Improving Labor Productivity with Operational Analytics

Abstract

The healthcare industry is facing a critical challenge: labor costs have surged by an average of 258% over the last three years, placing an immense burden on healthcare organizations. Coupled with labor shortages, staff burnout, and an aging population, labor management has become increasingly important for hospitals and public health institutions. The ramifications of labor inefficiency are far-reaching, impacting patient care, satisfaction, and profitability. In this era of data analytics, decisions can no longer be based on retrospective or anecdotal evidence. Real-time, data-driven insights into staffing and productivity have become essential for healthcare organizations to develop effective solutions for labor management and planning.

This white paper delves into the pressing issue of labor productivity in healthcare, its current state, and the anticipated need for improved staffing productivity due to labor shortages and population growth. With this background, we identify the improved accuracy of labor productivity tools that utilize operational analytics for more effective workforce utilization, enabling greater employee satisfaction and retention while improving care margins and revenue.

The Rising Cost of Labor

According to a JP Morgan poll of healthcare leaders[1], retaining and hiring employees is the leading factor responsible for driving up the cost of care (Figure 1). Employee wages and benefits represent the largest percentage of costs for acute care hospitals and have risen nearly 40% between 2019 and early 2022 alone.[2] Furthermore, staffing shortages have led to the use of overtime and agency staff to fill critically needed positions. These two circumstances can add 50% or more to an employee's hourly rate.[3] Unfortunately, hospital leaders often have little choice but to absorb these higher labor costs.

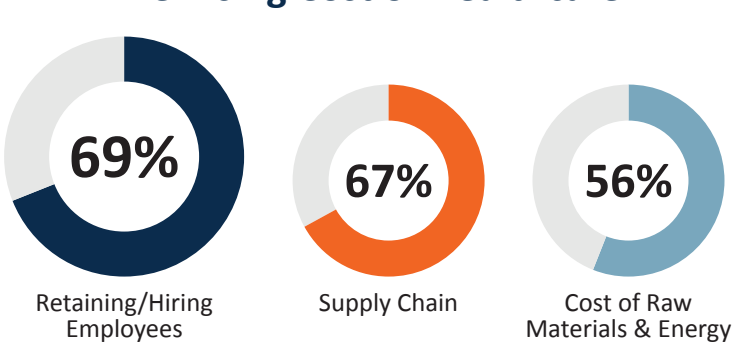

Figure 1 Issues driving up healthcare costs. Source: JP Morgan, 2023 Business Leaders Outlook: U.S., 2023

The impact of the current labor shortage has had numerous effects on the cost of care. A survey of healthcare workers conducted by Ipsos shows that over half of workers feel burned out and nearly a quarter of workers say they will leave the field in a few years.[4] Furthermore, travel nurses have assumed a greater percentage of nursing hours in hospitals, growing from 3.9% in January 2019 to 23.4% in January 2022. Although this percentage has dropped somewhat, it remains significantly higher than pre-pandemic numbers, with hourly rates approximately three times that of direct employees.

Labor Shortages Are Not Going Away

The healthcare industry has known for decades that a shortage was steadily growing due to an aging workforce, educational requirements for employment, and strenuous working conditions. As a result, the American Hospital Association (AHA) notes that hospitals are contending with ongoing shortages of pharmacists, registered nurses, medical technicians, and numerous other clinical roles, prompting many healthcare leaders to indicate staff shortages are the most significant issue confronting US hospitals.[5] Further exasperating the situation, turnover has dramatically increased in critical areas such as emergency, intensive care, and nursing.

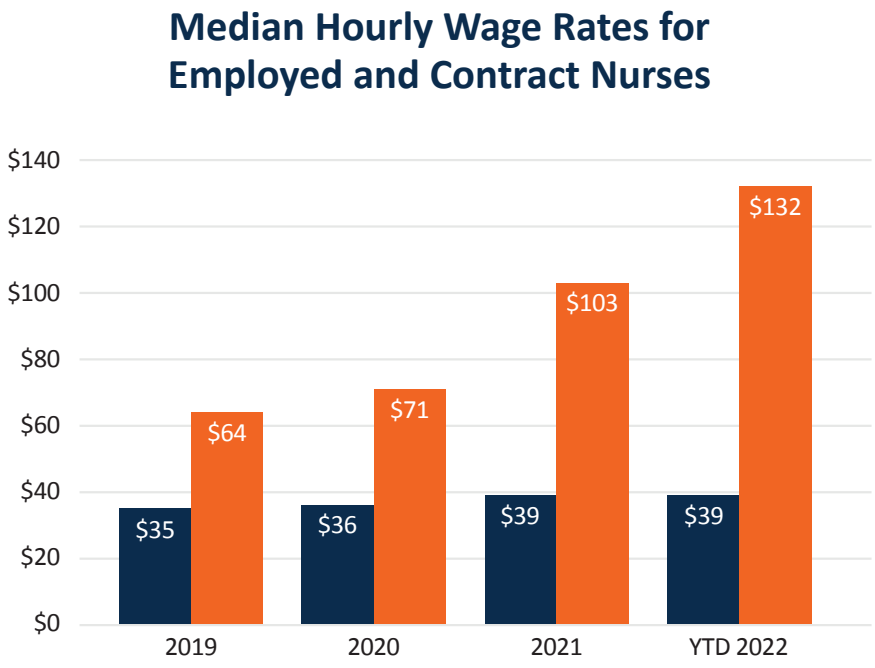

Figure 2 Rise in hourly rate of hospital nurses. Source: American Hospital Association. Data brief: workforce issues remain at the forefront of pandemic-related challenges for hospitals; 2022c.

By 2050, the US population is expected to increase by 41%. Furthermore, the population of those aged 65 or older is expected to more than double in that same period[6]. As a result, the annual number of hospitalizations is expected to increase by 67%. Total aggregate inpatient days is projected to increase 22% more than population growth. The total projected growth in required inpatient capacity is 72%, accounting for both number of admissions and length of stay. Hospitals stays have been relatively consistent, with more frequent stays for the elderly and only a slight decrease in average length of stay, leading to an increase in days. To this end, a recent article from McKinsey & Company has estimated that by 2025 the United States may have a gap of between 200,000 to 450,000 nurses available for direct patient care, equating to a 10 to 20 percent gap.[7] It must be noted, however, these projections are based on current trends. Recommendations to reduce projected shortages include changing care delivery models, making changes to location of care, and using technology enabled workforce productivity tools to optimize the labor-to-care ratio.

The Need for Improved Labor Productivity

Improving labor productivity is one area providers can focus their efforts on to reduce their cost of care. Labor productivity represents the labor output per healthcare worker. In healthcare, labor productivity involves measuring how efficiently a hospital, service line, or department utilize their labor resources to care for all patient activity compared to standards. It can be improved with more educated workers, technological improvements, or increased investment in other inputs, such as new equipment. Multifactor productivity (MFP) growth measures the increase in output over time that is achievable with the same set of inputs. On average, MFP growth in health care has been found to be smaller than economy-wide MFP or even negative.

Improving the patient-labor mix requires optimizing the existing workforce for maximum benefit. Workforce utilization is the efficient use of staff to achieve the hospital's goals. It involves identifying the right people for the right jobs based on acuity level, tracking their performance, and managing their workload to ensure that everyone is working at peak efficiency. The idea being that you let the RNs work to the top of their licenses. Prioritizing workforce utilization and productivity can be beneficial for:

Patient Outcomes

Identifying the right staff members for each role, tracking their performance, and managing their workload can ensure patients receive the best possible care while adding or subtracting resources as needed.

Staff Productivity

Effective workforce management can help identify areas where staff may need additional training or support, leading to higher productivity.

Cost Reductions

Tracking staff workload can help identify areas that are overstaffed or understaffed, reducing labor costs without compromising care.

Revenue

Effective workforce utilization is critical to ensuring compliance with regulatory requirements and avoiding costly fines or penalties.

Employee Retention

Burnout and employee dissatisfaction leads to retention issues. Ensuring workers are focused on meaningful work in line with their skill level improves satisfaction and retention, reducing errors as well as the added costs associated with recruitment and training new employees.

One example of ‘right sizing’ jobs would be to strategically deploy support staff to reduce the administrative burdens of bedside clinicians. Doing so would help to maximize the output of the highest acuity and highest wage staff, while meeting lower acuity activities with lower wage workers.

The Growth of Healthcare Data

Beginning with the passage of the Health Information Technology for Economic and Clinical Health (HITECH Act in 2009, Health and Human Services (HHS) established criteria for the 'meaningful use' of electronic health records, leading to increased adoption of EHRs (Electronic Health Record) and health IT. By 2021, 96% of acute care hospitals and 97% of children's hospitals had an integrated EHR system. As a result, hospital systems are generating amounts of rich data that has been consistently collected but inconsistently leveraged for making managerial decisions.

The graph below shows the increase in the amount of healthcare data over time. We are nearing 3,000 exabytes of data and it will continue to grow exponentially. For context, 1 exabyte is equal to 1 billion gigabytes.

The resultant increase in digital data has provided the basis for the development and monitoring of various quality improvement programs by the Centers for Medicare and Medicaid Services (CMS). When combined with operational analytics, this data can also be used to improve operating performance, including labor utilization and productivity.

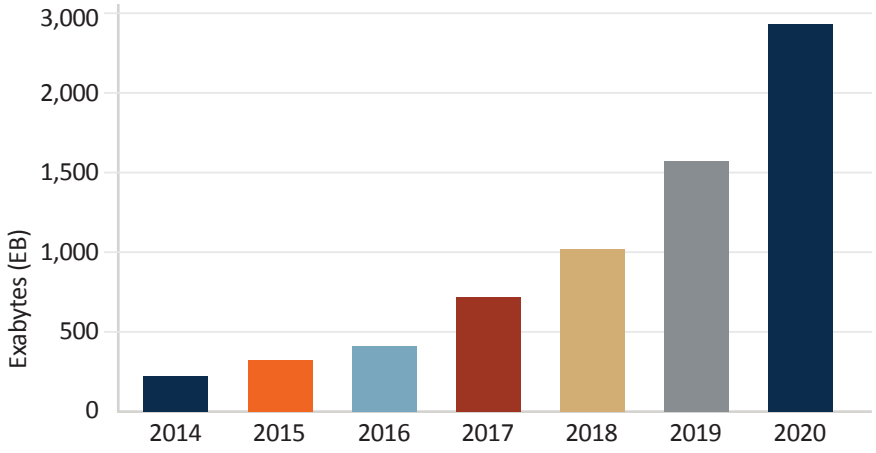

Figure 3 Change in healthcare data. Source: Vertical Industry Brief: Digital Universe Driving Data Growth in Healthcare, EMC², 2014

Operational Analytics for Better Analysis

Operational analytics or operational intelligence is an approach to data and discipline that involves the real-time, dynamic analysis of data to facilitate informed and agile decision-making. It enables businesses to monitor and optimize their operation by providing insights into care processes, resources, and performance metrics. By combining data integration, visualization, analytics, and reporting organizations can gain a competitive edge and respond quickly to changing circumstances.

Disparate data systems create reporting and insights that are siloed to the data available within that system. With analytics, these systems can be connected to provide greater insights and understanding that can change the way decisions are made.

Operational analytics offers various benefits, including improved decision-making, cost reduction, increased operational efficiency, and enhanced customer satisfaction. It empowers organizations to adapt to market trends, proactively address issues, and seize opportunities in real-time.

Improved Labor Productivity

Improving labor productivity involves providing decision-makers with actionable insights and data-driven recommendations. The current standard for reporting and reviewing labor productivity is limited to the data used. Most organizations only look at patient billing and payroll data, which limits the ability to identify the underlying cause or solutions for improving labor productivity.

Tools that use operational analytics can connect electronic health record (EHR) data, general ledger, patient billing, employee clock in/clock out feed, and payroll data. This level of connectivity provides for almost unlimited analytic possibilities and an ability to see patient or employee activity by hour and day, and service-specific analytics that wouldn't be available when only looking at billing and payroll data.

This connectivity to various data sources enables greater analysis across the spectrum of activities that could impact labor productivity. For example, you can determine to what extent overtime or agency costs are impacting the cost of care and adjust accordingly.

Reporting functionality is also critically important. Standard reports are typically bi-weekly or even monthly, and the data provided in these reports is static. Compare that to the ability to look in real-time at staffing variances by day, census, patient acuity, and costs. Furthermore, these solutions offer the higher level of analytics necessary to pinpoint the root cause of inefficiencies without affecting other areas.

Function	Reporting Capabilities	
	Standard Labor Productivity Solutions	Enhanced Labor Productivity Solutions
Overview	Static dashboards	Dynamic dashboards and visualizations
Reporting	Bi-weekly or monthly reporting	Daily reporting
Data Model	Charge-based models	ADT feed-based models
Statistical Analysis	High-level statistics	Detailed statistics tailored to services
Patient Tracking	Average patient activity indicators	Hourly patient activity indicators
Employee Tracking	—	Employee resource utilization detail
Cost Analysis	—	Cost impact of staffing levels

Figure 4 Enhanced functionality and detail due to additional data connectivity

A Case for Operational Analytics

To elevate the advantage of using analytics, we will look at one specific mid-sized, non-profit hospital in the Southeastern United States. In this example, the nursing unit is 46% overstaffed, there are no vacancies, and they are utilizing significant overtime hours to meet their nursing needs. Due to the overstaffing, one might conclude the hospital should reduce the staff by one FTE. However, doing so could create additional issues.

Looking at this scenario using a labor productivity solution with analytics, you would be able to see a detailed chart that shows the nursing staffing data compared with the occupancy rate over time.

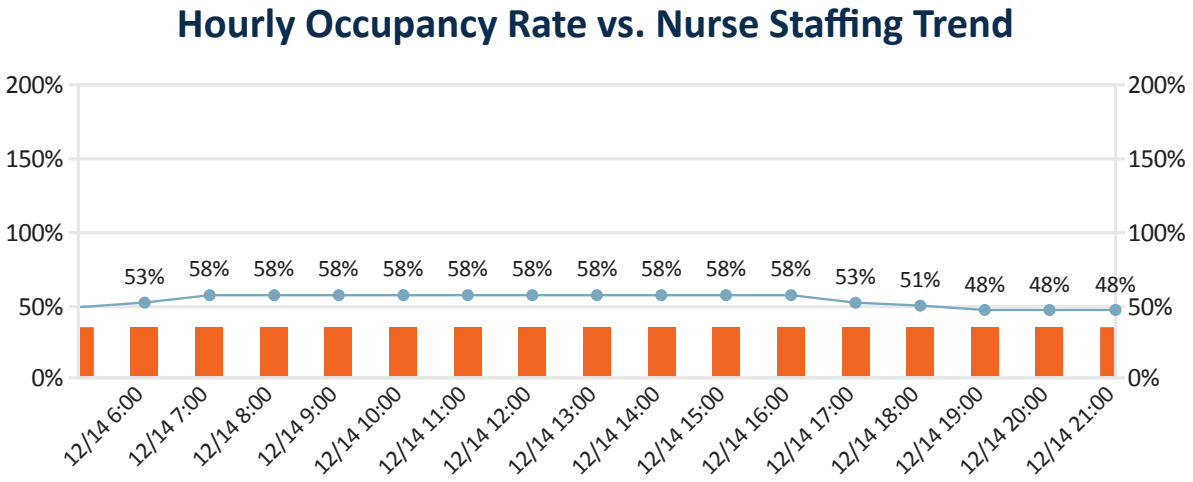

Figure 5 Hourly occupancy rate to nurse staffing. Source: Trisus® Labor Productivity.

Appropriate staffing would see occupancy rate and nurse staffing rate equal throughout the day as admission and discharges change the occupancy. This institution's staffing is far higher than the occupancy rate would justify. Although there is a small flex of staff in the afternoon, it does not sufficiently correspond to the reduced occupancy rate. It is apparent the staff is not flexed sufficiently throughout the day. Doing so would entail a much more nuanced solution that is more likely to succeed versus a flat FTE reduction.

Further analysis shows the estimated labor cost is $12,126 per day, which represents a negative impact of $7,345 per day. Looking at patients by acuity will help to determine which job category is overstaffed. According to the data, the nursing unit has been overstaffed by 46% for two weeks - *but only on weekdays*. In this scenario, flexing the RN staff would help you to meet your needs at the lowest risk.

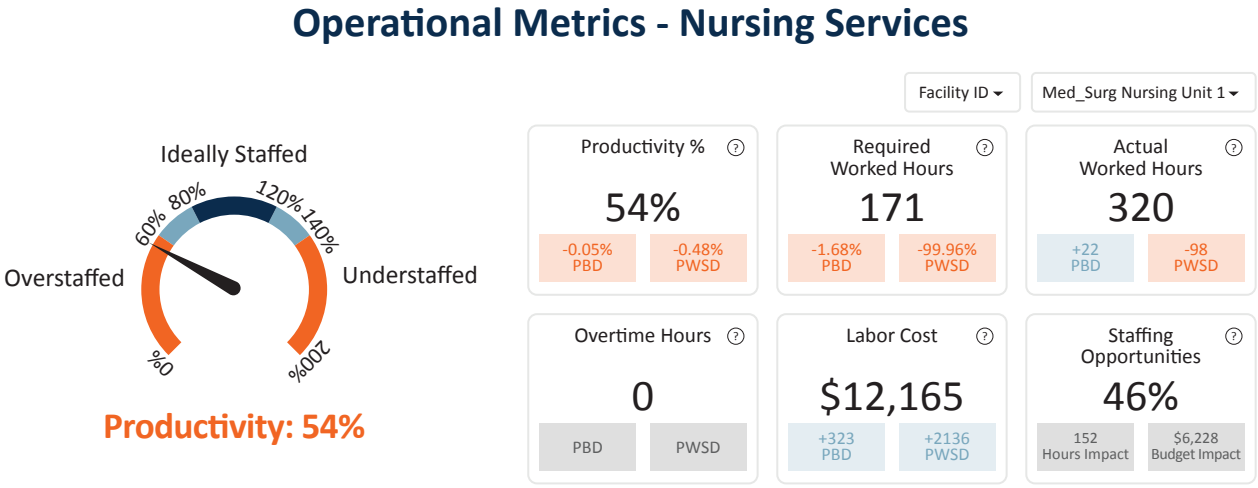

Figure 6 A snapshot of Operational KPIs. Source: Trisus® Labor Productivity

Using this data, the nurse manager can detail the specific areas of impact by acuity and flex the appropriate staff to meet departmental needs. By aligning staff acuity with needs, management can reduce the overall staffing costs, and reduce costly overtime and/or agency fees. Management can use the data to support real-time changes as well as identifying trends to more accurately project needs over time.

Conclusion

Labor productivity solutions that utilize operational analytics enable improved labor tracking and management due to the increased connectivity, granularity, and real-time analysis. These solutions provide real-time labor tracking, predictive analytics, benchmarking, and visualization of data, leading to more accurate and timely decision-making. Operational analytics can be a game-changer for those organizations looking to optimize their labor costs and remain competitive in the evolving healthcare market.

References

[1]JP Morgan, *2023 Business Leaders Outlook: U.S.,* www.jpmorgan.com/insights/outlook/business-leaders-outlook/us-business-leaders-outlook. January 05, 2023

[2]Hall K. *The Financial Effects of Hospital Workforce Dislocation: 2022*, www.kaufmanhall.com/sites/default/files/2022-05/KH-NHFR-Special-Report-2.pdf. Accessed December 7, 2022.

[3]American Hospital Association (AHA), *Data Brief: Workforce Issues Remain at the Forefront of Pandemic-related Challenges for Hospitals*, 2022c. www.aha.org/issue-brief/2022-01-25-data-brief-workforce-issues-remain-forefront-pandemic-related-challenges

[4]*American Healthcare Workers Persevering, but Remaining Stressed*, USA Today-Ipsos, February 22, 2022, www.ipsos.com/en-us/news-polls/usa-today-ipsos-healthcare-workers-covid19-poll-022222

[5]AHA, *Data Brief: Workforce Issues Remain at the Forefront of Pandemic-related Challenges for Hospitals*

[6]Wan He, Daniel Goodkind and Paul Kowal, U.S. Census Bureau, *International Population Reports, P95/16-1, An Aging World: 2015*, U.S. Government Publishing Office, Washington, DC, 2016.

[7]Gretchen Berlin, Meredith Lapointe, Joanna Wexler, *Assessing the Impact of COVID-19 on the Nursing Workforce*, May 11, 2022, McKinsey & Company, www.mckinsey.com/industries/healthcare/our-insights/assessing-the-lingering-impact-of-covid-19-on-the-nursing-workforce