Journal of Financial Risk Management, 2026, 15(3), 259-274
https://www.scirp.org/journal/jfrm
ISSN Online: 2167-9541
ISSN Print: 2167-9533

Transforming Healthcare Financial Sustainability—The Role of AI-Driven Real-Time Financial Dashboards to Improve Decision Support

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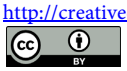
How to cite this paper: Patel, J. (2026). Transforming Healthcare Financial Sustainability—The Role of AI-Driven Real-Time Financial Dashboards to Improve Decision Support. *Journal of Financial Risk Management, 15,* 259-274.
https://doi.org/10.4236/jfrm.2026.153015

Received: April 20, 2026
Accepted: September 4, 2026
Published: September 7, 2026



Abstract

The current healthcare sector in the world has been going through a period where it experiences unprecedented financial strain and complexity in its operations. The conventional approaches to financial reporting that use past-based data and closed-month endings are no longer able to meet the dynamic needs of the contemporary clinical setting. In the current research paper, AI-driven, real-time financial dashboards are explored as a transformative tool to enhance the accuracy of decision-support and speed of operations. The healthcare industry can be shifted to a more proactive management model by combining advanced visual analytics solutions, such as Tableau and Power BI, with the hospital enterprise resource planning (ERP) systems. This paper discusses the technical design of such dashboards, such as how neural networks and machine learning can be used to predictively forecast patient recovery and revenue cycle. Besides, the paper is an analysis of key financial ratios, including Return on Investment (ROI), Liquidity Ratios, and Days Cash on Hand, in a real-time scenario. The study shows the impact of innovative approaches, such as driver-based P & L modeling, financial KPI, service line contribution margin, benchmarking and variance decomposition, on the efficiency, cost reduction, and patient outcomes through the prism of the U.S. healthcare system. The finding highlights AI-driven dashboard's ability to enhance the revenue, increase the reporting speed, optimize cost-saving opportunities for service line, thereby creating more advanced financial environment to support decision-making. The results indicate that in the 21st century, the key to a sustainable healthcare business model lies in real-time visibility.

Keywords

Decision Support, Innovative Methods, AI-Driven Real-Time Dashboard, Patient Management, Healthcare Business Management, Benchmarking and Ratio Analysis, Financial Metrics, Strategic Initiatives, Visual Analytics, KPI and Performance Monitoring

1. Introduction

Data-rich but insight-poor is a common problem in the healthcare sector, which is traditionally one of the most data-rich environments. Hospital administrators and Chief Financial Officers (CFOs) have traditionally used retrospective, static reporting to make strategic decisions over the decades. These reports, which are typically produced in huge spreadsheets or PDF files weeks after a fiscal year is closed, give a rear-view mirror view of the health of an organization. This information lag poses serious threats to financial viability and the quality of patient care in a region where the cost is on the rise, patient volumes fluctuate, and insurance reimbursement models are complex (Smith, 2021).

The transition to historical and static reporting to real-time data-driven dashboard technology is a paradigm shift in healthcare management. A real-time dashboard is not just a digital expression of a profit and loss statement, but a real-time ecosystem, which links clinical activity to financial outcomes as they happen (HFMA, 2025). With the shift by healthcare organizations in the United States towards value-based care over volume-based care, the need to monitor Key Performance Indicators (KPIs) and operational measures in a precise way has become a competitive requirement.

A real-time dashboard is a visual data management solution that offers instant access to real-time financial and clinical information. The system supports the practice of advanced decision support (using analyzed data to guide and improve the timeliness and quality of strategic decision making). The effectiveness of these systems is measured by 2 - 3 specific and tangible results, namely a shorter reporting cycle (e.g., from 10 days to 2 days), a decrease in insurance claim rejection rate and a higher operating margin, respectively. The transformation of healthcare in the United States towards value-based care has made it important to track these Return on Investment (ROI) and Benchmarking with high accuracy.

The main issue that this study would set out to solve is the ineffectiveness of the traditional decision-support cycle. With the current setting, where one specific division, say the Radiology or the Cardiology department, is spending more than it should on supplies or the insurance claims are not being billed as often as it needs to, the management may not notice the pattern until the monthly budgetary meeting. At that point, thousands of dollars of potential revenue could have been missed and bottlenecks in operations could have been compromising patient throughput. A solution to this issue on the industry level is real-time dashboards,

which offer iterative methods to accelerate the reporting process, enabling real-time course correction (Lyu, 2025).

Also, the introduction of new methods of reporting positively affects the whole organizational structure. To the frontline clinical manager, a dashboard gives him an idea of the staffing ratios and bed utilization. To the executive leadership, it provides top-tier reports on the health of Profit and Loss (P & L), Cash Flow and Balance Sheet based on ratio analysis and trend forecasting (Kriegova, Kudelka, & Gallo, 2021). In the following paper, the nature of adoption, recognition, and influence of these technologies in the development of the modern healthcare system will be examined, and it will be proven that the data-driven transparency is the key to the improvement of both the outcomes of the operations and patient management.

2. Methods and Approach

This research is a narrative review and conceptual analysis of the use of data dashboards in healthcare. The study is a literature review, in which literature was sourced by a systematic search of databases, peer-reviewed journals and industry reports between 2018 and 2025. The estimates of financial impacts and outcomes derived from published retrospective case studies of large U.S. health systems presented later in this review are illustrative of benchmarking metric impacts on dashboard performance.

3. Data Sources and Technology Innovation

In order to determine the effectiveness of real-time dashboards, it is necessary to initially take a look at the structure of data that drives them. A healthcare organization produces an enormous amount of data in various silos such as Electronic Health Records (EHR), Revenue Cycle Management (RCM) systems, and Human Resource (HR) systems. The modern dashboard innovation is that it is able to put all these disparate sources together in one source of truth.

3.1. Healthcare Financial and Revenue Cycle Data

Revenue Cycle Data is the central element of a financial dashboard. This would involve the tracking of a patient since the registration till the end payment of the bill in the U.S. healthcare context. The metrics measured by real-time dashboards include: Initial Denial Rates, Clean Claim Rates and Accounts Receivable (AR) Days (Miller & Tan, 2020). With a real-time view of these, financial teams can determine individual payers (insurance companies) that are lagging behind in making payments so that they can take action now.

3.2. Operational Metrics and Integrated Statements

In addition to revenue, dashboards also include operational measures like Average Length of Stay (ALOS), bed turnover rates, and wait time in the emergency department. Once these are overlaid on financial data such as Profit and Loss (P &

L) statements, Cash Flows and Balance Sheets a whole picture of the hospital will be created. An example would be that a dashboard would indicate that a rise in the ALOS in the Neurology department is directly related to a fall in the operating margin of the department as a result of unreimbursed excess days (Akter & Kudapa, 2024).

3.3. Visual Analytics through Tableau and Power BI

High-level business intelligence (BI) tools are a very important aspect of healthcare dashboards success. Tableau and Power BI have become the leaders of the industry since they have the power to manage very large and multi-structured data typical in medical settings. These are used to support Visual Analytics, which is the science of analytical reasoning with the help of interactive visual interfaces. In contrast to conventional spreadsheets, they utilize real-time API connectors to retrieve data directly out of the hospital data warehouse meaning that the information they show is up to date to the minute (IBM Watson Health, 2021).

As an example, in Power BI, with the aid of DAX (Data Analysis Expressions), financial analysts can dynamically build up complex measures to compare Year-to-Date (YTD) revenue with the previous year (SPLY). The strength of Tableau is that it can deal with geographic mapping and intricate scatter plots that are needed to determine the trends or differences in healthcare of a region or the differences in Cost per Case in various hospital branches. These integrative dashboards enable non-technical clinical managers to engage with the data and filter the data to particular physician groups or patient demographics to identify the root cause of the financial variances (Financial Sustainability, 2025).

3.4. Neural Networks and Machine Learning in Financial Forecasting

The largest modern healthcare dashboard innovation is the implementation of Neural Networks, or a part of the Machine Learning (ML). Whereas the conventional forecasting techniques are based on linear regression (examining the past to project a linear future), the Neural Networks have the ability of revealing non-linear trends and intricate relationships in the healthcare data. These networks are applied in a financial context to predict "Revenue Volatility" and "Patient Volume Flux" (IBM Watson Health, 2021).

To illustrate, a Recurrent Neural Network (RNN) or a Long Short-Term Memory (LSTM) model can be used to analyze five years of historical data of patients being admitted into their care as well as external variables such as weather patterns, local flu outbreaks, and economic indicators. The dashboard is able to generate a Predictive Forecast of the predicted patient load in the next quarter by processing this data. This will enable the hospital to maximize its "Revenue Cycle Management" in that they can anticipate the chances of claim denials without even submitting a claim. Moreover, neural networks are used in "Patient Recovery Forecasting," forecasting the most likely date of a patient to be discharged. Having

this information about the timely availability of a bed, financial system can maximize on occupancy throughput, which maximizes the net income and efficacy of operation of a hospital, as a whole (American Hospital Association, 2023) As shown in **Figure 1**, AI-driven dashboard transforms the row data into actionable insights, providing predictive scenarios faster to enhance decision-making across the healthcare organization.

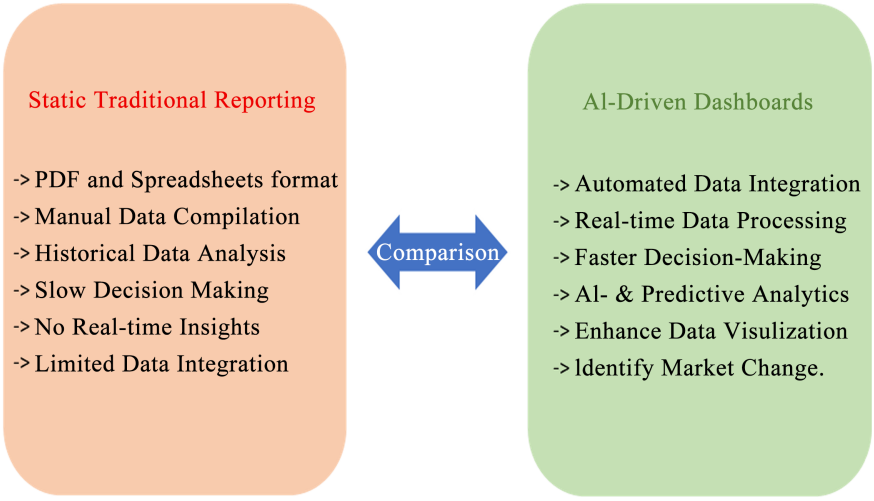


Figure 1. Static traditional reporting vs AI-driven dashboards. Data Source: Modern healthcare (2023).

4. Dashboard Design: A Novel AI/Data-Driven System

The design of dashboard in healthcare has experienced a transition through basic data visualization into a decision-support system. It is not considered to be a reporting tool but a system of action. A properly designed financial dashboard can fuse the details of medical procedures with the strategic aims of the hospital board.

4.1. Design Techniques for Healthcare Organizations

A useful dashboard design involves a number of cognitive tricks to accelerate the decision-making process:

- **The Drill-Down Technique:** This begins with the high-level KPI (e.g., Total Operating Margin) and then the user can click through to understand which particular service line (e.g., Orthopedics) is performing poorly.
- **Color-Coded Heatmaps:** Red-Amber-Green (RAG) status indicators are used to instantly provide managers with information that a metric, e.g., "Cost per Procedure," has surpassed the budgeted value.
- **Iterative Filtering:** Enabling users to filter financial data by payer mix (Medicare vs. Private Insurance), which is essential to comprehend the reimbursement situation in the U.S. healthcare system (Kaplan & Porter, 2011).

4.2. Visual Analytics: Chart Types and Use Cases

The dashboard should use certain visual elements to demonstrate the theory of

improved decision support:

1) Trend Lines: Trend lines are applied in order to track the progression of net patient revenue.

2) Variance Analysis Charts: Particularly, Waterfall Charts, which indicate the impact of various elements such as the cost of labor or inflation in the supply that have decreased profits. Following Figure 2 depicts AI driven financial variance analysis for actual and budget to improve healthcare operational performance.

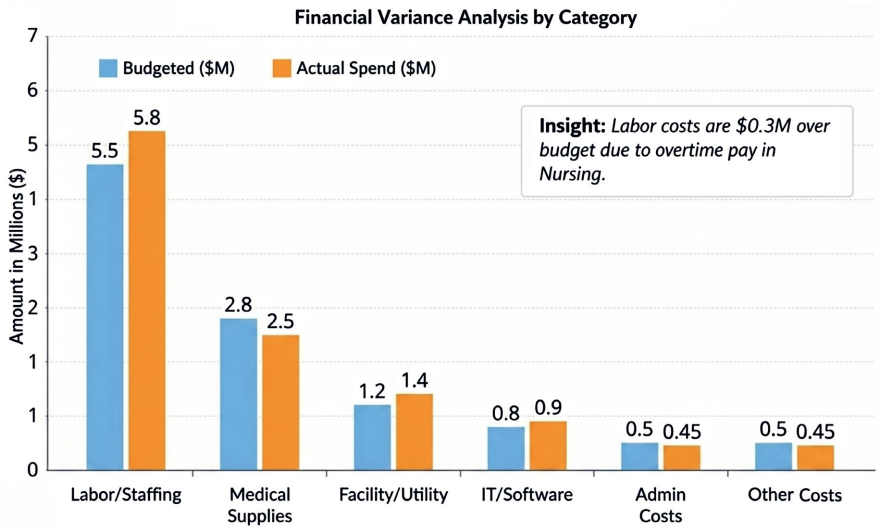


Figure 2. Financial variance analysis for actual and budget using AI-driven real-time Dashboard to improve operational performance. Data Source: Synthesized from healthcare financial sustainability benchmarks (2021). Direct Source Link: https://www.hfma.org/topics/financial-sustainability/.

3) Scatter Plots: It is applied to plot the "Quality of Care" (Clinical Outcome) versus the cost of Care (Financial Outcome) to determine the most efficient physicians.

4) Bar and Pie Charts: Applied to categorical data, e.g., the revenue share of various departments such as Cardiology vs Radiology (Becker Hospital Review. 2023).

Ratio Analysis in Real-Time

Ratio analysis is a mathematical rigor of the sustainability healthcare business model. Once these equations are estimated in real time in a dashboard, the organization will be able to detect the loopholes in the U.S. healthcare market and react quicker than other entities.

Profitability Ratios: These ratios are used to gauge the capacity of the hospital to raise income in comparison with revenue and assets. They are computed in real-time with live feeds of the P & L statement in a real-time dashboard:

Gross Profit Margin: It is a measure of the efficiency of the clinical services, excluding administrative overhead.

Formula: (Total Patient Revenue – Direct Clinical Costs)/Total Patient Revenue

Operating Profit Margin: This is an important measure in the U.S. since it indicates whether the hospital is making money off its core business (curing patients) or investments (Kaplan & Porter, 2011).

Return on Assets (ROI): This metric evaluates the efficiency of a specific capital investment.

Formula: ROI = (Net Profit/Cost of Investment) × 100

Return on Assets (ROA): This measures how effectively the hospital utilizes its total assets to bring in revenue.

Formula: ROA = (Net Income/Total Assets) × 100

By distinguishing between ROI and ROA, real-time dashboards ensure numerical and conceptual consistency, providing executives with a more reproducible set of metrics for decision support.

Liquidity Ratios and Days Cash on Hand: Cash is King in health care. Hospitals need to be very liquid to be able to cope with any emergency or abrupt change in government health policy.

- **Current Ratio:**

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

A ratio below 1.0 indicates a financial risk. For instance, if the Current Ratio drops below 1.0, the dashboard alerts the CFO to delay non-essential capital purchases, preventing a liquidity crisis connecting mathematical ratios directly to hospital survival.

- **Quick Ratio:** A more stringent test of liquidity, excluding inventory (medical supplies).
- **Days Cash on Hand:** This is perhaps the most watched metric by healthcare credit rating agencies like Moody's or S & P.

$$\text{Formula}: \frac{\text{Cash} + \text{Short Term Investments}}{\left(\text{Total Operating Expenses} - \text{Depreciation}\right)/365}$$

Real-time dashboards allow a CFO to see if they have 150 days or 120 days of cash available at any given moment (CMS, 2023).

Time Value of Money (TVM) Ratios: Dashboards are also used in future budgeting of expansions. Executives can also know whether to invest today in a new Oncology wing with a cost of $10 Million to get a positive Net Present Value (NPV) of a penalty in 10 years after inflation and the cost of capital by using Future Value (FV) and Present Value (PV) formulas.

5. Innovative Methods in Dashboards

Introduction of real-time dashboards enables healthcare organizations to go beyond mere data aggregation to Prescriptive Analytics. In this section, the innovative approaches to the financial health modeling and the simulating of the results in the future will be described.

5.1. Driver-Based P & L Modeling

Conventional Profit and Loss (P & L) statements indicate what occurred, and not the reason why it occurred. The new dashboards will be based on the use of the "Driver-Based Modeling" that will connect the financial outcomes to definite drivers of operation. The revenue and cost equation in the health sector can be determined by the following equation:

$$\text{Net Income} = (\text{Volume} \times \text{Rate}) - (\text{Volume} \times \text{Unit Cost})$$

Isolating these variables, a dashboard may indicate whether a drop in profit was brought about by a fall in the number of patients (Admissions/Encounters), a fall in the reimbursement rate by insurance payers (Rate), or an increase in the cost of labor and supplies (Cost). This openness enables executives to focus on the root cause of a financial shortfall and not use general, non-effective budget cuts to cut costs throughout the organization (Kaplan & Porter, 2011).

5.2. Real-Time Variance Decomposition

An important characteristic of advanced dashboards is that it can decompose variances in real-time. When a hospital incurs higher costs than the budget, it is normally because of one of three factors namely Price, Volume or Efficiency.

- **Price Change:** Increased cost of medical supplies or labor.
- **Volume Variance:** More patients were treated than was estimated resulting in an increase in total costs.
- **Efficiency Variance:** utilization of a greater number of resources per patient than the clinical standard.

The mathematical expression that the backend of the dashboard uses to compute Efficiency Variance is:

$$\text{Efficiency Variance} = (\text{Actual Quantity Used} - \text{Budgeted Quantity}) \times \text{Budgeted Price}$$

With this visualization, a department head in Surgery can immediately understand whether they are spending more money than the protocol on sutures, and can promptly change their behavior to save money (Deloitte Healthcare, 2021).

5.3. Service-Line Contribution Margin Analytics

Healthcare systems consist of different Service Lines (e.g., Oncology, Orthopedics, Cardiology). Service lines are not equally profitable. Other ones, such as Elective Orthopedic surgery, can have high margins whereas others, such as Behavioral Health, can run at a loss but are crucial to the community.

Contribution Margin Analytics is calculated as in innovative dashboards:

$$\text{Contribution Margin} = \text{Net Revenue} - \text{Variable Costs}$$

Monitoring this in real time will enable the leadership to make strategic decisions on which service lines to grow and those that need restructuring of costs. As an illustration, when the dashboard indicates that the Cardiology department is experiencing a falling contribution margin although with high volume, it is pos-

sible that the department has had the Payer Mix shifted to lower-remunerating government plans, and therefore the strategic focus of the department should be changed (Tseng et al., 2022).

5.4. Embedded Operational, Clinical, and Financial KPIs

The strength of a healthcare dashboard is in the interlocking of various types of KPI. A system that is really data-driven does not view finance in isolation. Some of the main measures inherent in these systems encompass:

- **Cost per Procedure:** The overall cost of resources expended by a particular DRG (Diagnosis Related Group).
- **Length of stay (LOS):** This is the number of days that a patient spends on a bed. The difference between the actual and the reimbursable LOS is monitored using a dashboard devoted to the Financial LOS Gap.
- **Case Mix Index (CMI):** The index is a number that indicates the complexity and resource requirement of patients. Increased reimbursement rates are normally warranted by higher CMI.
- **Payer Mix:** The percentage of patients covered by Medicare, Medicaid, and Private Insurance.

5.5. Scenario Simulation Capability ("What-If" Analysis)

The latest dashboards have simulation engines that enable the use of the What-If scenarios. With the business model math, an executive can simulate the effects of making outside changes. An example: What would our Net Income be with a 5% increase in the Nursing wages and a 2% decrease in Medicare reimbursements? The dashboard is based on the neural network-based forecasting and historic cost information to offer real-time financial forecasting, enabling the organization to plan in advance about economic changes before they happen (Health affairs, 2022). Figure 3 represents the AI-driven scenario simulation analysis to identify the contribution margin in clinical departments.

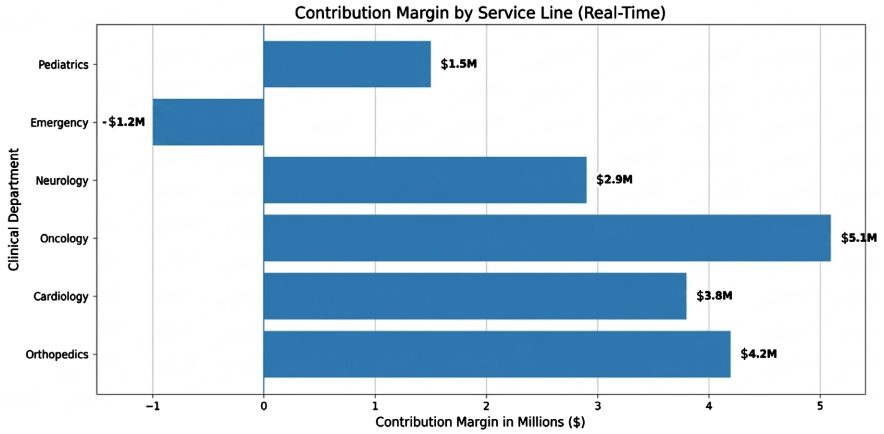


Figure 3. Illustration of scenario simulation analysis using AI driven real-time Dashboard to identify contribution margin in clinical departments. Data Source: Financial Management (2025). Direct Source Link: https://www.beckershospitalreview.com/finance/.

6. Benchmarking and Performance Quality

Benchmarking refers to the process of making comparisons between the performance of a hospital and both internal and external benchmarks. Benchmarking is a time-consuming and manual process without real-time dashboards. It turns into a continuous improvement cycle with them.

6.1. Key Metrics for Benchmarking

- **Cost of Care:** a comparison of the price of knee replacement in Hospital A and Hospital B in the same network.
- **Service Utilization:** Monitoring the utilization of high-cost resources, including imaging (CT/MRI), to provide the appropriate utilization of those resources.
- **Risk Scores:** AI based on comorbidities to award patients with a Risk Score. The financial expectations are then modified according to the riskiness of the patient pool using dashboards.
- **Work Relative Value Units (WRVUs):** This is a very important benchmarking tool in the United States. It uses a numeric value to rank the productivity of physicians on the basis of the number of procedures they undertake.

$$\text{Doctor Productivity} = \sum(\text{Procedure Count} \times \text{WRVU Weight})$$

Dashboards help administrators to determine whether a physician is earning a salary proportionate to his or her WRVU production, which will provide a fair and sustainable compensation pattern (Müller, Srinivasan, & Abeles, 2021).

6.2. Performance Quality Integration

Last, dashboards will make sure that cost-cutting does not result in quality reduction. The dashboard balances the approach by monitoring "Readmission Rates" and "Patient Satisfaction Scores (HCAHPS)" and financial data. In the US, the government punishes hospitals that have excessive readmission rates by cutting a part of their Medicare payment. Thus, a clinical quality monitoring dashboard is more or less a financial protection tool (Stanford medicine, 2021).

7. Improving Operational Efficiency and Enhancing Financial Performance

The shift to the dynamic data visualization of the process of reporting that relies on the old paper-based reporting is the main driver of the efficiency in the functioning of modern healthcare. Conventional methods of reporting tend to have a delay-response cycle. As an illustration in point, a monthly financial report may not be completed till mid-February. When a manager realizes an inefficiency like too much nursing overtime, six weeks have already been lost in terms of financial damage.

This lag is removed with real-time dashboards. Management by Exception is possible in data visualization. A manager does not have to look through thousands

of rows of data; all he has to do is to look at the indicators on the dashboard that are red. This simplified focus will lessen the thinking load on the administrators and enable them to dedicate more time towards clinical strategy and less time data entry (Wang & Hajli, 2017). The efficiency of automated dashboarding is a considerable competitive edge in the U.S. healthcare system, where administrative costs cover almost a quarter of all healthcare expenditures.

Enhancing Financial Performance and Patient Outcomes

There is a profound connection between a hospital's financial health and its clinical outcomes. It has come to be known as the Golden Triangle of healthcare: Cost, Quality, and Access. These three pillars will be balanced with the help of a real-time dashboard. Indicatively, when a dashboard is used to monitor the Cost per Case and the Patient Readmission Rates, the organization cannot reduce costs to the point that it compromises care delivery to patients.

Real-time visibility can aid in maximizing financial performance through optimizing the management of the revenue cycle. From reviewing industry literature, the link between dashboards and how they impact patient outcomes does so both directly and indirectly. Directly, the effects of dashboard as an aid in financial management help billing teams detect patterns of denial much sooner; therefore, billing teams are able to reduce the number of days accounts are outstanding as well as/or increase their net margin (Bates et al., 2014). Dashboards also indirectly help deliver better patient care through associated operational changes resulting from improved financial data. For example, by optimizing staffing based on financial data, being able to efficiently plan for patient discharges so to reduce a patient's length of stay, and/or streamlining the claims process, clinical staff are able to concentrate more on patient-centered care and throughput and less on managing administrative task/processes thus improving the overall quality of patient care management.

8. Implementation Process in Healthcare

The adoption of a data-driven system of dashboards is a multi-stage process that involves the IT, Finance and Clinical departments. It is usually carried out in the following steps:

1) Data Integration and Discovery: Discovery of all silos of data (EHR, ERP, Payroll) and the formation of a single data lake.

2) KPI Definition: Choose the most effective metrics (e.g., CMI, LOS, Days Cash on Hand) to make sure that the dashboard is focused and actionable.

3) Visual Design and Prototyping: With the help of such tools as Tableau or Power BI, it is possible to develop easy-to-use interfaces.

4) Neural Network Training: Introducing past data to machine learning models to allow predictive forecasting.

5) User Acceptance Testing (UAT): Making sure that clinicians and financial

analysts can find the data accurate and easy to interpret.

8.1. Quantifying the Impact

Although this study is an analysis of ideas, without using a dataset or testing a hypothesis, there are many previous examples of large-scale healthcare systems in the United States that support these conclusions (Chen & Asch, 2017). A successful dashboard implementation should be validated by considerable, measurable results. According to industry standards and case-studies of the large-scale U.S. healthcare system, the effect can be assessed as follows:

- **Speed of Reporting**: An example of the effectiveness of real-time reporting is found in many examples of health systems reducing their month-end close period from 10 days to just 2 days when they implement a real-time dashboard reporting system.
- **Cost Savings**: During implementation, some health systems saved $8 million in service line margins due to the use of standardized supplies (Chen & Asch, 2017).
- **Revenue Growth**: As part of their efforts to manage claim denials, some health systems projected that they would increase their net patient revenue by 3% to 5%.
- **Executive Decision Support:** Permitting fast "Service Line Expansion". When the dashboard indicates a high ROI (Return on Investment) and increasing demand in the Neurology department, then the board can be assured to approve a 5 million expansion project that is based on information and not a feeling (Müller, Srinivasan, & Abeles, 2021).

Though these figures are representative of expected outcomes from the literature, they have not been validated statistically with a new study; rather, they are consistent with previous literature that documented similar types of results.

8.2. Innovative Dashboard Processes in the U.S. Healthcare Departments

In order to demonstrate the popularity of such methods, we will need to consider the application of these methods in all the specialized departments of the U.S. healthcare system.

- **Radiology and Imaging**

Radiology uses dashboards that monitor Machine Utilization Rates and Turnaround Time (TAT) in reports. Through real-time tracking of maintenance costs of MRI and CT scanners, the department will be able to plan on the Predictive Maintenance and will avoid expensive downtime of equipment that would cost the department thousands of dollars per hour in revenue losses (Porter & Lee, 2013).

- **Oncology (Cancer Care)**

Oncology is one of the most expensive service lines due to the cost of chemo-

therapy drugs. Oncology Dashboards monitor Drug Waste and Infusion Chair Utilization. Hospitals can maximize patient throughput by scheduling infusion patients using data-driven insights, rather than adding extra staff to provide more infusion service.

- **Cardiology**

In the case of Cardiology, dashboards are dedicated to the Cost of Implants (stents and pacemakers). Real time variance analysis assists the head of the department to notice whether some physicians are paying premium prices on the purchase of implants when a standard implant of the same type, but of a clinically-equivalent type is available, which protects the contribution margin of the department (Guo & Li, 2022). **Figure 4** depicts the AI-driven clinical departments performance, cardiology has the highest cost saving opportunities, and it has 88% operational efficiency score to improve patient outcome.

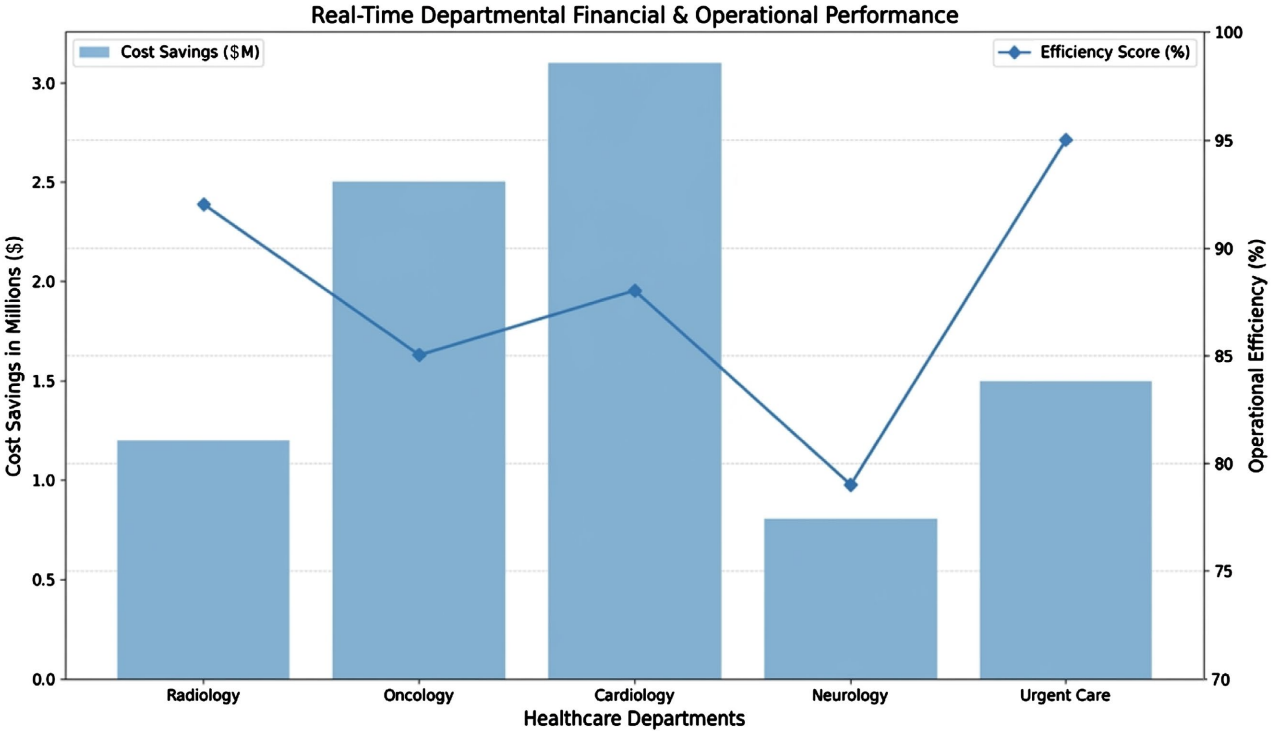


Figure 4. Financial cost saving operational performance using AI driven real-time Dashboard to improve patient outcomes for clinical departments. Data Source: National Dashboard for Health IT Performance and Hospital Metrics (2024). Direct Source Link: https://dashboard.healthit.gov/.

- **Urgent Care and Neurology**

Length of Stay (LOS) of stroke patients is the major concern in Neurology. The dashboards notify real-time when a patient is staying longer than the route the patient is supposed to stay based on his or her CMI. Tracked by dashboards in Urgent Care clinics are Wait Times and Door-to-Provider metrics, which are crucial to patient satisfaction and market share in a competitive outpatient environment.

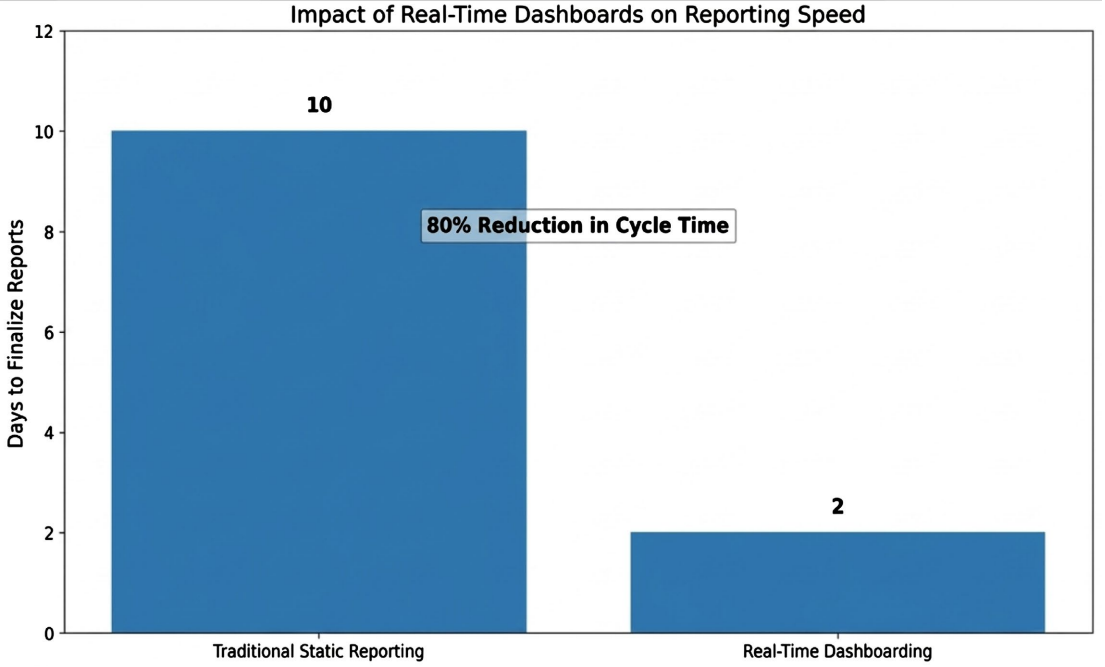


Figure 5. Comparison of AI driven real-time Dashboards and traditional static reporting. Data Source: Analytics performance benchmarks derived from Tableau Healthcare Intelligence Case Studies. Direct Source Link: https://www.tableau.com/solutions/healthcare-analytics.

9. Conclusions

The conclusion of this article is that the use of real-time financial dashboards as demonstrated by the relevant literature and industry benchmarks will be the basis for creating modern-day decision support for healthcare organizations. By utilizing an evolving conceptual model, as well as advancements in artificial intelligence (AI) and neural networks, healthcare organizations can create a framework that allows them to reach levels of precision and velocity that formerly were impossible to achieve.

The case studies outlined were derived from previously published research findings rather than empirical research. Nonetheless, these findings provide a significant amount of evidence supporting the potential benefits of improving operational efficiencies in an increasingly complex U.S. healthcare ecosystem; thus, it is critical for the successful implementation of real-time visibility to be achieved in order to achieve clinical excellence and long-term sustainability. Hospitals can overcome the gap between financial sustainability and clinical excellence through the strict implementation of financial ratio analysis, driver-based modeling and benchmarking, it takes a proactive approach to manage the healthcare system.

The 80% cycle-time reduction shown in **Figure 5** is a representative outcome synthesized from published U.S. hospital case studies to illustrate the conceptual benefits of dashboard technology.

Author Contributions

This research study constructed independently, single handed. The author con-

formed sole responsibility including interpretation of result, manuscript writing and review, material preparation, design and analysis, and study conception.

Funding Statement

This research did not receive specific funding, the study was self-funded by the author.

Conflicts of Interest

There is no conflict of interest regarding the publication of this research.

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