Revised Final Report on the CY 2014 Update of the Geographic Practice Cost Index 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. Each procedure is interpreted as being produced by a combination of three categories of inputs: physician 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 relative value units (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(e) of the Social Security Act, CMS must establish geographic indices as part of the Resource-Based Relative Value Scale (RBRVS) method for paying physicians. Whereas the Medicare hospital wage index adjusts hospital, home health agency, skilled nursing facility, and other provider payments for regional variation in the cost of labor, the geographic practice cost indices (GPCIs) account for geographic variation in the price of the PW, PE, and MP classes of inputs. CMS first implemented the GPCIs as part of the Medicare PFS in 1992 and requires the GPCIs to be updated at least every three years. To meet the requirement, this report outlines a number of proposed changes to the data sources used and methodology applied to calculate GPCIs for the CY 2014 Update (i.e., the Seventh Update).

After evaluating both the current data and methods CMS uses to calculate the GPCIs, Acumen recommends CMS implement six modifications to the GPCI framework for the Seventh GPCI Update. These modifications include updating:

(1) The Bureau of Labor Statistics (BLS) Occupational Employment Statistics (OES) wage data used in the calculation of the PW GPCI and PE GPCI;

(2) The American Community Survey (ACS) residential rent data used in the calculation of the PE GPCI;

(3) The malpractice premium data used in the calculation of the MP GPCI;

(4) The RVUs used in the calculation of the PW GPCI, PE GPCI, and MP GPCI;

(5) The Medicare Economic Index (MEI) cost share weights used to determine the relative contribution for each type of physician practice expense across cost categories; and

(6) The Virgin Islands locality GPCI methodology to utilize aggregate territory-level BLS OES data.

Each of these modifications offers an improvement in the data source used to calculate the GPCI values.

The remainder of the Executive Summary provides additional information about GPCIs and highlights this report's findings for each of the six proposed modifications. The first section briefly reviews how Medicare uses GPCIs within the PFS. The second and third sections discuss

each of the modifications proposed above in more detail. Finally, the fourth section concludes with highlights from the empirical analysis of the impact of the proposed changes.

How GPCIs Affect Physician Payments

GPCIs measure geographic differences in input prices. Paralleling the RVU structure, GPCIs are split into three parts: PW, PE, and MP. Each of these three GPCIs adjusts its corresponding RVU component. 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. 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. Equation (1) below demonstrates how the PW, PE, and MP GPCIs combine with the three RVUs and the CF to establish a Medicare physician payment for any service *K* in locality *L*:

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

CMS currently calculates GPCIs using six component indices. Whereas the PW and MP GPCIs are based on a single component index, the PE GPCI is comprised of four component indices (i.e., the employee wage; purchased services; office rent; and equipment, supplies and other indices). The PE GPCI is calculated as a weighted average of the four PE GPCI component indices, where the weight assigned to each PE GPCI component index equals each input's average share of physician practice expenses nationally. Table 1 below provides additional information on each component index.

Table 1: Breakdown of GPCIs into Current Component Indices

GPCI	Component Index	Measures Geographic Differences in:
Physician Work	Single Component	Physician wages
Practice Expense	*Employee Wage*	Wages of clinical and administrative office staff
	Purchased Services	Cost of contracted services (e.g., accounting, legal)
	Office Rent	Physician cost to rent office space
	Equipment, Supplies, and Other	Practice expenses for inputs such as chemicals and rubber, telephone use and postage
Malpractice	Single Component	Cost of professional liability insurance

Although GPCIs affect payments for each procedure depending on the relative amounts of PW, PE, and MP RVUs, one can summarize the combined impact of the three GPCI components on a locality's physician 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 MEI base year weights. These weights determine the relative contribution of each GPCI. Using the MEI base year weights under current regulation, one can calculate the GAF for a given locality *L* as follows in equation (2):

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

Calculating the GPCIs with More Updated Data

The first five modifications proposed in this report update the data sources currently used to calculate the GPCIs with more recent data. These updates include: (i) replacing the 2006-2008 BLS OES wage data with the more recent 2009-2011 BLS OES wage data; (ii) replacing the 2006-2008 ACS residential rent data with the more recent 2008-2010 ACS data; (iii) replacing the 2006-2007 malpractice premiums with 2011-2012 malpractice premiums; (iv) replacing the 2009 RVUs currently used as weights in the PW GPCI, PE GPCI, and MP GPCI calculations with more recent 2011 RVUs; and (v) updating the MEI cost share weights with a reclassification of the 2006-based MEI cost share weights.

Incorporating these five modifications proposed above will update nearly all the data sources used to calculate the GPCIs. Table 2 below summarizes the proposed data sources for the CY 2014 update and compares them to the current GPCI data sources.

Table 2: Overview of Updated Data Sources for the CY 2014 Update

GPCI Component Index	Current Regulation	CY 2014 Update
Physician Work GPCI	2006-2008 BLS Occupational Employment Statistics	2009-2011 BLS Occupational Employment Statistics
Practice Expense GPCI		
Employee Wage	2006-2008 BLS Occupational Employment Statistics	2009-2011 BLS Occupational Employment Statistics
Purchased Services	2006-2008 BLS Occupational Employment Statistics	2009-2011 BLS Occupational Employment Statistics
	CMS Labor-Related Classification	CMS Labor-Related Classification
Office Rent	2006-2008 American Community Survey	2008-2010 American Community Survey
Equipment, Supplies, and Other	1.00 for All Counties	1.00 for All Counties
Malpractice GPCI	2006-2007 Malpractice Premiums	2011-2012 Malpractice Premiums
Cost Share Weights	2006 MEI Weights	Reclassification of 2006 MEI Weights
County RVU Weights	2009 RVUs	2011 RVUs

Modifying the Virgin Islands GPCI Methodology to Utilize Territory-Level Data

The sixth modification proposed in this report modifies the Virgin Islands locality GPCI methodology to utilize aggregate territory-level BLS OES data. The current methodology for calculating locality-level PW GPCIs and PE GPCIs relies on the acquisition of county-level data. County-level data for the Virgin Islands, however, are not represented in the BLS OES wage data. Given this absence of county-level wage data, CMS has historically set the PW GPCI and PE GPCI for the Virgin Islands payment locality at 1.0. Although county-level data for the Virgin Islands are not represented in the BLS OES wage data, aggregate territory-level BLS OES wage data are available. Using aggregate-level data instead of assigning the locality PW GPCI and PE GPCI values of 1.0 is a better reflection of the relative cost differences of operating a medical practice in the Virgin Islands payment locality.

Summary of Predicted Impacts of All GPCI Updates on Locality GAFs

The six modifications to the GPCI framework result in moderate changes in locality GAF values. Table 3 below shows that the average locality experiences a change in its GAF value of 1.0 percentage points. Further, 59.55 percent of localities experience a change in their GAF value of less than one percentage point and no localities experience a change in their GAF value of greater than five percentage points. These impacts do not reflect final adjustments to GPCIs for budget neutralization and statutorily mandated floors. The impacts do, however, reflect the legislative adjustment requiring the PW GPCI to represent one-quarter of the relative cost differences compared to the national average (Section 1848(e)(1)(A)(iii) of the Social Security Act).

Table 3: Combined Impact Analysis, All GPCI Updates (GAF)

GAF Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.0%
0.05 to 0.10	0	0.0%
0.01 to 0.05	22	24.7%
0.00 to 0.01	**29**	**32.58%**
-0.01 to 0.00	**24**	**26.97%**
-0.05 to -0.01	14	15.73%
-0.10 to -0.05	0	0.0%
< -0.10	0	0.0%

Percentile	GAF Difference
Mean	0.002
Abs. Mean	0.010
Min	-0.046
P10	-0.016
P25	-0.005
P50 (Median)	**0.003**
P75	0.010
P90	0.019
Max	0.031

Sections 3 and 4 of the full report contain the individual impacts of the modifications one through five on the GPCIs and GAF. Section 5 of the full report contains the individual impact of the sixth modification on the GPCIs and GAF. Section 6 of the full report presents the Seventh Update of the GPCIs by locality, as well as the combined impact of the updates.

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1 INTRODUCTION

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. Each procedure is interpreted as being produced by a combination of three categories of inputs: physician 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 relative value units (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(e) of the Social Security Act, CMS must establish geographic indices as part of the Resource-Based Relative Value Scale (RBRVS) method for paying physicians. Whereas the Medicare hospital wage index adjusts hospital, home health agency, skilled nursing facility, and other provider payments for regional variation in the cost of labor, the geographic practice cost indices (GPCIs) account for geographic variation in the price of the PW, PE, and MP classes of inputs. In 1992, CMS—then known as the Health Care Financing Administration (HCFA)—first implemented the GPCIs as part of the Medicare PFS. CMS requires the GPCIs to be updated at least every three years. To meet this requirement, this report outlines a number of proposed changes to the data sources used and methodology applied to calculate locality GPCIs for the CY 2014 Update (i.e., the Seventh Update).[1]

Acumen used three general principles to guide the proposed changes to the Seventh Update. First, the data used should reflect the most current information available. Second, all GPCI calculations must be methodologically sound and defensible. Although the Government Accountability Office (GAO) noted that the "geographic adjustment indices are valid in design," this report explores areas where incremental improvements can be made to the GPCI methodology.[2] Third, revisions to the GPCI methodology should consider stakeholder comments that are feasible and consistent with the statute.

Using these guiding principles, this report describes six changes to the GPCI framework for the Seventh Update. Specifically, these changes include five proposals that update the GPCIs with more current data: (i) updating the Bureau of Labor Statistics (BLS) Occupational Employment Statistics (OES) wage data used in the calculation of the PW GPCI and PE GPCI; (ii) updating the American Community Survey (ACS) residential rent data used in the calculation of the PE GPCI; (iii) updating the malpractice premium data used in the calculation of the MP GPCI; (iv) updating the RVUs used in the calculation of the PW GPCI, PE GPCI, and MP GPCI, and v) updating the Medicare Economic Index (MEI) cost share weights used to determine the relative contribution of each type of physician practice expense across cost categories. The sixth

[1] The latest GPCI update occurred during the Revision to the Sixth Update as part of the CY 2012 PFS.
[2] U.S. GAO March 2005.

proposal modifies the data and methodology used to calculate the PW GPCI and PE GPCI for the Virgin Islands to more accurately reflect the geographic cost differences for the Virgin Islands payment locality.

The remainder of this report describes these changes in detail, and calculates the impact of the changes on locality GPCI and GAF values. Specifically, this report details how these changes affect the calculations of the GPCIs *before final adjustments.* CMS implements a number of required adjustments after completing its core calculations. These adjustments include: final budget neutralization, a permanent 1.5 floor for the PW GPCI in Alaska; and a permanent 1.0 floor for the practice expense GPCI for frontier states[3]. All of the figures presented in this report, except for Table 5.2, include these final adjustments.[4] Further, CMS will transition from the current GPCIs to the updated GPCIs over a two-year period. This report contains the GPCI and GAF values for the fully implemented Seventh Update.

This report explains the changes to the GPCI data sources, methodology, and values in six sections. Section 2 provides a brief overview of how CMS calculates the GPCIs and uses them to adjust provider payments. Section 3 describes updating the data sources currently used to calculate the GPCIs with more recent data. Section 4 provides additional details on updating the malpractice premium data used to calculate the MP GPCI. Section 5 discusses modifying the data and methodology used to calculate the PW GPCI and PE GPCI for the Virgin Islands. Section 6 presents the impacts of incorporating all GPCI updates and concludes with a summary of the findings of this report.

[3] As of 2012, the states which qualified as frontier states were: Montana, Nevada, North Dakota, South Dakota, and Wyoming.
[4] Table 5.2 includes budget neutralization only.

2 BRIEF OVERVIEW OF THE GPCI METHODOLOGY

Where physicians locate their practices affects their cost of providing each service. For instance, the cost of living for physicians is higher in Manhattan than in Montana; the cost of operating a physician practice is higher in San Francisco, California than in Sandusky, Ohio; and purchasing malpractice insurance is more expensive for a physician in Miami, Florida than for a doctor in Minneapolis, Minnesota. To account for such geographic differences in the inputs required to provide medical services, CMS uses GPCIs to adjust Medicare physician payments based on geographic differences in physician wages, practice expenses, and the price of malpractice insurance.[5] To implement these PFS adjustments in practice, CMS uses three GPCIs—PW GPCI, PE GPCI, and MP GPCI—which correspond to these three broad classes of inputs physician practices use.

The remainder of this section provides additional background information regarding how CMS uses GPCIs within the Medicare PFS. Specifically, this section answers three questions:

- How do GPCIs affect Medicare payments to physicians?
- What are the component indices that make up GPCIs?
- What methodology does CMS currently use to calculate GPCIs?

Sections 2.1, 2.2, and 2.3 answer each of these questions in turn.

2.1 How GPCIs Affect Physician Payments

Under the PFS, Medicare pays for physician services based on a list of services and their payment rates. Under the PFS, every physician 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 physician 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, 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

[5] CMS posts updates concerning the Medicare physician fee schedule at the following website: https://www.cms.gov/PhysicianFeeSched/

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).[6] Although the SGR is projected to significantly decrease physician compensation over the upcoming years, Congress has reversed the reductions in most years since the SGR was implemented in 2002.[7] Most recently, the American Taxpayer Relief Act of 2012 nullifies the SGR and continues current Medicare physician payment rates through December 31, 2013.[8] Equation (2.1) below demonstrates how the PW, PE, and MP GPCIs combine with the three RVUs and the CF to establish a Medicare physician payment for any service K in locality L[9]:

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

Although GPCIs affect payments for each procedure depending on the relative amounts of PW, PE, and MP RVUs, one can summarize the combined impact of the three GPCI components on a locality's physician 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[10], one can calculate the GAF as follows in equation (2.2):

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

[6] For more information on the SGR, see: CMS March 2012.
[7] Hahn August 2010.
[8] U.S. Congress January 2012.
[9] 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.
[10] For 2013, the MEI base year weights come from 2006 data. See http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareProgramRatesStats/MarketBasketData.html (Accessed Feb 19, 2013).

2.2 GPCI Component Indices

CMS currently uses six component indices to calculate the PW, PE, and MP GPCIs. Table 2.1 maps the corresponding component index to its relevant GPCI. Whereas the PW and MP GPCIs are comprised of a single index, the PE GPCI is comprised of four component indices (i.e., the employee wage; purchased services; office rent; and equipment, supplies and other indices). The first component of the PE GPCI, the employee wage index, measures regional variation in the cost of hiring skilled and unskilled labor directly employed by the practice. Practice expenses for employee wages account for the largest share of the PE GPCI. Although the employee wage index adjusts for regional variation in the cost of labor employed directly by physician practices, the employee wage index does not account for geographic variation of practices' costs for services that have been outsourced to other firms. Such cases occur when practices purchase services from law firms, accounting firms, information technology consultants, building service managers, or any other third-party vendor. The second component, the purchased services index, measures regional variation in the cost of these contracted services that physicians typically buy. The third component of the PE GPCI, the office rent index, measures regional variation in the cost of typical physician office rents. Finally, the "equipment, supplies and other" category measures practice expenses associated with a wide range of costs from chemicals and rubber, to telephone and postage. CMS assumes that these capital goods are purchased in a national market and does not adjust for regional variation in practice costs within the "equipment, supplies and other" category. Thus, each locality receives a value of 1.0 for the "equipment, supplies, and other" index.

Table 2.1: Breakdown of GPCIs into Current Component Indices

GPCI	Component Index	Measures Geographic Differences in:
Physician Work	Single Component	Physician wages
Practice Expense	*Employee Wage*	Wages of clinical and administrative office staff
	Purchased Services	Cost of contracted services (e.g., accounting, legal)
	Office Rent	Physician cost to rent office space
	Equipment, Supplies, and Other	Practice expenses for inputs such as chemicals and rubber, telephone use and postage
Malpractice	Single Component	Cost of professional liability insurance

To determine the relative contribution of each type of expense category, the GPCI relies on MEI base year weights. The MEI weights estimate the share of expenses broken down into physician work, practice expense, and malpractice insurance categories for the average American

self-employed physician. CMS uses these three MEI cost shares to calculate the GAF by assigning a weight to the PW, PE, and MP GPCIs based on its corresponding MEI cost share. Because the PE GPCI is currently composed from four component indices (i.e., non-physician employee compensation; purchased services; office rent; and equipment, supplies, and other), to calculate the PE GPCI, each index is weighted by its PE cost share weight, which is derived from the MEI cost share weights. Table 2.2 below presents the cost share weights currently used to calculate the CY 2013 GPCIs, which are based on the 2006 MEI cost share weights.

Table 2.2: 2006-Based MEI Cost Share Weights for CY 2013 GPCIs

Expense Category	CY 2013 Cost Share Weights (%)
Physician Work	48.266
Practice Expense	47.439
Employee Compensation	*19.153*
Purchased Services	*8.095*
Office Rent	*10.223*
Equipment, Supplies, and Other	*9.968*
Malpractice Insurance	4.295
Total	**100.000**

2.3 Current Policy for Calculating GPCIs

Calculating GPCI values requires measuring the price of each input relative to its national average price. Although the general approach is similar across all geographically-adjusted component indices, the specific methodology used to calculate each index value varies. The remainder of this subsection describes the methodology for calculating the six GPCI component indices. Sections 2.3.1, 2.3.2, and 2.3.3 present an overview of the methodology for calculating the component indices within the PW GPCI, PE GPCI, and MP GPCI, respectively. Earlier reports on the Sixth Update of the GPCIs and subsequent revisions describe these methods in greater detail.[11,12] Although GPCI values are calculated for all U.S. States and Puerto Rico, most data sources used do not contain data for other U.S. territories. To address this issue, the Virgin Islands receive a value of 1.0 for all three GPCIs; American Samoa and Guam are assigned the same GPCI values as Hawaii.

2.3.1 PW GPCI Methodology

In the current methodology, CMS defines PW GPCI values based on regional variation in wages across a set of proxy occupation groups. Although one could measure regional variation in physician wages directly, CMS elects not to use this information in the PW GPCI calculation; computing the PW GPCI using direct measures of physician wages would produce a circular

[11] O'Brien-Strain, et al. November 2010.
[12] MaCurdy, et al. October 2011.

measure where the work adjustment would depend on past payments to physicians by Medicare. To mitigate this problem, CMS uses proxy occupation wages in its calculation of PW GPCI values. CMS uses the following four steps to calculate the PW GPCI:

(1) Select proxy occupation groups;

(2) Calculate an occupation group-specific wage index for each proxy;

(3) Assign weights to each proxy-occupation group index to create an aggregate proxy-occupation group index at the locality level; and

(4) Adjust the aggregate proxy-occupation group index by a physician inclusion factor.

The proxy occupations Medicare currently selects in Step 1 represent highly educated, professional occupation categories, whose wages would be expected to reflect the overall geographic differences in living costs and amenities for other professional workers. Specifically, the current PW GPCI draws on the regional variation in the earnings of the following seven proxy occupation groups: (i) architecture and engineering; (ii) computer, mathematical, life and physical science; (iii) social science, community and social service, and legal; (iv) education, training, and library; (v) registered nurses; (vi) pharmacists; and (vii) art, design, entertainment, sports, and media.[13]

Step 2 calculates an occupation group-specific index for each of the proxy groups. The occupation group-specific index in a given county is the median hourly earnings for that occupation group relative to RVU-weighted national average median hourly wage for that occupation group.[14] To create an aggregate proxy-occupation index at the locality level, Step 3 first weights the occupation group-specific indices from Step 2 by each occupational group's share of the national wage bill. An occupation group's share of the national wage bill equals the national hourly wage for that occupation multiplied by the number of non-zero wage earners in that occupation nationally and then divided by the wage bill summed across all proxy occupation groups. Table 2.3 below lists the wage bill shares between the occupation groups CMS used to calculate the PW GPCI for CY 2013.

[13] See Appendix A for a list of the individual occupations in the BLS OES data that compose the seven professional categories used for the Seventh Update of the GPCIs.

[14] In cases where the BLS OES data does not publish median wages for areas with insufficient numbers of workers in a given occupation, the area is assigned the national median wage for that occupation.

Table 2.3: Sixth Update National Wage Bill Shares used for CY2013

Occupation Group	Sixth Update
Architecture & Engineering	8.5%
Computer, Mathematical, Life, & Physical Science	16.0%
Social Science, Community, & Social Service	8.5%
Education, Training, & Library	40.2%
Registered Nurses	16.6%
Pharmacists	2.8%
Art Design, Entertainment, Sports, & Media	7.4%

Using the wage bill share, one can calculate the county-specific hourly index as the sum of the product of the county indices for each occupation group times the wage bill share for each occupation group. Using these median hourly wages, the county values are aggregated to the locality level. Specifically, a Medicare locality index is created by weighting the county values for all counties in the locality by the total PW RVUs in the county. If P_K represents the median wage across the seven occupations for county K, and $RVU_{W,K}$ represents the physician work RVUs in that county, then the raw physician work GPCI for locality L is:

$$X_L = \frac{\sum_K \left(RVU_{W,K} \times P_K \right)}{\sum_K RVU_{W,K}} \tag{2.3}$$

Finally, Step 4 reduces the variation of the work GPCI to 25% of the original. By law, the PW GPCI is adjusted to reduce the variation in the work index by locality to one-quarter (25 percent) of the full variation in X_L.

2.3.2 PE GPCI Methodology

As discussed in Section 2.2, the PE GPCI is currently comprised of four component indices: the employee wage index; the purchased services index; the office rent index; and the equipment, supplies, and other index. Because equipment and supplies are assumed to be purchased on a national market, CMS sets this component index to 1.0 for all localities. Therefore, calculating the PE GPCI for a locality L ($PE\ GPCI_L$) involves calculating the relative earnings of office staff (including earnings by occupation and employment shares by occupation), the relative cost of contracted services, and the relative cost of office space. These three components, along with the unit supply component are then weighted based on their shares within total practice expenses, according to the following formula:

$$PE\ GPCI_L = \frac{\sum_{ci \in \{PE\ GPCI\}} \left(Cost\ Share^{ci} \times X_L^{ci} \right)}{\sum_{ci \in \{PE\ GPCI\}} \left(Cost\ Share^{ci} \right)} \tag{2.4}$$

where X_L^{ci} is a PE GPCI component index *ci* for locality *L*, and *Cost Share*^{ci} is the share within total practice expenses of component index *ci*. The remainder of Section 2.3.2 describes the current methodology for each of the four PE GPCI component indices.

Employee Wage Index Methodology

To calculate the employee wage index component of the PE GPCI, one simply follows the steps described in Section 2.3.1 for the PW GPCI, with two modifications. First, Step 1 is modified such that the median hourly earnings are calculated for occupations representing 100% of total non-physician wages in the offices of physicians industry. Second, the wages of these occupations are combined into a single index by weighting these wages by the occupation's employment shares in the offices of physician industry.

Purchased Services Index Methodology

The methodology for computing the purchased services index follows the same broad approach as the employee wage index, but with three modifications. First, rather than including occupations that are employed in physician offices, the purchased services index includes occupations employed in industries from which physicians are likely to purchase services.[15] Second, the weight each occupation receives in the composite index differs between the employee wage index and purchased services index. Whereas the employee wage index weights each occupation based on each share of the national wage bill in the offices of physician industry, the purchased services index weights occupations based on their national wage share within the industries from which physicians purchase services. Third, unlike the employee wage index, only a portion of the purchased services index is geographically adjusted. For the previous GPCI update, only 62% of the index is adjusted for regional variation in labor costs because capital expenses made up approximately 38% of purchased services inputs; the labor-related shares used to differentiate between capital expenses and labor costs came from the CMS Office of the Actuary (OACT).[16]

[15] The occupations physicians from which physicians are likely to purchase are those that comprise the "All Other Service" and "Other Professional Expenses" MEI cost shares. This report uses data from the CMS Office of the Actuary (OACT) which decomposes these MEI cost shares into industries, identified by NAICs codes.

[16] The exact proportion of the occupation-specific index that is regionally adjusted depends on the labor-related share of expenses in the industries in which that occupation is most frequently employed.

Office Rent Index Methodology

Calculating the office rent index component using the ACS data requires the following three-step approach:

(1) Calculate an RVU-weighted national average rent value using county rent data;

(2) Create a county-specific index; and

(3) Calculate a Medicare locality-level index.

The office rent index measures regional variation in the price of office rents using residential rent data from the ACS on median gross rents for two-bedroom apartments.[17] In Step 1, one calculates national average rents as follows:

$$R_N = \frac{\sum_K RVU_{PE,K} \times R_K}{\sum_K RVU_{PE,K}} \tag{2.5}$$

where R_N is the RVU-weighted national average, $RVU_{PE,K}$ is the number of PE RVUs in county K, and R_K is the median gross rent in county K. Using the national rent estimate, one can create a county-specific rent index in Step 2 as the ratio of the county gross rents and the national average rents as follows:

$$X_K = \frac{R_K}{R_N}. \tag{2.6}$$

In this case, X_K is the office rent index for county K. In Step 3, one aggregates the county-level office rent index to locality-level office rent index as shown in equation (2.3).

Equipment, Supplies, and Other Index

CMS assigns all localities a value of one for their equipment, supplies, and other component index, which measures practice expenses associated with a wide range of costs from chemicals and rubber, to telephone and postage. CMS assumes that these capital goods are purchased in a national market and does not adjust for regional variation in practice costs within the "equipment, supplies, and other" category.

[17] In cases where the ACS does not report 2-bedroom rents for a given county, the county is assigned the average rent value for all other counties in its MSA (or rest of state area).

2.3.3 MP GPCI Methodology

The calculation of the MP GPCI takes into account the premiums for each of the medical specialties, the specific firms with rate filings in each state, and the market shares of these firms.[18] To measure regional variation in the cost of professional liability insurance, the MP GPCI methodology uses these data to examine the price of a homogenous unit of coverage taking into account specialty mix. Specifically, the MP GPCIs are created in eight steps as follows:

(1) *Calculate specialty weights for each state*. Using the RVUs for each physician specialty *S* in each state *T*, the specialty weights (SW) are:

$$SW_{S,T} = \frac{RVU_{MP,S,T}}{\sum RVU_{MP,S,T}} \quad . \tag{2.7}$$

(2) *Summarize premiums by insurer*. The specialty weights are used to develop a summary premium measure for each insurer across all physician specialties. Since insurers often have different rates for different territories, a specialty-weighted premium is developed for each insurer in each county from the premiums (P_{SIKY}) reported by a given insurer *I* for specialty *S* in county *K* in year *Y*:

$$P_{IKY} = \sum_{S} \left(SW_{S,T} \times P_{SIKY} \right) \quad . \tag{2.8}$$

For states with mandatory Patient Compensation Funds (PCFs), the premium values P_{SIKY} include the compensation fund surcharge to the premium reported in the rate filings. The insurer premiums are determined using weights at the state level rather than at the individual insurer level.

(3) *Adjust market share weights.* Market share data are used to identify and collect rate filings from the companies that capture at least 50% of the market share in each state. These "raw" market shares for each insurer in each state are adjusted to re-weight the market shares for the companies whose data have been collected as a share of the total market data collected. In other words, if data has been collected for three companies, each of which has 20 percent market share, the market share adjustment would inflate their market share to 33 percent each so that the sum of the market shares of all insurers for which data is available sum to one. Adjusted market share weights are calculated as follows:

$$MS_{ITY} = \frac{rawMS_{ITY}}{\sum_{I} rawMS_{ITY}} \tag{2.9}$$

[18] For additional details on the collection of these data for the calculation of the MP GPCIs, see O'Brien-Strain et al. November 2010.

where MS_{ITY} is the normalized market share for an insurer I in state T in year Y and $rawMS_{ITY}$ is the total market share for an insurer I in state T in year Y.

(4) *Calculate average county-level MP insurance premiums in each year*. To develop average premiums by county, a weighted average of the premiums for each insurer from Step 2 is developed using the adjusted market shares from Step 3 as the weights:

$$P_{KY} = \sum_{I} \left(MS_{ITY} \times P_{IKY} \right) \tag{2.10}$$

where P_{KY} is the premium price in county K in year Y.

(5) *Calculate an average county-level MP insurance premium across years.* The current GPCI methodology calculates a 2-year average county-level MP insurance premium using the average county-level MP insurance premiums calculated in Step 4:

$$P_K = \frac{P_{K,t} + P_{K,t+1}}{2} \tag{2.11}$$

where P_K is the average annual premium in county K. As part the Sixth Update, premium data from 2006 and 2007 was used; the Seventh Update proposes using rate filings data from 2011 and 2012.

(6) *Calculate a national average MP insurance premium*. The county-level MP RVUs are next used to create a national average MP insurance premium, P_N, that weights the county premiums by RVUs:

$$P_N = \frac{\sum_{K} \left(RVU_{MP,K} \times P_K \right)}{\sum_{K} RVU_{MP,K}} \ . \tag{2.12}$$

(7) *Index the premium in each county to the national average:* With the calculation of the national average MP premium, the county premium can be converted to a premium index, X_K. This index is simply the county average premium divided by the national average premium:

$$X_K = \frac{P_K}{P_N} . \tag{2.13}$$

(8) *Create Medicare locality measures that are RVU-weighted averages of the county index.* Finally, the MP GPCI is created by summing the county level index into Medicare locality measures:

$$GPCI_{MP,L} = \frac{\sum_{K}\left(RVU_{MP,K} \times X_{K}\right)}{\sum_{K} RVU_{MP,K}} \quad (2.14)$$

2.4 Legislative Adjustments to GPCI Calculations

After completing the core GPCI calculations, CMS implements a number of required adjustments. Section 1848(e)(1)(A)(iii) of the Social Security Act requires that the work GPCIs reflect only one-quarter of the relative cost differences compared to the national average. In addition, Section 1848(e)(1)(G) of the Social Security Act sets a permanent 1.5 PW GPCI floor for services furnished in Alaska beginning January 1, 2009. Further, section 1848(e)(1)(I) establishes a 1.0 PE GPCI floor for physicians' services furnished in frontier States effective January 1, 2011. Based on the legislation, Montana, North Dakota, Nevada, South Dakota, and Wyoming are considered to be "Frontier States" for CY 2013. Table 2.4 below summarizes these adjustments. The empirical analyses in this report detail the calculations of GPCIs *before final adjustments* for the statutorily mandated floors. The analyses do reflect the one-quarter adjustment to the PW GPCI.

Table 2.4: Legislative Adjustments to GPCI Calculations

Legislative Adjustment	GPCI Component Affected	Adjustment Description
Section 1848(e)(1)(A)(iii) of the Social Security Act	Physician Work (PW)	PW GPCI should reflect only ¼ of the relative cost differences compared to the national average
Section 1848(e)(1)(G) of the Social Security Act	Physician Work (PW)	Sets a permanent PW GPCI 1.5 floor for services furnished in Alaska
Section 1848(e)(1)(I) of the Social Security Act	Practice Expense (PE)	Sets a permanent 1.0 floor for physicians' services furnished in frontier states

3 CALCULATING THE GPCI WITH MOST RECENT DATA

To update the GPCIs for the Seventh Update, Acumen calculated the GPCIs using more recent versions of data sources used for previous updates. Table 3.1 below shows that the GPCIs under current regulation rely primarily on six data sources and compares the current data sources to the data sources proposed for the CY 2014 Seventh Update. The first data source, the BLS OES wage data, is used for the calculation of the PW GPCI, PE GPCI employee wage index, and PE GPCI purchased services index. The second data source, the ACS, is used for the calculation of the PE GPCI office rent index. Sections 3.1 and Section3.2, respectively, describe the impact of updating these data sources using the latest data available as of the publication of this report. Section 3.3 briefly discusses updating the 2006-2007 MP premiums with more recent 2011-2012 MP premiums. Section 4 provides a more detailed treatment of these data. The fourth data source, the RVUs, is used as weights in the calculation of all GPCIs and GPCI components, and Section 3.4 discusses the impacts of updating the 2009 RVUs currently used with more recent 2011 RVUs. The fifth data source, the MEI weights, is used to update the cost share weights. Section 3.5 briefly discusses the impacts of updating the 2006-based MEI cost shares weights currently used with a reclassification of the 2006-based MEI cost share weights. The sixth data source, the CMS labor-related classification, is also used in the calculation of the PE GPCI purchased services index. Although the labor-related shares have not been updated for this report, Section 3.6 briefly discusses this data source used for the current update.

Table 3.1: Overview of Data Sources for the CY 2014 GPCI Update

GPCI Component Index	Current Regulation	CY 2014 Update
Physician Work GPCI	2006-2008 BLS Occupational Employment Statistics	2009-2011 BLS Occupational Employment Statistics
Practice Expense GPCI		
Employee Wage	2006-2008 BLS Occupational Employment Statistics	2009-2011 BLS Occupational Employment Statistics
Purchased Services	2006-2008 BLS Occupational Employment Statistics	2009-2011 BLS Occupational Employment Statistics
	CMS Labor-Related Classification	CMS Labor-Related Classification
Office Rent	2006-2008 American Community Survey	2008-2010 American Community Survey
Equipment, Supplies, and Other	1.00 for All Counties	1.00 for All Counties
Malpractice GPCI	2006-2007 Malpractice Premiums	2011-2012 Malpractice Premiums
Cost Share Weights	2006 MEI Weights	Reclassification of 2006 MEI Weights
County RVU Weights	2009 RVUs	2011 RVUs

3.1 BLS OES Wage Data

To calculate the PW GPCI, PE GPCI employee wage index, and PE GPCI purchased services index as part of this Seventh Update, Acumen replaced the previous data file—the 2006-2008 BLS OES wage data—with more recent 2009-2011 BLS OES wage data. The OES survey is a semi-annual mail survey of all salaried non-farm workers, excluding self-employed individuals, administered by the BLS. OES data from any given year are aggregated using six semi-annual panels of data collected over three years.[19] May 2011 estimates, for example, are based on responses from May 2011, November 2010, May 2010, November 2009, May 2009, and November 2008. The establishments surveyed are selected from lists maintained by State Workforce Agencies for unemployment insurance purposes. Specifically, the BLS-OES collects data from approximately 200,000 establishments from every metropolitan area and state, across all surveyed industries, and from establishments of varying sizes. Using this sample of establishments, the BLS collects detailed wage data by industry and region. Wage data include various forms of compensation but omit nonproduction bonuses or employer costs for nonwage benefits.[20] The OES program produces employment and wage estimates for over 800 occupations based on the Office of Management and Budget's standard Occupational Classification (SOC) system; these occupations make up 22 of the 23 SOC major occupational groups.[21] Because of its reliability, public availability, level of detail, and national scope, BLS OES represents an attractive source for wage and employment data.

The Seventh Update uses BLS OES hourly wage and employment data to estimate both occupation-specific wage indices and occupation weights for the PW GPCI, PE GPCI employee wage index, and PE GPCI purchased services index. As discussed in Section 2, to calculate the PW GPCI, the current GPCI methodology draws wages and employment shares for each MSA from the BLS OES for seven professional categories: architecture and engineering; computer, mathematical, and natural sciences; social scientists, social workers, and lawyers; education, training, and library; registered nurses and pharmacists; and writers, editors, and artists.[22] Next, to calculate the PE GPCI employee wage index, the current GPCI methodology relies on wage data from occupations representing 100 percent of total non-physician wages in the "offices of

[19] The OES uses data over time to increase the sample size of the survey, thereby increasing the reliability of the survey and reducing sampling error. But labor costs change over time, as evidenced by the Employment Cost Index (ECI) time series data. To make the data from all survey respondents comparable, the OES program uses the ECI to translate the occupation-level wages from previous years into a wage number for the most recent year. For additional detail, see "Technical Notes for May 2011 OES Estimates" (http://www.bls.gov/oes/current/oes_tec.htm).
[20] The BLS OES wage estimates include worker compensation regarding base pay, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay and tips, but exclude compensation for back pay, jury duty pay, overtime pay, severance pay, shift differentials, nonproduction bonuses, tuition reimbursement, and non-wage benefits (http://www.bls.gov/oes/oes_ques.htm#Ques16).
[21] Major group 55, Military Specific Occupations, is not included.
[22] See Appendix A for a list of the individual BLS occupations that compose the seven professional categories.

physicians" industry.[23,24,25] This industry comprises establishments of health practitioners having the degree of M.D. (Doctor of Medicine) or D.O. (Doctor of Osteopathy) primarily engaged in the independent practice of general or specialized medicine (except psychiatry or psychoanalysis) or surgery. These practitioners operate private or group practices in their own offices (e.g., centers, clinics) or in the facilities of others, such as hospitals or HMO medical centers. The OES data break down wages into detailed occupational categories and also include national-level cost share estimates for the physicians industry. Finally, to calculate the PE GPCI purchased services index, the current GPCI methodology draws from occupations employed in industries from which physicians are likely to purchase services. BLS OES data is used to weight occupations within each industry but each industry's weight is determined by the MEI. For instance, the BLS OES would be used to calculate a wage index for each occupation within the Legal Services industry (NAICS 541100). To determine the weight labor-related legal services should receive within the purchased services index, the methodology uses the MEI cost shares.[26]

Subsections 3.1.1, 3.1.2, and 3.1.3 present the impacts of updating the currently used 2006-2008 Bureau BLS OES wage data with the more recent 2009-2011 BLS OES wage data on the PW GPCI, PE GPCI employee wage index, and PE GPCI purchased services index, respectively.

3.1.1 PW GPCI Impacts

Comparing PW GPCIs calculated using the more recent 2009-2011 BLS OES wage data against the indices calculated using the 2006-2008 Bureau BLS OES wage data, this report finds that localities' PW GPCIs and GAFs experience little change. Table 3.2 shows how the data update affects PW GPCI figures for localities. The average locality experiences a change in its PW GPCI of 0.6 percentage points. Further, 80.9 percent of localities experience a change in their PW GPCI of less than 1 percentage point. Table 3.3 displays the changes in the GAF values, which are even smaller than the changes in the PW GPCI values. 97.75 percent of GAF values experience changes of less than 1 percentage point.

[23] Offices of Physician Industry: NAICS code 621100.
[24] The top ten occupations by share of non-physician wages in the offices of physician industry are: SOC 29-1111 Registered Nurses (21.6%), SOC 31-9092 Medical Assistants (12.5%), SOC 43-6013 Medical Secretaries (7.3%), SOC 43-4171 Receptionists and Information Clerks (6.3%), SOC 43-1011 First-Line Supervisors of Office and Administrative Support Workers (4.7%), SOC 29-2061 Licensed Practical and Licensed Vocational Nurses (4.3%), SOC 43-3021 Billing and Postal Clerks (3.9%), SOC 11-9111 Medical and Health Services Manages (3.3%), SOC 29-2037 Radiologic Technologists and Technicians (3.3%), and SOC 43-9061 General Office Clerks (2.9%).
[25] Physician occupations from the offices of physicians' industry excluded from the calculation of the PE GPCI employee wage index include the following occupations from the BLS Healthcare Practioners and Technical Occupations (SOC 29-0000): 1011, 1021-1024, 1031, 1041, 1061-1069, 1081, 1121-1127, and 1129.
[26] Also, the labor-related shares (LRS) from the Office of the Actuary (OACT) are needed to determine the share of the industry's cost that is labor-related and to be included in the purchased services index. They are discussed in Section 3.6.

Table 3.2: Impact Analysis, Using Updated BLS OES Wage Data (PW GPCI)

PW GPCI Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	12	13.48
0.00 to 0.01	40	44.94
-0.01 to 0.00	32	35.96
-0.05 to -0.01	5	5.62
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	PW GPCI Difference
Mean	0.002
Abs. Mean	0.006
Min	-0.024
P10	-0.008
P25	-0.002
P50 (Median)	0.002
P75	0.007
P90	0.010
Max	0.018

Table 3.3: Impact Analysis, Using Updated BLS OES Wage Data (GAF)

GAF Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	0	0.00
0.00 to 0.01	52	58.43
-0.01 to 0.00	35	39.33
-0.05 to -0.01	2	2.25
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	GAF Difference
Mean	0.001
Abs. Mean	0.003
Min	-0.012
P10	-0.004
P25	-0.001
P50 (Median)	0.001
P75	0.003
P90	0.005
Max	0.009

3.1.2 PE GPCI Employee Wage Index Impacts

Comparing employee wage indices calculated using the more recent 2009-2011 BLS OES wage data against the indices calculated using the 2006-2008 Bureau BLS OES wage data, this report finds that localities' employee wage indices, PE GPCIs, and GAFs experience little change. Table 3.4 describes how the data update affects employee wage index figures for localities. The average locality experiences a change in its employee wage index of 1.8 percentage points. However, 42.69 percent of localities experience a change in their employee wage index of less than 1 percentage point. The changes at the PE GPCI and GAF levels are even smaller. 78.66 percent and 92.14 percent of localities' PE GPCI and GAF values,

respectively, experience changes of less than 1 percentage point. Table 3.5 and Table 3.6 display the changes in PE GPCI and GAF values respectively.

Table 3.4: Impact Analysis, Using Updated BLS OES Wage Data (Employee Wage Index)

Employee Wage Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	6	6.74
0.01 to 0.05	23	25.84
0.00 to 0.01	**23**	**25.84**
-0.01 to 0.00	**15**	**16.85**
-0.05 to -0.01	21	23.60
-0.10 to -0.05	1	1.12
< -0.10	0	0.00

Percentile	Employee Wage Difference
Mean	0.006
Abs. Mean	0.018
Min	-0.064
P10	-0.017
P25	-0.010
P50 (Median)	**0.002**
P75	0.016
P90	0.047
Max	0.094

Table 3.5: Impact Analysis, Using Updated BLS OES Wage Data (PE GPCI)

PE GPCI Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	14	15.73
0.00 to 0.01	**38**	**42.70**
-0.01 to 0.00	**32**	**35.96**
-0.05 to -0.01	5	5.62
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	PE GPCI Difference
Mean	0.003
Abs. Mean	0.007
Min	-0.026
P10	-0.007
P25	-0.004
P50 (Median)	**0.001**
P75	0.006
P90	0.019
Max	0.038

Table 3.6: Impact Analysis, Using Updated BLS OES Wage Data (GAF)

GAF Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	6	6.74
0.00 to 0.01	**46**	**51.69**
-0.01 to 0.00	**36**	**40.45**
-0.05 to -0.01	1	1.12
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	GAF Difference
Mean	0.001
Abs. Mean	0.003
Min	-0.012
P10	-0.003
P25	-0.002
P50 (Median)	**0.000**
P75	0.003
P90	0.009
Max	0.018

3.1.3 PE GPCI Purchased Services Index Impacts

Comparing purchased services indices calculated using the more recent 2009-2011 BLS OES wage data against the indices calculated using the 2006-2008 Bureau BLS OES wage data, this report finds that localities' purchased services indices, PE GPCIs, and GAFs experience little change. Table 3.7 describes how the data update affects purchased services index figures for localities. The average locality experiences a change in its purchased services index of 1.0 percentage points. Further, 60.67 percent of localities experience a change in their purchased services index of less than 1 percentage point. The changes at the PE GPCI and GAF levels are even smaller. 100 percent of localities' PE GPCI and GAF values experience changes of less than 1 percentage point; Table 3.8 and Table 3.9 display the changes in PE GPCI and GAF values respectively.

Table 3.7: Impact Analysis, Updated BLS OES Wage Data (Purchased Services Index)

Purchased Services Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	25	28.09
0.00 to 0.01	**31**	**34.83**
-0.01 to 0.00	**23**	**25.84**
-0.05 to -0.01	10	11.24
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	Purchased Services Difference
Mean	0.003
Abs. Mean	0.010
Min	-0.028
P10	-0.012
P25	-0.004
P50 (Median)	**0.003**
P75	0.011
P90	0.017
Max	0.042

Table 3.8: Impact Analysis, Updated BLS OES Wage Data (PE GPCI)

PE GPCI Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	0	0.00
0.00 to 0.01	**56**	**62.92**
-0.01 to 0.00	**33**	**37.08**
-0.05 to -0.01	0	0.00
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	PE GPCI Difference
Mean	0.001
Abs. Mean	0.002
Min	-0.005
P10	-0.002
P25	-0.001
P50 (Median)	**0.001**
P75	0.002
P90	0.003
Max	0.007

Table 3.9: Impact Analysis, Updated BLS OES Wage Data (GAF)

GAF Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	0	0.00
0.00 to 0.01	**56**	**62.92**
-0.01 to 0.00	**33**	**37.08**
-0.05 to -0.01	0	0.00
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	GAF Difference
Mean	0.000
Abs. Mean	0.001
Min	-0.002
P10	-0.001
P25	0.000
P50 (Median)	**0.000**
P75	0.001
P90	0.001
Max	0.003

3.2 ACS Residential Rent Data

Acumen also examined the impact of updating the 2006-2008 ACS residential rent data used in the calculation of the PE GPCI office rent index with the more recent 2008-2010 ACS data. To estimate prevailing residential rental costs, the office rent index currently relies on 2-bedroom rental data from the 3-year 2008-2010 ACS.[27] The ACS is one of the largest nationally representative surveys of household rents in the United States. Conducted annually by the U.S. Census Bureau, the ACS samples approximately 3 million addresses per year and recent

[27] Acumen obtained a customized extract of the 2008-2010 ACS data from the U.S. Census Bureau on November 14, 2012.

response rates are above 97 percent.[28] The ACS reports rental information for residences with 0, 1, 2, 3, 4, or 5+ bedrooms at the county level; this rental information also includes utility costs.[29] For the 3-year residential rent data, ACS does not report rental rates for counties with fewer than 20,000 individuals; to impute rents for counties with fewer than 20,000 individuals, Acumen estimates the rent based on the weighted average rents of counties with more than 20,000 individuals that are located in the same MSA as the county containing less than 20,000 individuals.

Comparing office rent indices calculated using 2008-2010 ACS data against the indices calculated using the 2006-2008 ACS residential rent data, this report finds that localities' office rent indices, PE GPCIs, and GAFs experience little change. Table 3.10 describes how the data update affects office rent index figures for localities. The average locality experiences a change in its office rent index of 1.7 percentage points. Further, 43.82 percent of localities experience a change in their office rent index of less than 1 percentage point. The changes at the PE GPCI and GAF levels are even smaller. In fact, 87.64 percent and 100 percent of localities' PE GPCI and GAF values, respectively, experience changes of less than 1 percentage point; Table 3.11 and Table 3.12 display the changes in PE GPCI and GAF values respectively.

[28] ACS Response Rates are available here: http://www.census.gov/acs/www/methodology/response_rates_data/

[29] Utilities cannot be analyzed separately since some individuals' monthly rent covers the cost of utilities. Thus, the ACS data can only accurately measure gross (i.e., including utilities) rents rather than net rents. In the ACS survey, individuals report whether electricity, gas, water/sewer, and oil/coal/kerosene/wood costs (i.e., questions 11a, 11b, 11c, and 11d on the survey) charges were included in their rent and – if not – they report what their utility cost was during the past 12 months. See: http://www.census.gov/acs/www/Downloads/questionnaires/2012/Quest12.pdf.

Table 3.10: Impact Analysis, Using Updated ACS Residential Rent Data (Office Rent Index)

Office Rent Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	7	7.87
0.01 to 0.05	20	22.47
0.00 to 0.01	**18**	**20.22**
-0.01 to 0.00	**21**	**23.60**
-0.05 to -0.01	20	22.47
-0.10 to -0.05	3	3.37
< -0.10	0	0.00

Percentile	Office Rent Difference
Mean	0.003
Abs. Mean	0.017
Min	-0.079
P10	-0.022
P25	-0.011
P50 (Median)	**0.000**
P75	0.012
P90	0.039
Max	0.068

Table 3.11: Impact Analysis, Using Updated ACS Residential Rent Data (PE GPCI)

PE GPCI Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	8	8.99
0.00 to 0.01	**37**	**41.57**
-0.01 to 0.00	**41**	**46.07**
-0.05 to -0.01	3	3.37
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	PE GPCI Difference
Mean	0.001
Abs. Mean	0.004
Min	-0.017
P10	-0.005
P25	-0.002
P50 (Median)	**0.000**
P75	0.003
P90	0.008
Max	0.015

Table 3.12: Impact Analysis, Using Updated ACS Residential Rent Data (GAF)

GAF Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	0	0.00
0.00 to 0.01	**45**	**50.56**
-0.01 to 0.00	**44**	**49.44**
-0.05 to -0.01	0	0.00
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	GAF Difference
Mean	0.000
Abs. Mean	0.002
Min	-0.008
P10	-0.002
P25	-0.001
P50 (Median)	**0.000**
P75	0.001
P90	0.004
Max	0.007

3.3 Malpractice Premium Data

For the calculation of the MP GPCI, Acumen updated the 2006-2007 MP premiums with more recent 2011-2012 MP premiums. The calculation of the MP GPCI takes into account the premiums for thirty medical specialties, the specific firms with rate filings in each state, and the market shares of these firms. Because collecting malpractice premiums and insurer market shares involved collecting data from multiple sources including a variety of state agencies, Section 4 describes the process for updating the MP premium data in greater detail.

3.4 Relative Value Unit (RVU) Data

For the calculation of the PW GPCI, PE GPCI, and MP GPCI, Acumen updated the 2009 RVUs used to weight county values with the more recent 2011 RVUs.[30] The 2011 RVUs list the total PW RVUs, PE RVUs, and MP RVUs for each county. Using these updated weights allows CMS to rely on a more current data source.

Comparing GAF values calculated using the 2009 RVUs against GAF values calculated using the updated 2011 RVUs, this report finds that localities' GAF values experience little change. Table 3.13 below shows that 100 percent of localities' GAF values experience changes of less than 1 percentage point. Additionally, the average locality experiences a change in its GAF value of 0.1 percentage points. The MP GPCI experienced the largest changes in values relative to the PW GPCI and PE GPCI; the MP GPCI, however, still experiences relatively little change. Specifically, the average locality experiences a change in its MP GPCI of 1.5 percentage points, and 46.07 percent of localities' MP GPCI values experience changes of less

[30] Acumen received the 2011 RVUs from CMS on February 20, 2013.

than 1 percentage point. Only 2.25 percent of localities experience changes of greater than 0.05 percentage points in MP GPCI values.

Table 3.13: Impact Analysis, Using Updated RVU Data (GAF)

GAF Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	0	0.00
0.00 to 0.01	**12**	**13.48**
-0.01 to 0.00	**77**	**86.52**
-0.05 to -0.01	0	0.00
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	GAF Difference
Mean	-0.001
Abs. Mean	0.001
Min	-0.003
P10	-0.002
P25	-0.001
P50 (Median)	**-0.001**
P75	0.000
P90	0.000
Max	0.002

3.5 MEI Cost Share Weights

To determine the relative contribution of each type of physician practice expense, the GPCI methodology relies on MEI base year weights. The MEI weights estimate the share of physician expenses broken down into the PW, four PE components, and MP insurance categories for the average American self-employed physician. For the CY 2014 GPCI update, Acumen updated the 2006-based MEI cost share weights currently being used for the Revisions to the Sixth Update with a reclassification of the 2006-based MEI cost share weights. CMS calculates the MEI cost shares using data from the American Medical Association (AMA) Physician Practice Information Survey (PPIS). This data contains practice cost information collected from self-employed physicians and selected self-employed non-medical physician specialties.[31] Table 3.14 below compares the cost share weights used to calculate the CY 2014 GPCIs, which are based on the reclassified 2006-based MEI cost share weights, against the cost share weights currently used to calculate the CY 2013 GPCIs, which are based on the 2006 MEI cost share weights.

[31] 75 FR 40,040.

Table 3.14: Reclassified 2006-Based MEI Cost Share Weights for CY 2014 GPCIs

Expense Category	CY 2013 Cost Share Weights (%)	CY 2014 Cost Share Weights (%)
Physician Work	48.266	50.866
Practice Expense	47.439	44.839
Employee Compensation	*19.153*	*16.553*
Purchased Services	*8.095*	*8.095*
Office Rent	*10.223*	*10.223*
Equipment, Supplies, and Other	*9.968*	*9.968*
Malpractice Insurance	4.295	4.295
Total	**100.000**	**100.000**

Comparing GAF values calculated using the reclassified 2006-based MEI cost share weights against GAF values calculated using the 2006-based MEI cost share weights used in the Revisions to the Sixth Update, this report finds that localities' GAF values experience little change. Table 3.15below shows that 100 percent of localities' GAF values experience changes of less than 1 percentage point. Additionally, the average locality experiences a change in its GAF value of 0.2 percentage points

Table 3.15: Impact Analysis, Using Updated MEI Cost Share Weights (GAF)

GAF Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	0	0.00
0.00 to 0.01	**42**	**47.19**
-0.01 to 0.00	**47**	**52.81**
-0.05 to -0.01	0	0.00
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	GAF Difference
Mean	0.000
Abs. Mean	0.002
Min	-0.009
P10	-0.004
P25	-0.002
P50 (Median)	**0.000**
P75	0.002
P90	0.003
Max	0.009

3.6 CMS Labor-Related Classification

In addition to the BLS OES wage data, calculation of the PE GPCI purchased services index utilizes the CMS labor-related classification to identify whether an industry is classified as labor-related as determined by CMS. For the CY 2014 GPCI update, Acumen used the same labor-related shares received from OACT for the revisions to the sixth update of the GPCIs to differentiate between capital expenses and labor costs, as these are the most recent classifications available. CMS generally does not use geographic adjustments for goods-related products because most tangible, non-labor related products can be sold on a nation-wide market. As a

result, the current GPCI methodology only adjusts physicians' purchased service costs for regional variation in labor costs. The CMS labor-related classification system defines a cost category as labor-related if the cost category is defined as being both labor intensive and its costs vary with, or are influenced by, the local labor market. For example, the labor-related share (LRS) CMS calculates for legal services is 67 percent. By using these LRS assumptions from CMS, the GPCI methodology is consistent with CMS's labor-related classification methodology used in other provider settings.[32]

[32] The LRS CMS uses for legal services is based on the results of a professional services survey for hospital facilities.

4 UPDATING THE MP GPCI

The MP GPCI is designed to adjust for geographic differences in professional liability or malpractice insurance premiums. For the Seventh Update, this section describes updating the 2006-2007 MP premiums currently used to calculate the MP GPCI with more recent 2011-2012 MP premiums. Determining a locality's typical malpractice premium level requires answering the following four questions:

- What features define the typical malpractice coverage that physicians purchase?
- Which insurance companies have the largest market share in each state?
- What premiums do these insurers charge for the typical malpractice coverage?
- Do states mandate any supplementary coverage?

Section 4.1 describes how the Seventh Update answers each question as part of the malpractice premium data collection process. Section 4.2 details how the malpractice premiums dataset is constructed.

Once the malpractice premium data are collected and standardized, one can calculate each locality's MP GPCI value. The remainder of this section provides an overview of this process. In certain cases, malpractice premium data are not available or are only available for earlier time periods. Section 4.3 describes how the Seventh Update addresses these issues. Finally, Section 4.4 presents the impact of this update on the MP GPCI.

4.1 Malpractice Premium Data Collection

As part of the Seventh Update, Acumen collected malpractice data from state departments of insurance, National Association of Insurance Commissioners (NAIC), the Medical Liability Monitor (MLM), and other sources. This section describes the major steps to collect data from these sources. These steps include: (i) defining a standard for malpractice policies, (ii) identifying the medical malpractice underwriters with the largest market shares, (iii) collecting the malpractice premium data, and (iv) collecting additional information on patient compensation fund (PCF) surcharges. Each of the following four subsections describes these steps in more detail.

4.1.1 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 physicians 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 physicians 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 physician for the policy amount in effect at the time of the event in question, even if the policy is expired.
- **1 million/3 million liability (coverage) limits:** Acumen chose one million and three million liability limits because they are the most commonly used liability limits for 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.

The MP GPCI calculation includes policies that meet the above criteria.

4.1.2 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[33], 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 Seventh 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 data with group-level 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 Virgin Islands. The third and sixth columns of Table 4.1 show the market share data source by state/territory.

Table 4.1: Source of Market Share Data and Most Recent Data Collected by State[34]

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

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

[34] 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
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
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

4.1.3 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.[35] Acumen relied on the Perr and Knight database rate 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.[36]

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.[37] 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 4.1 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.

[35] See https://www.ratefilings.com
[36] The Perr and Knight database does not provide rate filings for the four U.S. territories.
[37] We were unable to collect rate filings from American Samoa, Guam and Virgin Islands.

4.1.4 Step 4: Collecting Patient Compensation Fund Surcharges

In the fourth step, Acumen collected PCF surcharges, which represent an additional cost to physicians and surgeons in some states. PCFs are state funds that operate like an excess-layer of insurance. If a judgment exceeds the physician's primary policy limit, the PCF pays the amount above the limit (or the amount between the limit and another statutorily-prescribed amount). PCFs are funded by surcharges (paid directly to the PCF) that physicians and hospitals pay in addition to their primary policy premiums. These arrangements give primary insurers, physicians, and hospitals an added level of coverage in the event of large judgments. Eight states have PCFs that charge physicians 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 4.2 summarizes this information for all active PCFs. Three of the eight PCF programs are mandatory. All states with PCFs, whether mandatory or not, require participating physicians 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. 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. Physicians 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 4.2: 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
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

4.2 Constructing the Malpractice Premium Data Set

To structure the rate filing information into a dataset for use in developing the malpractice GPCIs, 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 physician 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 physicians 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.

Table 4.3 describes the 30 specialties used to calculate the MP GPCI. These specialties were selected because premium data was available for at least 50 of the 52 states and/or territories from which data was collected.[38] Since filings contained premium rates for different surgical classifications within the same specialty, our team identified a preferred and alternative surgical classification for each specialty to ensure uniformity across companies. Specialty premiums are classified as major surgery (MAJ), minor surgery (MIN), non-surgery (NS), or unspecified (UN). To select the preferred surgical classification, Acumen identified the most common classification for each specialty across states. Because rates were not always available for the preferred classification, our team analyzed average premiums at the national level to select an alternate classification, choosing the classification with rates most similar to the preferred classification. For example, rates for the minor surgery classification of the gastroenterology specialty were most commonly available across states, but these rates were unavailable in Alaska. On average, the unspecified surgical classification was associated with rates most similar to minor surgery for the gastroenterology specialty. Thus, our team used reported rates for the unspecified surgical classification in Alaska to estimate gastroenterology premiums. In cases where rates were unavailable for both the preferred and alternative surgical classification, our team imputed premiums as described in Section 4.3.

[38] The Sixth Update required that a physician specialty have data in 47 states and/or territories to be included in the MP GPCI. There were 25 specialties that met that threshold. For the Seventh Update, more complete data allowed us to raise the threshold for data completeness to 50 states and/or territories and include a larger number of specialties. Of the 30 specialties included in the Seventh Update, 22 were included in the Sixth Update and 8 newly met the state threshold.

Table 4.3: Malpractice Insurance Specialties and Surgery Classifications

CMS Specialty Code	Specialty Name	Preferred Surgery Class	Alternate Surgery Class
2	General Surgery	MAJ	N/A[39]
3	Allergy/Immunology	UN	NS
4	Otolaryngology	MAJ	UN
5	Anesthesiology	UN	MAJ
6	Cardiology	MIN	UN
7	Dermatology	MIN	UN
8	Family practice	NS	MIN
10	Gastroenterology	MIN	UN
11	Internal medicine	UN	NS
13	Neurology	NS	UN
14	Neurosurgery	MAJ	MIN
16	Obstetrics/gynecology	MAJ	UN
18	Ophthalmology	MAJ	UN
20	Orthopedic surgery	MAJ	MIN
22	Pathology	UN	NS
24	Plastic and reconstructive surgery	MAJ	MIN
25	Physical medicine and rehabilitation	UN	NS
26	Psychiatry	UN	NS
28	Colorectal surgery	MAJ	MIN
29	Pulmonary disease	NS	MIN
30	Diagnostic radiology	UN	MIN
33	Thoracic surgery	MAJ	NS
34	Urology	MAJ	UN
36	Nuclear medicine	UN	NS
37	Pediatric medicine	MIN	NS
40	Hand surgery	MAJ	UN
77	Vascular surgery	MAJ	MIN
92	Radiation oncology	UN	MIN
93	Emergency medicine	UN	NS
97	Physician assistant	UN	NS

[39] No alternate surgery class was specified for General Surgery.

Because many companies have different rates within states, Acumen also developed a territory crosswalk. The crosswalk assigns each territory's malpractice rates to specific counties. Acumen also preserved the original territory code terminology specific to individual rate filings to allow easy crosschecking of collected rate filings.

4.3 Adjustments for Missing Data

The steps outlined in Section 2.3.3 describe the methodology for calculating the malpractice insurance GPCI when premium data are complete. Missing premium data require alternative strategies. Specifically, Acumen classified missing data into three types and developed an alternative methodology to address each: (i) premium data missing in the base year or that became effective mid-year, (ii) premium data missing rates for specific specialties, (iii) no premium data available (i.e., American Samoa, Guam, and Virgin Islands).

4.3.1 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).[40] 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.

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

In a few cases, the first observed filing was after July 1, 2011. In these cases, we used existing filings to extrapolate rates effective as of July 1, 2011. If we did not have two filings (for a linear extrapolation), we used rate changes over time from the Medical Liability Monitor data for the extrapolation. These adjustments are made at the county-insurer-specialty level (P_{SICY}).

4.3.2 Case 2: Missing Premium Data for a Specialty

Our team extracted premium information for all physician and surgeon and ancillary specialties reported in the rate filings. Some filings reported rates for a limited number of specialties. When none of the filings for a given company reported premium rates for certain specialties, failing to account for such omissions could produce an insurer price that reflects a specific mix of risk instead of geographic differences in price. Therefore, Acumen sought a method to fill in missing specialties with values that were consistent with a given rate filing (reflecting regional differences) and with the specialty costs (to ensure balance in the weighted averages).

The methodology imputed missing specialties using other premiums on the same rate filing. Our team computed the national average premium for each specialty to rank specialties by insurance risk. Risk factors were computed by renormalizing the national average premiums so that the least expensive specialty had a risk factor equal to one. Similar to the Sixth Update, neurosurgery was the most expensive specialty and allergy/immunology was the least expensive specialty at the national level. In each instance of missing premium data, Acumen computed the average of the imputed values obtained by scaling the premiums of the specialties with the lowest and highest risk factors. Because no specialty had complete coverage in every state, the specialties used to impute missing premiums varied by company.[41] [42]

4.3.3 Case 3: 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.

[41] Please refer to O'Brien-Strain et al., March 2010 for additional details.

[42] Since our team was only able to collect premiums for ancillary specialties in Rhode Island and Connecticut, we supplemented data for these states with premiums for internal medicine, general surgery, and OB/GYN from the Medical Liability Monitor before imputing specialty premiums.

Since neither the Medical Liability Monitor nor Perr and Knight collect data from the U.S. territories, the methodology assigned MP GPCI values to these territories based on the values calculated from other localities. Acumen assigned Hawaii's values to American Samoa and Guam since American Samoa and Guam are part of the same locality as Hawaii. Since there is no such overlap for the Virgin Islands, Acumen assigned the value of 1.00, as in previous updates. Table 4.4 summarizes the strategies for dealing with missing premium data for the territories.

Table 4.4: Treatment of U.S. States and Territories without Rate Filings

Location	Treatment
Guam, American Samoa & Other Pacific Islands	No values calculated. Assigned Hawaii values.
Virgin Islands	No values calculated. Assigned value of 1.0

4.4 Impact of MP GPCI Update

Comparing the MP GPCI calculated using the updated malpractice premium data against the indices calculated using the malpractice premium data from the Sixth Update, this report finds that although localities' MP GPCI values experience large impacts, localities' GAF values experience little change. Table 4.5 shows how the data update affects MP GPCI figures for localities. The average locality experiences a change in its MP GPCI of 14.6 percentage points. Further, over 65 percent of localities experience a change in their MP GPCI of greater than 5 percentage points.[43] Table 4.6 displays the smaller changes in the GAF values. The average locality experiences a change in its GAF of 0.6 percentage points, and 78.6 percent of GAF values experience changes of less than 1 percentage point.

[43] Though large, these impacts are not unprecedented. Between the Fifth and Sixth Updates, 73.03% of localities experienced a change in their MP GPCI of greater than 5 percentage points.

Table 4.5: Impact Analysis, Using Updated Malpractice Data (MP GPCI)

MP GPCI Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	21	23.60%
0.05 to 0.10	10	11.24%
0.01 to 0.05	15	16.85%
0.00 to 0.01	**4**	**4.49%**
-0.01 to 0.00	**2**	**2.25%**
-0.05 to -0.01	10	11.24%
-0.10 to -0.05	9	10.11%
< -0.10	18	20.22%

Percentile	MP GPCI Difference
Mean	0.025
Abs. Mean	0.146
Min	-0.464
P10	-0.234
P25	-0.064
P50 (Median)	**0.014**
P75	0.091
P90	0.241
Max	0.795

Table 4.6: Impact Analysis, Using Updated Malpractice Data (GAF)

GAF Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00%
0.05 to 0.10	0	0.00%
0.01 to 0.05	10	11.24%
0.00 to 0.01	**40**	**44.94%**
-0.01 to 0.00	**30**	**33.71%**
-0.05 to -0.01	9	10.11%
-0.10 to -0.05	0	0.0%
< -0.10	0	0.0%

Percentile	GAF Difference
Mean	0.001
Abs. Mean	0.006
Min	-0.020
P10	-0.010
P25	-0.003
P50 (Median)	**0.001**
P75	0.004
P90	0.010
Max	0.034

5 CALCULATING THE VIRGIN ISLANDS LOCALITY GPCIS WITH TERRITORY-LEVEL DATA

As discussed in Section 2, calculating the PW GPCI requires county-level wage data from the BLS OES; similarly, calculating the PE GPCI requires county-level wage data from the BLS OES in addition to county-level wage data from the ACS. Where data for a specific county is not available, data from a similar county within the same payment locality is assigned to the county without data. Calculating the MP GPCI, on the other hand, only requires state/territory-level malpractice insurance premium data.

The U.S. Virgin Islands are a group of islands in the Caribbean that are a territory of the U.S. The Virgin Islands have county-level equivalents identified as districts. Specifically, the Virgin Islands are divided into three districts: Saint Croix, Saint Thomas, and Saint John. These districts are, in turn, subdivided into 20 sub-districts. Although the Virgin Islands are divided into these county equivalents, county-level data for the Virgin Islands are not represented in the BLS OES wage data. Additionally, the ACS is not conducted in the Virgin Islands. Further, malpractice insurance premium data are not available for the Virgin Islands. Given the absence of county-level wage data and rent data, as well as sufficient malpractice premium data by specialty type, CMS has historically set the PW GPCI, PE GPCI, and MP GPCI values for the Virgin Islands payment locality at 1.0.

Although county-level wage data are not available, BLS OES data do include data for the Virgin Islands at the territory level. This section explores using these available wage data from the Virgin Islands to more accurately reflect the geographic cost differences for the Virgin Islands payment locality as compared to other PFS localities. Specifically, Section 5.1 discusses the current data and methodology used for calculating GPCI values for the Virgin Islands. Section 5.2 presents the methodology and explores the impacts of using aggregate territory-level BLS OES wage data to calculate GPCI values for the Virgin Islands.

5.1 Current Data and Methodology Used for Calculating GPCIs for the Virgin Islands

In the current methodology, CMS defines PW GPCI values based on regional variation in wages across a set of proxy occupations. In particular, the current methodology requires county-level median hourly earnings for a set of proxy occupations and relies on wage data from the Bureau of Labor Statistics (BLS) Occupational Employment Statistics (OES). The Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands, however, do not have county-level data represented in the BLS OES wage data. Because the Pacific island territories are part of the Hawaii/Guam locality, these territories are treated as missing and are assigned the Hawaii locality value. The Virgin Islands, however, are a separate locality, so the same solution does not work. Given the absence of data, the Virgin Islands locality is assigned a value of 1.0.

In the current methodology, CMS similarly defines PE GPCI values based on regional variation in the earnings of office staff, the cost of contracted services, and the cost of office space. Specifically, the PE GPCI is comprised of four component indices (i.e., the employee wage; purchased services; office rent; and equipment, supplies, and other indices). To calculate the employee wage and purchased services indices, the current methodology requires county-level median hourly earnings of office staff and contracted services. To calculate the office rent index, the current methodology relies on county-level median rents. CMS assumes that the capital good expenses measured by the equipment, supplies, and other index are purchased in a national market and does not adjust for regional variation, assigning every locality an equipment, supplies, and other index value of 1.0. CMS relies on wage data from the BLS OES for the county-level median hourly earnings and rent data from the American Community Survey (ACS) for the county-level median rents. Similar to the BLS OES wage data, county-level data are not represented in the ACS rental data for the Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands. As with the PW GPCI, the Pacific island territories are treated as missing and are ultimately assigned the Hawaii locality value given the absence of county-level data. The Virgin Islands are assigned a value of 1.0.

MP GPCI values are similarly defined by CMS based on regional variation in the cost of professional liability insurance. Specifically, the current methodology requires malpractice insurance premium data for common physician specialties in each State and territory. For the Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands, it was not possible to obtain malpractice premium data. Thus for the Pacific island territories, Hawaii's malpractice premium rates and MP GPCI value are used. Again, the Virgin Islands are assigned a value of 1.0 because the Virgin Islands are a separate locality.

5.2 Calculating the Virgin Islands Locality GPCIs with Aggregate Territory-Level BLS OES Data

Although county-level data for the Virgin Islands are not represented in the BLS OES wage data, aggregate territory-level BLS OES wage data are available. To calculate the PW GPCI and PE GPCI for the Virgin Islands Locality using 2009-2011 aggregate territory-level BLS OES wage data instead of assigning the locality PW GPCI and PE GPCI values of 1.0, Acumen assigned each county in the Virgin Islands the same aggregate territory-level wage values. With these "county-level" data in hand, the current methodology was followed, and PW GPCI and PE GPCI were re-calculated. As mentioned previously in this section, the ACS is not conducted in the Virgin Islands. Therefore, county-level median rent data remain missing, and the office rent index component of the PE GPCI is assigned a value of 1.0. Similarly, as MP premiums were not available from the Virgin Islands, the Virgin Islands were assigned an MP GPCI value of 1.0.

Implementing aggregate territory-level BLS OES wage data for the Virgin Islands locality results in lower PW GPCI, PE GPCI, and GAF values for the Virgin Islands locality. Comparing Sixth Update PW GPCIs calculated using 2009-2011 aggregate territory-level BLS OES wage data against the Sixth Update indices calculated by assigning the locality PW GPCI value of 1.0, this report finds that the Virgin Islands locality experiences a change in its PW GPCI of -2.3 percent. Similarly, comparing Sixth Update PE GPCIs calculated using 2009-2011 aggregate territory-level BLS OES wage data against the Sixth Update indices calculated by assigning the locality PE GPCI value of 1.0, this report finds that the Virgin Islands locality experiences a change in its PE GPCI of -4.4 percent. In sum, the Virgin Islands locality experiences a change in its GAF of -3.1 percent.

Table 5.1: Sixth Update Impact Analysis, Using Territory-Level Virgin Islands Data

	Revisions to the 6th Update Virgin Islands GPCI	Virgin Islands GPCI Using Territory-Level Virgin Islands Data	Percent Change
PW GPCI	1	0.977	-2.3%
PE GPCI	1	0.956	-4.4%
MP GPCI	1	1	0.0%
GAF	1	0.969	-3.1%

To further assess the impact of implementing aggregate territory-level BLS OES wage data for the Virgin Islands, Acumen compared the Seventh Update Virgin Islands locality GPCIs and GAF with and without implementing aggregate territory-level BLS OES wage data for the Virgin Islands. Specifically, Acumen implemented the modifications for the Seventh Update GPCI discussed in Section 3 and Section 4, and compared the Virgin Islands locality GPCIs and GAF with and without implementing aggregate territory-level BLS OES wage data for the Virgin Islands. Comparing Seventh Update PW GPCIs calculated using 2009-2011 aggregate territory-level BLS OES wage data against the Seventh Update indices calculated by assigning the locality PW GPCI value of 1.0, this report finds that the Virgin Islands locality experiences a change in its PW GPCI of -2.3 percent. All other localities experience no change in their PW GPCIs. Similarly, comparing Seventh Update PE GPCIs calculated using 2009-2011 aggregate territory-level BLS OES wage data against the Seventh Update indices calculated by assigning the locality PE GPCI value of 1.0, this report finds that the Virgin Islands locality experiences a change in its PE GPCI of -4.5 percent. All other localities experience no change in their PE GPCIs. In sum, the Virgin Islands locality experiences a change in its GAF of -3.2 percent. Again, all other localities experience no change in their GAFs.

Table 5.2: Seventh Update Impact Analysis, Using Territory-Level Virgin Islands Data[44]

	7th Update Virgin Islands GPCI	Virgin Islands GPCI Using Territory-Level Virgin Islands Data	Percent Change
PW GPCI	0.998	0.975	-2.30%
PE GPCI	1.005	0.960	-4.48%
MP GPCI	0.996	0.996	0.00%
GAF	1.001	0.969	-3.20%

[44] All GPCIs and GAF values in this table reflect CMS OACT budget neutrality adjustment.

6 SUMMARY OF FINDINGS: IMPACT OF INCORPORATING ALL UPDATES

Recall that the six modifications proposed for the Seventh GPCI Update for CY 2014 include:

(1) Updating the currently used 2006-2008 Bureau BLS OES wage data with the more recent 2009-2011 BLS OES wage data;

(2) Updating the 2006-2008 ACS residential rent data with the more recent 2008-2010 ACS data;

(3) Updating the 2006-2007 MP premiums with more recent 2011-2012 MP premiums;

(4) Updating the 2009 RVUs with more recent 2011 RVUs;

(5) Updating the 2006-based MEI cost shares weights with a reclassification of the 2006-based MEI cost share weights; and

(6) Calculating the Virgin Islands Locality GPCIs with aggregate territory-level BLS OES data

Using these updates will allow CMS to rely on more current data sources to adjust Medicare physician payments based on geographic differences in physician wages, practice expenses, and the price of malpractice insurance. This section describes the combined impact of the relevant updates on each GPCI and on the GAF and presents the Seventh Update GPCI and GAF values by locality. Sections 6.1, 6.2, and 6.3 discuss the PW GPCI, PE GPCI, and MP GPCI impacts, respectively. Section 6.4 addresses GAF impacts. Finally, Section 6.5 contains the Seventh Update values by locality. Recall that the empirical analyses in this report, however, detail only the calculations of GPCIs *before final adjustments* for budget neutralization and statutorily mandated floors. PW GPCI impacts, however, reflect the legislative adjustment requiring the PW GPCI to represent one-quarter of the relative cost differences compared to the national average.

6.1 Overall PW GPCI Impacts

Only modifications (1), (4), and (6) affect PW GPCI values. Comparing PW GPCIs calculated using the more recent 2009-2011 BLS OES wage data and 2011 RVUs, and with the addition of aggregate territory-level BLS OES data for the Virgin Islands against the indices calculated using the 2006-2008 BLS OES wage data and 2009 RVUs, this report finds that localities' PW GPCIs experience little change. Table 6.1 shows how the three updates affect PW GPCI figures for localities. The average locality experiences a change in its PW GPCI of 0.6 percentage points. Further, 80.9 percent of localities experience a change in their PW GPCI of less than 1 percentage point.

Table 6.1: Impact Analysis, Using Updated BLS OES Wage Data, Updated RVU Data, and Aggregate Territory-Level BLS OES Data for Virgin Islands (PW GPCI)

PW GPCI Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	11	12.36
0.00 to 0.01	**40**	**44.94**
-0.01 to 0.00	**32**	**35.96**
-0.05 to -0.01	6	6.74
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	PW GPCI Difference
Mean	0.001
Abs. Mean	0.006
Min	-0.024
P10	-0.009
P25	-0.003
P50 (Median)	**0.002**
P75	0.006
P90	0.010
Max	0.017

6.2 Overall PE GPCI Impacts

At the PE GPCI level, modifications (1), (2), (4), (5), and (6) are the relevant updates. Comparing PE GPCIs calculated using the more recent 2009-2011 BLS OES wage data, 2008-2010 ACS data, 2011 RVUs, reclassified 2006-based MEI cost share weights, and with the addition of aggregate territory-level BLS OES data for the Virgin Islands against the indices calculated using the 2006-2008 BLS OES wage data, 2006-2008 ACS data, 2009 RVUs, and 2006-based MEI cost share weights, this report finds that localities' PE GPCIs also experience little change. Table 6.2 shows how this data update affects PE GPCI figures for localities. The average locality experiences a change in its PE GPCI of 0.9 percentage points. Further, 66.29 percent of localities experience a change in their PE GPCI of less than 1 percentage point.

Table 6.2: Impact Analysis, Using Updated BLS OES Wage Data, Updated ACS Data, Updated RVU Data, Updated MEI Cost Share Weights, and Aggregate Territory-Level BLS OES Data for Virgin Island (PE GPCI)

PE GPCI Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.00
0.05 to 0.10	0	0.00
0.01 to 0.05	15	16.85
0.00 to 0.01	33	37.08
-0.01 to 0.00	26	29.21
-0.05 to -0.01	15	16.85
-0.10 to -0.05	0	0.00
< -0.10	0	0.00

Percentile	PE GPCI Difference
Mean	0.001
Abs. Mean	0.009
Min	-0.032
P10	-0.013
P25	-0.005
P50 (Median)	0.001
P75	0.007
P90	0.014
Max	0.036

6.3 Overall MP GPCI Impacts

At the MP GPCI level, modifications (3) and (4) are the relevant updates. Comparing MP GPCIs calculated using the 2011-2012 MP premiums and 2011 RVUs against the indices calculated using the 2006-2007 MP premiums and 2009 RVUs, this report finds that localities' MP GPCIs experience large changes. Table 6.3 shows how this data update affects MP GPCI figures for localities. The average locality experiences a change in its MP GPCI of 14.6 percentage points. Further, over 65 percent of localities experience a change in their MP GPCI of greater than 5 percentage points.

Table 6.3: Impact Analysis, Using Updated MP Premium Data and Updated RVU Data, (MP GPCI)

MP GPCI Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	21	23.60%
0.05 to 0.10	10	11.24%
0.01 to 0.05	15	16.85%
0.00 to 0.01	**4**	**4.49%**
-0.01 to 0.00	**2**	**2.25%**
-0.05 to -0.01	10	11.24%
-0.10 to -0.05	9	10.11%
< -0.10	18	20.22%

Percentile	MP GPCI Difference
Mean	0.025
Abs. Mean	0.146
Min	-0.464
P10	-0.234
P25	-0.064
P50 (Median)	**0.014**
P75	0.091
P90	0.241
Max	0.795

6.4 Overall GAF Impacts

The six proposed updates considered together have a fairly small effect on locality GAF values. As Table 6.4 below shows, the typical locality experiences a change in the value of its GAF of 1.0 percentage points. For 59.55 percent of localities, GAF values do not change by more than 1.0 percentage point. Additionally, no localities experience a change in GAF value of greater than five percentage points.

Table 6.4: Combined Impact Analysis, All GPCI Updates (GAF)

GAF Difference	# of Localities	% of Localities
All	**89**	**100%**
> 0.10	0	0.0%
0.05 to 0.10	0	0.0%
0.01 to 0.05	22	24.72%
0.00 to 0.01	**29**	**32.58%**
-0.01 to 0.00	**24**	**26.97%**
-0.05 to -0.01	14	15.73%
-0.10 to -0.05	0	0.0%
< -0.10	0	0.0%

Percentile	GAF Difference
Mean	0.002
Abs. Mean	0.010
Min	-0.046
P10	-0.015
P25	-0.005
P50 (Median)	**0.003**
P75	0.010
P90	0.019
Max	0.031

6.5 CY 2014 (Seventh) Update GAF and GPCI Values by Locality

Table 6.5 lists the GAF, PW GPCI, PE GPCI, and MP GPCI values for each locality incorporating all updates to the data under the Seventh Update described in this report. Recall that these numbers do not include final adjustments and do not account for any transition from the Sixth to Seventh updates.

Table 6.5: Seventh Update GAF and GPCI Values, by Locality

Medicare Locality	Diff. in GAF	Seventh Update				Revisions to the Sixth Update			
		GAF	PW GPCI	PE GPCI	MP GPCI	GAF	PW GPCI	PE GPCI	MP GPCI
ALABAMA	0.013	0.921	0.983	0.881	0.614	0.908	0.978	0.876	0.470
ALASKA	0.026	1.049	1.032	1.101	0.715	1.023	1.015	1.065	0.655
ANAHEIM/SANTA ANA, CA	-0.001	1.109	1.038	1.210	0.912	1.110	1.046	1.215	0.670
ARIZONA	0.009	0.987	0.988	0.995	0.880	0.978	0.979	0.976	1.005
ARKANSAS	0.006	0.902	0.969	0.862	0.536	0.896	0.969	0.863	0.446
ATLANTA, GA	-0.008	0.998	1.001	1.000	0.946	1.006	1.004	1.013	0.940
AUSTIN, TX	0.012	0.997	1.001	1.014	0.769	0.985	0.986	1.007	0.744
BALTIMORE/SURR. CNTYS, MD	-0.005	1.062	1.026	1.091	1.186	1.067	1.029	1.095	1.195
BEAUMONT, TX	0.013	0.946	0.989	0.897	0.959	0.933	0.973	0.895	0.914
BRAZORIA, TX	0.007	1.002	1.021	0.985	0.959	0.995	1.011	0.985	0.914

Medicare Locality	Diff. in GAF	Seventh Update				Revisions to the Sixth Update			
		GAF	PW GPCI	PE GPCI	MP GPCI	GAF	PW GPCI	PE GPCI	MP GPCI
CHICAGO, IL	-0.017	1.067	1.018	1.031	2.027	1.084	1.033	1.049	2.056
COLORADO	0.014	1.008	1.002	1.005	1.094	0.994	0.998	1.002	0.863
CONNECTICUT	0.002	1.075	1.027	1.115	1.237	1.073	1.026	1.107	1.223
DALLAS, TX	-0.003	1.002	1.020	1.003	0.775	1.005	1.011	1.015	0.826
DC + MD/VA SUBURBS	0.005	1.128	1.053	1.199	1.285	1.123	1.051	1.196	1.119
DELAWARE	0.011	1.023	1.015	1.025	1.087	1.012	1.014	1.042	0.666
DETROIT, MI	-0.047	1.009	1.000	0.988	1.334	1.056	1.024	1.021	1.797
EAST ST. LOUIS, IL	-0.003	1.000	0.987	0.929	1.892	1.003	0.989	0.934	1.916
FORT LAUDERDALE, FL	-0.027	1.036	0.987	1.025	1.721	1.063	0.996	1.049	1.963
FORT WORTH, TX	0.007	0.989	1.007	0.989	0.775	0.982	1.001	0.977	0.818
GALVESTON, TX	0.010	1.012	1.021	1.008	0.959	1.002	1.011	0.994	0.975
HAWAII	-0.004	1.056	1.005	1.156	0.621	1.060	1.003	1.152	0.693
HOUSTON, TX	0.008	1.009	1.021	1.001	0.959	1.001	1.011	0.999	0.914
IDAHO	-0.013	0.911	0.960	0.893	0.510	0.924	0.983	0.893	0.597
INDIANA	0.001	0.933	0.974	0.916	0.620	0.932	0.971	0.921	0.607
IOWA	0.010	0.913	0.967	0.891	0.495	0.903	0.960	0.885	0.452
KANSAS	-0.006	0.923	0.966	0.899	0.664	0.929	0.965	0.892	0.947
KENTUCKY	0.005	0.919	0.976	0.867	0.798	0.914	0.973	0.869	0.745
LOS ANGELES, CA	0.016	1.091	1.050	1.155	0.912	1.075	1.039	1.152	0.636
MANHATTAN, NY	0.016	1.134	1.055	1.162	1.770	1.118	1.065	1.159	1.258
MARIN/NAPA/SOLANO, CA	0.017	1.135	1.061	1.279	0.498	1.118	1.053	1.245	0.452
METROPOLITAN BOSTON	-0.004	1.064	1.019	1.157	0.620	1.068	1.016	1.146	0.783
METROPOLITAN KANSAS CITY, MO	-0.008	0.970	0.986	0.947	1.029	0.978	0.984	0.951	1.221
METROPOLITAN PHILADELPHIA, PA	-0.001	1.060	1.023	1.081	1.269	1.061	1.017	1.056	1.609
METROPOLITAN ST. LOUIS, MO	-0.007	0.973	0.989	0.950	1.029	0.980	0.991	0.962	1.054
MIAMI, FL	-0.027	1.073	0.993	1.027	2.499	1.100	0.998	1.051	2.787
MINNESOTA	0.003	0.976	0.997	1.015	0.320	0.973	0.999	1.010	0.280
MISSISSIPPI	-0.008	0.900	0.961	0.859	0.616	0.908	0.964	0.864	0.754
MONTANA	0.021	0.941	0.958	0.894	1.231	0.920	0.948	0.877	1.092
NEBRASKA	0.004	0.913	0.968	0.903	0.364	0.909	0.969	0.902	0.318
NEVADA	-0.012	1.023	1.007	1.045	0.986	1.035	0.998	1.056	1.220
NEW HAMPSHIRE	0.009	1.019	1.002	1.052	0.876	1.010	0.993	1.042	0.852
NEW MEXICO	0.008	0.962	0.987	0.915	1.166	0.954	0.991	0.914	0.987
NEW ORLEANS, LA	0.026	1.003	0.991	0.978	1.396	0.977	0.985	0.974	0.912
NORTH CAROLINA	0.008	0.946	0.980	0.925	0.772	0.938	0.973	0.925	0.688
NORTH DAKOTA	0.007	0.911	0.967	0.882	0.556	0.904	0.968	0.875	0.511
NORTHERN NJ	-0.006	1.105	1.043	1.176	1.095	1.111	1.047	1.184	1.035
NYC SUBURBS/LONG I., NY	0.025	1.168	1.048	1.203	2.223	1.143	1.051	1.210	1.428
OAKLAND/BERKELEY, CA	-0.004	1.123	1.063	1.254	0.459	1.127	1.060	1.251	0.511
OHIO	-0.020	0.954	0.987	0.914	0.998	0.974	1.000	0.925	1.228
OKLAHOMA	0.017	0.915	0.962	0.868	0.848	0.898	0.957	0.854	0.727
PORTLAND, OR	0.004	1.011	1.007	1.043	0.711	1.007	1.007	1.042	0.619
POUGHKPSIE/N NYC	0.019	1.058	1.012	1.069	1.491	1.039	1.013	1.063	1.070

Medicare Locality	Diff. in GAF	Seventh Update				Revisions to the Sixth Update			
		GAF	PW GPCI	PE GPCI	MP GPCI	GAF	PW GPCI	PE GPCI	MP GPCI
SUBURBS, NY									
PUERTO RICO	0.022	0.793	0.915	0.702	0.294	0.771	0.910	0.676	0.247
QUEENS, NY	0.023	1.166	1.055	1.193	2.189	1.143	1.065	1.192	1.476
REST OF CALIFORNIA	0.003	1.035	1.029	1.078	0.661	1.032	1.027	1.082	0.542
REST OF FLORIDA	-0.015	0.984	0.982	0.955	1.320	0.999	0.985	0.966	1.538
REST OF GEORGIA	0.000	0.937	0.978	0.894	0.908	0.937	0.979	0.896	0.918
REST OF ILLINOIS	-0.003	0.956	0.976	0.905	1.258	0.959	0.978	0.907	1.323
REST OF LOUISIANA	0.032	0.946	0.979	0.882	1.210	0.914	0.969	0.875	0.737
REST OF MAINE	0.007	0.930	0.969	0.913	0.645	0.923	0.967	0.903	0.670
REST OF MARYLAND	0.000	1.021	1.017	1.031	0.975	1.021	1.014	1.033	0.977
REST OF MASSACHUSETTS	-0.006	1.021	1.019	1.061	0.620	1.027	1.016	1.060	0.783
REST OF MICHIGAN	-0.009	0.953	0.986	0.915	0.958	0.962	0.993	0.921	1.059
REST OF MISSOURI*	-0.005	0.904	0.954	0.843	0.950	0.909	0.958	0.849	1.013
REST OF NEW JERSEY	-0.001	1.071	1.027	1.119	1.095	1.072	1.023	1.124	1.035
REST OF NEW YORK	0.011	0.957	0.989	0.940	0.763	0.946	0.989	0.937	0.557
REST OF OREGON	0.009	0.965	0.989	0.962	0.711	0.956	0.983	0.960	0.619
REST OF PENNSYLVANIA	0.005	0.962	0.993	0.924	0.991	0.957	0.989	0.911	1.112
REST OF TEXAS	0.010	0.950	0.992	0.915	0.826	0.940	0.981	0.911	0.802
REST OF WASHINGTON	-0.015	0.981	0.999	1.009	0.477	0.996	0.996	1.009	0.853
RHODE ISLAND	-0.017	1.023	1.024	1.048	0.762	1.040	1.019	1.050	1.176
SAN FRANCISCO, CA	0.004	1.188	1.081	1.381	0.459	1.184	1.074	1.357	0.511
SAN MATEO, CA	-0.002	1.180	1.081	1.365	0.418	1.182	1.074	1.352	0.511
SANTA CLARA, CA	-0.003	1.173	1.090	1.341	0.418	1.176	1.080	1.334	0.511
SEATTLE (KING CNTY), WA	-0.016	1.059	1.027	1.149	0.497	1.075	1.028	1.142	0.872
SOUTH CAROLINA	0.011	0.935	0.978	0.907	0.718	0.924	0.978	0.907	0.515
SOUTH DAKOTA	0.002	0.896	0.956	0.875	0.402	0.894	0.952	0.878	0.428
SOUTHERN MAINE	-0.011	0.978	0.985	1.001	0.645	0.989	0.986	1.022	0.670
SUBURBAN CHICAGO, IL	-0.018	1.058	1.014	1.052	1.642	1.076	1.027	1.070	1.689
TENNESSEE	0.000	0.918	0.973	0.893	0.526	0.918	0.974	0.896	0.518
UTAH	0.004	0.954	0.969	0.917	1.174	0.950	0.973	0.914	1.091
VENTURA, CA	-0.002	1.088	1.033	1.174	0.837	1.090	1.036	1.190	0.599
VERMONT	0.004	0.977	0.983	0.998	0.685	0.973	0.979	1.006	0.549
VIRGIN ISLANDS	-0.032	0.968	0.977	0.955	1.000	1.000	1.000	1.000	1.000
VIRGINIA	0.005	0.979	0.993	0.978	0.828	0.974	0.995	0.975	0.724
WEST VIRGINIA	0.008	0.918	0.963	0.832	1.287	0.910	0.965	0.826	1.218
WISCONSIN	-0.003	0.952	0.987	0.950	0.569	0.955	0.989	0.958	0.542
WYOMING	0.021	0.970	0.987	0.927	1.224	0.949	0.974	0.898	1.222

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APPENDIX A: PW GPCI OCCUPATION LIST

There are over 800 occupations represented in the OES, each of which fits into a broader occupation group. Using the SOC system, these broader classifications are identified by SOC codes ending with "0000". For example, SOC code 17-0000 identifies all architecture and engineering occupations, and SOC code 17-1011 identifies architects (except landscape and naval architects), which is one of the 36 individual occupations within the broader architecture and engineering classification. Table A.1 below lists the seven occupation groups used for creating the PW GPCI; this table lists the occupation group, the SOC code(s) that comprise each group, and finally occupation title(s) corresponding to each SOC code. Of the seven occupation groups used for creating the PW GPCI, four contain only a single occupation: Education, Training, and Library; Registered Nurses; Pharmacists; and Art, Design, Entertainment, Sports, and Media. The remaining three occupation groups used to construct the PW GPCI consist of a collection of individual occupations that either cover multiple classifications or are a subset of classifications.

Table A.1: Occupations Used for PW GPCI Calculation

Occupation Group	SOC Code	Occupation Title
Architecture and Engineering	17-1011	Architects, Except Landscape and Naval
	17-1012	Landscape Architects
	17-1021	Cartographers and Photogrammetrists
	17-1022	Surveyors
	17-2011	Aerospace engineers
	17-2021	Agricultural engineers
	17-2031	Biomedical engineers
	17-2041	Chemical engineers
	17-2051	Civil engineers
	17-2061	Computer hardware engineers
	17-2071	Electrical Engineers
	17-2072	Electronics Engineers, Except Computer
	17-2081	Environmental engineers
	17-2111	Health and Safety Engineers
	17-2112	Industrial Engineers
	17-2121	Marine engineers and naval architects
	17-2131	Materials engineers
	17-2141	Mechanical engineers
	17-2151	Mining and geological engineers, including mining safety engineers
	17-2161	Nuclear engineers
	17-2171	Petroleum engineers
	17-2199	Engineers, all other
	17-3031	Surveying and mapping technicians
Computer, Mathematical, Life, and Physical Science	15-1111	Computer and Information Research Scientists
	15-1121	Computer Systems Analysts
	15-1131	Computer Programmers
	15-1132	Software Developers, Applications
	15-1133	Software Developers, Systems Software
	15-1141	Database Administrators

Occupation Group	SOC Code	Occupation Title
Computer, Mathematical, Life, and Physical Science	15-1142	Network and Computer Systems Administrators*
	15-1150	Computer Support Specialists
	15-1179	Information Security Analysts, Web Developers, and Computer Network Architects
	15-1799	Computer Occupations, All Other*
	15-2011	Actuaries
	15-2021	Mathematicians
	15-2031	Operations research analysts
	15-2041	Statisticians
	15-2091	Mathematical Technicians
	15-2099	Mathematical Science Occupations, All Other
	19-1011	Animal Scientists
	19-1012	Food Scientists and Technologists
	19-1013	Social and Plant Scientists
	19-1021	Biochemists and Biophysicists
	19-1022	Microbiologists
	19-1023	Zoologists and Wildlife Biologists
	19-1029	Biological Scientists, All Other
	19-1031	Conservation Scientists
	19-1032	Foresters
	19-1041	Epidemiologists
	19-1042	Medical Scientists, Except Epidemiologists
	19-2011	Astronomers
	19-2012	Physicists
	19-2021	Atmospheric and Space Scientists
	19-2031	Chemists
	19-2032	Materials Scientists
	19-2041	Environmental Scientists and Specialists, Including Health
	19-2042	Geoscientists, Except Hydrologists and Geographers
	19-2043	Hydrologists
	19-2099	Physical Scientists, all other
Social Science, Community and Social Service, and Legal	19-3011	Economists
	19-3022	Survey researchers
	19-3031	Clinical, Counseling, and School Psychologists
	19-3032	Industrial-Organization Psychologists
	19-3039	Psychologists, All Other
	19-3041	Sociologists
	19-3051	Urban and regional planners
	19-3091	Anthropologists and Archeologists
	19-3092	Geographers
	19-3093	Historians
	19-3094	Historians
	19-3099	Social Scientists, All Other
	19-4011	Agricultural and food science technicians
	19-4021	Biological technicians
	19-4031	Chemical technicians
	19-4041	Geological and petroleum technicians
	19-4051	Nuclear technicians
	19-4061	Social science research assistants
	19-4091	Environmental Science and Protection Technicians, Including Health
	19-4092	Forensic Science Technicians
	19-4093	Forest and Conservation Technicians

Occupation Group	SOC Code	Occupation Title
Social Science, Community and Social Service, and Legal	19-4099	Life, Physical, and Social Science Technicians, All Other
	21-1011	Substance Abuse and Behavioral Disorder Counselors
	21-1012	Educational, Guidance, School, and Vocational Counselors
	21-1013	Marriage and Family Therapists
	21-1014	Mental Health Counselors
	21-1015	Rehabilitation Counselors
	21-1019	Counselors, All Other
	21-1021	Child, Family, and School Social Workers
	21-1022	Healthcare Social Workers
	21-1023	Mental Health and Substance Abuse Social Workers
	21-1029	Social Workers, All Other
	21-1091	Health Educators
	21-1092	Probation Officers and Correctional Treatment Specialists
	21-1093	Social and Human Service Assistants
	21-2011	Clergy
	21-2021	Directors, religious activities and education
	21-2099	Religious workers, all other
	23-1011	Lawyers
	23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers
	23-1022	Arbitrators, Mediators, and Conciliators
	23-1023	Judges, Magistrate Judges, and Magistrates
	23-2011	Paralegals and legal assistants
	23-2091	Court Reporters
	23-2093	Title Examiners, Abstractors, and Searchers
	23-2099	Legal Support Workers, All Other
Education, Training, and Library	25-0000	Education, Training, and Library Occupations
Registered Nurses	29-1111	Registered Nurses
Pharmacists	29-1051	Pharmacists
Art, Design, Entertainment, Sports, and Media	27-0000	Arts, Design, Entertainment, Sports, and Media