

How to Measure Acuity-Adjusted Panel Size for Contemporary Provider Compensation Plans

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As the healthcare industry continues to move along the curve from volume to value-based care, the way health systems remunerate providers and advanced practice providers (“APPs” and together with providers referred to as “providers”) for services provided will consequently evolve. For many organizations, this has meant adding compensation tied to non-productivity incentive metrics such as quality, patient experience, patient access, or other outcomes-based metrics. But as organizations continue to move along the volume to value continuum, the authors have observed a growing trend of introducing empanelment metrics into the compensation formula.

Empanelment can take on many forms in the compensation system, but all metrics center around the size of a particular primary care provider’s (PCP’s) patient panel (i.e., panel size and/or acuity-adjusted panel size), and how well (e.g., quality, patient experience) and how efficiently (e.g., shared savings, reduction of unnecessary procedures, etc.) a particular PCP take cares for those patients in his or her charge.

Perhaps the most direct way empanelment has made it into provider compensation plans is through payments for a provider’s acuity-adjusted panel size, a direct measure of both the volume and complexity of a provider’s panel. This productivity-based metric is similar to work relative value units (wRVUs), but instead of intending to measure a provider’s total work effort relative to other providers in the market, acuity-adjusted panel size measures how many patients a provider is responsible for taking care of while accounting for acuity factors among individual patients.

Though perhaps only subtly different than wRVUs, this shift away from a widget-based production statistic to a metric more aligned with population health management represents a broader mindset shift as the industry continues to move the needle from volume-to-value. According to a recent McKinsey report, value-based contracts will cover 22% of insured lives by 2025, up from about 15% in 2021.¹

While incorporating panel size into a compensation plan may seem like a step forward on the volume-to-value continuum, the challenges associated with measuring, acuity-adjusting, and benchmarking patient panels to market surveys make this step a challenging one. In the following sections of this article, the authors will outline the various ways organizations measure and acuity-adjust patient panels, and how those decisions impact the organization’s ability to compare a provider’s panel to other providers in the broader market.

Step 1: Raw Panel

Every metric of panel size starts with a raw panel size or measuring how many unique patients a provider is responsible for. Determining a provider’s raw panel is a much easier exercise than acuity-adjusting the raw panel, however there are challenges organizations face even in measuring the raw panel counts.

¹ “The Next Frontier of Care Delivery in Healthcare”, published March 24, 2022 by McKinsey & Company.
<https://www.mckinsey.com/industries/healthcare/our-insights/the-next-frontier-of-care-delivery-in-healthcare>

Most electronic medical record systems (EMRs) have a primary care provider (PCP) field that tracks which patients are assigned to which providers. However, in practice, these fields often aren't updated regularly and frankly aren't managed well over time, requiring significant data clean up as patients move in and out of a provider's care.

Given some of these challenges, many organizations have implemented a patient attribution algorithm that regularly updates the PCP field within the EMR based on a defined set of criteria and tiebreaker scenarios. An example algorithm is described below:

Panel Attribution Algorithm Example

- **Step 1:** Which provider has seen the patient the most times over an 18-month period?
- **Step 2:** If two or more providers have seen the patient the same number of times over an 18-month period, which provider saw the patient for the most recent annual wellness exam?
- **Step 3:** If no annual wellness exam occurred during the last 18-month period, which provider saw the patient most recently?

This algorithm then gets applied to a health system's total patient roster until each patient is assigned to a PCP.

Embedded in this algorithm is another choice a health system must make when measuring raw panel size – specifically, over what time period will the organization measure the total number of patients on a provider's panel. Anecdotally, over the course of 15+ years consulting with clients on empanelment issues, the author has seen this metric defined as 12, 18, 24, 30, and 36 months (basically all 6-month increments between one and three years).

While there is no real "right" way to answer this question, if the goal of the organization is to compare their provider panels to the broader "market," understanding how the surveys define panel measurement is essential.

Survey Definition: Raw Panel Size

SullivanCotter	AMGA	MGMA
<p>Defined as the incumbent provider's population of living patients based on a count of unique patients seen within the last 18 months.</p> <ul style="list-style-type: none"> If a patient does not have a personal provider identified, the patient is assigned to a provider based on whom the patient saw the most often. If the patient has seen multiple doctors the same number of times, the patient is assigned to the provider seen most recently. 	<p>Panel size is the number of patients served by a provider or provider group. A provider's panel is a provider's population of living patients, based on a count of unique patients seen within the last 18 months. Patients are assigned to a provider by the following:</p> <p>Patients who have seen only one provider for all visits, verified within the last three years, are assigned to that provider.</p> <p>If a patient does not have a personal provider identified, the patient is assigned to a provider based on whom the patient saw the most often. If the patient has seen multiple doctors the same number of times, the patient is assigned to the provider seen most recently.</p>	<p>For primary care and cardiology practices that participate in the MGMA Cost and Revenue Survey each year, provider panel size is largely determined by the set of individual, unique patients seen by a provider within the practice over the past 18 months. The per-provider panel size is set using the following methodologies:</p> <ul style="list-style-type: none"> If a patient has only seen one provider in the practice, assign the patient to that provider. If a patient has seen more than one provider in the practice, assign the patient to the provider seen most frequently. If a patient has seen more than one provider in the practice the same number of times, assign the patient to the provider who did the patient's last physical. <p>If a patient has not had a physical, assign him/her to the provider seen most recently.</p>

While the surveys have slight variation in how they define and handle the tiebreaking scenarios, the common underlying themes are that:

- Panel size should be defined as the number of unique patients seen within the last 18-month period.
- Patients must not be assigned to more than one primary care provider (PCP), so tiebreaking scenarios must be devised in order to ensure provider panels are not overcounted.

Conclusion: If an organization is hoping to compare incumbent provider performance to the broader market, the organization should calculate panel size using an 18-month lookback. If instead an organization is looking to only compare to other incumbent providers, the organization has more flexibility in how they define a lookback period for the purposes of calculating a patient panel.

It is important when establishing raw patient count totals to validate these totals with the providers to ensure the calculations represent an accurate depiction of panel size. When implementing panel size into compensation, organizations will be much more successful migrating to a new compensation system if the providers believe in the accuracy of the data set.

Step 2: Acuity Adjustment

Once an organization has made the decisions necessary to be able to accurately measure a raw patient panel, the next and certainly largest challenge is appropriately adjusting the raw panel size to reflect relative patient acuity.

A patient acuity factor reflects the relative difficulty and effort associated with managing a particular patient. By way of example, consider two 75-year-old female patients with the following characteristics:

- Patient A is a healthy patient with no known health problems
- Patient B is a patient with multiple comorbidities, including type 2 diabetes, congestive heart failure, and hypertension.

Undoubtedly, patient B will likely require more of a provider's time and effort due to the patient's multiple chronic conditions, whereas patient A will take relatively less time to manage. While raw panel size measures the total number of patients managed by a particular provider, an acuity-adjusted panel size is a way to level the playing field by adjusting raw panel to reflect a relative level of work effort and complexity associated with a particular patient panel.

There have been many acuity models developed over the last several years. In the next section, this article will highlight some of the most predominant ways patient acuity is determined in the market and will conclude with a comparison to the limited acuity factors utilized in the market compensation and productivity surveys. As you read, please be mindful of the Patient A vs. Patient B example as we will be using that example throughout the remainder of this section.

Understanding the Various Acuity Factors

There are several methods to calculate a patient acuity factor. In general, each method uses a defined set of patient characteristics which are then applied to a formula to calculate a normalized acuity score for each patient. Each provider's adjusted panel size is then the sum of their patients' scores.

Common Acuity Factors

- **Age / Sex:** Stratifies age and sex into an acuity-score, generally based on the average number of visits within 12-18 months for patients within each age / sex category. Historically, this combination of factors is the most common, although it has become more outdated as EMRs become more robust and more comprehensive factors have become available. However, as discussed in the next section, market surveys reporting adjusted panel size still rely on Age / Sex as an acuity factor since it is the easiest from a reporting perspective.
- **Age / Sex / Insurance Category:** Like the age / sex category with the addition of insurance categories (Medicaid, Medicare, Commercial). As many acuity-adjustment studies have found, health coverage is a significant correlator with health.
- **Hierarchical Condition Category (HCC) / RAF Scores:** HCCs and RAF Scores are both pieces of a CMS acuity-adjustment model originally designed to estimate future health care costs for patients. HCCs specifically identify individuals with serious acute or chronic conditions based on specific clinical diagnoses and are entirely dependent on proper coding. RAF Scores are the combination of HCC factors and general demographic information such as age, sex etc. Most modern EHR systems (especially primary care interfaces) now calculate HCC codes and RAF scores automatically, allowing providers to become more familiar with

these acuity scores. The result is that HCC and RAF Scores have emerged as the most predominant forms of panel acuity-adjustment in the market.

Other Acuity Factors

- **Charlson Comorbidity Index (CCI):** a weighted index to predict acuity of death within 1 year of hospitalization for patients with specific comorbid conditions. Nineteen conditions are included in the index.
- **Chronic Illness and Disability Payment System:** a diagnostic-based acuity-adjustment model that is widely used to adjust capitated payments for health plans that enroll Medicaid beneficiaries.
- **Medicaid Rx (MRX):** a pharmacy-based acuity adjustment model that was developed as an alternative to diagnosis or claim-based models.

An important consideration for organizations is whether to stratify their own patient population and determine a “personalized” acuity table or, if available, adopt a published acuity table from a survey, professional society, or research article.

Survey Acuity Factors

While these previous factors likely all better represent true “patient acuity” in a much more robust way, the surveys by necessity must use more simplistic factors.

After all, the various patient acuity factors previously outlined likely all yield different results, and survey organizations cannot mandate that participating organizations prescribe to a certain acuity factor. What they can do is prescribe an acuity factor that all organizations who wish to report panel size must follow if their data are to be included in the survey. Surveys like AMGA, SullivanCotter, and others use the following table that uses simplistic age and patient sex (male, female) factors to determine relative patient acuity.

Age Range (Years)	Male	Female
0	5.02	4.66
1	3.28	2.99
2	2.05	1.97
3	1.72	1.62
4	1.47	1.46
5 to 9	0.98	1.00
10 to 14	0.74	0.79
15 to 19	0.54	0.72
20 to 24	0.47	0.70
25 to 29	0.60	0.82
30 to 34	0.63	0.84
35 to 39	0.66	0.86
40 to 44	0.69	0.89
45 to 49	0.76	0.98
50 to 54	0.87	1.10
55 to 59	1.00	1.20
60 to 64	1.17	1.31
65 to 69	1.36	1.46
70 to 74	1.55	1.60
75 to 79	1.68	1.40
80 to 84	1.70	1.66
85+	1.57	1.39

Thinking back to the Patient A vs. Patient B example from earlier, by using the survey acuity factor, Patient A and Patient B will both have the same acuity factor even though in reality Patient B requires more effort to manage than Patient A.

While this methodology may be imperfect, organizations looking to use external comparisons to market panel sizes must restate their panel size using the survey acuity-adjustment table or risk an apples-to-oranges comparison.

As an example, the author was working with an organization to develop a panel-based compensation plan. Upon reviewing the acuity-adjustment factors, all of the client's providers had really high acuity-adjusted panel size and compared very favorably to the market. When reviewing the acuity adjustment factor, however, it was discovered that the client used a factor of 2 for patients below 5 years of age and for patients above 75 years of age, with a factor of 1 for everyone in between. When restating the client's panel size using the survey acuity adjustment table, however, the client's providers were more in line with typical panel sizes of other providers in the market.

Complicating Factors: Impact of Panel Size Decisions on Compensation Plans

As shown in the previous sections, there are many decisions organizations must make to determine how to measure both a raw and acuity-adjusted panel size for the organization's PCPs for the purposes of compensation model development. Unlike wRVUs, which are universal and are unambiguous (a 99213 is always 1.3 wRVUs), there are no universally agreed-upon standards for measuring panel.

From a compensation perspective, the biggest challenge with acuity-adjusted panel size is comparability to others. The major panel size benchmarks use a singular definition of raw panel (unique patients seen in the last 18 months) and use a rudimentary age and sex adjustment table to adjust panels for patient acuity. In order to use the panel size benchmarks from MGMA, AMGA, and SullivanCotter in the compensation formula, an organization must measure acuity-adjusted panel size in the same way.

If instead an organization wants to use a more robust, accurate measure of acuity-adjusted panel size such as HCCs (which the authors observe is being used more frequently in recent years), the resulting panel sizes can only be compared to other providers within that organization, which is somewhat limiting from a compensation perspective.

Conclusion

With the growing use of empanelment metrics in both care models and compensation models, organizations must take great care in how they decide to measure both raw and acuity-adjusted panel sizes.

While there is no "right" way to measure these variables, organizations must understand the intended – and unintended – consequences of these decisions, and the potential impact these decisions will have on how an organization can structure their compensation plan. Deciding to measure acuity-adjusted panel size differently than the surveys, then using the surveys to benchmark provider panels to the "market" carries significant risk of under or over-payment for empanelment.