



# The Path to Accurate Cost Accounting: A Rigorous but Critical Journey

Developed for the American Hospital Association



# Introduction

**This report discusses the limitations of cost-accounting methodologies that are based on charges. Charges can be an unreliable reflection of actual costs compared to other cost-accounting methodologies that better account for the numerous factors that influence costs.**

Across healthcare, there is a pressing need to understand the true costs of delivering care.

Stakeholders at all levels — from federal and state governments to hospitals, policymakers, healthcare payers, and consumers — are looking for a straightforward, accurate, and easy-to-comprehend view of healthcare costs, which is far easier said than done.

Healthcare costs are inherently complex and understanding them requires a significant investment of time and resources. With overall U.S. healthcare spending hovering above \$4.5 trillion<sup>i</sup> and more than a third of hospitals (35%) operating at a financial loss throughout 2023,<sup>ii</sup> it is a very necessary investment. At the same time, stakeholders must invest in reliable and accurate data. Having incomplete or inaccurate information can lead to potentially harmful or flawed assumptions.

Understanding healthcare costs is important because it has implications for policymaking and the allocation of resources. Hospitals and health systems need a clear understanding of costs to navigate the current environment of elevated expenses and thin operating margins. Employers need to understand costs to negotiate competitive benefits. Moreover, policymakers need to understand health care costs to make fiscally responsible policy decisions, such as where to allocate funds or how to set payment rates. Striking the right balance is critical, because underfunding healthcare can put both care quality and access at risk.



# Cost Accounting



At its core, cost accounting is the process by which organizations allocate expenses to specific care delivery activities to calculate the cost of individual encounters and cases. One of the most common approaches to cost accounting is using *cost-to-charge ratio* (CCR) — also referred to as *ratio of costs to charges* (RCC) — as a key indicator of hospital costs. While CCR is a helpful, high-level proxy for costs for some broad applications, it has limitations when it comes to reflecting the true costs of providing care. For instance, numerous factors can contribute to a more than \$10,000 difference in costs for knee replacement surgeries on two patients of similar ages and similar medical histories.

A more detailed, data-informed cost accounting approach is better suited for informing policy decisions or widespread payment strategies. While data collection and processes for such applications have yet to be developed for public policy applications, **it is important that policymakers and government agencies understand the constraints of current methodologies, as well as the benefits of more detailed methodologies used within the industry.**

This report describes the limitations of CCR and discusses alternative cost accounting methods used by many healthcare organizations that better reflect the intricacies of healthcare costs. In particular, it describes the Healthcare Financial Management Association (HFMA)-Strata L7 Cost Accounting Model, which defines seven levels organizations can advance through for greater granularity and precision. Each level deploys progressively more dynamic costing methodologies and datasets to reveal additional details that help organizations gain a more comprehensive understanding of the care delivered, and therefore a more accurate view of costs.

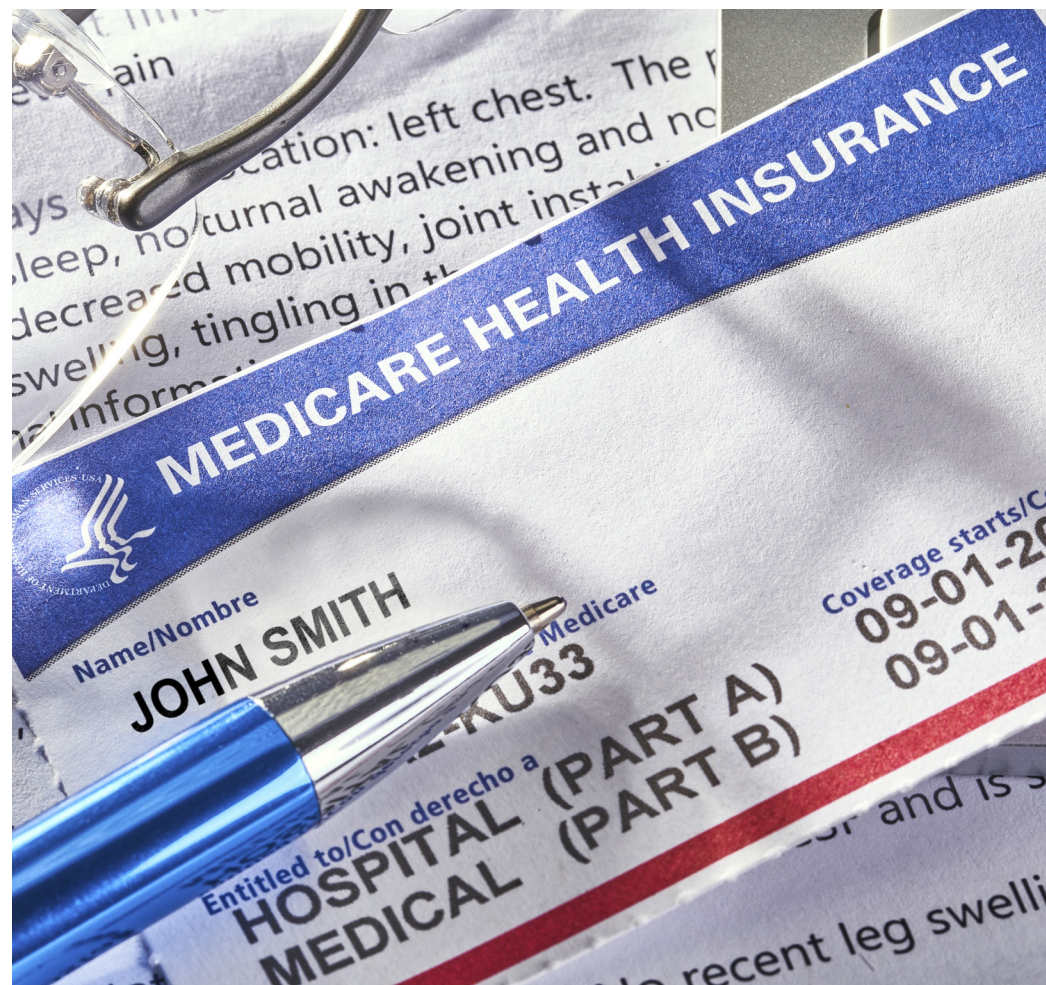
# The Cost-to-Charge Ratio Approach

CCR is among the most common approaches to trying to interpret hospital costs. By calculating a ratio between the total expenses hospitals incur versus what they charge, CCR aims to provide a quick and accessible view to hospital costs. This approach has some merits for high-level applications and is used by professional associations and other groups to illustrate underpayments in healthcare. For example, the Centers for Medicare and Medicaid Services (CMS) uses this approach for Medicare cost reports. The American Hospital Association also uses CCR in analyzing overall gaps in costs hospitals incur for providing care versus what they are reimbursed at a national level. **CCR has significant limitations, however, when it comes to understanding the true costs of care at more granular levels, such as by payer or service line within individual hospitals.**

The fundamental challenge with the CCR approach is that it emphasizes hospital charges and thus does not account for nuances in individual patient cases or encounters. This is an incomplete measure of cost due to intricacies within individual care systems, as well as the complex systems that govern how hospitals and other healthcare organizations are paid for the care they provide. Some limitations associated with this approach include:

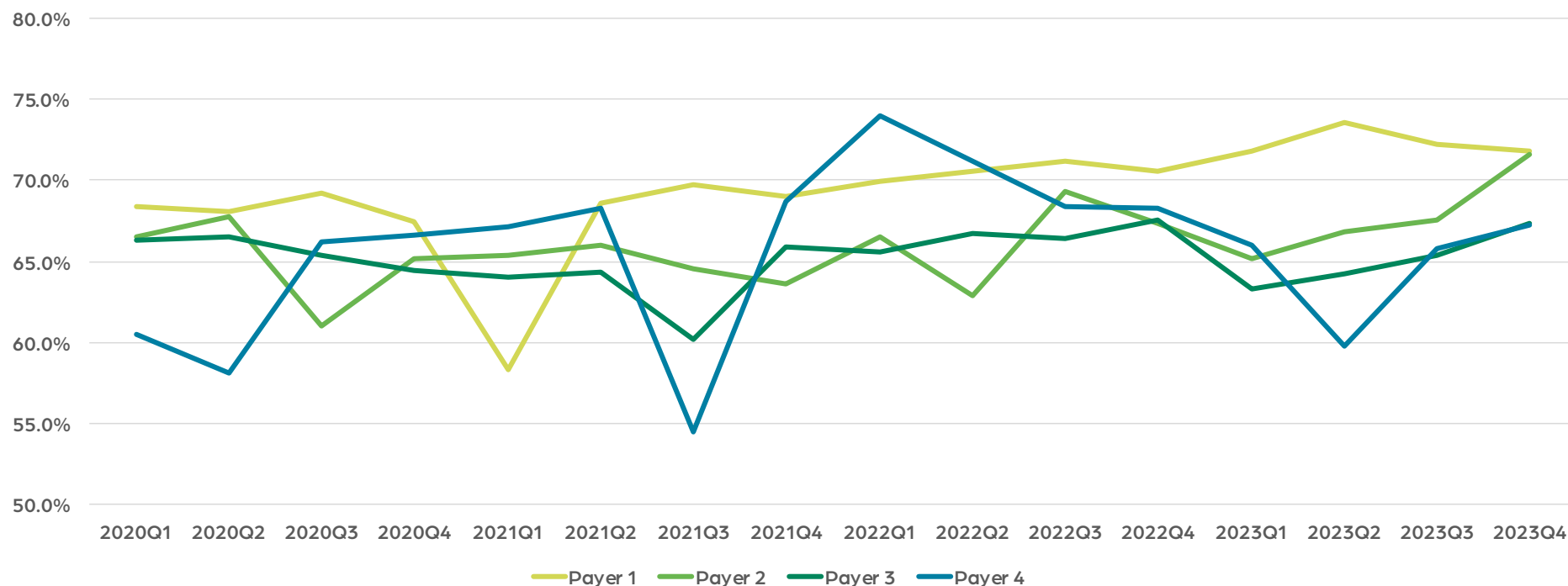
**Charges fluctuate based on reimbursement rates.** Hospital charges do not accurately reflect the actual costs that hospitals incur, or what patients ultimately pay for the care they receive. In most cases, healthcare organizations are paid a fraction of what they charge, depending on reimbursement rates set by CMS and how payment rates are negotiated by insurance companies and other healthcare payers. In a process referred

to as chargemaster maintenance, charges often are adjusted in response to changes in reimbursement rates, as hospitals attempt to close the gap between what they are paid and the costs they incur in providing care<sup>iii</sup>



**Figure 1. Average Contractual Allowance Rate for Four Large U.S. Commercial Payers**

Facility Claims for Orthopedic Procedures in a Hospital or Ambulatory Surgery Center (ASC)



Note: Company names have been blinded for the purposes of this report.

Figure 1 illustrates this gap and how it fluctuates among some of the nation's largest commercial healthcare payers. Using orthopedic procedures as an example, the graph shows trends in average contractual allowance, which represents the difference between what hospitals and health systems charge for claims versus what they are paid. For Payer 1, the average contractual allowance fluctuated from the low of a 58.3% difference in charges versus payments in Q1 2021 to a high of 73.6% in the second quarter of 2023. As of the fourth quarter of 2023, contractual allowance rates among the four payers ranged from 67.2% for Payer 4 to 71.8% for Payer 1.

**Charges lack granularity.** Using hospital charges as the basis for cost calculations also results in unreliable and often distorted results because of the complexities of how costs are distributed across hospitals. Every hospital is different, with its own unique services, facilities, workforce, patient population, and clinical and operational structures. These variations lead to countless differences in care costs among different facilities, departments, procedures, and patients. Examples of such variations follow.

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- **Charges provide a skewed view of administrative costs.** The distribution of administrative costs is a prime example. Maintaining hospital facilities and operations is costly. Many factors beyond clinical functions contribute to a hospital's costs, including cleaning crews and other maintenance needs, and ensuring a secure information technology (IT) infrastructure. While these are not direct patient care functions, they are essential to maintaining safe and effective hospital operations.

How hospitals charge for these types of non-clinical functions varies. In many cases, departments that provide high-cost services — such as surgical units — end up bearing a disproportionate burden for administrative functions, which can skew cost ratios based solely on charges.

- **Charges do not accurately convey labor or specialty costs.** Differences in how labor is distributed across various hospital departments is another factor that contributes to charges being an unreliable reflection of actual costs. For example, some hospitals have clinical nurse leaders who oversee and provide patient care across multiple departments, while other hospitals have unit-based clinical leadership models, with nurse leaders assigned to specific departments. To take it a step further, CCR calculations typically do not account for variations in specialty costs. Overall operating room charges do not differentiate between a routine procedure conducted by a general surgeon versus a more complex operation conducted by a team of specialists. Using a generalized CCR calculation misses such distinctions and can lead to erroneous conclusions regarding the financial health of specific hospital departments.

- **Charges do not incorporate variations in patient acuity or care.** There also are variations in care costs by individual patient. For example, conducting hip replacement surgery on a patient who has multiple co-morbidities requires higher levels of care with a larger clinical staff, more supply needs, and a longer recovery than the same procedure on a healthier patient with no pre-existing conditions. Similarly, obstetrics costs vary significantly for a high-risk, premature birth versus a birth with no complications. **CCR calculations mask these types of clinical complexities and can lead to payment methodologies that have the potential to harm at-risk patients.**

A CCR approach can be useful in some applications. It is popular because it provides a relatively simple formula that is both easy to calculate and easy to understand, offering an accessible approach for those trying to get a high-level perspective on hospital costs. It may be used by administrators, researchers, and others trying to quickly gauge the overall health of a hospital or health system, compare hospital costs to industry or market benchmarks, or gain a broader regional, state, or national view of hospital costs.

Healthcare leaders and other stakeholders need a more detailed cost accounting approach to better understand the intricacies of organizational operations. As demonstrated here, **CCR does not provide anywhere near the level of accuracy needed to inform crucial decisions such as those related to financial and strategic planning, determining reimbursement rates, or allocating funds.**

# Other Cost-Accounting Methodologies

Numerous other cost accounting approaches provide different views with varying levels of granularity to hospital costs. Some common methodologies include:

**Relative Value Unit (RVU)-based costing** — An approach centered on a unit of measurement — the RVU — which quantifies the value of a service or procedure relative to all services and procedures based on the level of work, resources, and expertise involved. RVUs may be defined by individual healthcare organizations or drawn from federal standards set by the Centers for Medicare and Medicaid Services.

**Supply-Based Costing** — Supply and drug costs vary based on numerous factors, such as the company that manufactured the item, when and where it was purchased, and the quantities purchased. Supply-based costing accounts for these variations by focusing on the actual costs of acquiring drugs and supplies, rather than taking a more generalized, allocation methodology.

**Activity-Based Costing** — Often referred to as ABC, this approach enables organizations to move beyond their charge master to more precisely associate costs with specific services or patient encounters. Costs can be assigned through activity measures in near real-time, as they are incurred.

**Time-Driven Costing** — This approach leverages timestamp data generated by electronic health records to help determine care costs. With this automated data, organizations can pinpoint cost details, such as when a

procedure was performed or how long a specialist or other clinician spent with a specific patient.



# The HFMA–Strata L7 Cost Accounting Model

To address the need for more accurate cost accounting, Strata Decision Technology developed the L7 Cost Accounting Model in partnership with the [HFMA](#).<sup>iv</sup> It is a progressive model that provides the industry's first cost accounting roadmap aimed at helping hospitals and other healthcare organizations cut through all the complexities to assess the true costs of providing care.

The L7 model empowers organizations to:

- Assess their current cost accounting methodology
- Benchmark their cost accounting capabilities against peers
- Understand where inaccuracies exist in their cost data
- Map the actions needed to ensure their cost accounting approach meets their strategic needs

As organizations advance through each of the model's seven levels, they implement progressively more sophisticated costing tools and methods to gain progressively more precise views of costs. Each level builds on the previous one, allowing leaders to leverage a variety of cost accounting methods to dig into greater detail on the many factors that contribute to costs, such as the types of clinicians involved, variations in supply costs, and administrative contributions. The model also assesses current gaps in the organization's source system data to help standardize and automate data capture for more meaningful and accurate outputs.

The L7 model utilizes each of the cost accounting methodologies discussed in the previous section to build a comprehensive cost picture. For example, as organizations move from Level 0 to Level 3, they shift away from the constraints of the CCR approach to RVU-based costing. This allows them to understand which clinicians were involved in a specific patient's care, and better assess variability in labor and professional services costs. Organizations also use supply-based costing to more accurately pinpoint supply and drug costs.

Beginning with Level 4, organizations progress to using patient-specific timestamp detail and activity codes, and by Level 7 they are conducting time-driven costing — the gold standard for cost accounting.

**Organizations can better understand the true cost of services based on the staff involved and the resources used, taking into account factors such as compensation modeling, time-driven costing, and the purchase cost of supplies, drugs, and robotic procedure tools.** Figure 2 details the seven levels of the L7 Model, including the methodologies used and the cost details provided at each.



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**Figure 2. The HFMA–Strata L7 Cost Accounting Maturity Model**

LEVELS	ACCURATE: Components of Cost Model	COMPREHENSIVE: Scope and Use of Cost
7	<b>Levels 1–6, plus:</b> <ul style="list-style-type: none"> <li>• Use of patient-specific timestamp detail to allocate &gt;35% of variable direct labor cost</li> <li>• Rebates are applied at the patient level for every applicable supply or drug</li> <li>• Cost for professional services using patient-specific time stamp detail to allocate &gt;25% of direct labor cost</li> <li>• Integrating outside medical expense claim detail</li> <li>• Cost at a real-time/near real-time basis</li> </ul>	All services provided to patients & members Established data standardization & mature data governance Real-time cost utilization & predictive analytics
6	<b>Levels 1–5, plus:</b> <ul style="list-style-type: none"> <li>• Use of patient-specific timestamp detail to allocate &gt;25% of variable direct labor cost</li> <li>• Payer discount programs (e.g.: 340B) reflected in drug and supply cost</li> <li>• Cost for professional services using timestamp detail to allocate &gt;5% of direct labor cost</li> </ul>	All services provided to patients Established data standardization & mature data governance Patient utilization, population health & VBC analytics
5	<b>Levels 1–4, plus:</b> <ul style="list-style-type: none"> <li>• Use of patient-specific timestamp detail to allocate &gt;15% of variable direct labor cost</li> <li>• Patient-specific acquisition cost for non-chargeable supplies at item level</li> <li>• Patient-specific acquisition cost to allocate &gt;75% of direct drug cost</li> <li>• Labor cost for professional services attributed directly to providers</li> <li>• Comprehensive use of activity codes identifying variation not captured by the CDM</li> </ul>	Hospitals + physician groups + post-acute care Established data standardization & mature data governance Patient utilization, population health & VBC analytics
4	<b>Levels 1–3, plus:</b> <ul style="list-style-type: none"> <li>• Use of patient-specific timestamp detail to allocate &gt;5% of variable direct labor cost</li> <li>• Patient-specific acquisition cost to allocate &gt;75% of supply direct cost</li> <li>• Patient-specific acquisition cost to allocate &gt;50% of direct drug cost</li> <li>• Cost for professional services based on 80% CMS resource-based relative value scale (RBRVS) and 20% directly to providers</li> <li>• Limited use of activity codes identifying variation not captured by the CDM</li> </ul>	Hospitals + physician groups Established data standardization & mature data governance Hospital & professional service line analytics
3	<b>Levels 1–2, plus:</b> <ul style="list-style-type: none"> <li>• Use RVUs to allocate &gt;75% of variable direct labor cost</li> <li>• Patient-specific acquisition cost to allocate &gt;50% of direct supply cost</li> <li>• Standard cost, RVU or percentage markup to allocate &gt;25% of direct drug cost</li> <li>• Cost for professional services using CMS RBRVS</li> <li>• Cost is maintained on a monthly basis</li> </ul>	Hospitals + physician groups Expanding data governance Hospital & professional service line analytics
2	<b>Level 1, plus:</b> <ul style="list-style-type: none"> <li>• Use RVUs to allocate &gt;50% of variable direct labor cost</li> <li>• Standard cost, RVU or markup to allocate &gt;25% of direct supply cost</li> <li>• Cost for professional services utilizing RCC</li> <li>• Detailed cost components for supply and labor</li> </ul>	Hospitals + physician groups Foundational data governance Hospital service line analytics
1	<ul style="list-style-type: none"> <li>• Use RVUs to allocate &gt;25% of variable direct labor cost</li> <li>• Use RVUs to allocate &gt;50% of direct supply/drug cost</li> <li>• Simultaneous overhead allocation</li> <li>• Cost is maintained on a semi-annual basis</li> </ul>	Limited to hospitals & no data governance Utilization driven analytics
0	Use a basic RCC methodology for labor, supply/drug, and overhead expenses	Limited to hospitals & no data governance Used for Medicare cost reporting only

Source: Strata Decision Technology

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Implementing the L7 model occurs in stages. The earlier stages tend to require the heaviest investments of time and resources, but those requirements ease as organizations build out their cost accounting infrastructure and move on to the more advanced levels. Entities that have an advanced costing system can delve deeper into the cost accounting maturity model with less effort. For example, such systems allow them to tap clinical data feeds within EHR systems for automated activity-based costing.

It should be noted that not all organizations may need the level of granularity achieved at the highest stages of the L7 Model. Organizations that benefit most from the level of detail provided at those levels are ones with larger cost structures and more complex patient cases, such as regional medical centers and health systems that encompass centers of excellence. Organizations that are actively seeking to expand their services and geographic footprints also benefit from greater levels of cost detail as they work to manage costs and grow margins to support expansion.

The L7 Model — which was developed and refined over many years — helps organizations inform performance needs and strategic growth decisions by accounting for the numerous factors that influence costs.



# Case Example: Nearly Identical Patients, Very Different Costs

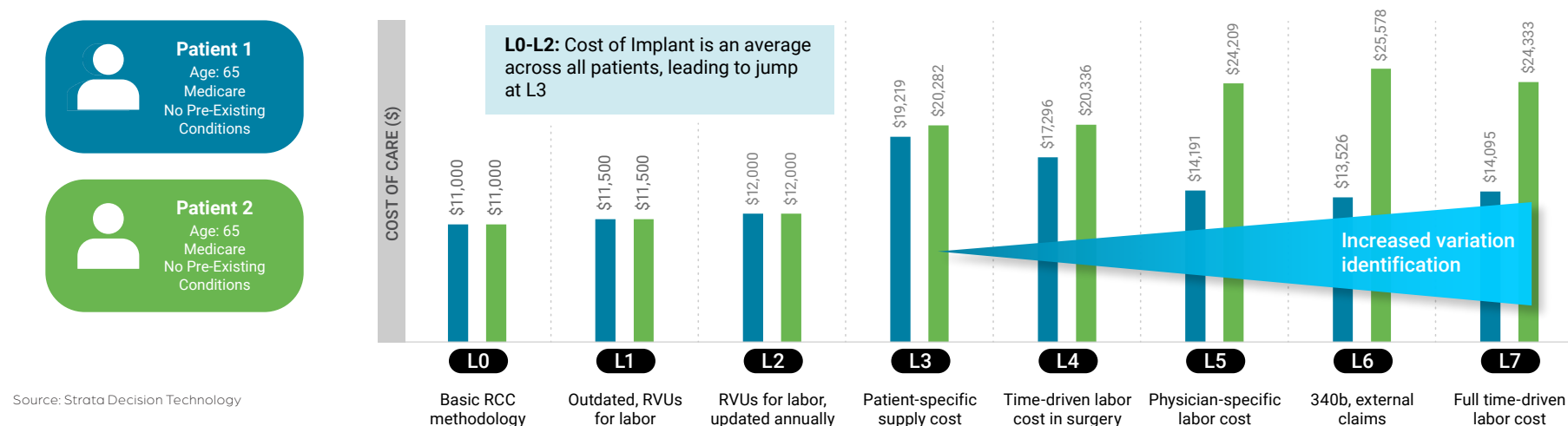
To illustrate the intricacies of costs, consider the example of two patients undergoing knee replacement surgeries (see Figure 3). The two patients have essentially the same profile at the outset. Both are 65-year-old men with Medicare coverage and no pre-existing conditions. After their surgeries, the health system assesses their costs of care as equal at \$11,000 each, based on a CCR approach at Level 0 of the L7 model. Further assessments incorporating RVUs at Levels 1 and 2 return similar results, with identical charge codes for both cases suggesting identical costs.

It isn't until the health system moves to Level 3 and above that further analyses reveal variations in labor and supply costs. For example, a sensitivity to metal in one of the patients required his surgeon to opt for a more expensive, ceramic knee implant, whereas the other surgeon used a metal implant that cost

\$1,000 less. Closer examination also reveals variations in other areas, such as procedure times, labs, and imaging costs.

By Level 6, further activity costing shows a sizable, \$500,000 annualized difference between compensation for one surgery team that includes employed nurses versus the other surgery team that relies on contract nurses due to severe nursing shortages in the area. At the highest level of analysis at Level 7, the health system expands time-driven costing to all clinical areas and identifies further cost differences between the two patients for outpatient imaging conducted post-surgery. Ultimately, the L7 model reveals a more than \$10,000 cost difference between the two cases, with Patient 1's costs totaling \$14,095 compared to \$24,333 for Patient 2.

**Figure 3. Cost of Care by Strata L7 Level**



# Conclusion

There are no quick fixes or immediate answers to addressing the challenges of healthcare costs. The quest to understand healthcare costs is not an easy one. At the same time, however, it is not beyond reach. Healthcare costs are innately complex and require rigor and perseverance to accurately analyze and understand.

**While a CCR approach is relatively easy to implement and understand, healthcare leaders and other stakeholders should be aware of its limitations. Such analyses can be useful in generalized applications, but any method that relies on charges as a basic measure of costs offers inconclusive, inaccurate, and overly broad information, at best.**

The lack of precision in a CCR analysis makes it an unreliable method for use in financial planning, setting policies, allocating funds, determining reimbursement rates, or making other critical cost-based decisions. The potential for distortions or misinterpretations of the data is high.

Healthcare organizations are uniquely positioned to analyze the true costs of care delivery because they can drill in on details relative to specific patient cases and encounters. **For data they can trust, healthcare leaders need a comprehensive approach — such as the L7 Model — that combines various cost accounting methodologies to uncover true healthcare costs and better understand the intricacies of their operations.**

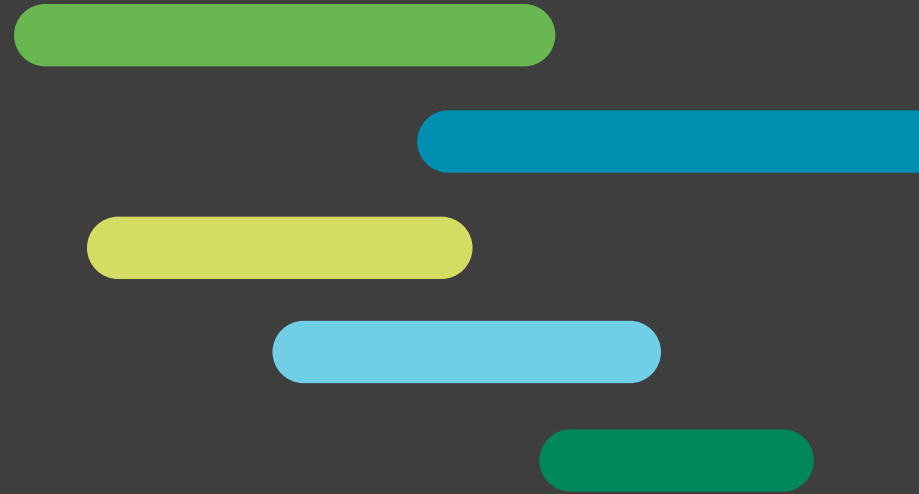


<sup>i</sup> The Centers for Medicare and Medicaid Services: "[National Health Expenditure Data](#), Historical." CMS.gov (accessed Sept. 5, 2024).

<sup>ii</sup> Strata Decision Technology, [Comparative Analytics](#) data, February 2024.

<sup>iii</sup> RevCycle Intelligence: "[The Role of the Hospital Chargemaster in Revenue Cycle Management](#)," Jan. 2, 2024.

<sup>iv</sup> HFMA: "[Introducing Healthcare's First Cost Accounting Adoption Model](#)," Accessed Sept. 5, 2024.



## About Strata

Strata Decision Technology, LLC provides an innovative, cloud-based platform for software, and data and service solutions to help healthcare organizations acquire insights, accelerate decisions, and enhance performance in support of their missions. More than 2,300 organizations rely on Strata's StrataJazz and Axiom solutions for market-leading service and enterprise performance management software, data, and intelligence solutions. To learn more about Strata and why the company has been named the market leader for Business Decision Support for more than 15 consecutive years, please go to [www.stratadecision.com](https://www.stratadecision.com).