 2.2.3). The 2014 Discounted Utilization file is used in the MTUS count of the numerator of the budget neutralization factor while the 2015 utilization files is used in the denominator (see Section 2.2.4).

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[35] CMS directly provided Acumen the Clinical RVUs for CY 2015.

4 IMPACT OF THE CY 2015 UPDATE

This section summarizes the impact of the CY 2015 update to the MP RVUs for 8,853 procedures (defined by CPT/MOD codes). Similar to the impacts presented in Acumen's report on the CY 2010 update to the MP RVUs, Acumen did not apply the 5 percent threshold for inclusion of services or specialties; rather, Acumen 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 threshold includes all specialties for which Acumen has services and risk factors for each CPT code, even if the CPT provides fewer than 100 or less than 5 percent of the services.

4.1 Overall Impact and Impact by CPT Code Type

To describe the MP RVU update, we present both descriptive statistics on the levels of the updated MP RVU values for 2015 and the percent changes in these values relative to the values in effect for 2014. These distributions are presented overall, broken down by modifier (Technical, Professional, Global, Single), and broken down by surgical class (Surgical, Surgical with Obstetrics, and Non-Surgical).

4.1.1 Average MP RVUs and Distribution of MP RVUs

Table 4.1 presents the distribution of the updated MP RVUs. The first row contains the count of number of the procedures overall in the All column and by category in the Technical, Professional, Global, and Single columns. The distinctions among these procedure code types is discussed in Section 3.5 above.

The distribution over all updated MP RVU values is in the first numeric column. The (MTUS weighted) average MP RVU value is 0.09 while the unweighted mean is 1.39. More than 10 percent of MP RVU values reside at their floor value of 0.01, and they range as high as 26.50, with a standard deviation of 2.44. Single CPTs show the highest weighted mean, at 0.11 while Technical CPTs show the lowest, at 0.01. Though the 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 4.1: Distribution of Updated 2015 Budget Neutral MP RVUs by Mod/Indicator

Statistic	Subset				
	All	Tech	Prof	Global	Single
Non-Empty Values Count	9,035	943	1,024	869	6,199
MTUS Weighted Mean	0.09	0.01	0.04	0.04	0.11
Mean	1.39	0.02	0.10	0.08	2.00
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	0.09
25th Percentile	0.05	0.01	0.02	0.03	0.33
50th Percentile	0.40	0.01	0.04	0.05	1.05
75th Percentile	1.65	0.02	0.08	0.08	2.49
90th Percentile	4.10	0.03	0.16	0.13	5.19
95th Percentile	6.12	0.04	0.36	0.20	7.41
99th Percentile	11.97	0.09	1.21	1.04	13.55
Maximum	26.50	0.22	2.35	1.51	26.50
Standard Deviation	2.44	0.02	0.21	0.15	2.73

Table 4.2 shows the distribution of MP RVUs according to their classification as Surgery, Surgery with Obstetrics, and Non-Surgery. On average, obstetrical CPTs have the highest MP RVU values, ranging from 0.01 to 8.50 with a weighted mean of 2.14. Next highest are the surgical CPTs ranging from 0.01 to 26.50 with a weighted mean of 0.29. Finally, the non-surgical CPTs range from 0.01 to 1.32 with a weighted mean of 0.07.

Table 4.2: Distribution of Updated 2015 Budget Neutral MP RVUs by Surgery Class

Statistic	Subset		
	MAJ	OB	NS
Non-Empty Values Count	5,648	65	3,322
MTUS Weighted Mean	0.29	2.14	0.07
Mean	2.18	1.86	0.05
Minimum	0.01	0.01	0.01
1st Percentile	0.03	0.01	0.01
5th Percentile	0.11	0.12	0.01
10th Percentile	0.18	0.15	0.01
25th Percentile	0.47	0.51	0.01
50th Percentile	1.22	1.14	0.03
75th Percentile	2.67	2.89	0.07
90th Percentile	5.45	4.63	0.11
95th Percentile	7.68	7.32	0.16
99th Percentile	13.89	8.50	0.42
Maximum	26.50	8.50	1.32
Standard Deviation	2.79	2.08	0.09

4.1.2 Percentage Change in MP RVUs

Since the update affects each CPT code, it is useful to consider the distribution of changes in MP RVU values between the CY 2010 and CY 2015 updates. This information is presented in Table 4.3. Over all codes, MP RVUs increase by one percent with the highest average increase occurring for Technical CPTs at 8 percent and with a decrease of 5 percent for Global codes. There were a number of codes which experienced large percentage increases or decreases. For the most part, these codes had very small MP RVU values in the previous update, which means that even modest absolute changes in their values in this update caused large percentage changes.

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

Statistic	Subset				
	All	Tech	Prof	Global	Single
Non-Empty Values Count	8,857	916	997	842	6,102
MTUS Weighted Mean	1%	8%	1%	-5%	1%
Mean	1%	12%	9%	6%	-3%
Minimum	-96%	-91%	-96%	-92%	-96%
1st Percentile	-74%	-67%	-75%	-60%	-73%
5th Percentile	-51%	-25%	-67%	-43%	-56%
10th Percentile	-31%	0%	-34%	-26%	-31%
25th Percentile	-11%	0%	-15%	-13%	-12%
50th Percentile	0%	0%	0%	0%	-3%
75th Percentile	4%	0%	0%	13%	4%
90th Percentile	20%	99%	99%	49%	11%
95th Percentile	62%	99%	99%	79%	22%
99th Percentile	189%	99%	268%	179%	166%
Maximum	622%	398%	622%	353%	597%
Standard Deviation	42%	38%	61%	42%	38%

In Table 4.4, the change in MP RVUs according to whether the CPT code was classified as Surgery, Surgery with Obstetrics, or Non-Surgical is reported. Surgical and obstetric CPTs saw declines, on average, of 7 percent in their MP RVUs while non-surgical codes saw an increase of 2 percent, on average. At the median, MP RVU values declined for surgical and obstetric CPTs, with the largest decline for obstetrics.

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

Statistic	Subset		
	MAJ	**OB**	**NS**
Non-Empty Values Count	5,577	65	3,215
MTUS Weighted Mean	-7%	-7%	2%
Mean	-4%	-6%	8%
Minimum	-85%	-78%	-96%
1st Percentile	-72%	-78%	-75%
5th Percentile	-56%	-19%	-43%
10th Percentile	-30%	-16%	-34%
25th Percentile	-12%	-15%	-1%
50th Percentile	-4%	-14%	0%
75th Percentile	4%	-12%	0%
90th Percentile	11%	0%	59%
95th Percentile	20%	0%	99%
99th Percentile	163%	258%	199%
Maximum	467%	258%	622%
Standard Deviation	35%	48%	51%

4.1.3 Percentage Change in Total RVUs

Malpractice RVUs are a relatively small component of overall RVUs, so it is reasonable to expect the effect of an update of MP RVUs to have a modest effect on total RVUs. This expectation is borne out by the results reported below. The weighted average effect of the MP RVU update on total RVUs is negligible for all categories reported in Tables 4.5 and 4.6. Similarly, the median effects on total RVUs are very modest, rounding down to zero percent in all categories in Tables 4.5 and 4.6 except for a one percent decline for obstetric RVUs. In addition, even the minimum and maximum changes induced by the update are quite modest. Among all codes, the minimum change in total RVUs owing to this update is a decline of 14 percent and the maximum change is an increase of 18 percent.

Table 4.5: Percent Change in Total RVUs, 2014 to Updated, Budget Neutral Values by Mod/Indicator

Statistic	Subset				
	All	**Tech**	**Prof**	**Global**	**Single**
Non-Empty Values Count	8,857	916	997	842	6,102
MTUS Weighted Mean	0%	0%	0%	0%	0%
Mean	0%	0%	0%	0%	0%
Minimum	-14%	-2%	-12%	-3%	-14%
1st Percentile	-6%	0%	-4%	-1%	-7%
5th Percentile	-2%	0%	-2%	0%	-3%
10th Percentile	-1%	0%	-1%	0%	-2%
25th Percentile	0%	0%	0%	0%	-1%
50th Percentile	0%	0%	0%	0%	0%
75th Percentile	0%	0%	0%	0%	0%
90th Percentile	1%	0%	2%	0%	1%
95th Percentile	1%	0%	3%	1%	1%
99th Percentile	4%	0%	7%	1%	4%
Maximum	18%	0%	9%	4%	18%
Standard Deviation	2%	0%	2%	0%	2%

Table 4.6: Percent Change in Total RVUs, 2014 to Updated, Budged Neutral Values by Surgery Class

Statistic	Subset		
	MAJ	**OB**	**NS**
Non-Empty Values Count	5,577	65	3,215
MTUS Weighted Mean	0%	-1%	0%
Mean	0%	-1%	0%
Minimum	-14%	-10%	-12%
1st Percentile	-7%	-10%	-3%
5th Percentile	-3%	-2%	-1%
10th Percentile	-2%	-2%	-1%
25th Percentile	-1%	-2%	0%
50th Percentile	0%	-2%	0%
75th Percentile	0%	-1%	0%
90th Percentile	1%	0%	0%
95th Percentile	1%	0%	1%
99th Percentile	5%	8%	3%
Maximum	18%	8%	13%
Standard Deviation	2%	2%	1%

4.2　Impact by Specialty

Impacts by specialty are summarized in Table 4.7. The rows contain specialties. The first numeric column shows the aggregate MTUS for each specialty in 2015. The next two columns show the MTUS-weighted average MP RVU for each specialty after the update and in 2014. The next column shows the percent change in this average MP RVU for each specialty. The next three columns show the same figures calculated for total RVUs rather than MP RVUs.

The change in average MP RVU for most specialties is modest. As was the case above, once attention is shifted to total RVUs, the change occasioned by this update is quite modest at less than one half of one percent for almost every specialty.

Table 4.7: Impact by Specialty

Specialty Name	MTUS	MP RVUs			Total RVUs		
		2015	2014	Percent Change	2015	2014	Percent Change
Allergy/ Immunology	12,865,873	0.02	0.02	-1.0%	0.66	0.66	0.0%
Anesthesiology	5,855,721	0.11	0.11	0.0%	3.67	3.67	-0.1%
Cardiac Surgery	953,924	1.08	1.20	-0.2%	14.05	14.17	-0.3%
Cardiology	74,621,888	0.10	0.10	5.6%	3.57	3.57	0.0%
Colon and Rectal Surgery	771,855	0.42	0.44	-6.1%	8.23	8.25	-0.2%
Critical Care	2,301,108	0.17	0.16	4.4%	4.85	4.84	0.1%
Dermatology	41,582,680	0.08	0.08	-6.1%	2.74	2.75	-0.2%
Emergency Medicine	26,804,031	0.20	0.18	6.8%	3.94	3.92	0.3%
Endocrinology	4,763,534	0.09	0.10	-5.5%	3.44	3.44	-0.2%
Family Practice	76,776,992	0.08	0.08	-2.4%	2.93	2.93	-0.1%
Gastroenterology	13,597,713	0.22	0.24	-5.0%	6.74	6.76	-0.2%
General Practice	5,991,949	0.08	0.09	-2.2%	3.02	3.02	-0.1%
General Surgery	11,868,850	0.41	0.42	-1.9%	7.79	7.80	-0.1%
Geriatrics	2,506,858	0.09	0.10	-1.4%	3.44	3.45	-0.1%
Hand Surgery	1,313,728	0.19	0.20	2.9%	4.96	4.97	-0.1%
Hematology/ Oncology	23,906,633	0.06	0.06	0.9%	3.11	3.11	-0.1%
Infectious Disease	7,158,348	0.11	0.11	6.8%	3.35	3.34	0.2%
Internal Medicine	129,325,437	0.09	0.09	1.7%	3.22	3.22	0.0%
Interventional Pain Mgmt	6,267,607	0.10	0.10	-2.3%	3.98	3.99	-0.1%
Interventional Radiology	2,215,895	0.12	0.13	0.2%	7.01	7.01	-0.1%
Multispecialty Clinic/other Ph	966,029	0.09	0.10	0.4%	3.12	3.13	-0.1%
Nephrology	16,547,824	0.13	0.13	0.2%	4.72	4.73	0.0%
Neurology	13,219,018	0.11	0.12	-0.3%	4.39	4.40	-0.1%
Neurosurgery	2,437,770	1.06	1.03	-1.4%	11.49	11.45	0.0%
Nuclear Medicine	692,758	0.06	0.06	3.8%	2.87	2.87	0.0%
Obstetrics/Gynecology	6,679,605	0.14	0.15	10.3%	3.95	3.96	0.1%
Ophthalmology	46,153,494	0.07	0.15	-40.3%	4.76	4.83	-1.1%

Specialty Name	MTUS	MP RVUs			Total RVUs		
		2015	2014	Percent Change	2015	2014	Percent Change
Orthopedic Surgery	28,724,843	0.24	0.26	-2.6%	4.93	4.95	-0.2%
Otolarngology	14,728,278	0.09	0.09	-1.4%	2.91	2.91	-0.1%
Pathology	23,155,372	0.01	0.02	-5.4%	1.85	1.85	-0.1%
Pediatrics	837,768	0.08	0.08	0.7%	2.60	2.60	0.0%
Physical Medicine	12,461,076	0.08	0.08	4.6%	3.01	3.01	0.0%
Plastic Surgery	1,806,442	0.34	0.40	-8.0%	8.39	8.45	-0.4%
Psychiatry	16,899,659	0.08	0.08	1.1%	2.81	2.81	0.0%
Pulmonary Disease	19,047,196	0.11	0.11	0.9%	3.64	3.64	0.0%
Radiation Oncology	11,623,416	0.07	0.10	0.7%	5.43	5.44	-0.1%
Radiology	101,079,141	0.04	0.04	-1.9%	2.03	2.03	-0.2%
Rheumatology	6,493,569	0.07	0.08	-3.4%	3.15	3.16	-0.2%
Thoracic Surgery	1,031,357	0.94	1.05	-1.0%	12.94	13.05	-0.3%
Urology	17,092,881	0.12	0.12	-5.9%	4.13	4.14	-0.2%
Vascular Surgery	4,741,886	0.32	0.33	5.1%	10.72	10.73	0.0%
Audiologist	1,905,589	0.02	0.02	-15.5%	1.24	1.25	-0.4%
Chiropractor	21,228,830	0.02	0.02	-20.8%	1.29	1.30	-0.4%
Clinical Psychologist	8,182,136	0.07	0.08	2.9%	2.73	2.74	0.0%
Clinical Social Worker	5,743,644	0.07	0.08	-3.8%	2.86	2.87	-0.1%
Diagnostic Testing Facility	5,368,762	0.03	0.03	11.0%	7.10	7.11	0.0%
Independent laboratory	11,052,718	0.02	0.02	-3.2%	2.83	2.83	-0.1%
Nurse Anes / Anes Asst	165,895	0.12	0.13	-2.1%	3.01	3.01	-0.3%
Nurse Practitioner	27,555,761	0.08	0.09	-2.3%	2.98	2.98	-0.1%
Optometry	12,312,502	0.05	0.08	-34.5%	3.46	3.49	-0.8%
Oral/ Maxillofacial Surgery	280,027	0.20	0.21	4.2%	6.19	6.20	0.0%
Physical/ Occupational Therapy	90,336,930	0.02	0.01	42.9%	1.31	1.31	0.3%
Physician Assistant	17,982,621	0.12	0.13	-3.4%	3.21	3.22	-0.1%
Podiatry	32,030,205	0.06	0.06	-5.6%	2.20	2.20	-0.2%
Portable X-Ray Supplier	5,351,504	0.01	0.01	-0.6%	1.05	1.05	-0.1%
Radiation Therapy Centers	310,448	0.02	0.02	17.9%	7.00	7.00	0.0%
Other	643,669	0.03	0.04	-34.0%	1.60	1.61	-0.8%

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APPENDIX A: RISK FACTORS OF LOW VOLUME SERVICES

For 23 services with low utilization, Acumen applied a crosswalk created by CMS instead of using the claims based dominant specialty. For all other low volume services, Acumen applied the claims based dominant specialty. Table A.1 shows the list of low volume service codes which used the risk factor of the recommended specialty instead of the claims based dominant specialty.

Table A.1: Low Volume Services

HCPCS Code	Short Descriptor	Claims Based Dominant Specialty	Assigned Specialty
25490	Reinforce radius	Otolaryngology	Orthopedic Surgery
26556	Toe joint transfer	Pulmonary Disease	Orthopedic Surgery
31320	Diagnostic incision larynx	Cardiology	Otolaryngology
33620	Apply r&l pulm art bands	Anesthesiology	Cardiac Surgery
33621	Transthor cath for stent	Cardiology	Cardiac Surgery
33622	Redo compl cardiac anomaly	Pulmonary Disease	Cardiac Surgery
33697	Repair of heart defects	Cardiology	Cardiac Surgery
33766	Major vessel shunt	General Surgery	Cardiac Surgery
36261	Revision of infusion pump	General Practice	General Surgery
43341	Fuse esophagus & intestine	Gastroenterology	Thoracic Surgery
43350	Surgical opening esophagus	General Practice	General Surgery
49491	Rpr hern preemie reduc	General Practice	General Surgery
50686	Measure ureter pressure	Internal Medicine	Urology
54352	Reconstruct urethra/penis	Pediatric Medicine	Urology
54380	Repair penis	Gastroenterology	Urology
61000	Remove cranial cavity fluid	Family Practice	Neurosurgery
61558	Excision of skull/sutures	Family Practice	Neurosurgery
61567	Incision of brain tissue	Cardiology	Neurosurgery
74710	X-ray measurement of pelvis	Thoracic Surgery	Diagnostic Radiology
96003	Dynamic fine wire emg	Cardiology	Physical Therapist/Independent Practice
96420	Chemo ia push tecnique	Urology	Hematology Oncology
99170	Anogenital exam child w imag	Ophthalmology	Pediatric Medicine
99461	Init nb em per day non-fac	Cardiac Electrophysiology	Pediatric Medicine

APPENDIX B: SUMMARY OF MP RVU DATA

Table B.1 shows summary data before and after MP RVU calculations for each surgery class – specialty combination using the final methodologies described in Section 3.4. 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 is calculated using the scenarios listed in Table 3.8. The Final National Risk Factor is calculated from the final premium, and identifies the specialty risk that is used for MP RVU calculations.[36]

Table B.1: Summary of MP RVU Data

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
01	General Practice	MAJ	627,414	4.5%	$33,725	4.11	41	$33,725	4.11	41
01	General Practice	NS	6,336,879	45.5%	$14,992	1.83	45	$14,992	1.83	45
01	General Practice	UNSP	6,964,578	50.0%	$25,967	3.17	26			
02	General Surgery	MAJ	20,737,141	32.2%	$59,808	7.30	50	$59,808	7.30	50
02	General Surgery	NS	11,489,393	17.8%	$11,645	1.42	3			
02	General Surgery	UNSP	32,226,800	50.0%	$28,910	3.53	2			
03	Allergy Immunology	MAJ	20,788	0.6%				$8,198	1.00	46
03	Allergy Immunology	NS	1,608,428	49.4%	$12,286	1.50	20	$8,198	1.00	46
03	Allergy Immunology	UNSP	1,629,221	50.0%	$8,198	1.00	46	$8,198	1.00	46
04	Otolaryngology	MAJ	5,822,528	21.7%	$36,664	4.47	49	$36,664	4.47	49
04	Otolaryngology	NS	7,620,481	28.3%	$15,978	1.95	41	$15,978	1.95	41

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[36] For specialties with insufficient state coverage, no state coverage or unreliable data, premium, risk factor and state count reflects the data of the source specialty.

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
04	Otolaryngology	UNSP	13,443,010	50.0%	$27,249	3.32	29			
05	Anesthesiology	MAJ	4,607,915	27.4%	$24,674	3.01	18	$19,805	2.42	48
05	Anesthesiology	NS	3,814,007	22.6%				$19,805	2.42	48
05	Anesthesiology	UNSP	8,421,931	50.0%	$19,805	2.42	48	$19,805	2.42	48
06	Cardiology	MAJ	14,076,840	8.5%	$58,173	7.10	41	$58,173	7.10	41
06	Cardiology	NS	68,492,266	41.5%	$17,268	2.11	38	$17,268	2.11	38
06	Cardiology	UNSP	82,569,106	50.0%	$25,774	3.14	39			
07	Dermatology	MAJ	20,464,194	31.4%	$33,675	4.11	26	$33,675	4.11	26
07	Dermatology	NS	12,126,637	18.6%	$10,275	1.25	37	$10,275	1.25	37
07	Dermatology	UNSP	32,590,830	50.0%	$17,518	2.14	38			
08	Family Practice	MAJ	2,721,160	1.5%	$34,258	4.18	42	$34,258	4.18	42
08	Family Practice	MAJ w OB	16,267	0.0%	$32,361	3.95	14	$32,361	3.95	14
08	Family Practice	NS	85,265,058	48.4%	$14,492	1.77	48	$14,492	1.77	48
08	Family Practice	UNSP	88,002,484	50.0%	$29,113	3.55	16			
09	Interventional Pain Management	MAJ	2,722,435	25.2%	$42,337	5.16	20	$19,805	2.42	48
09	Interventional Pain Management	NS	2,679,377	24.8%				$19,805	2.42	48
09	Interventional Pain Management	UNSP	5,401,812	50.0%	$23,832	2.91	7	$19,805	2.42	48
10	Gastroenterology	MAJ	16,748,705	27.8%	$36,494	4.45	34	$36,494	4.45	34
10	Gastroenterology	NS	13,392,694	22.2%	$17,702	2.16	35	$17,702	2.16	35
10	Gastroenterology	UNSP	30,141,405	50.0%	$23,179	2.83	27			
11	Internal Medicine	BLND						$16,941	2.07	50
11	Internal Medicine	MAJ	3,798,058	1.1%	$32,852	4.01	3			
11	Internal Medicine	NS	171,933,723	48.9%	$15,623	1.91	39			
11	Internal Medicine	UNSP	175,732,441	50.0%	$17,886	2.18	40			

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
12	Osteopathic Manipulative Medicine	MAJ	73,961	5.7%				$8,198	1.00	46
12	Osteopathic Manipulative Medicine	NS	574,580	44.3%				$8,198	1.00	46
12	Osteopathic Manipulative Medicine	UNSP	648,541	50.0%	$9,776	1.19	6	$8,198	1.00	46
13	Neurology	MAJ	764,724	1.8%	$96,970	11.83	43	$106,901	13.04	50
13	Neurology	NS	20,554,238	48.2%	$21,223	2.59	36	$21,223	2.59	36
13	Neurology	UNSP	21,318,962	50.0%	$24,531	2.99	31			
14	Neurosurgery	MAJ	8,274,547	77.6%	$123,400	15.05	24	$106,901	13.04	50
14	Neurosurgery	NS	2,386,952	22.4%	$85,708	10.45	4			
16	Obstetrics Gynecology	MAJ	3,002,827	19.4%	$42,988	5.24	10	$31,167	3.80	42
16	Obstetrics Gynecology	MAJ w OB			$58,930	7.19	50	$66,024	8.05	35
16	Obstetrics Gynecology	NS	4,343,555	28.1%	$27,063	3.30	12	$31,167	3.80	42
16	Obstetrics Gynecology	NS w OB			$13,182	1.61	41			
16	Obstetrics Gynecology	OB	389,406	2.5%	$66,024	8.05	35	$66,024	8.05	35
16	Obstetrics Gynecology	UNSP	7,735,789	50.0%	$31,167	3.80	42	$31,167	3.80	42
17	Hospice and Palliative Care	MAJ	4,847	0.6%				$8,198	1.00	46
17	Hospice and Palliative Care	NS	384,509	49.4%	$14,241	1.74	1	$8,198	1.00	46

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
17	Hospice and Palliative Care	UNSP	389,357	50.0%	$10,257	1.25	7	$8,198	1.00	46
18	Ophthalmology	MAJ	30,236,544	22.7%	$18,131	2.21	49	$18,131	2.21	49
18	Ophthalmology	NS	36,322,816	27.3%	$9,988	1.22	48	$9,988	1.22	48
18	Ophthalmology	UNSP	66,559,363	50.0%	$24,140	2.94	20			
19	Oral Surgery (dental only)	MAJ	147,276	33.7%	$17,711	2.16	6	$41,930	5.11	49
19	Oral Surgery (dental only)	UNSP	289,628	66.3%	$16,567	2.02	1			
20	Orthopedic Surgery	MAJ	32,847,791	33.3%	$52,344	6.38	50	$52,344	6.38	50
20	Orthopedic Surgery	NS	16,420,782	16.7%	$13,134	1.60	21			
20	Orthopedic Surgery	UNSP	49,268,576	50.0%	$36,569	4.46	1			
22	Pathology	BLND						$14,637	1.79	50
22	Pathology	NS	17,730,006	49.8%	$15,939	1.94	31			
22	Pathology	UNSP	17,850,454	50.2%	$13,345	1.63	40			
23	Sports Medicine	MAJ	219,877	23.1%				$33,725	4.11	41
23	Sports Medicine	NS	256,678	26.9%	$11,400	1.39	8	$14,992	1.83	45
23	Sports Medicine	UNSP	476,555	50.0%	$7,820	0.95	2			
24	Plastic and Reconstructive Surgery	MAJ	3,815,732	77.3%	$41,930	5.11	49	$41,930	5.11	49
24	Plastic and Reconstructive Surgery	NS	1,118,961	22.7%	$15,294	1.87	6			
25	Physical Medicine and Rehabilitation	MAJ	1,965,407	6.4%	$17,252	2.10	10	$11,391	1.39	46
25	Physical Medicine and Rehabilitation	NS	13,316,038	43.6%	$12,211	1.49	19	$11,391	1.39	46

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
25	Physical Medicine and Rehabilitation	UNSP	15,281,445	50.0%	$11,391	1.39	46	$11,391	1.39	46
26	Psychiatry	MAJ	19,890	0.0%	$12,960	1.58	1	$9,238	1.13	45
26	Psychiatry	NS	22,484,594	50.0%	$13,252	1.62	24	$9,238	1.13	45
26	Psychiatry	UNSP	22,504,484	50.0%	$9,238	1.13	45	$9,238	1.13	45
28	Colorectal Surgery (formerly Proctology)	MAJ	1,715,526	74.1%	$33,443	4.08	43	$33,443	4.08	43
28	Colorectal Surgery (formerly Proctology)	NS	598,830	25.9%	$6,326	0.77	3			
29	Pulmonary Disease	BLND						$19,125	2.33	50
29	Pulmonary Disease	MAJ	1,135,598	1.9%	$8,715	1.06	2			
29	Pulmonary Disease	NS	28,295,727	48.1%	$20,268	2.47	35			
29	Pulmonary Disease	UNSP	29,431,325	50.0%	$18,428	2.25	33			
30	Diagnostic Radiology	BLND						$24,518	2.99	49
30	Diagnostic Radiology	MAJ	6,096,119	4.7%	$30,281	3.69	2			
30	Diagnostic Radiology	NS	58,254,094	45.3%	$20,362	2.48	34			
30	Diagnostic Radiology	UNSP	64,350,226	50.0%	$27,734	3.38	39			
33	Thoracic Surgery	MAJ	4,432,885	81.4%	$59,569	7.27	48	$59,569	7.27	48
33	Thoracic Surgery	NS	1,012,586	18.6%	$21,182	2.58	3			
34	Urology	MAJ	11,178,952	23.1%	$27,760	3.39	42	$27,760	3.39	42
34	Urology	NS	12,998,387	26.9%	$13,215	1.61	22	$13,215	1.61	22
34	Urology	UNSP	24,177,366	50.0%	$27,975	3.41	20			
35	Chiropractic	MAJ						$8,198	1.00	46
35	Chiropractic	NS	12,717,262	50.0%	$7,600	0.93	1	$8,198	1.00	46
35	Chiropractic	UNSP	12,717,262	50.0%	$3,836	0.47	32	$8,198	1.00	46
36	Nuclear Medicine	MAJ	8,031	0.6%	$79,353	9.68	2	$11,575	1.41	39
36	Nuclear Medicine	NS	663,656	49.4%	$13,506	1.65	14	$11,575	1.41	39

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
36	Nuclear Medicine	UNSP	671,692	50.0%	$11,575	1.41	39	$11,575	1.41	39
37	Pediatric Medicine	BLND						$14,934	1.82	50
37	Pediatric Medicine	MAJ	54,495	3.1%	$30,939	3.77	19			
37	Pediatric Medicine	NS	825,801	46.9%	$13,150	1.60	40			
37	Pediatric Medicine	UNSP	880,398	50.0%	$15,617	1.90	27			
38	Geriatric Medicine	MAJ	27,420	0.4%	$39,634	4.83	27	$39,634	4.83	27
38	Geriatric Medicine	NS	3,742,216	49.6%	$14,560	1.78	32	$14,560	1.78	32
38	Geriatric Medicine	UNSP	3,769,636	50.0%	$13,242	1.62	17			
39	Nephrology	MAJ	1,028,165	1.5%	$35,017	4.27	24	$35,017	4.27	24
39	Nephrology	NS	33,863,675	48.5%	$14,002	1.71	35	$14,002	1.71	35
39	Nephrology	UNSP	34,891,841	50.0%	$15,810	1.93	16			
40	Hand Surgery	MAJ	1,245,281	31.5%	$38,602	4.71	48	$38,602	4.71	48
40	Hand Surgery	NS	730,082	18.5%	$47,967	5.85	1			
40	Hand Surgery	UNSP	1,975,363	50.0%	$37,841	4.62	4			
41	Optometry	MAJ	828,284	3.1%				$8,198	1.00	46
41	Optometry	NS	12,408,527	46.9%				$8,198	1.00	46
41	Optometry	UNSP	13,236,811	50.0%	$1,837	0.22	36	$8,198	1.00	46
44	Infectious Disease	BLND						$19,736	2.41	41
44	Infectious Disease	NS	11,511,717	49.9%	$21,162	2.58	29			
44	Infectious Disease	UNSP	11,572,786	50.1%	$18,317	2.23	22			
46	Endocrinology	MAJ	76,816	0.6%	$34,656	4.23	25	$34,656	4.23	25
46	Endocrinology	NS	6,538,882	49.4%	$13,558	1.65	33	$13,558	1.65	33
46	Endocrinology	UNSP	6,615,703	50.0%	$26,565	3.24	20			
48	Podiatry	BLND						$18,207	2.22	44
48	Podiatry	MAJ	12,567,326	25.8%	$18,795	2.29	33			
48	Podiatry	NS	11,810,251	24.2%	$11,518	1.40	19			

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
48	Podiatry	UNSP	24,377,577	50.0%	$21,145	2.58	33			
60	Public Health or Welfare Agency	MAJ						$8,198	1.00	46
60	Public Health or Welfare Agency	NS	383	50.0%	$17,237	2.10	5	$8,198	1.00	46
60	Public Health or Welfare Agency	UNSP	383	50.0%	$14,971	1.83	9	$8,198	1.00	46
62	Psychologist	MAJ	0	0.0%				$8,198	1.00	46
62	Psychologist	NS	323,212	50.0%				$8,198	1.00	46
62	Psychologist	UNSP	323,212	50.0%	$1,228	0.15	6	$8,198	1.00	46
65	Physical Therapist	MAJ	1,088,860	1.5%				$8,198	1.00	46
65	Physical Therapist	NS	35,191,999	48.5%				$8,198	1.00	46
65	Physical Therapist	UNSP	36,280,859	50.0%	$226	0.03	2	$8,198	1.00	46
66	Rheumatology	BLND						$14,479	1.77	43
66	Rheumatology	NS	5,900,720	47.5%	$14,034	1.71	35			
66	Rheumatology	UNSP	6,515,344	52.5%	$14,883	1.82	21			
67	Occupational Therapist	MAJ	25,741	0.5%				$8,198	1.00	46
67	Occupational Therapist	NS	2,531,821	49.5%				$8,198	1.00	46
67	Occupational Therapist	UNSP	2,557,561	50.0%	$993	0.12	19	$8,198	1.00	46
71	Registered Dietitian/Nutrition Professional	MAJ						$8,198	1.00	46
71	Registered Dietitian/Nutrition Professional	NS	253,948	50.0%	$12,958	1.58	15	$8,198	1.00	46

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
71	Registered Dietitian/Nutrition Professional	UNSP	253,948	50.0%	$8,111	0.99	33	$8,198	1.00	46
72	Pain Management	MAJ	1,372,183	22.9%	$44,540	5.43	21	$19,805	2.42	48
72	Pain Management	NS	1,629,160	27.1%	$19,358	2.36	14	$19,805	2.42	48
72	Pain Management	UNSP	3,001,350	50.0%	$27,464	3.35	18	$19,805	2.42	48
77	Vascular Surgery	MAJ	6,490,711	64.8%	$58,970	7.19	46	$58,970	7.19	46
77	Vascular Surgery	NS	3,524,782	35.2%	$7,160	0.87	2			
78	Cardiac Surgery	MAJ	4,653,314	82.9%	$59,305	7.23	48	$59,305	7.23	48
78	Cardiac Surgery	NS	958,887	17.1%	$24,818	3.03	3			
79	Addiction Medicine	MAJ	1,214	0.5%				$8,198	1.00	46
79	Addiction Medicine	NS	113,353	49.5%				$8,198	1.00	46
79	Addiction Medicine	UNSP	114,599	50.0%	$10,210	1.25	12	$8,198	1.00	46
81	Critical Care (Intensivists)	MAJ	368,316	3.5%	$60,438	7.37	4	$23,218	2.83	35
81	Critical Care (Intensivists)	NS	4,835,068	46.5%				$23,218	2.83	35
81	Critical Care (Intensivists)	UNSP	5,203,384	50.0%	$23,218	2.83	35	$23,218	2.83	35
82	Hematology	BLND						$14,850	1.81	36
82	Hematology	MAJ	10,911	0.5%	$22,396	2.73	2			
82	Hematology	NS	994,555	49.5%	$14,732	1.80	31			
82	Hematology	UNSP	1,005,465	50.0%	$14,886	1.82	10			
83	Hematology/Oncology	BLND						$15,514	1.89	41
83	Hematology/Oncology	MAJ	118,067	0.4%	$57,343	6.99	1			
83	Hematology/Oncology	NS	15,711,762	49.6%	$19,036	2.32	13			
83	Hematology/Oncology	UNSP	15,829,829	50.0%	$9,724	1.19	4			
84	Preventive Medicine	BLND						$11,768	1.44	42

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
84	Preventive Medicine	MAJ	23,522	5.1%	$24,395	2.98	1			
84	Preventive Medicine	NS	207,750	44.9%	$11,464	1.40	31			
84	Preventive Medicine	UNSP	231,272	50.0%	$10,757	1.31	26			
85	Maxillofacial Surgery	MAJ	126,738	100.0%	$31,195	3.81	19	$41,930	5.11	49
90	Medical Oncology	BLND						$15,514	1.89	41
90	Medical Oncology	MAJ	31,258	0.3%	$18,868	2.30	1			
90	Medical Oncology	NS	4,571,490	49.7%	$15,256	1.86	33			
90	Medical Oncology	UNSP	4,602,748	50.0%	$15,747	1.92	19			
91	Surgical Oncology	MAJ	711,526	100.0%	$39,150	4.78	25	$59,808	7.30	50
92	Radiation Oncology	BLND						$19,353	2.36	46
92	Radiation Oncology	MAJ	104,333	0.4%	$43,487	5.30	3			
92	Radiation Oncology	NS	13,287,438	49.6%	$18,193	2.22	32			
92	Radiation Oncology	UNSP	13,391,771	50.0%	$20,315	2.48	39			
93	Emergency Medicine	MAJ	1,948,755	1.6%	$42,375	5.17	33	$42,375	5.17	33
93	Emergency Medicine	NS	60,662,434	48.4%	$27,010	3.29	16	$27,010	3.29	16
93	Emergency Medicine	UNSP	62,612,031	50.0%	$25,514	3.11	41			
94	Interventional Radiology	BLND						$24,518	2.99	49
94	Interventional Radiology	MAJ	1,601,677	28.9%	$31,872	3.89	5			
94	Interventional Radiology	NS	1,166,630	21.1%	$28,755	3.51	3			
94	Interventional Radiology	UNSP	2,768,306	50.0%	$28,730	3.50	29			
97	Physician Assistant	MAJ	2,509,345	6.2%	$12,414	1.51	3	$8,198	1.00	46
97	Physician Assistant	NS	17,865,703	43.8%	$3,258	0.40	1	$8,198	1.00	46
97	Physician Assistant	UNSP	20,375,155	50.0%	$6,986	0.85	43	$8,198	1.00	46

Specialty Code	Specialty Name	Surgery Class	Total PW RVUs	Percent PW RVUs by Specialty	Normalized Premium	National Risk Factor	# States with Specialty	Final Normalized Premium	Final National Risk Factor	Final # of States with Specialty
99	Unknown Physician Specialty	MAJ	17,571	10.6%	$64,667	7.89	6	$33,725	4.11	41
99	Unknown Physician Specialty	NS	65,529	39.4%	$14,833	1.81	30	$14,992	1.83	45
99	Unknown Physician Specialty	UNSP	83,215	50.0%	$11,598	1.41	36			
C0	Sleep Medicine	MAJ	2,115	0.9%				$33,725	4.11	41
C0	Sleep Medicine	NS	117,259	49.1%				$14,992	1.83	45
C0	Sleep Medicine	UNSP	119,374	50.0%	$15,230	1.86	8			

APPENDIX C : SURGICAL CODES OUTSIDE 10000-69999 RANGE

Table C.1 shows surgical cardiology codes and surgical G codes outside of the 10000-69999 CPT range. G0105 and G0121 have modifier 53; the remainder of the CPT codes in Table C.1 do *not* have a modifier.

Table C.1: Surgical Codes Outside 10000-69999 Range

HCPCS Code
92920
92921
92924
92925
92928
92929
92933
92934
92937
92938
92941
92943
92944
92961
92970
92971
92973
92974
92975
92977
92978
92979
92986
92987
92990
92997
92998
93451
93452
93453
93454
93455
93456
93457
93458
93459
93460

HCPCS Code
93461
93462
93503
93505
93530
93531
93532
93533
93580
93581
93582
93583
93600
93602
93603
93609
93610
93612
93613
93618
93619
93620
93621
93622
93623
93624
93631
93640
93641
93642
93650
93653
93654
93655
93656
93657
93563
93564
93565
93566
93567
93568
93571
93572

HCPCS Code
G0101
G0104
G0105
G0121
G0127
G0168
G0186
G0268
G0269
G0278
G0283
G0288
G0289
G0341
G0342
G0343
G0364
G0412
G0413
G0414
G0415
G0429
G0460

APPENDIX D: SERVICE CODES WITH CROSSWALKED RISK FACTORS

For new or revised services lacking utilization, Acumen applied a crosswalk created by CMS that assigns the risk factor of a code with a similar specialty mix. Existing services that lacked utilization received the weighted average risk factor of all services.   Table D.1 and D.2 respectively show 2014 and 2015 new/revised service codes which were crosswalked to codes with a similar specialty mix; the codes in the destination columns received the CPT level risk factor values of their respective counterparts in the source columns.

Table D.1: 2014 New/Revised Service Codes with Crosswalked Risk Factors

Source Code	Destination Code
37200	10030
32553	19081
64480	19082
32551	19083
64480	19084
36565	19085
76812	19086
50387	19281
76812	19282
50387	19283
76812	19284
36569	19285
76812	19286
32551	19287
76812	19288
23472	23333
23472	23334
23472	23335
24363	24160
23430	24164
33979	33366
37660	37217
36247	37236
37223	37237
36247	37238
37223	37239
37204	37241
37204	37242
37204	37243
37204	37244
31575	43191
31575	43192

Source Code	Destination Code
31575	43193
31575	43194
31575	43195
31638	43196
31575	43197
31575	43198
43200	43206
43201	43211
43219	43212
43456	43213
43458	43214
43228	43229
43271	43233
43200	43252
43242	43253
43251	43254
43256	43266
43258	43270
43268	43274
43269	43275
43269	43276
43271	43277
43272	43278
37200	49405
37200	49406
37200	49407
52353	52356
64613	64616
31513	64617
64614	64642
64614	64643
64614	64644
64614	64645
64614	64646
64614	64647
65850	66183
77470	77293
90836	90785
90837	90839
90833	90840
96105	92521
96105	92522
96105	92523
92520	92524

Source Code	Destination Code
93580	93582
93580	93583
91065	G0455
95920	G0453
90846	90791
90846	90792
90846	90832
90846	90833
90846	90834
90846	90836
90846	90837
90846	90838
78452	78072
94668	94669

Table D.2: 2015 New/Revised Service Codes with Crosswalked Risk Factors

Source Code	Destination Code
20600	20604
20605	20606
20610	20611
20982	20983
21805	21811
21805	21812
21805	21813
22520	22510
22521	22511
22522	22512
22523	22513
22524	22514
22525	22515
22856	22858
62287	27279
33249	33270
33216	33271
33244	33272
33215	33273
92987	33418
92987	33419
33960	33946
33960	33947
33961	33948
33961	33949
36822	33951

Source Code	Destination Code
36822	33952
36822	33953
36822	33954
33981	33955
33981	33956
33981	33957
33981	33958
33981	33959
33981	33962
33981	33963
33981	33964
33981	33965
33981	33966
33971	33969
33971	33984
33977	33985
33977	33986
33530	33987
33530	33988
33257	33989
37217	37218
43130	43180
45340	44381
44383	44384
45339	45346
45345	45347
43236	45349
45332	45350
45383	45388
45387	45389
45385	45390
45379	45393
45379	45398
47382	47383
52282	52441
52282	52442
62284	62302
62284	62303
62284	62304
62284	62305
64447	64486
64448	64487
64447	64488
64448	64489
66180	66179

Source Code	Destination Code
66185	66184
76645	76641
76645	76642
77057	77063
77080	77085
77082	77086
77305	77306
77315	77307
77326	77316
77327	77317
77328	77318
88342	88341
88342	88344
88365	88364
88365	88366
88368	88369
88367	88373
88367	88374
88368	88377
91132	91200
76514	92145
93282	93260
93289	93261
93312	93355
93642	93644
93701	93702
93882	93895
96110	96127
99291	99184
99212	99490
99183	G0277
77055	G0279
G0477	G0473

APPENDIX E: SERVICE CODES WITH CROSSWALKED MP RVUS

Table E.1 shows CPT codes which were assigned the CY 2015 MP RVU values of other CPT codes to maintain consistency with PE RVU methodology. The codes in the destination columns received the MP RVU values of their respective counterparts in the source columns.

Table E.1: CPT Codes with Cross-walked MP RVUs

Source Code	Destination Code
95940	G0453
45330	45378 (Modifier 53)
45330	G0104
45330	G0105(Modifier 53)
45330	G0121 (Modifier 53)
45378	G0105
45378	G0121
74280	G0106
74280	G0120
76775	G0389
77418	0073T
88141	G0124
88141	G0141
88141	P3001
90472	90461
90472	90474
93000	G0403
93005	G0404
93010	G0405
96372	90460
96372	90471
96372	90473
97803	G0270
97804	G0271
99211	G0102
99221	G0425
99222	G0426
99223	G0427
99231	G0406
99232	G0407
99233	G0408
74280 (Modifier 26)	G0106 (Modifier 26)
74280 (Modifier 26)	G0120 (Modifier 26)
76775 (Modifier 26)	G0389 (Modifier 26)

Source Code	Destination Code
74280 (Modifier TC)	G0106 (Modifier TC)
74280 (Modifier TC)	G0120 (Modifier TC)
76775 (Modifier TC)	G0389 (Modifier TC)
G0451	96110
37200	10030