

# Workforce Analytics In Health Care:

The **only** way to equip leaders **with the information they need** to make **the right decisions** in **real-time**.

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**"As a general rule, the most successful man in life is the man who has the best information."** - Benjamin Disraeli (1804 - 1881), former British Prime Minister

Health care service delivery is evolving in directions that affect staffing strategies, but many organizations are unprepared to staff more efficiently. For example, ambulatory health care facilities and positions are exploding – they were leading health care job growth earlier this year<sup>i</sup> – but traditional staffing metrics simply don't apply where patients don't occupy a bed overnight.

The potential for inefficiency and waste is incredibly high. Throughout the health care industry, an organization's biggest cost is labor – over 50% of operating costs, on average.<sup>ii</sup> You can change staffing levels easily enough, but not if you don't know *when* to change, and to what.

Say that you see 50 patient visits every Monday in the summer, so you staff up appropriately. But every Tuesday, you have only half as many visits. Obviously you should staff at a lower, more cost-efficient level.

But you have to realize that first!

Many organizations don't even track their patient visits in a manner suitable for such analysis, much less actually crunch those numbers in order to identify patterns, generate accurate forecasts, and then tie that information to their workforces.

Here's the good news: the technology exists to handle this for your health care organization. It's called workforce analytics, or using sophisticated artificial intelligence (AI) to gather, validate, and analyze data you already have to make better workforce decisions.

Only 15% of companies use data in this sophisticated way, yet the rewards are momentous: the companies that leverage data analytics in their organizations see stock market returns 30% higher than the S&P 500 and are twice as likely to deliver successful recruiting solutions.<sup>iii</sup>

Better information means better decisions, and in this paper, we're going to tell you exactly how to generate the business insight you need.

# How do you do it? Three straight-forward steps to reap the many rewards of **workforce analytics** for your own organization.

**Workforce analytics** translates raw data into **actionable information**.

Most business organizations have a bounty of data available to them, and this is definitely true of health care organizations, who have rich resources from patient records to payroll to EHR records. As *The Harvard Business Review* writes, “The vast majority [of organizations] readily acknowledge themselves as ‘data rich and information poor.’”<sup>iv</sup>

The problem is that 90% of healthcare providers underutilize that data, according to industry analyst McKinsey & Co.<sup>v</sup>

Records may be stored in systems that don’t talk to each other, or they’re kept in a program whose analytical and predictive functionality is limited (Microsoft Excel is a common culprit here), or the data may lack enough “structure” to use.

But if your organization can parse those piles of data to make use of them, the results can be spectacular. *Beckers Hospital Review* reports, for example, that intelligent scheduling platforms can analyze workforce data with enough sophistication to produce accurate staffing forecasts up to *four months* in advance. One company that implemented such a solution saw up to 7% year-over-year savings in labor spend, and “time savings of 7-15 hours per manager per pay period.”<sup>vi</sup>

Such benefits aggregate. Technology research and analysis firm Forrester Research says, “Predictive analytics can have a multiplicative model on the bottom line.”<sup>vii</sup>

But where do you start?

## **Step #1:** Lay the groundwork and diagnose your needs.

How do we improve your workforce efficiency? That question is *always* the starting point. We don’t approach workforce analytics from the standpoint of basic data management – that is, merely capturing, storing and presenting raw data. Instead, we want to leverage that data to produce beneficial outcomes.



Thus, it’s crucial to start with the goal in mind. Given that labor is the biggest spend in most health care organizations, you might want to take the time upfront to understand your situation and your workforce.

For example, is time- and labor-intensive scheduling an issue? If your managers spend an average of two to three hours daily on core staff scheduling to the exclusion of patient care, then yes, it’s an issue. Fortunately, a problem like that is prime territory for workforce analytics: one facility reduced scheduling time by 40% just by installing a data management engine (as discussed in Step 2).

## **Step #2:** Use an intelligent data management engine to capture and validate your data.

Excel is yesterday’s solution. Today’s is an AI-driven data management engine that can interface directly with other data sources, like HR systems, patient data, even weather forecasts. Once deployed, the data engine should do all the work by gathering and even storing the data with little-to-no manual input.

You will also want to verify that the information feeding into the data management engine is reliable and applicable, and that your system/processes protect against unauthorized users inputting bad information.

Your organization should:

1. **Use role-based controls.** Define who can do what based on their roles. For example, many people should be able to read; few people should be able to update or change. Create user profiles appropriate to your staff and set gatekeepers.
2. **Feed policy and internal processes into the system.** For instance, you may not want your nurses to incur more overtime, so you input system controls that will say, “Nancy is coming on overtime, but Bill has worked fewer hours, so for this shift, schedule Bill rather than Nancy.” The system should also conform to organizational policy.

Many health care organizations continue to use Excel spreadsheets for scheduling, but for this purpose, Excel is a dinosaur. You simply cannot leverage the true power of workforce analytics without a powerful and smart engine that can access, validate, process and analyze huge volumes of data.

But what do you look for in such a solution? In the next step, we’ll look at the critical – and often overlooked – criteria that separate the future-proofed from the backwards-looking.

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#### Case In Point: \$500K savings in first year



One four-hospital system desired meaningful reports including trend reporting, forecasts on LOAs, open positions, float pool availability, and more. Their goal: automate complex scheduling processes and always deploy the right resources where needed with predictive resources. The result: they saved **\$500,000** during the first year.

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## Step #3: Make use of the data for decision-making.

With AI to shoulder the burden of data analysis, the data engine does most of the work for the user.

That’s great in theory; but what specifically can users expect in practice once they upgrade their use of workforce analytics? And what functionality must you demand of your data engine in order to ensure it’s delivering the quality of information you need for today’s market? Here are four cornerstones.

### 1: Customizable, Real-Time Dashboards

The dashboard is how users ultimately consume the intelligence being distilled out of raw data, but an AI-driven dashboard is a different beast than others: it’s dynamic, displaying real-time information presented in customizable, actionable visualizations. In other words, users are looking at their world as it exists *right now*, presented in a way that answers questions specific to their role in the organization. Look for:

1. **Dashboards customized to user profiles;** the Chief Financial Officer does not need the same information as the Chief Nursing Office, for instance. Each user should be able to individually configure the dashboards to display the information they need to make the best decisions possible.
2. **A horizontal, organization-wide view.** Users should be able to easily view info across departments within a single location, as well as holistic info across entire organizations.
3. **A vertical, department-deep detail.** Users should be able to dive from the 30,000-foot view down to the minute day-shift view with nothing more than a few clicks. For example, if you have one facility but 50 departments, from the aggregate data, users should be able to delve into department-specific or team-specific.
4. **Real-time, up to the minute information.** Another spot where intelligent systems outpace legacy systems and Excel spreadsheets. Instead of using historical records to produce less accurate forecasts, use actual data to identify trends.

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#### Diagnose Yourself:



Are you using real-time data in addition to historical? One study found that predictions made on historical averages alone are 20% less accurate than forecasts generated with workforce analytics.<sup>viii</sup>

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### 2: Automatic Cost Optimization

The data management system should automatically schedule, or encourage the scheduler to choose, the right resource at the minimum cost. Overtime, for example, should not exceed 2% of payroll as a best practice, and the system should help users identify when they have other, non-overtime options by adjusting the daily staff mix based on the census, acuity and hours per patient day.

### 3: Automated Alerts

Of course, one of the major benefits to using a predictive data management engine is the reduction or elimination of manual labor during scheduling. In fact, the system should go a step further: the burden should be on the *system* (rather than the user) to identify red flags, like advanced overtime and budget warnings, *before* the schedule is produced; it should generate replacement options, thus allowing organizations to forecast, control and budget for their overtime and premium spend.

### 4: Predictive Analytics

Real-time data is important for more than just accuracy, too. It fuels the decisions that need to be made today. Productivity data you get two *months* later is useless for the decisions you need to make four *hours* later. The data engine should be able to overlay *now* information over historical data so, for example, you can compare year over year metrics and use that to predict what's going on in the future.

Reports thus shift from reactive – from constantly putting out fires, from breathlessly playing catch-up, from feeling like you can never get ahead – to forward-looking, using the most current and real-time data. That can open up new avenues of analysis, strategy and decision-making, like the following:

#### → Generate a recommended schedule.

Scheduling can require consideration of dozens or even hundreds of factors, requirements, policies, preferences, restrictions, laws and regulations, not to mention simple personnel requests and conflicts. A good workforce optimization solution should handle all of this automatically with minimal human input or intervention, even producing schedules that meet accurately forecasted needs weeks or months out. In effect, what the AI does is run through simulation after simulation until all metrics are met.

Here's a simplified example: you don't want to pay overtime, and you want a wait time of less than 30 minutes. The system will run schedule simulations until it identifies the number of nurses and personnel needed to achieve a wait time under 30 minutes, assigning shifts to under-utilized personnel to avoid paying OT. A workable, automatically generated schedule is simply the baseline output of a modern health system's workforce analytics engine – yet it's worlds beyond what most current solutions can do.

#### → Predict patient patterns.

You should be able to predict patient inflow by hour of the day, day of the week, week of the month, and month of the year

with reasonable accuracy. Seasonality and even weather also affect patient inflow, which should be considered.

That, in turn, should help you understand what your scheduling needs are: how many beds can you expect to be occupied at any given time, how many staff do you need for healthy patient-staff ratios, etc.

Frankly, you should even be able to predict acuity levels, wait times for different treatment levels, and more. Performed manually, that degree of specificity is so prohibitively difficult as to be impossible. With AI and good data inputs, it's nearly instantaneous. Once again, all of this should happen automatically *without* users having to manually tweak settings on a regular calendar schedule.

#### → Prioritize data appropriately.

Not all data is equal. The quality of data decays over time, until it ultimately becomes *outdated*. For example, if a long-standing medical facility nearby closes, that will affect your own patient patterns permanently moving forward. Therefore, old data predicated on that medical facility being available becomes less applicable moving forward. Your workforce analytics should reflect that, automatically.

#### → Tailor for each individual facility.

Even within a single organization, multiple locations (e.g., clinics or surgical centers) can have different patient patterns. Therefore, metrics may vary from one location to another, and the workforce optimization solution should offer enough granularity to track and identify multiple metrics individualized for multiple locations.

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#### Case In Point: \$1M savings in two years



One health care system with 13 centers in New York deployed workforce analytics to increase transparency, using real-time, organization-wide reports on overtime usage, real-time labor spend, and future labor requirements. They automatically generate schedules based on employee work preference, availability, budget and organization-specific rules. They **reduced time** spent on scheduling and saved **\$1M in overtime usage alone** in the first two years.

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**Conclusion:** From data to information to business intelligence, the results of workforce analytics are **cost reductions, happier staff** and greater **organizational efficiency**.

Why do you want workforce analytics? It is the one way health care leaders, equipped with meaningful and actionable real-time information, can seize control of their decisions in a marketplace that's undergoing seismic shifts. Ultimately, leveraging data is all about doing better business: using better (and more consistent) information

to make better decisions. It feeds business intelligence into the hands of the people who need it most. It enables executives to stay ahead of patient and market trends and push profit further than they even could before. As one manager says, "I've never had so much control in my work."

## Hallmark Healthcare Solutions

We are a people, process, technology consulting firm blending Strategy and Technology. For the past 11 years we have conducted more than 4000 engagements for more than 1500 clients nationwide. We help with workforce optimization solutions to enhance your clinical workforce strategy related to recruitment, deployment, retention and technology. We understand that a more engaged and adaptable workforce to fluctuate with volume changes, the ability to automate your scheduling process and sharing resources throughout the entire system is desired. The need for a larger resource pool, analytic software, real time information and the ability to better manage/communicate with staff around workforce needs is paramount to continued success. Hallmark is here to assist. Visit [www.hallmarkhealthcareit.com](http://www.hallmarkhealthcareit.com) or email [info@hallmarkhealthcareit.com](mailto:info@hallmarkhealthcareit.com)



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<sup>i</sup> Goodman, M. (2015, Apr 6). "Ambulatory Positions Lead Healthcare Job Growth In March." *D Magazine*. Retrieved September 2015 from <http://healthcare.dmagazine.com/2015/04/06/ambulatory-positions-lead-healthcare-job-growth-in-march/>.

<sup>ii</sup> Schouten, P. (2013, Oct 22). "Better patient forecasts and schedule optimization Improve patient care and curb staffing costs." *Beckers Hospital Review*. Retrieved September 2015 from <http://www.beckershospitalreview.com/hospital-management-administration/better-patient-forecasts-and-schedule-optimization-improve-patient-care-and-curb-staffing-costs.html>.

<sup>iii</sup> Bersin J. (2013, Oct 7). "Big data in human resources: a world of haves and have-nots." *Forbes*. Retrieved September 2015 from <http://www.forbes.com/sites/joshbersin/2013/10/07/big-data-in-human-resources-a-world-of-haves-and-have-nots/>.

<sup>iv</sup> Redman, T. & Walker, D. (2012, Jan 25). "Make data work throughout your organization." *The Harvard Business Review*. Retrieved September 2015 from <https://hbr.org/2012/01/make-data-work-throughout-your-organization>.

<sup>v</sup> Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C. & Byers A.H. (2011, May). "Big data: The next frontier for innovation, competition, and productivity." Retrieved September 2015.

<sup>vi</sup> White, D. (2015, Jul 17). "Nurse scheduling problems solved by predictive analytics." *Beckers Hospital Review*. Retrieved September 2015 from <http://www.beckershospitalreview.com/workforce-labor-management/nurse-scheduling-problems-solved-by-predictive-analytics.html>.

<sup>vii</sup> Kaminski, K. (2014, Dec 16). "Forrester: big data, predictive analytics, data integrity driving transformational change in it decision making." *Informed Logix*. Retrieved September 2015 from <http://www.infogix.com/forrester-big-data-predictive-analytics-data-integrity-driving-transformational-change-decision-making/>.

<sup>viii</sup> Schouten, P. (2013, Oct 22).