# An Analysis of Usual, Customary, and Reasonable Charges in Life Care Planning

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Abstract

An integral part of life care planning is researching and presenting accurate charges for recommended future care items and services. Traditionally this has been done by directly contacting several providers in an evaluee's geographic area to inquire about charges, then calculating the average of those local options to determine the usual, reasonable, and customary (UCR) value of the service. More recently, databases are being utilized in Life Care Plan cost research, as these databases contain large sample sizes of geographically specific billed charge data. These databases often present charge data in percentiles, and there is little consistency among life care planners when choosing which percentile reflects the UCR charge. We propose that using median costs, or the 50th percentile of a normal distribution, allows for the reduced risk of influence of outliers and best reflects market billed charges. This paper includes a discussion of UCR charges, a basic introduction of the use of statistical information in life care planning, an analysis of billed versus database charges, and an argument for the aforementioned use of the median when conducting database cost research.

## The Nuances of Life Care Planning

Life care planning is a unique area of academic and clinical practice in that it is transdisciplinary and applied across many settings. The core requirement of anyone seeking certification in life care planning is specialized knowledge, training, and experience in the management of acute and chronic disability (Gamez et al., 2017; International Academy of Life Care Planners, 2015; Johnson, 2015; Johnson et al., 2018; Mauk, 2019; R. O. Weed & Berens, 2018). Thus, unlike many health-care related certifications, individuals with a wide range of educational and experiential/professional backgrounds can obtain life care planning

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certification, such as case managers, nurses, rehabilitation counselors, physicians, and therapists.

While this diversity can, and often does, offer a richness of perspective and many possible applications, it can, and sometimes does, lead to differences in method and work product. This is particularly true in the forensic realm, where it is often the case that the Plaintiff and the Defense each retain their own life care planning expert, and their Plans compete for standing in terms of reliability and validity. Though each expert creates a Life Care Plan presumably based on the same facts of the case, there are myriad possible results with regard to what items and services are included and the cost of those items and services. Assuming both life care planners utilize sound methodology, the discrepancy between their plans can likely be traced to the differential interpretation of the standards intended to guide Life Care Plan development.

Importantly, there are published guidelines regarding most aspects of life care planning methodology, as can be found in the International Academy of International Academy of Life Care Planners (2015) and Life Care Planning Consensus and Majority Statements (Johnson, 2015; Johnson, Pomeranz & Stetten, 2018). These guidelines stipulate that a valid and reliable Life Care Plan includes conducting an interview, engaging in professional consultation, reviewing pre- and post-injury records, and performing cost research (International Academy of Life Care Planners, 2015; R. Weed & Rutherford-Owen, 2018).

These guidelines also outline the goals of a Life Care Plan, as follows (International Academy of Life Care Planners, 2015):

1. To assist the evaluee in achieving optimal outcomes by developing an appropriate plan of prevention of complications and restoration. This may include recommendations for evaluations or treatment that may contribute to the evaluee's level of wellness or provide information regarding treatment requirements.

2. To provide health education to the evaluee and interested parties, when appropriate.

3. To develop accurate and timely cost information and specificity of service allocations that can be easily utilized by the evaluee and interested parties.

4. To develop options for care that may be necessary for alternative situations.

5. To communicate the Life Care Plan and objectives to the evaluee and interested parties, when appropriate.

6. To develop measurement tools, which can be used to analyze outcomes.

7. To routinely develop comprehensive assessments of the projected goals of the Life Care Plan, whenever possible.

Despite this seemingly clear direction, how a life care planner is to implement the aforementioned methodology to achieve these goals is largely up for individual interpretation. While this autonomy can be viewed as an advantageous component of an otherwise standardized process, the practical result is that there is little consensus among life care planners and much confusion among those who utilize life care plans for clinical or forensic purposes.

It is beyond the scope of this paper to address the nuances inherent in each step of life care planning methodology; however, the authors intend to focus on the cost research aspect of life care planning, as this area is rife with variable approaches. After conducting an exhaustive literature review, it was noted that there is a gap in empirical information regarding how to conduct and present valid and reliable cost research. As such, the goal of this investigation is to offer recommendations regarding what constitutes usual, customary, and reasonable charges by analyzing actual charge data.

## The Cost Research Conundrum

Cost research is an essential component of Life Care Plan development. While, of course, foundation is required and collaboration is necessary for determining the specific items and services necessary to guide post-injury rehabilitation, the cost of each of those items and services dictates how practically useful that Plan will be. This is particularly true when a Life Care Plan is used in forensic cases, as the total dollar amount of the plan may be considered an economic damage for the Plaintiff as a result of an alleged injury. In this arena, it is imperative that the cost research performed is supported by industry-standard and sound methodology.

The life care planning Majority and Consensus Statements (Johnson et al., 2018) speak to the best practices for identifying the cost of items and services contained in a Life Care Plan, as follows:

- Verifiable data from appropriately referenced sources;
- Costs identified are geographically specific when appropriate and available;
- Non-discounted/market rate prices;
- More than one cost estimate, when appropriate.

While these "best practices" offer a useful framework for developing a cost research methodology, there are no clear guidelines regarding how to conduct cost research, leaving individual life care planners to determine what constitutes usual, customary, and reasonable costs for the services included in their Life Care Plans.

For context, the American Medical Association (2013) defined Usual, Customary, and Reasonable ("UCR") fees as follows:

1. "a 'usual' fee means that fee usually charged, for a given service, by an individual physician to his private patient (i.e., his own usual fee);
2. a fee is 'customary' when it is within the range of usual fees currently charged by physicians of similar training and experience, for the same service within the same specific and limited geographical area; and
3. a fee is 'reasonable' when it meets the above two criteria and is justifiable, considering the special circumstance of the particular case in question, without regard to payments that have been discounted under governmental or private plans."

According to HealthCare.gov (2022), the definition of UCR is "The amount paid for a medical service in a geographical area based on what providers in the area usually charge for the same or similar medical service."

How, though, does one determine, with both specificity and reliability, the usual, customary, and reasonable charge for a medical service? Is it appropriate to rely on databases that aggregate charge data from across various geographic areas? Is it appropriate to cold-call providers in an area to inquire about charges? How can a life care planner ensure the information they receive from a database or from a provider's office is representative? These questions have yet to be answered with any sort of consensus.

This paper seeks to address the issues inherently created by the lack of clear guidance regarding UCR when performing LCP cost research. This suggested protocol was developed through a review of the relevant literature, an analysis of medical bills and database research, an understanding of statistics, and the extensive education, training and experience of the authors.

## The What and Why of Databases

Life care planners regularly utilize medical coding systems and medical databases in their development of a Life Care Plan. Busch (2018) indicated that "proprietary database software systems may be used to abstract health information into a relational database and facilitate the analysis and data mining of the health information" (pg. 11). Further, in applying UCR to life care planning cost research, Busch (2017) suggested that that the "goal of the UCR analysis is to articulate anticipated expenses in their proper context, condition, and through the use of the correct diagnostic and procedure coding language" (pg. 12). A coding system, then, "provides the opportunity for consistency in communicating services recommended, followed by a formal process to track expenditures as the life care plan is executed" (pg. 12).

The databases routinely utilized by life care planners when conducting cost research organize their charge data according to Current Procedural Terminology (CPT®) codes. The CPT code system, developed by the American Medical Association (AMA), is a communication system that enables the identification and reporting of medical services rendered. CPT descriptive terminology and associated code numbers provide the most widely accepted medical nomenclature used to report medical procedures and services for processing claims, conducting research, evaluating healthcare utilization, and developing medical guidelines and other forms of healthcare documentation. Importantly, CPT codes are irrespective of the amount ultimately paid for health care services, and utilization of CPT codes does not equate reliance on health insurance allowables.

For the purposes of this paper, two commonly relied upon databases will be spotlighted with regard to how they are used and why they are used in the context of Life Care Plan development. The first, *Medical Fees*, provides complete, accurate, and statistically valid information regarding usual, customary, and reasonable billed charges for the purposes of being a resource for reviewing, adjusting, and setting fees. The second, FAIR Health (www.fairhealth.org), is a national, independent nonprofit organization whose mission is to bring transparency to healthcare costs and health insurance information through comprehensive data products, consumer resources and the support of health services research (https://www.fairhealth.org/faqs).

*Medical Fees 2021* represents the 25th annual edition of the publication, meaning one can search [Medical Fees] charge data dating back to 1996. *Medical Fees* data fulfills the aforementioned best practices guidelines for life care planners, as follows:

- Verifiable data from appropriately referenced sources: Medical Fees is the result of a publishing collaboration between Context4 Healthcare Inc. and Practice Management Information Corporation (PMIC);
  - Context4 Healthcare Inc. is a leading developer of reimbursement products for the health care industry. Context4 Healthcare Inc. products are used by thousands of health care organizations, from solo physician practices to Fortune 500 companies. To ensure accuracy, charge data was obtained from a variety of sources including third-party payers, clearinghouses, practice management system vendors, billing services, universities, medical practices, hospitals and the Centers for Medicare and Medicaid Services (CMS);
  - PMIC is the nation's leading independent publisher and distributer of coding, payment, and practice management software. To create the annual Medical Fees publication, PMIC rakes raw CPT/UCR data from Context4 Healthcare Inc., adds comprehensive introductory materials, full CPT descriptions, and then applies proprietary formulas to estimate fees for new medical services and procedures;
- Costs identified are geographically specific when appropriate and available: Medical Fees offers a Geographic Adjustment Factor (GAF), which is a weighted multiplier used to determine a more accurate fee for a specific location of medical practice;
  - The city, county, area, or region closest to the plaintiff's residence is used when possible, and if more specific information is not available, the state in which the person resides is utilized;
  - As an example, in 2021, charges in Alabama were found to be statistically 7.00% lower than the national average; thus, Alabama has a 2021 GAF of 0.931. Charges in San Jose, California were found to be 19.5% higher than the national average; thus, San Jose, California has a 2021 GAF of 1.195;
- Non-discounted/market rate prices: The charge data contained in Medical Fees does not take into account discounted or negotiated rates;
  - Instead, the charges listed in the Medical Fees publications are derived from an analysis of over 600 million actual charges submitted by medical providers.

Similar to Medical Fees, FAIR Health fulfills the aforementioned best practices guidelines for life care planners, as follows:

- Verifiable data from appropriately referenced sources: The FAIR Health National Private Insurance Claims (FH NPIC®) database is made up of de-identified data from billions of privately billed claims for medical and dental services submitted by healthcare professionals to health insurers across all 50 states; Washington, DC; Puerto Rico; and the US Virgin Islands;

  - The database includes over 35 billion billed procedures, from 2002 to the present;

- Costs identified are geographically specific when appropriate and available: FAIR Health data is organized by 493 Geozips, which are comprised of the first three digits of a zip code and which are required to search the FAIR Health Database;

  - For example, to research charges in the Mobile, Alabama area, one would use the Geozip 366 to search the FAIR Health database. To research charges in the San Jose, California area, one would use the Geozip 965;

- Non-discounted/market rate prices: Charge benchmark data provided by FAIR Health represents non-discounted provider-billed charges.

As noted previously, both of these databases organize their medical service cost data according to medical billing codes, which represent what (procedure), who (physician), and where (facility) of medical services (Maniha, 2020). To reiterate, medical billing codes are essentially a numeric language used to help qualified health professionals communicate the charges for their services to many stakeholders, and the charges linked to medical billing codes reflect the amount *billed* for the medical service, irrespective of the amount ultimately paid by the payer.

It is the opinion of the authors of this paper that valid and reliable medical databases, such as *Medical Fees* and FAIR Health, offer representative and realistic charge data for medical services in a specific area. With this established, the question then becomes what percentile best reflects the usual, customary, and reasonable charges for medical services? To answer this, one must have a basic understanding of statistics.

## Crash Course in Percentiles

Percentiles are a measure used in statistics to indicate the value above or below which a given percentage of observations in a group of observations fall. Said another way, a percentile is a value on a scale of one hundred that indicates the percent of a distribution that is equal to or above it. Both *Medical Fees* and FAIR Health organize their data according to percentiles, so as to give an understanding of how a particular charge compares to other charges for a specific service in a specific area.

To organize data by percentile, the first step is to sort all the charge information gathered for each CPT code in numerical order. For example, assume the following charges are collected for a routine office visit (CPT 99213) for physicians in Mobile, Alabama: (Note: These charges are for instructional use only; they do not reflect true billing charges, though they do exemplify the range of charges that may be billed for one CPT code.)

- $64.00
- $66.00 (10th percentile)
- $67.00 (20th percentile)
- $70.00 (30th percentile)
- $71.00 (40th percentile)

- **$73.00 (50th percentile; Median)**
- $75.00 (60th percentile)
- $76.00 (70th percentile)
- $78.00 (80th percentile)
- $79.00 (90th percentile)
- $107.00

The 50th percentile, also known as the statistical median, represents that 50% of all the data for charges for a specific CPT code fall at or below (i.e., are less than) that charge and 50% fall above (i.e., are more than) that charge. In the above example, $73.00 is the 50th percentile charge.

In the above example, $76.00 represents the 70th percentile, meaning 70% of all the charges fall at or below $76.00 and 30% fall above $76.00; $79.00 represents the 90th percentile, meaning 90% of all the charges fall at or below $79.00 and 25% fall above $79.00.

The mean, on the other hand, is the average of all values. In the above example, $75.09 is the mean (i.e., Mean = (sum of all charges) / number of charges in the sample).

The range is the difference between the lowest and highest values in a dataset. In the above example, the range is $43.00 ($107.00 - $64.00 = $43.00).

Outliers are values that are abnormally distant from the other values in a sample. In the above example, the physician charging $107.00 for an office visit represents an outlier, as $107.00 is $28.00 higher than the closest value to it (i.e., $79.00), while all the other values are within $3.00 of their closest value(s). Given that $107.00 is greater than the 90th percentile, this also indicates that the physician charging $107.00 is charging more than 90% of other physicians in his area for that service.

Obviously, the calculation of percentiles becomes more complicated with larger datasets, but the principle of Percentile (P) = (Number of values below "x" / Total number of values) x 100 remains true.

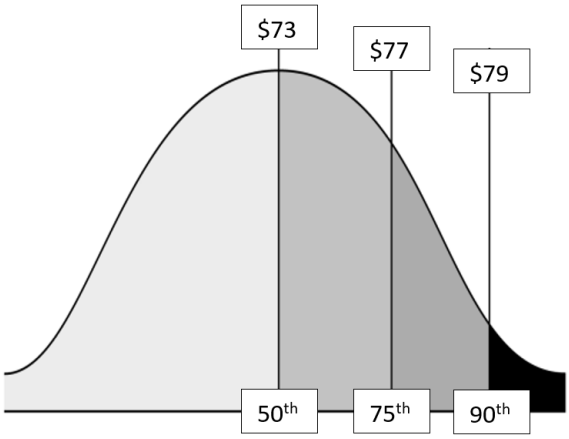
Another way to visualize and understand percentiles is by plotting them on a bell curve, or normal distribution, graph. Using the example from above,

It is the authors of this paper's stance that the mean is not the most valid and reliable value to utilize when doing cost research because it is affected by outliers. The median, on the other hand, is better suited for skewed distributions to arrive at central tendency since it is much more robust and sensible. Given that there are very little, if any, confines on what a physician can charge for their services, there are likely to be outliers for the charges associated with each CPT code. With this in mind, if one were tasked with determining which one value best represents all other values in any given medical charge dataset, the median is, in our opinion, the strongest contender.

*Medical Fees* categorizes their data according to the 50th, 75th, and 90th percentiles. The published data in FAIR Health is presented at the 50th, 60th, 70th, 75th, 80th, 90th and 95th percentiles. Importantly though, neither database dictates, determines, or establishes UCR rates or appropriate reimbursement levels for any procedure or service. The issue this paper seeks to address is which percentile(s) represent the most intellectually honest and practically valid values to rely upon when doing LCP cost research.

**Figure 1**

*Percentiles on a Normal Distribution*




## A Possible Path Forward

Busch (2018) noted that "life care planners rely on a variety of methods for determining the monetary impact of care projected in a care plan. Costing methodologies vary in their approach, formulary and comprehension." Despite acknowledging this variability, Busch (2018) further stipulated that, regardless of approach, "the pricing of services should parallel reliable market data that takes into consideration appropriate metrics."

Ideally, a Life Care Plan will include "more than one cost estimate, when appropriate" for each item and service in the Plan, as is stipulated by the life care planning Majority and Consensus Statements' (Johnson et al., 2018) best practices. This can be accomplished by utilizing a triangulation method, which entails obtaining non-negotiated cost / billed charge estimates from three geographically specific sources.

When the evaluee's current treatment providers are known, billed charges from those specific providers can be obtained via medical bill analysis and / or direct communication. In addition, or in a case where treatment providers are not known, UCR market charge data can be obtained by contacting actual vendors in a particular area to inquire as to the non-negotiated cost / billable charge for the services they provide. Some life care planners argue relying solely on this type of cost research generates a more evaluee-specific plan, since the charges included in the Plan would be derived from the actual providers the evaluee could seek treatment from. However, this type of cost research is less efficient, may be prone to sampling bias, and in some venues disallowed by the Court; thus, while it is an ecologically valid option, it should be supplemented with other types of research, when possible.

Another option for obtaining charges is to rely on medical coding systems and medical databases, as discussed previously. Unlike with the prior two methods, where a specific cost is obtained for a specific service, databases present charge data according to percentiles. To our knowledge, there have been no peer-reviewed, published analyses of medical billing records and actual, real-time cost research compared to database percentiles. As such, how does one know which percentile to rely on when utilizing databases for cost research?

As stated by Maniha (2020),

> In the preparation of life care plans, professionals are cautioned against utilizing the least expensive pricing or the most expensive pricing, as either choice fails the standard of objectivity. Rather, the life care planner should use what is usual, customary, and reasonable (UCR) in the evaluee's geographic area.

However, as discussed previously, the guidance stops there, and, as result, there have been many interpretations of UCR. This is probably best exemplified in the differences across the reports of life care planners retained as damages experts in forensic cases, in which the 50th through the 90th percentiles are relied upon by various experts. Clearly, even if all the items and services included in two Plans are identical, if one expert utilizes the 80th percentile as UCR while the other utilizes the 50th percentile, there will be a considerable difference in the total amounts of those two Plans.

Research and Planning Consultants (RPC), L.P., in their non-peer reviewed white paper published March 29, 2021, titled *Determining Usual, Customary, and Reasonable Charges for Healthcare Services* (Research and Planning Consultants, 2021), wrote,

> A threshold percentile determines the maximum reasonable charge for that service in that medical market. Charges less than or equal to the threshold percentile value are reasonable; charges more than the threshold value are not reasonable.

The RPC white paper goes on to state that "RPC determines the UCR charge based on the 80th percentile when possible as this is the most frequently used threshold." According to their aforementioned definition of a threshold percentile, the 80th percentile is the absolute ceiling on what can be considered a reasonable charge, and it was chosen because it is the "most commonly used in state and federal laws and by major health insurance plans." However, this determination utilizes what could be described as backwards logic, i.e., since it has been commonly used, it must be UCR. Rather, wouldn't it be prudent to empirically evaluate which percentile is best aligned with actual charges and then determine that percentile constitutes UCR?

We suspect that the practical result of relying on the absolute ceiling threshold when doing life care planning cost research creates a Plan that over endows the evaluee for the services and goods required due to their disability. Similarly, we acknowledge that using a percentile that is lower than UCR may overburden the evaluee by underfunding for the goods and services required due to their disability. It is our intention to investigate which percentile represents the most intellectually honest and practically valid choice when obtaining costs of future medical services.

In order to assess which percentile best parallels the market data, we have compared aggregated market charge data from medical bills (tables 1 – 8) and direct vendor contact (tables 7 – 10) to the percentile data available on Medical Fees and FAIR Health. The market charge data used in these comparisons were randomly selected from cases in which the authors of this paper have been retained as experts in the last four years. Importantly, there is no difference in the data dependent on whether the authors were hired by Defense or Plaintiff, as the medical bills and information obtained directly from vendors is objective and irrespective of the experts' role in the case. We purposefully chose cases from various years and several geographic locations to provide the broadest understanding of whether, and if so how, the data differs from year to year and place to place.

The tables 1-11 below depict these comparisons, which includes market data charges spanning from 2017 to 2021. We have limited our research to charges associated with office visits, therapeutic services, and diagnostic/laboratory services for the purposes of this paper; however, we look forward to future research expanding this analysis to charges associated with other services commonly included in Life Care Plans.

Of note, the "billed charges" were obtained directly from physician submitted medical bills for services rendered. The "vendor quoted charges" were obtained from calling vendors in a specific area to inquire about their non-negotiated cost / billable charge for a specific service they provide.

**Table 1**

*2017 Billed Charges From a Radiology Clinic in Colorado Springs, CO 80920 compared to Medical Fees (2017; GAF 1.009) and FAIR Health (November 2017, GeoZip 809) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 72125-26 | $159.00 | $207.85 | $160.00 | $258.30 | $230.00 | $342.04 | $230.00 |
| 72131-26 | $159.00 | $204.83 | $159.00 | $254.29 | $159.00 | $335.99 | $159.00 |
| 71260-26 | $171.00 | $244.18 | $186.00 | $289.58 | $267.00 | $388.47 | $267.00 |
| 73610-26 | $24.00 | $38.34 | $27.00 | $47.42 | $37.00 | $63.57 | $37.00 |
| 73562-26 | $25.00 | $37.33 | $38.00 | $46.41 | $40.00 | $62.56 | $40.00 |
| 74177-26 | $334.00 | $360.21 | $334.00 | $469.08 | $390.00 | $632.64 | $390.00 |
| 73600-26 | $22.00 | $31.28 | $26.00 | $39.35 | $36.00 | $52.47 | $36.00 |
| 73700-26 | $150.00 | $202.81 | $191.00 | $250.23 | $215.00 | $319.85 | $215.00 |
| 73610-26 | $24.00 | $38.34 | $27.00 | $47.42 | $37.00 | $63.57 | $37.00 |
| Total | $1,068.00 | $1,365.17 | $1,148.00 | $1,702.08 | $1,411.00 | $2,261.16 | $1,411.00 |

**Table 2**

*2018 Billed Charges from a Medical Clinic in Colorado Springs, CO 80917 compared to Medical Fees (2018; GAF 1.008) and FAIR Health (November 2018, GeoZip 809) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 97035 | $26.00 | $33.26 | $40.00 | $43.34 | $40.00 | $58.46 | $48.00 |
| 97032 | $26.00 | $35.28 | $35.00 | $46.37 | $42.00 | $61.49 | $62.00 |
| 97163 | $150.00 | $181.44 | $165.00 | $227.81 | $185.00 | $298.37 | $206.00 |
| 97110 | $39.00 | $56.45 | $80.00 | $70.56 | $97.00 | $92.74 | $100.00 |
| 97530 | $40.00 | $56.47 | $50.00 | $70.56 | $75.00 | $92.74 | $89.00 |
| 99212 | $65.00 | $80.64 | $83.00 | $98.78 | $102.00 | $128.02 | $117.00 |
| 98940 | $45.00 | $49.39 | $50.00 | $61.49 | $60.00 | $80.64 | $68.00 |
| Total | $391.00 | $492.93 | $503.00 | $618.91 | $601.00 | $812.46 | $690.00 |

**Table 3**

*2018 Billed Charges from an Imaging Facility in Denver, CO 80218 compared to Medical Fees (2018; GAF 1.008) and FAIR Health (November 2018, GeoZip 802) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 73610 | $180.00 | $95.76 | $85.00 | $120.96 | $100.00 | $166.32 | $142.00 |
| 73630 | $180.00 | $93.74 | $73.00 | $118.94 | $100.00 | $162.23 | $120.00 |
| 73718 | $1,300.00 | $1,451.42 | $1,550.00 | $1,810.37 | $1,742.00 | $2,271.02 | $1,742.00 |
| Total | $1,660.00 | $1,640.92 | $1,708.00 | $2,050.27 | $1,942.00 | $2,599.57 | $2,004.00 |

**Table 4**

*2018 Billed Charges from a Medical Provider in Phoenix, AZ 85048 compared to Medical Fees (2018; GAF 0.970) and FAIR Health (November 2018, GeoZip 850) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 99214 | $303.00 | $177.51 | $181.00 | $218.25 | $265.00 | $281.30 | $280.00 |
| 80305 | $48.00 | $40.74 | $50.00 | $58.20 | $120.00 | $83.42 | $206.00 |
| 99242 | $271.00 | $194.00 | $276.00 | $246.38 | $318.00 | $317.19 | $333.00 |
| 27640 | $2,468.00 | $2,576.32 | $2,000.00 | $3,523.04 | $2,502.00 | $5,432.00 | $3,902.00 |
| 27610 | $1,912.00 | $1,917.69 | $1,677.00 | $2,621.91 | $1,863.00 | $4,042.96 | $3,317.00 |
| 73610 | $95.00 | $92.15 | $85.00 | $116.40 | $106.00 | $160.05 | $125.00 |
| 73590 | $75.00 | $80.51 | $85.00 | $101.85 | $105.00 | $138.71 | $114.00 |
| Total | $5,172.00 | $5,078.92 | $4,354.00 | $6,886.03 | $5,277.00 | $10,455.63 | $8,277.00 |

**Table 5**

*2019 Billed Charges a Chiropractor Clinic in Reno, NV 89509 compared to Medical Fees (2019; GAF 1.011) and FAIR Health (November 2019, GeoZip 895) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 98943 | $40.00 | $43.47 | $40.00 | $55.61 | $45.00 | $72.79 | $50.00 |
| 97032 | $30.00 | $35.39 | $35.00 | $47.52 | $35.00 | $64.70 | $35.00 |
| 97010 | $15.00 | $26.23 | $20.00 | $35.39 | $25.00 | $47.52 | $27.00 |
| 98941 | $60.00 | $55.61 | $60.00 | $70.77 | $65.00 | $93.01 | $70.00 |
| 99214 | $155.00 | $188.05 | $222.00 | $231.52 | $254.00 | $301.28 | $277.00 |
| 98941 | $60.00 | $55.61 | $60.00 | $70.77 | $65.00 | $93.01 | $70.00 |
| Total | $360.00 | $404.36 | $437.00 | $511.58 | $489.00 | $672.31 | $529.00 |

## Discussion

The idea for this investigation came from years of fielding questions about how to conduct cost research. Given the lack of clear direction from the life care planning governing

**Table 6**

*2019 Billed Charges from a Diagnostic Clinic in Reno, NV 89509 compared to Medical Fees (2019; GAF 1.011) and FAIR Health (November 2019, GeoZip 895) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 72052 | $184.00 | $202.20 | $184.00 | $254.77 | $184.00 | $343.74 | $203.00 |
| 72100 | $139.00 | $108.18 | $110.00 | $136.49 | $143.00 | $185.01 | $218.00 |
| 72170 | $100.00 | $124.35 | $200.00 | $152.66 | $200.00 | $200.18 | $143.00 |
| 72070 | $109.00 | $90.99 | $95.00 | $114.24 | $109.00 | $153.67 | $200.00 |
| Total | $532.00 | $525.72 | $589.00 | $658.16 | $636.00 | $882.60 | $764.00 |

**Table 7**

*2018 Billed Charges from a Medical Clinic in Milwaukee, Wisconsin 53226 compared to Medical Fees (2018; GAF 0.946) and FAIR Health (November 2018, GeoZip 532) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 99214 | $199.00 | $173.12 | $297.00 | $212.85 | $356.00 | $274.34 | $374.00 |
| 99215 | $279.00 | $244.07 | $465.00 | $300.83 | $471.00 | $387.86 | $540.00 |
| 72170 | $201.25 | $132.44 | $290.00 | $163.66 | $299.00 | $214.74 | $314.00 |
| 64642 | $341.75 | $343.40 | $1,463.00 | $564.76 | $1,535.00 | $1,014.11 | $1,610.00 |
| 64643 | $258.25 | $237.45 | $1,463.00 | $389.75 | $1,535.00 | $700.99 | $1,610.00 |
| Total | $1,279.25 | $1,130.47 | $3,978.00 | $1,631.85 | $4,196.00 | $2,592.04 | $4,448.00 |

**Table 8**

*Vendor Quoted Charges from Providers in Cook County, Illinois 60089 (contacted in 2021) compared to Medical Fees (2021; GAF 1.051) and FAIR Health (November 2021, GeoZip 600) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 99213 | $200.00 | $146.09 | $300.00 | $183.93 | $308.00 | $235.42 | $385.00 |
| 99243 | $282.00 | $292.18 | $150.00 | $386.77 | $177.00 | $518.14 | $219.00 |
| 20610 | $233.00 | $198.64 | $247.00 | $263.80 | $247.00 | $360.49 | $247.00 |
| 97530 | $200.00 | $251.04 | $65.00 | $340.52 | $84.00 | $433.01 | $98.00 |
| 73721 | $1,500.00 | $1,484.01 | $1,412.00 | $1,911.77 | $1,426.00 | $2,361.60 | $1,426.00 |
| Total | $2,415.00 | $2,371.96 | $2,174.00 | $3,086.79 | $2,242.00 | $3,908.66 | $2,375.00 |

entities, individual life care planners have been tasked with determining their own method regarding what sources to rely on and what charges reflect usual, customary, and reasonable. This is no easy task, and it is no wonder that many approaches have emerged.

**Table 9**

*Vendor Quoted Charges from Providers in Lubbock, Texas (contacted in 2021) compared to Medical Fees (2021; GAF 0.959) and FAIR Health (November 2021, GeoZip 794) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 99213 | $225.00 | $133.30 | $125.00 | $167.83 | $140.00 | $214.82 | $155.00 |
| 99214 | $125.00 | $190.84 | $185.00 | $248.38 | $209.00 | $318.39 | $220.00 |
| 72148 | $750.00 | $1,415.48 | $1,800.00 | $1,783.74 | $1,800.00 | $2,385.03 | $1,800.00 |
| 73564 | $90.00 | $125.63 | $125.00 | $158.24 | $139.00 | $220.57 | $139.00 |
| 85025 | $20.00 | $38.36 | $32.00 | $45.07 | $33.00 | $63.29 | $33.00 |
| 80053 | $40.00 | $62.34 | $45.00 | $87.27 | $91.00 | $103.57 | $91.00 |
| 97162 | $150.00 | $150.56 | $160.00 | $189.88 | $160.00 | $242.63 | $188.00 |
| Total | $1,400.00 | $2,116.52 | $2,472.00 | $2,680.41 | $2,572.00 | $3,548.30 | $2,626.00 |

**Table 10**

*Vendor Quoted Charges from Providers in Denver, CO (contacted in 2021) compared to Medical Fees (2021; GAF 1.012) and FAIR Health (November 2021, GeoZip 802) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 99213 | $215.50 | $140.67 | $137.00 | $177.10 | $165.00 | $226.69 | $201.00 |
| 99214 | $242.75 | $207.46 | $203.00 | $262.11 | $265.00 | $335.98 | $300.00 |
| 73600 | $60.00 | $88.04 | $80.00 | $111.32 | $134.00 | $154.84 | $135.00 |
| 72082 | $60.00 | $184.18 | $191.00 | $231.75 | $191.00 | $314.73 | $200.00 |
| 97162 | $140.00 | $158.88 | $130.00 | $201.96 | $155.00 | $256.04 | $177.00 |
| 97110 | $75.00 | $61.73 | $59.00 | $77.92 | $71.00 | $99.18 | $134.00 |
| Total | $793.25 | $840.23 | $800.00 | $1,062.16 | $981.00 | $1,387.43 | $1,047.00 |

It is now generally well-accepted that the use of medical databases is a viable resource for conducting reliable and valid cost research. Busch (2018) and others have published regarding the efficiency and effectiveness of relying on medical coding systems and medical databases in the development of a Life Care Plan. As was discussed previously, many medical databases, such as Medical Fees and FAIR Health, adhere to the "best practices" for conducting cost research, as proposed by the life care planning Majority and Consensus Statements (Johnson, 2015; Johnson et al., 2018).

Importantly, though, no database dictates, determines, or establishes UCR rates for any procedure or service, and after an exhaustive literature review, we could find no evidence that anyone has ever analyzed actual medical bills and /or vendor quotes in conjunction with database percentiles to determine what percentile constitutes the charges usually billed, customarily quoted, and, therefore, considered reasonable. We investigated this by pulling actual medical bills (including only the charges, irrespective of adjusted rates or amounts ultimately paid) and information obtained directly by contacting vendors. We compared these

**Table 11**

*Vendor Quoted Charges from Providers in Las Vegas, NV (contacted in 2020) compared to Medical Fees (2020; GAF 1.007) and FAIR Health (November 2020, GeoZip 891) Charge Data*

| Service Code | Billed Charges | Medical Fees 50th% | FAIR Health 50th% | Medical Fees 75th% | FAIR Health 75th% | Medical Fees 90th% | FAIR Health 90th% |
|---|---|---|---|---|---|---|---|
| 99213 | $120.00 | $132.92 | $130.00 | $165.15 | $152.00 | $213.48 | $204.00 |
| 99214 | $130.00 | $200.39 | $200.00 | $248.73 | $249.00 | $322.24 | $312.00 |
| 99203 | $120.00 | $205.43 | $212.00 | $257.79 | $251.00 | $330.30 | $330.00 |
| 73610 | $50.00 | $100.70 | $103.00 | $126.88 | $123.00 | $176.23 | $161.00 |
| 72148 | $450.00 | $1,487.34 | $1,205.00 | $1,868.99 | $1,650.00 | $2,460.10 | $1,999.00 |
| 97802 | $165.00 | $53.37 | $44.00 | $67.47 | $55.00 | $88.62 | $55.00 |
| 97162 | $125.00 | $153.06 | $180.00 | $194.35 | $200.00 | $253.76 | $224.00 |
| Total | $1,160.00 | $2,333.21 | $2,074.00 | $3,199.36 | $2,680.00 | $3,844.73 | $3,285.00 |

"billed charges" and "vendor quoted charges" to the Medical Fees and FAIR Health 50th, 75th, and 90th percentile data for the corresponding year and with the necessary geographic adjustments.

We found that, in a randomly selected sample of past medical bills and vendor quoted charges, the 50th percentile of *Medical Fees* and FAIR Health charge data most closely and consistently reflects the actual charges. In fact, often, the actual charges were less than the 50th percentile values.

Referring back to the section of this paper that discusses statistics and percentiles, this finding is not surprising. As noted, the median, or 50th percentile, is the best suited value for describing skewed distributions, as it is much more robust and sensible. Given that there are very little, if any, confines on what a physician can charge for their services, there are likely to be outliers for the charges associated with each CPT code. Further, by its very definition as the middle value, the median is firmly situated in the realm of reasonability. Thus, when tasked with determining which one value best represents all other values in any given medical charge dataset, the median is the strongest contender.

As such, moving forward, it is the authors of this paper's recommendation that the 50th percentile be relied upon when medical databases are utilized to conduct cost research. We believe that this quantitative analysis supports that the 50th percentile best reflects actual, historical billed charges and current quoted vendor billed charges, and, in doing so, produces a Life Care Plan that is ecologically valid, intellectually honest, valid, and reliable.

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