



Research and Planning Consultants, LP

**RPC'S USUAL, CUSTOMARY, AND
REASONABLE CHARGE DATABASE FOR
PRACTITIONER CHARGES**

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Table of Contents

Introduction.....	1
Existing Sources for UCR Charges.....	2
FairHealth (FH).....	3
Context4Healthcare (C4H)	4
Medical Fees in the United States, a.k.a. the Medical Fee Book (MFB).....	6
Physician's Fee Reference (PFR)	7
RPC UCR Charge Database.....	8
Objectives	8
Data Sources	9
CMS Carrier SAF 5% Sample (Database).....	9
National Provider Identification (NPI) File	10
Dartmouth Atlas of Healthcare	10
Physician Services Component of the Consumer Price Index.....	11
RPC's Two Methods for Determining UCR Charges.....	3
Method 1	4
Method 2	4
Example Method 2 Calculation	5
CPT/HRR Coverage for Texas HRRs.....	6
RPC Percentile Values Compared to MFB Percentile Values.....	7
Data Elements	14

Attachments

Attachment 1	Glossary of Terms
Attachment 2	Map of Texas HRRs
Attachment 3	Data Tables

Introduction

The question of whether a provider's charges are reasonable arises when there is no provider contract or government regulation setting the rate for a service (e.g., out-of-network providers in health plans, personal injury cases, first-person auto claims), and when the third-party payor sets the allowed amount based on the Usual, Customary, and Reasonable ("UCR") charge method. Attachment 1 to this document is a glossary defining terms related to calculation of UCR charges.

2. Medical services by practitioners are identified by Common Procedural Terminology ("CPT") codes, which are five-digit codes maintained and copyrighted by the American Medical Association.¹ A UCR charge for a CPT code is "the amount paid for a medical service in a geographic area based on what providers in the area usually charge for the same or similar medical service."² This is the definition adopted by many states and major commercial insurers to define maximum reasonable charges for out-of-network care.
3. CPT codes are a subset of a larger coding system called Healthcare Common Procedure Coding System ("HCPCS"). HCPCS was established in 1978 to provide a standardized coding system for describing specific items and services. Initially, facilities voluntarily used HCPCS codes, but with the implementation of HIPAA in 1996, facilities reported HCPCS for transaction codes. HCPCS has its own coding guidelines and works hand in hand with CPT. HCPCS includes three levels of codes:
 - Level I codes consist of the AMA's CPT codes and is numeric.
 - Level II codes are the HCPCS alphanumeric code set and primarily include non-physician products, supplies, and procedures not included in CPT.
 - Level III codes, also called HCPCS local codes, were developed by state Medicaid agencies, Medicare contractors, and private insurers for specific programs and jurisdictions. These are still in the HCPCS reference coding

¹ <https://www.ama-assn.org/practice-management/cpt/cpt-overview-and-code-approval>

² HealthCare.gov. Glossary definition of UCR.

book. Some payors prefer that coders report the Level III codes in addition to the Level I and Level II code sets. However, these codes are not nationally recognized.

4. RPC's UCR database for practitioners only includes permanent CPT codes. It excludes temporary and trial CPT codes. CPT codes beginning with a "0" are used to describe anesthesia services. RPC maintains a separate database of anesthesia code UCR charges, that are not a part of this database.
5. Facility bills also use CPT codes to describe some of the outpatient goods and services facilities provide. Although they sometimes use the same coding system, facility charges are different from practitioner charges. This database applies only to practitioner charges.
6. A threshold percentile determines the maximum reasonable charge for a service in a medical market. Charges less than or equal to the threshold percentile value are considered reasonable; charges more than the threshold value are considered not reasonable. The industry standard for the threshold percentiles is from the 75th to the 80th percentile. RPC found many state governments and private health plans adopt the 75th or 80th charge percentile as the threshold for the maximum reasonable charge in a medical market. This means 80% or 75% of the providers in a medical market charged an amount less than or equal to this percentile value. RPC uses the 80th percentile as the threshold when we have data at the provider level from which to calculate the UCR charge.

Existing Sources for UCR Charges

7. Several organizations discussed below publish UCR charge values for different threshold percentiles. All have three major weaknesses. First, no major UCR charge database or publication uses a geographic definition based on a reasonable definition of medical markets. They either use three-digit zip codes, or geozips, defined by the U.S. Postal Service to manage mail deliveries or they use areas

defined by Medicare tied to differences in practice costs. Any correspondence to medical markets is coincidental.

8. Second, these publications are not transparent in how they arrive at their percentile values for each CPT code. Each publication uses multiple methods to calculate percentile values for services. From the available documentation a user cannot tell:

- Which method was used to calculate the value for each CPT code,
- Whether the service is actually provided in the geozip, and
- How many different providers' charges went into a calculation.

9. Third, according to their documentation, none of the existing publications require a minimum number of providers to calculate a UCR charge. They instead require a minimum number of claims. In some areas, a single provider may have a large enough market share to individually determine the UCR charge.

FairHealth (FH)

10. FairHealth is a non-profit organization created in a settlement agreement between the New York State Attorney General and United Health Care when Ingenix, a United Health subsidiary, was found to have improperly calculated UCR values to the benefit of payors.³

11. FH calculates benchmarks using the full Medicare claims data set and a database of private insurance claims covering over 150 million individuals.⁴ Practitioner CPT benchmarks (as opposed to benchmarks for facility claims) are calculated from private claims data only. FH does not disclose why it excludes Medicare

³ <https://www.fairhealthconsumer.org/#about>

⁴ FH Benchmarks flyer. June 2019.

charge data. FH calculates benchmarks at the geozip level,⁵ but some geozips are grouped together.⁶ Attachment 2 has a map of FH's Texas geozips.

12. FH uses two methods to calculate percentile values. For code/geozip combinations with a "sufficient" number of charges, FH uses its "actual" method to calculate the percentile value for a CPT code. When FH deems there are not a "sufficient" number of claims, FH uses its "derived" method at the geozip level on a "code-group" after normalizing codes on a Relative Value Unit (RVU) basis. FH provides no definition of a "code group" or listing of what codes are in each group. The resulting code group percentile value for a geozip is multiplied by the RVUs for each code to get a percentile value for each code in the group.⁷
13. FH does not disclose what is a "sufficient" number of charges to use the actual methodology rather than the derived methodology. FH does not publish whether the published percentile value for a CPT code was calculated using the actual or the derived method.
14. FH calculates all percentiles based on number of claims not based on number of providers.⁸ This means it is possible for the percentile value to be determined by one provider if that provider has a large market share. For example, if the provider with the highest charges in a market has a market share over 20 percent, that provider's charge will be the 80th percentile charge no matter how many other providers charge less. FH does not disclose if it has procedures to address this situation.

Context4Healthcare (C4H)

15. C4H has published software and data products for healthcare compliance for 29 years. It employs a cloud based "Payment Integrity Platform" which uses a

⁵ FH Benchmarks flyer. June 2019.

⁶ FairHealth Geozips. Accessed April 26, 2019.

⁷ FH Benchmarks flyer. June 2019.

⁸ Email correspondence with Tracy Guo, Sales Account Executive. November 20, 2019.

proprietary analytics engine to identify billing and coding errors and a cloud-based UCR database.⁹

16. C4H calculates UCR benchmarks using a database of insurance claims, voluntarily submitted by providers, updated semi-annually.¹⁰ Less than one percent of observations are from payor databases.¹¹ C4H does not disclose if its practitioner data includes Medicare data.
17. C4H calculates percentile values at the geozip level.¹² Sometimes C4H uses larger areas, called ZIPTiers.¹³ They do not define or provide examples of ZIPTiers. C4H does not directly calculate any percentile values. It calculates a national median charge for each code and calculates the percentile value for each geozip or ZIPTier by calculating the ratio of the geozip percentile value for a family of codes to the national percentile value for that family of codes. C4H does not disclose its definition of code families.
18. As an example, C4H calculates the UCR charge for an initial physician office visit with CPT code 99203 as follows. For whatever family of codes includes 99203, C4H calculates the median charge in a geozip or ZIPTier. C4H creates a ratio of the median charge in the geozip or ZIPTier to the national median charge for each code in the group, and then takes an average of these ratios. Finally, C4H multiplies this average ratio by the number of RVUs for 99203 and a constant to determine the UCR charge for 99203.
19. When there are fewer than 500 charges for a code nationally, the benchmark is calculated over the CPT family within the geozip instead, and it is calculated

⁹ <https://www.context4healthcare.com/about-us>

¹⁰ Context4Healthcare. Usual, Customary & Reasonable: Healthcare Fee Data. Accessed April 26, 2019.

¹¹ Context4Healthcare, Inc. Usual, Customary & Reasonable Fee Database Methodology: A White Paper. January 2010.

¹² Context4Healthcare. Usual, Customary & Reasonable: Healthcare Fee Data. Accessed April 26, 2019.

¹³ Context4Healthcare, Inc. "Usual, Customary & Reasonable Fee Database Methodology: A White Paper." January 2010.

relative to Medicare reimbursement rates.¹⁴ CH4 does not disclose the details of this calculation.

20. C4H calculates all percentile values based on number of claims and not on number of providers.¹⁵ This means it is possible for the percentile value to be determined by one provider if that provider has a large market share for a family of codes. For example, if the provider with the highest charges in a market has a market share over 20 percent, that provider's charges determine the 80th percentile charge no matter how many other providers charge less. CH4 does not disclose if it has procedures to address this situation.

Medical Fees in the United States, a.k.a. the Medical Fee Book (MFB)

21. The MFB uses data provided by Context4Healthcare (see above).¹⁶ The MFB states that the C4H database includes data from third-party payers, clearinghouses, practice management system vendors, billing services, universities, medical practices, hospitals, and the Center for Medicare and Medicaid Services (CMS). It is unclear if the CH4 data used to calculate CPT codes includes Medicare data. The difference in descriptions of the C4H data and by C4H and the MFB makes it unclear if their UCR values are based on all or some of the same data.
22. The MFB adjusts charges geographically using Medicare GPCI regions instead of geozips. The MFB calculates a national percentile value for each CPT code and multiplies the national value by a geographic adjustment factor (GAF) for each Medicare GPCI region. Medicare GPCI adjustments are an approximation of differences in the cost of providing a service.¹⁷ They are calculated using

¹⁴ Context4Healthcare, Inc. "Usual, Customary & Reasonable Fee Database Methodology: A White Paper." January 2010.

¹⁵ Telephone conversation between Brian Piper and a representative of C4H in November, 2018, as part of Eagle Air Med vs. Sentinel Air Medical Alliance, in the United States District Court, District of Utah, Central Division.

¹⁶ It is unclear if MFB is now owned by C4H or if they collaborate and share data.

¹⁷ <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/Medicare-PFS-Locality-Configuration-and-Studies>

apartment rental rates, wage indices, and malpractice insurance rates. These factors do not correlate directly with what providers charge, which is more influenced by factors such as market concentration. Texas has only eight GPCI regions: Austin, Beaumont, Brazoria, Dallas, Fort Worth, Galveston, Houston, and all other areas are grouped into a single GPCI for “Rest of Texas” Attachment 2 has a map of the Medicare GPCI areas for Texas.

Physician's Fee Reference (PFR)

23. The primary data source for the PFR is the Center for Medicare and Medicaid Services, Limited Data Set, Standard Analytical File (“CMS LDS SAF”) for the most recent year available. While these claims are for Medicare beneficiaries, the billed charges apply to all patients treated by the practitioners regardless of payor. The PFR treats each claim as an observation to determine data sufficiency and to calculate percentiles. The PFR calculates a national percentile value for each CPT code for each percentile. PFR calculates percentile values based on the number of claims, not the number of providers.
24. The national value is multiplied by a GAF for each zip code.¹⁸ PFR says “Additional information was extrapolated based on relative value methodologies.”¹⁹ PFR does not explain this statement. The digital version of the PFR adjusts costs using a geographic factor specific for each zip code “whenever possible,” and for a geozip when there are insufficient observations for a zip code. The print version adjusts only by geozips.²⁰
25. The PFR says its GAFs are based in part on Medicare GPICs, and also on government wage indices and regional economic information.²¹ The GAFs are not based on geographic differences in charges. PFR does not disclose further details

¹⁸ Physician's Fee Reference Introduction

¹⁹ PFR Introduction. Page 1.

²⁰ Email correspondence with Krista Reynolds. November 18, 2019.

²¹ Physician's Fee Reference Introduction

on how GAFs are calculated. The PFR does not disclose whether a GAF for a zip code is based on observations for that zip code or for the geozip.

RPC UCR Charge Database

26. Research & Planning Consultants, LP (“RPC”) determines the maximum UCR charges for most²² medical services based on the industry-standard definition of UCR charges. A UCR charge is “[t]he amount paid for a medical service in a geographic area based on what providers in the area usually charge for the same or similar medical service.”²³ This is the definition adopted by several states and health plans to define the allowed amount for out-of-network care. Medicare used the term “prevailing charge” for the same approach before it adopted the Resource Based Relative Value Scale model in 1992.²⁴

Objectives

27. RPC’s objectives in creating this database were:

- Create a UCR charge database based on medical market definitions. Zip codes, geozips, city boundaries, and county boundaries do not necessarily reflect common medical markets.
- Calculate percentiles directly whenever possible. Directly calculated percentiles reflect an area’s charges more than a national percentile which has a geographic adjustment.
- Clearly identify what method was used to arrive at each UCR benchmark.
- Clearly identify how many provider’s charges were used to calculate percentile values and how many provider’s charges were used to create each GAF.
- Calculate GAFs based on differences in charges and not differences in practice costs.

²² The UCR method requires a database of charges. RPC does not use the UCR method when no such database is available, e.g. prescription drugs, over-the-counter drugs, or supplies which can be purchased from non-medical retail outlets.

²³ HealthCare.gov. Glossary definition of UCR.

²⁴ Omnibus Budget Reconciliation Act of 1989.

- Disclose details of sources and methods to maximize transparency.
28. RPC's database is, at this time, limited to permanent, non-anesthesia, CPT codes. It does not include temporary CPT codes, other HCPCS codes (injectable drugs, durable medical equipment, transportation services, etc.), facility charges, or prescription drugs.
29. For each CPT code the RPC database displays
- the 50th, 75th, 80th, and 90th percentile charges,
 - the method used to generate the percentile charges, and
 - the number of providers in the market.
30. RPC uses one of two methods to calculate percentile values. The method used depends on the number of providers of that service in the medical market.

Data Sources

CMS Carrier SAF 5% Sample (Database)

31. RPC uses the CMS Carrier SAF 5% Sample file ("CMS Carrier 5% SAF").²⁵ This is the same primary data source the PFR uses. CMS publishes the file quarterly and annually. It has data for a semi-random sample of 5% of Medicare beneficiaries of all fee for service billings to Medicare by physicians, radiologists, anesthesiologists, therapists, labs, and other providers. The files contain most of the data elements found on a CMS 1500 billing form. While these claims are for Medicare beneficiaries, the billed charges apply to all patients treated by the practitioners regardless of payor. Because the analysis is performed on Medicare data, any code which is not covered by Medicare is not included in the database. RPC determines percentile values based on the charges, not on the Medicare

²⁵ <https://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/LimitedDataSets/StandardAnalyticalFiles>

payment rates or allowable amounts. These files are available to those with a Data Use Agreement with CMS for limited data set (LDS) files.²⁶

National Provider Identification (NPI) File

32. The CMS Carrier 5% SAF identifies the provider performing a service by NPI number. Medicare's *National Provider Identification File* is used to link the CMS Carrier 5% SAF to the HRR in which services were performed.²⁷ The *National Provider Identification File* includes both NPI numbers and practice zip codes. The zip codes are used with the *Dartmouth Atlas of Healthcare* to identify the HRR of service.

Dartmouth Atlas of Healthcare

33. RPC relies on medical market definitions from the *Dartmouth Atlas of Healthcare*.²⁸ RPC uses the HRRs defined in the *Dartmouth Atlas of Healthcare* to define medical markets. Each HRR is a collection of zip codes. HRRs represent regional health care markets that include a major referral center and community hospitals. The regions were defined by determining where patients were referred for major cardiovascular surgical procedures and for neurosurgery. Each HRR has at least one city where both major cardiovascular surgical procedures and neurosurgery are performed.²⁹
34. The United States is divided into 306 HRRs. The complete list of zip codes and HRRs for all other states can be found on the Dartmouth Atlas website. Dartmouth Atlas HRR definitions are available to download, free, from its

²⁶ <https://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/LimitedDataSets>

²⁷ <https://www.resdac.org/articles/overview-nppesnpi-downloadable-file>

²⁸ The Dartmouth Institute for Health Policy and Clinical Practice, The Dartmouth Atlas of Health Care, <http://www.dartmouthatlas.org/>, viewed May 6, 2017.

²⁹ Dartmouth also defines 3,436 Hospital Service Areas ("HSAs"). Most of the HSAs contain only one hospital and some contain no hospital. Thus, many of the HSAs contain too few physicians in many specialties to provide enough observations to determine UCR charges.

website.³⁰ There are 22 HRRs in Texas. Attachment 2 has a map of the HRRs in Texas. Boundaries for all HRRs in the United States are shown on the Dartmouth Atlas web site. The Texas HRRs are:

Abilene	Fort Worth	San Antonio
Amarillo	Harlingen	Temple
Austin	Houston	Tyler
Beaumont	Longview	Victoria
Bryan	Lubbock	Waco
Corpus Christi	McAllen	Wichita Falls
Dallas	Odessa	
El Paso	San Angelo	

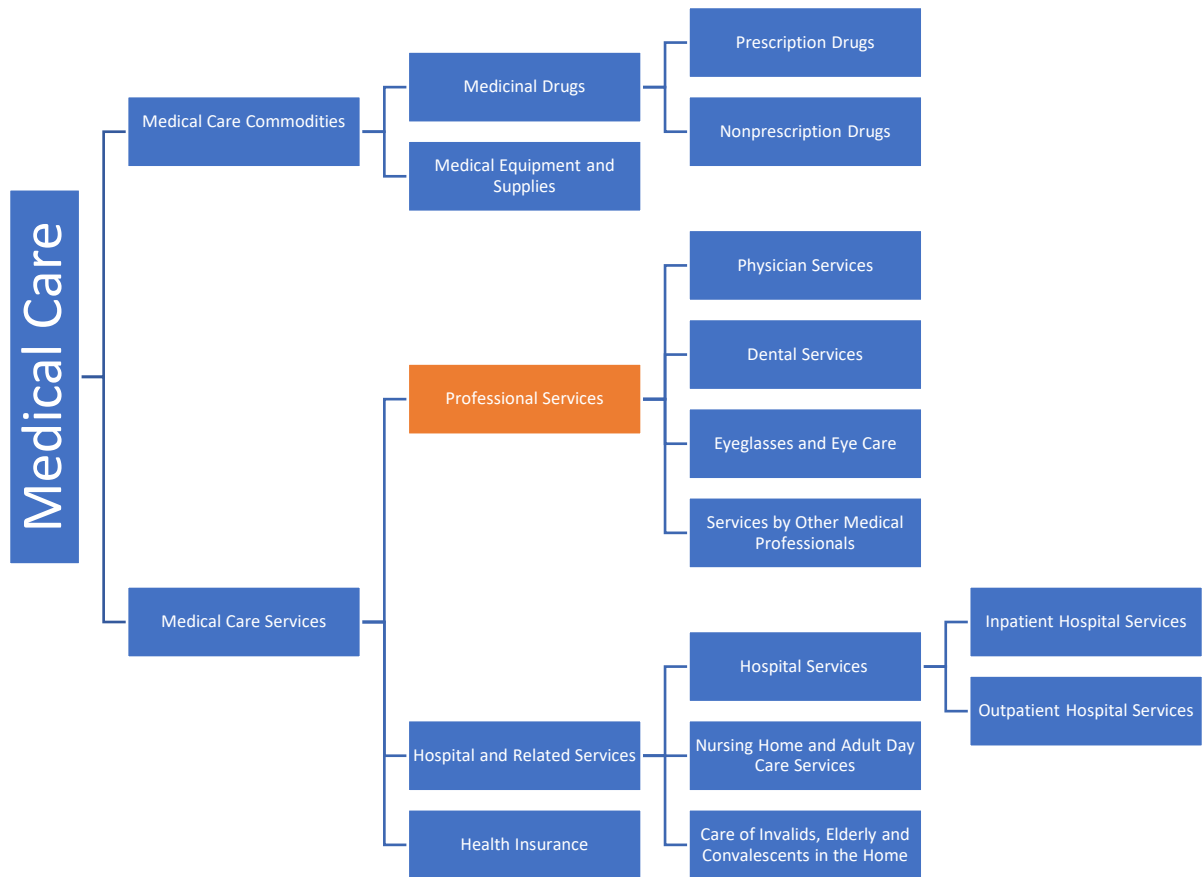
Physician Services Component of the Consumer Price Index

35. Because of lags between service delivery and charge data analysis, the most recent Medicare charge data is usually about two years old at the time of analysis. RPC adjusts the percentile values to current dollars for the relevant year using the Professional Services component of the Medical Care component Consumer Price Index (CPI), as published by the Bureau of Labor Statistics (BLS).³¹ These indices are available for download free from the Bureau of Labor Statistics website.³²

³⁰ The Dartmouth Institute for Health Policy and Clinical Practice, The Dartmouth Atlas of Health Care, <http://www.dartmouthatlas.org/>, viewed May 6, 2017.

³¹ <https://www.bls.gov/cpi/>

³² <https://www.bls.gov/cpi/>



36. The Professional Services component of the CPI includes services by physicians, dentists, eye care providers, and other medical professionals such as psychologists, chiropractors, physical therapists, podiatrists, social workers, nurse practitioners, independent lab work and imaging services.³³ The graphic above shows the subcomponents in the CPI’s Medical Care component and what is included in the Professional Services sub-component.

37. FH’s benchmarks “are based on a recent 12-month window of claims.” They do not state whether they make any inflationary adjustments to this data.³⁴ C4H uses the most recent 24 months of data, updated bi-annually, and performs an inflation adjustment every 6 months based on the CPI component for professional medical

³³ BLS. Measuring Price Change in the CPI: Medical Care. <https://www.bls.gov/cpi/factsheets/medical-care.htm>

³⁴ FH Benchmarks flyer. June 2019.

services.³⁵ Both MFB and PFR publish benchmarks for a year before that year begins (e.g. the 2021 versions will be published in late 2020). They do not disclose what, if any, inflation adjustments are made to forecast benchmarks.

RPC's Two Methods for Determining UCR Charges

38. The RPC database has percentile values for all non-anesthesia CPT codes, except temporary CPT codes. CPT codes with modifiers 26 or TC are analyzed separately from the unmodified codes. Line items with other modifier codes which may affect the amount a provider bills to Medicare are excluded from the analysis. For example, line items with modifier code 80, which indicates an assistant-at-surgery, were excluded. Most payors pay for an assistant-at-surgery at a fraction of the amount they pay for the primary surgeon. This fraction is usually less than 25%. Some providers bill for assistant-at-surgery services at the charge for the surgeon and assume the payor will apply its discount. Other providers bill for assistant-at-surgery services at the discounted amount. Including line items with this modifier could distort the UCR charge. The excluded codes are listed in Table 1 of Attachment 3. Modifier codes which do not modify payment amounts or billed amounts are ignored.

39. RPC combines data from the CMS files for three most recent years. As of this writing, they are the 2016, 2017, and 2018 files. Data from these files are combined with no inflationary adjustments. Each provider in the resulting dataset is identified by National Provider Identification (NPI) number. The average billed charge for each provider is calculated for each CPT code that provider billed fee for service Medicare. Each provider is assigned to an HRR based on practice zip code. Practice zip code is a data element in the CMS Carrier 5% SAF. If a

³⁵ Context4Healthcare, Inc. Usual, Customary & Reasonable Fee Database Methodology: A White Paper. January 2010.

provider changes practice HRRs, its charges from each HRR are included in that HRR's calculations only.

40. RPC uses one of two methods to calculate the percentile values for each CPT code in each HRR. The method used depends on the number of providers who billed each CPT code in the HRR.

41. If there are five or more providers in the dataset for a CPT/HRR combination, RPC calculates the percentile values directly. If there are fewer than five providers, RPC calculates national percentile values and adjusts the national percentile with a GAF specific to the percentile, code category, and HRR.

Method 1

42. RPC uses Method 1 when a CPT/HRR combination has charges for five or more providers. In Method 1, the percentiles values for a CPT code are directly calculated from the average charges of all providers in the HRR who billed that CPT code. Codes with a 26 or TC modifier are only analyzed with Method 1. RPC does not calculate benchmarks for -26 or -TC codes with fewer than five providers in an HRR.

Method 2

43. When fewer than five providers in an HRR billed a CPT code, RPC calculates national percentile values and adjusts the national percentile values to the HRR by a GAF specific to the HRR, CPT code category, and percentile.

44. RPC calculates GAFs for CPT code categories defined by the American Medical Association. RPC does not include the Anesthesia code category in our UCR database. The code categories included are:

- Evaluation & Management,
- Surgery,

- Radiology,
- Laboratory & Pathology, and
- Medicine.³⁶

45. All Code Category/HRR combinations have at least five CPT codes with at least five providers except for Radiology codes in San Angelo. At this time, RPC's database does not include UCR values for Radiology codes in San Angelo. RPC calculates Method 2 GAFs and resulting percentile values using these steps:

- Create a ratio of the Method 1 HRR percentile value to the national percentile value for every CPT code in the category with a Method 1 percentile value.
- Calculate a weighted average of all ratios from step i), weighted by the frequency of included CPT codes in the national CMS database. This is the Code Category/HRR/Percentile specific GAF.
- Multiply the resulting GAF by the national percentile amount to determine the Method 2 UCR percentile for the CPT/HRR.

Example Method 2 Calculation

46. Only one provider in the San Angelo HRR provided CPT code 80051 "Electrolyte Panel; this panel must include the following: carbon dioxide (bicarbonate) (82374) Chloride (82435) Potassium (84132) Sodium (84295)" in the three-year time period. Method 1 cannot be used, so Method 2 is used. This CPT code is in the category "Pathology and Laboratory." There are seven CPT codes in the San Angelo HRR in the Pathology and Laboratory category for which at least 5 providers billed the code. For each of the seven codes, RPC divided the percentile value for the code in the San Angelo HRR by the national percentile value. The average of these ratios weighted by the frequency of each code in the national CMS database is the GAF for the Pathology and Laboratory category in

³⁶ <https://www.medicalbillingandcoding.org/intro-to-cpt/>

the San Angelo HRR. This calculation is repeated for each reported threshold percentile. For the 80th percentile,

$$GAF_{San\ Angelo,\ Laboratory\ and\ Pathology,\ 80th\ \%ile} = \frac{\sum_{i=1}^7 \left(\frac{CPT_i\ San\ Angelo\ 80th\ \%ile}{CPT_i\ National\ 80th\ \%ile} \times Frequency_i \right)}{\sum_{i=1}^7 Frequency_i}$$

The table below calculates the GAF for San Angelo for Pathology and Laboratory codes at the 80th percentile.

Code	San Angelo 80th Percentile	National 80th Percentile	Ratio	National Frequency	Code Weight
80053	\$115.50	\$65.77	1.756	7,067	7.09%
87804	\$56.00	\$50.00	1.120	14,251	14.29%
81002	\$30.00	\$20.00	1.500	23,238	23.30%
81003	\$36.00	\$23.77	1.514	15,535	15.58%
87880	\$85.00	\$50.00	1.700	13,960	14.00%
82962	\$19.50	\$20.00	0.975	10,896	10.93%
83036	\$43.54	\$50.00	0.871	14,766	14.81%
Weighted Average Ratio = GAF			1.344		

CPT/HRR Coverage for Texas HRRs

47. Nationally, the CMS Carrier SAF 5% Sample file has 7,129 CPT codes without a -26 or -TC modifier with charges billed by at least five providers during the three-year period. For Texas, the RPC database includes percentile values for the 7,129 CPT codes for each HRR other than Radiology codes in San Angelo, for 156,327 CPT/HRR combinations (7,129 codes x 22 HRRs - 511 Radiology codes x 1 HRR). RPC calculated 13,551 of the CPT/HRR combinations using Method 1. RPC calculated 142,776 of the CPT/HRR combinations using Method 2. For some codes, we calculated percentile values using Method 2 but no providers in

the HRR billed the code. The database shows the number of providers of each code in each HRR. Caution should be used when drawing conclusions about percentiles with no recorded billings in an HRR.

48. For Texas, there are 3,320 CPT/HRR combinations with a -26 or -TC modifier with five or more providers allowing us to use Method 1. This creates 159,647 Code/Modifier/HRR combinations in the database. The table below shows these combinations by method used to calculate UCR percentiles. While only 10.6% of CPT/HRR combinations have percentiles calculated via Method 1, these are the most frequently occurring codes. For example, in 2018, these Method 1 codes accounted for 92.7% of all CPT codes billed in the CMS Carrier 5% SAF in Texas.

Method	Code/Modifier/HRR Combinations Calculated	% of Code/HRR Combinations	% of Codes Billed in Texas in 2018
Method 1	16,871	10.6%	87.6%
Method 2	142,776	89.4%	12.4%
Total	159,647	100.0%	100%

RPC Percentile Values Compared to MFB Percentile Values

49. In comparing RPC's database to an existing database, we focused on three issues. First, there will always be different calculated results when different data and methods are used. It is important not just to identify that values are different across databases, but instead to look for systematic differences across geographic areas (in this case HRRs) or across code categories. Second, it is important to determine the magnitude of the differences. Are they small enough to be ignored? Third, because RPC's Method 1 is a direct calculation of a UCR charge only within the region in question, it is presumed to be more accurate than any interpolated or estimated UCR charge in another database like the MFB. Whether

or not RPC's Method 2 is a better metric than another UCR database's estimates can be evaluated in part by seeing if RPC's Method 2 results show the same patterns as RPC's Method 1 results when compared to another database like the MFB.

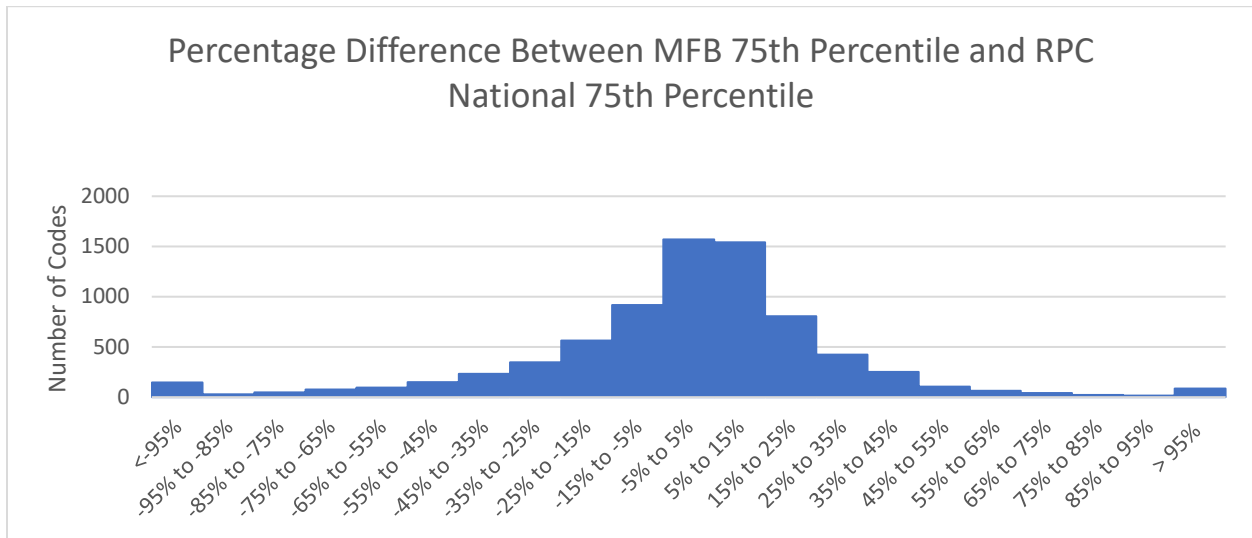
Comparison of RPC Method 1 75th Percentile Values to MFB 2017 75th Percentile Values

HRR	Evaluation & Management Services	Medicine	Pathology and Laboratory	Radiology	Surgery Services
Abilene	59%	24%	15%	4%	39%
Amarillo	37%	26%	14%	8%	32%
Austin	49%	27%	19%	21%	51%
Beaumont	43%	30%	20%	84%	56%
Bryan	44%	26%	78%	44%	44%
Corpus Christi	23%	16%	32%	10%	31%
Dallas	57%	32%	47%	52%	46%
El Paso	54%	21%	22%	39%	40%
Fort Worth	49%	26%	39%	78%	43%
Harlingen	31%	32%	39%	22%	43%
Houston	53%	43%	51%	65%	70%
Longview	15%	12%	50%	17%	61%
Lubbock	48%	23%	49%	39%	40%
McAllen	50%	29%	26%	28%	35%
Odessa	78%	44%	71%	80%	45%
San Angelo	42%	21%	80%	0%	43%
San Antonio	49%	15%	15%	22%	47%
Temple	58%	40%	67%	84%	46%
Tyler	47%	35%	26%	2%	46%
Victoria	33%	21%	53%	31%	31%
Waco	61%	36%	50%	62%	44%
Wichita Falls	70%	35%	67%	33%	30%

50. RPC compared its percentile values to those published in MFB, 2017. RPC did not inflate its values before comparing, so the calculation represents RPC's direct calculations from the 2017 base year to MFB's 2017 publication. The MFB values for each HRR were adjusted by the corresponding GAF published in the MFB. The table below shows, for each HRR and code category, the percentage of codes where RPC's Method 1 75th percentile value was higher than the GAF-adjusted 75th percentile value in the MFB. Shaded cells indicate when RPC percentile values for over 50% of codes were higher than the MFB.
51. Neither source was consistently higher than the other across all code categories or HRRs. RPC's 75th percentile value was usually lower for Medicine and Surgery codes. RPC's 75th percentile value was usually higher in the Houston HRR, and lower in Abilene, Amarillo, Austin, Bryan, Corpus Christi, El Paso, Fort Worth, Harlingen, Longview, Lubbock, McAllen, San Angelo, San Antonio, and Victoria. Other HRRs and Categories were mixed.
52. As mentioned above, RPC's Method 1 results should be better than MFB estimates, which are based on national data adjusted by a GAF. The MFB only has GAFs for seven areas in Texas, which further limits its ability to provide accurate UCR results compared to RPC's Method 1.
53. To help understand what portion of the differences between RPC's Method 1 and the MFB are due to the MFB's GAF versus other differences in data or methods, RPC compared our national percentile values to those of the MFB. There are three major differences between RPC's national percentile values and the MFB's national percentile values. First, the MFB treats every charge as an observation, while RPC treats every provider as an observation. Second, the MFB values for 2017 were published before 2017, so they are based on older charges which have presumably been inflated, although the MFB does say so. Third, the MFB uses

C4H's third-party payor data while RPC used the Medicare Carrier SAF 5% sample file.

54. The graph below is a histogram of the difference between the MFB 75th percentile values and the RPC national 75th percentile values. The histogram shows a normal distribution centered around an approximate 5% difference. An analysis of the difference shows larger differences where there were fewer national providers. The MFB inflation adjustment likely accounts for less than a 10% difference in the percentile values, while the treatment of providers versus claims as observations and the different underlying data account for the remainder.



55. The next table shows, for each HRR and code category, the percentage of codes where RPC's Method 2 75th percentile value was higher than MFB's GAF-adjusted 75th percentile value. Highlighted cells indicate when the RPC percentile values of over 50% of codes were higher than the MFB.

**Comparison of RPC Method 2 75th Percentile to MFB 2017 75th
Percentile**

HRR	Evaluation & Management Services	Medicine	Pathology and Laboratory	Radiology	Surgery Services
Abilene	69%	26%	42%	22%	39%
Amarillo	58%	35%	43%	19%	29%
Austin	68%	33%	50%	42%	83%
Beaumont	71%	42%	58%	88%	92%
Bryan	55%	41%	86%	44%	79%
Corpus Christi	42%	28%	46%	29%	40%
Dallas	72%	46%	66%	83%	71%
El Paso	69%	37%	48%	77%	70%
Fort Worth	66%	40%	70%	91%	70%
Harlingen	60%	54%	63%	67%	52%
Houston	68%	56%	77%	85%	82%
Longview	45%	25%	66%	25%	53%
Lubbock	61%	36%	71%	39%	50%
McAllen	67%	49%	57%	71%	36%
Odessa	82%	60%	75%	87%	56%
San Angelo	58%	31%	74%	N/A	91%
San Antonio	67%	36%	49%	45%	61%
Temple	76%	51%	86%	90%	73%
Tyler	70%	52%	60%	31%	71%
Victoria	57%	34%	69%	23%	37%
Waco	80%	97%	54%	86%	59%
Wichita Falls	82%	54%	73%	51%	38%

56. RPC's Method 2 produced percentile calculations higher than those in the MFB for most categories in most HRRs. The notable exception is for Medicine codes, where MFB estimates were usually higher.

57. Averaging across all codes and HRRs, RPC's combined methods generated a higher 75th percentile value for about 43% of codes calculated with Method 1, for about 59% of codes calculated with Method 2, and for about 57% of codes overall.

58. The differences between RPC's 75th percentile estimates and the MFB 75th percentile estimates are substantial. The table below shows the average absolute percentage difference between RPC's Method 1 75th percentile values and the MFB 75th percentile value by category and HRR. Absolute (unsigned) differences are used so that positive differences and negative differences do not cancel each other out.

Difference (%) Between RPC Method 1 75th Percentile Values and MFB 2017 75th Percentile Values

HRR	Evaluation & Management Services	Medicine	Pathology and Laboratory	Radiology	Surgery Services
Abilene	21%	31%	33%	29%	23%
Amarillo	17%	25%	41%	22%	32%
Austin	15%	24%	40%	27%	38%
Beaumont	21%	34%	29%	40%	43%
Bryan	12%	41%	27%	16%	25%
Corpus Christi	26%	36%	32%	32%	33%
Dallas	15%	19%	29%	24%	29%
El Paso	22%	28%	36%	18%	34%
Fort Worth	18%	27%	27%	37%	34%
Harlingen	22%	31%	25%	14%	27%
Houston	17%	23%	27%	32%	35%
Longview	15%	30%	19%	20%	30%
Lubbock	16%	27%	22%	13%	24%
McAllen	19%	35%	39%	24%	27%
Odessa	18%	21%	24%	18%	21%

San Angelo	18%	28%	29%	43%	27%
San Antonio	17%	27%	34%	21%	30%
Temple	15%	37%	23%	27%	35%
Tyler	18%	28%	36%	22%	28%
Victoria	14%	27%	25%	24%	22%
Waco	18%	27%	15%	11%	25%
Wichita Falls	15%	36%	18%	25%	22%

59. The estimates from the two sources were closest on average for Evaluation & Management Services. Medicine, Surgery, and Pathology and Laboratory Services had average differences of 29%.

60. RPC Method 2 results also differed substantially from MFB 75th percentile values, as shown in the table below.

Difference (%) Between RPC Method 2 75th Percentile and MFB 2017 75th Percentile

HRR	Evaluation & Management Services	Medicine	Pathology and Laboratory	Radiology	Surgery Services
Abilene	28%	25%	35%	20%	19%
Amarillo	28%	23%	35%	23%	21%
Austin	35%	25%	35%	20%	27%
Beaumont	27%	23%	35%	31%	37%
Bryan	26%	22%	47%	17%	23%
Corpus Christi	27%	25%	34%	19%	19%
Dallas	34%	28%	41%	31%	22%
El Paso	33%	25%	35%	23%	21%
Fort Worth	32%	25%	38%	41%	21%
Harlingen	27%	23%	36%	19%	18%
Houston	34%	27%	45%	34%	28%

Longview	24%	26%	36%	19%	18%
Lubbock	30%	24%	38%	18%	19%
McAllen	29%	23%	35%	20%	19%
Odessa	34%	22%	40%	27%	19%
San Angelo	23%	24%	39%		34%
San Antonio	35%	27%	35%	21%	20%
Temple	28%	22%	46%	32%	21%
Tyler	30%	23%	36%	19%	21%
Victoria	26%	23%	37%	20%	19%
Waco	30%	483%	34%	25%	19%
Wichita Falls	33%	22%	39%	17%	19%

61. Averaging across all codes and HRRs, RPC’s combined methods generated 75th percentile values which differed from MFB estimates by 28% for codes calculated with Method 1, 27% for codes calculated with Method 2, and 27% for codes overall.

Codes Not Included in the RPC UCR Database

62. The RPC database does not include Radiology codes in the San Angelo HRR at this time. It does not include codes for services Medicare does not cover. Examples of codes for services Medicare does not cover are.

- CPT 97010 “Application of a modality to 1 or more areas; hot or cold packs”
- CPT Codes 99241-99245 “Office consultation for a new or established patient ... Counseling and/or coordination of care with other physicians, other qualified health care professionals, or agencies are provided consistent with the nature of the problems.”
- CPT 98943 “Chiropractic manipulative treatment; extraspinal, 1 or more regions”

To determine UCR charges for these and other CPT codes not included in RPC's database, we rely on 75th percentile charges from *Medical Fees in the United States*.

Data Elements

The database consists of 14 data elements, as described below.

Data Element	Data Type	Description
CPT_CODE	Char(5)	Common Procedural Terminology Code Values are 5-digit codes beginning with numerals 1-9. There are 7,046 unique codes in the database
MODIFIER	Char(2)	Modifier codes applied to CPT which affect provider charges. Codes with modifiers are analyzed separately from each other and from un-modified codes. Values are: '26' 'TC' 'NULL'
CATEGORY	Varchar	Category into which CPT code falls. Possible categories are: 'Evaluation & Management' 'Surgery' 'Radiology' 'Laboratory & Pathology' 'Medicine'
HRR_CITY	Varchar	Hospital Referral Region for which percentiles are calculated. Possible values are: 'Abilene' 'Amarillo' 'Austin' 'Beaumont' 'Bryan' 'Corpus Christi' 'Dallas' 'El Paso' 'Fort Worth' 'Harlingen' 'Houston' 'Longview' 'Lubbock'

Data Element	Data Type	Description
		'McAllen' 'Odessa' 'San Angelo' 'San Antonio' 'Temple' 'Tyler' 'Victoria' 'Waco' 'Wichita Falls'
PERC_50	Float	50th Percentile calculated charge for CPT code in HRR
PERC_75	Float	75th Percentile calculated charge for CPT code in HRR
PERC_80	Float	80th Percentile calculated charge for CPT code in HRR
PERC_90	Float	90th Percentile calculated charge for CPT code in HRR
GAF_50	Float	Geographic Adjustment Factor used to calculate 50th percentile charge. The field is null if charge was calculated under Method 1.
GAF_75	Float	Geographic Adjustment Factor used to calculate 75th percentile charge. The field is null if charge was calculated under Method 1.
GAF_80	Float	Geographic Adjustment Factor used to calculate 80th percentile charge. The field is null if charge was calculated under Method 1.
GAF_90	Float	Geographic Adjustment Factor used to calculate 90th percentile charge. The field is null if charge was calculated under Method 1.
METHOD	Char(1)	Method used to calculate percentiles. Possible values are: '1' '2'
PROV_COUNT	Int	Number of providers billing code/modifier in the HRR
YEAR	Int	Base year of dataset (middle year of three years used)