



# How Leading Healthcare Enterprises Drive Better Outcomes with Visual Analytics

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# Introduction

As healthcare reform shifts the traditional fee-for-service model into a pay-for-performance, value-based paradigm, the implications for existing healthcare delivery systems in the U.S. are far-reaching and even crippling within an increasingly complex technology environment.

With so much raw data from electronic health records, medical devices, operations, finance, and revenue cycle management (RCM) hospital information systems and practice management systems, there is an acute need for a data aggregation and analytics solution. The right solution must provide a holistic view of individual patients and populations, so providers and payers can discover insights that will improve clinical, financial, and operational outcomes.

Key to this change is the advent of the Accountable Care Organization (ACO), which is responsible for ensuring Population Health Management (PHM).

While the PHM concept of working together to improve care at the lowest cost is ideal for most healthcare organizations, the new standards of operation are understandably daunting. Organizations must adapt best practices that align with the business objectives of their enterprise. They must also implement repeatable business processes across the organization—in operations, finance, supply chain management, and so on—to optimize efficiency at the enterprise level.

In the complex world of healthcare, providers and payers are in a constant push-pull that requires them to deliver superior services while managing the revenue cycle proactively and efficiently. Dependencies are the norm, with numerous processes that rely on accurate information from multiple systems and sources. Issues must be identified quickly to avoid costly delays. Claims denials, charge capture and coding, payment posting, appeals, and collections are among the processes that can be impacted by delayed or inaccurate information.

In this white paper we will explore and articulate how industry leaders in healthcare are deploying self-service visual analytics across clinical, operational, and revenue cycle management (RCM) processes and use cases to enable superior patient outcomes with higher quality of care delivery at a lower cost of care—delivering measurable value across the data-driven healthcare enterprise.

<sup>1</sup>According to the Centers for Medicare and Medicaid Services (CMS), ACOs are groups of doctors, hospitals, and other healthcare providers who work collaboratively and accept collective accountability for the cost and quality of care delivered to their population of patients.

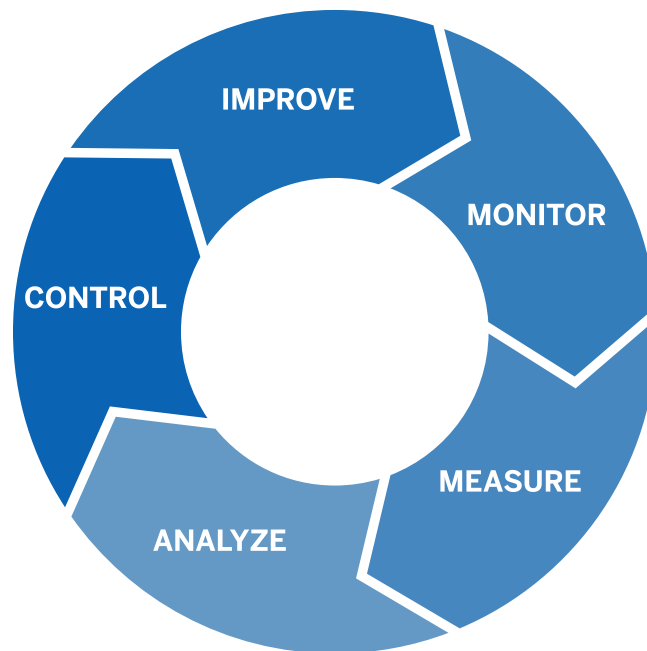
## **An analytics-fueled framework for operational excellence**

Data has long been a pain point for healthcare providers. For years, hospitals and clinics have relied on IT departments to provide answers to data questions, creating a never-ending cycle of long wait times and inflexible results. IT has faced the inverse challenge. IT teams have spent dozens of hours churning out reports and responding to requests that often fall short of what the requester needs to know.

And because most healthcare workers lack the time and skills to see and understand data, they simply don't use the analytics systems provided by their companies. As a result, many knowledge workers today rely on spreadsheets as their primary self-service analytical tool, which can be slow, inefficient, erroneous, and difficult to govern and scale.

Some healthcare providers are altering this status quo by empowering people throughout their organizations to explore data, enabling them to answer their own questions, act on their answers, and improve efficiency.

These organizations embrace a five-part framework: monitor, measure, analyze, resolve, and improve. Data plays a critical part in this model since, as the famous axiom goes, you cannot fix what you cannot measure. And with self-service analytics, anyone across the organization, even non-analysts, can monitor, measure, and analyze their data to track progress.

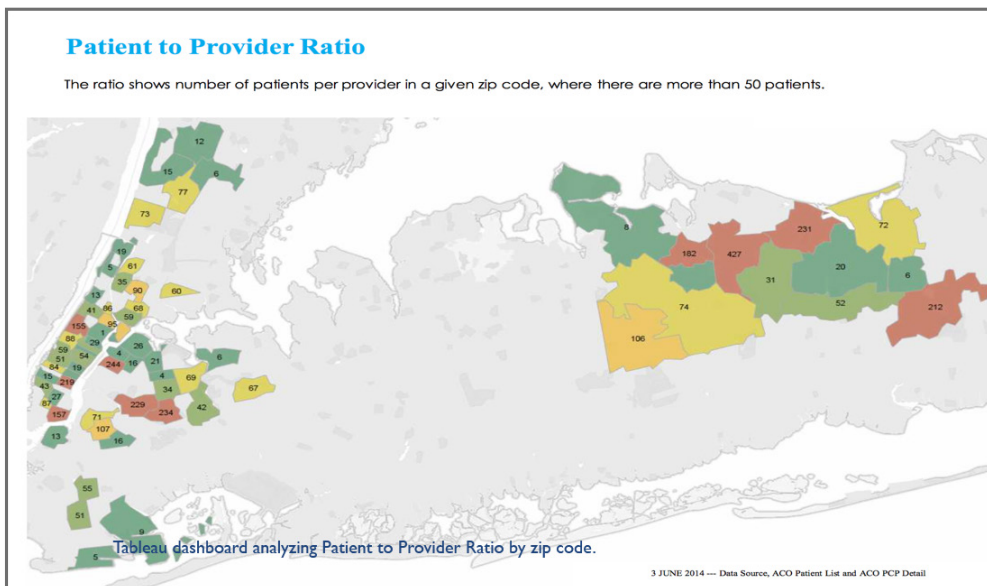


This process empowers people to maximize the impact of their data and make data-driven decisions that improve outcomes. And healthcare leaders across the country are seeing great success with this simple, intuitive, and pragmatic approach.

# Chapter 1

## Segmenting patient populations for robust population health management at Mount Sinai

Mount Sinai Medical Center, based in New York City, was challenged with analyzing their patient-to-provider ratios as the basis for understanding service levels provided to their patient population. They also wanted to use this data strategically to identify primary care practices for potential acquisition and locations to build out their next hospital facility to better serve these patients. They addressed this daunting challenge by aggregating data from multiple healthcare IT (HIT) systems into a single unified dashboard, providing their strategy leaders with valuable, actionable insights to enable population health management.



**Figure 1** Patient-to-provider analysis dashboards to identify under-served patient populations at Mount Sinai Medical Center.

Mount Sinai has also developed disease registries leveraging data from its EHRs and data sources like CMS to monitor and track performance against metrics with Tableau. In addition, they have used publicly available data (blood pressure, BMI, etc.) to craft predictive analytics algorithms, enabling them to proactively segment patients based on their risk for conditions including heart disease, diabetes, COPD, cancer, for care coordination and risk driven intervention.

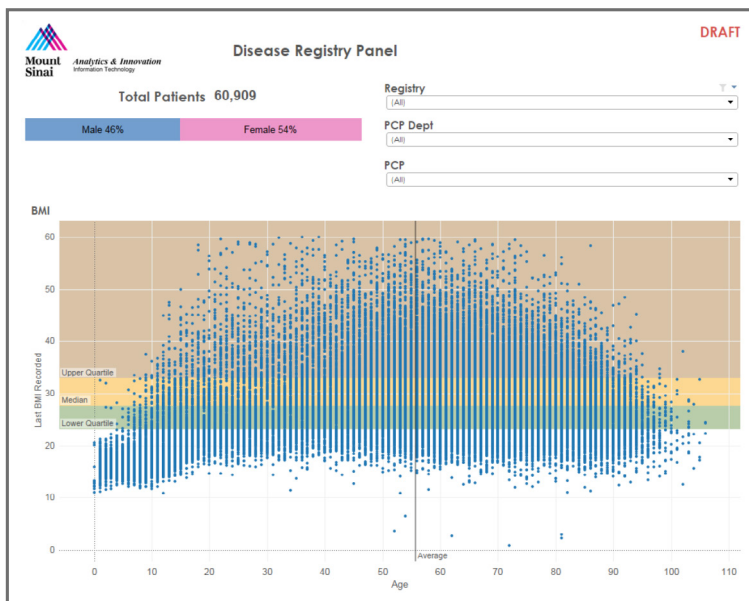


Figure 2 Disease registries with metrics to segment patient population at Mount Sinai Medical Center.

## Chapter 2

### Deploying self-service visual analytics for improved productivity and performance at Piedmont Healthcare and Providence St. Joseph’s Health

At **Piedmont Healthcare**, data had become a problem. This Atlanta-based provider includes five hospitals, 400 medical staff members, and 1,200 affiliate physicians.

Before adopting self-service analytics, accurate and timely data was hard to come by. With no “single version of the truth,” there were scheduling problems that hindered operational excellence. Something needed to change.

After making the switch to self-service analytics, remarkable changes occurred, including a 23% improvement in efficiency and savings of almost \$650,000. How? Piedmont used to rely on some 2,400 Excel spreadsheets that took nearly a month to deliver. Now, that same data is accessible via a single dashboard. This not only simplified access to data but also enabled people across the organization to always have access to the very latest, up-to-the-second data. With a stronger data ecosystem, Piedmont has more resources to pass on to patients.

Providence St. Joseph’s Health faced similar problems. Providence is an enormous organization—the third-largest healthcare provider in the U.S.—with 34 hospitals, 475 physician clinics, 22 long-term care facilities, 19 hospices, 693 supportive housing units, 436,000 members, and 76,000 employees. All those people and facilities produced an avalanche of data that was impossible to use properly—until the organization embraced self-service analytics.

Providence St. Joseph's Health built a self-service data discovery, operational reporting, and analytics platform called 'Vantage' that brings together data from EPIC, Lawson, Press-Ganey, and other hospital systems to deliver 40 standard reports across 30,000+ users. These standardized reports across financial, operational, supply chain, and clinical functions (including physician scorecards) enable executives to monitor the financial health of the enterprise, operational supply chain efficiencies and benchmark physician utilization and performance. Adoption of the platform has increased physician productivity by 8% in 12 months, with measurable decrease in 30-day re-admission rates for PHM. Adopting predictive and prescriptive analytics to augment PHM capabilities is on the horizon.

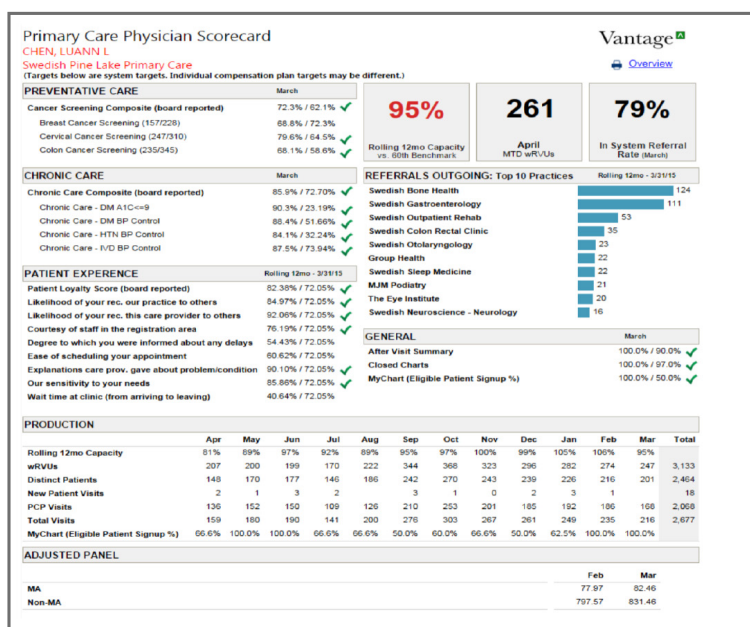


Figure 3 Physician scorecard at Providence St. Joseph's Health with data drawn from their Epic electronic health record, Press-Ganey, revenue cycle management (RCM) and other healthcare IT systems, catapulting physician productivity by 8% within 12 months of introduction.

Among other benefits, Providence saw gains in physician productivity and the quality of cancer-screen composites, which improved 100% in one year. The data is having critical impact, says Kim Womack, Clinical Administrator for Providence's Swedish Medical Group.

“ The cancer screening metric and our patient detail reporting has enabled better patient care.

—KIM WOMACK, CLINICAL ADMINISTRATOR

# Chapter 3

## Optimizing the supply chain to lower off-contract buying and improve supply chain performance at BJC Healthcare

Barnes-Jewish Healthcare (BJC) was suffering from an inefficient supply chain. The system of 11 hospitals had little visibility and inventory was hard to track. Since records were inaccurate, spending was sometimes wasteful. The goal was to reduce spending and develop a leaner, cleaner approach to the supply chain.

With self-service analytics, BJC managed to centralize purchasing and keep much closer tabs on spending with suppliers and supplies, as well as off-contract or “maverick buying” happening within their hospitals. Not only can they track maverick buying at a stock keeping unit (SKU) level and trace this back to the clinicians and nurses ordering them, they can also use the insights to drive awareness and minimize the behavior. BJC also set aggressive targets for procurement and supply chain savings annually and leveraged visual analytics dashboards to monitor, measure, analyze, and improve performance on a month-by-month basis, with visibility at each level of the organization. See Figure 4, below.

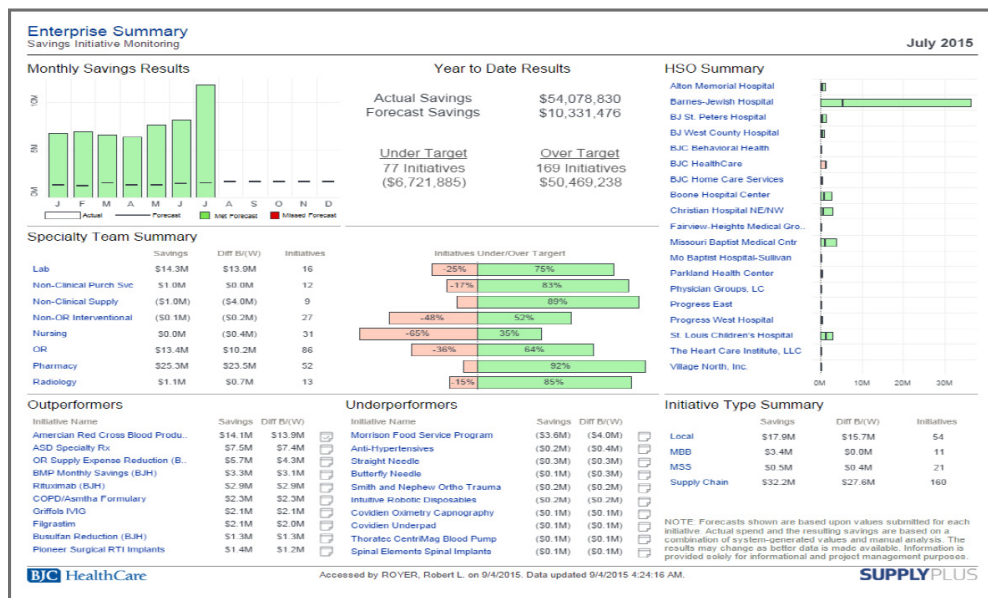


Figure 4 Executive dashboard showing year-to-date savings, procurement, and supply chain performance at BJC Healthcare.



The result: The organization saw numerous benefits, including saving \$212 million on supply-chain spending over a four-year period. Barnes-Jewish (BJC) Healthcare was also recognized with the prestigious Gartner Supply Chain Innovator Award in 2015.

These savings directly translate to better care, says Strategic Supply Chain Manager Lynn Kersting:



Every one-percent reduction in supply spending is equal to hiring 500 full-time equivalent caregivers.

—LYNN KERSTING, STRATEGIC SUPPLY CHAIN MANAGER

## Chapter 4

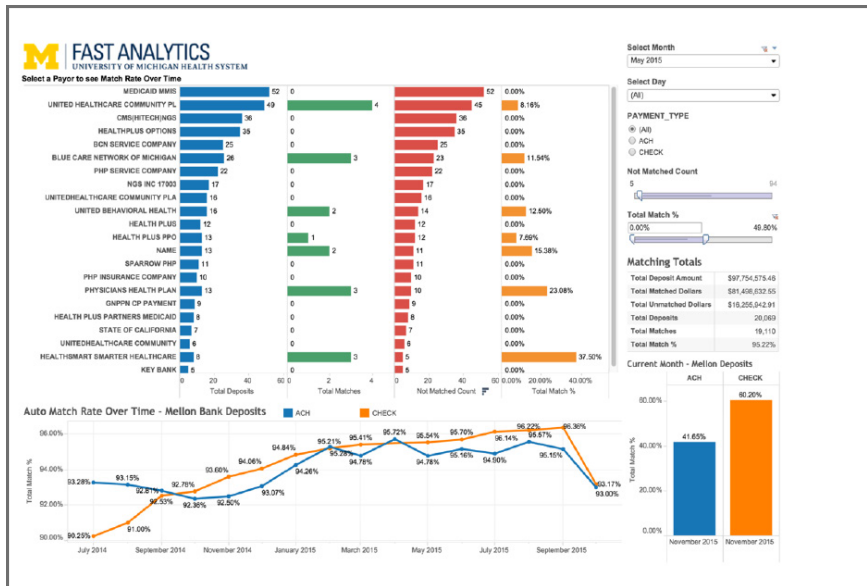
### Enabling RCM efficiencies and productivity with visual analytics-enabled automation at Michigan Medicine

**Michigan Medicine** is home to one of the largest health care complexes in the world, with three hospitals, 40 outpatient hospitals, and more than 140 clinics. Michigan Medicine's Fast Analytics team, part of the Revenue Cycle Management Department, serves the data needs of over 30 internal groups. With Tableau, these 30 teams are able to allocate resources more efficiently—what was siloed information is now accessible, leading to faster decisions.

Michigan Medicine has achieved numerous process and productivity milestones since implementing Tableau, including 10,000 hours of cumulative manual work saved. Automation of manual, repetitive, and mundane tasks has also led to higher employee productivity and morale, with a reduction in employee turnover.

#### Among the most significant improvements:

- Automated reporting saved over 5,000 hours on four different projects
- 19 groups eliminated 48 hours of work per week with access to common dashboard
- Charge estimation dashboard accelerates a 4.5-hour process into a 4.5 second query
- 85–92% of reconciliation process is now automated, providing a baseline to reconcile the rest



**Figure 5** Before Tableau implementation, only 13% of accounts were being reconciled—manually. Today, reconciliation is automated at a rate of 96%-97%.

## Conclusion

Market forces—including evolving regulations, increased consumerism, value-based care, and growing patient financial burden—are forcing healthcare organizations to transform their approach to managing their business processes, from clinical and population health management (PHM), operations, procurement and supply chain management (SCM) to HR productivity, finance, and revenue cycle management (RCM). Increasingly, the healthcare sector is turning to technology to address the challenges of RCM. This includes a combination of software solutions, electronic health records systems, and business intelligence platforms.

Self-service visual analytics from Tableau is the leading enterprise-ready analytics and BI platform for healthcare organizations. Visual analytics from Tableau helps decision makers across the enterprise (executives, line of business leaders, physicians, clinicians, nurses and analysts) understand their data and create actionable insights to lower costs, improve the quality of care and patient outcomes, and drive operational and revenue cycle efficiencies. At the same time, organizations receive tangible payback on their healthcare IT (HIT) investments in weeks and months.

## About the Author

Andy Dé is the senior global industry director for Healthcare and Life Sciences at [Tableau Software](#). In this role, he leads the innovation, thought leadership, go-to-market, partner ecosystem and commercialization strategy, planning and execution for Tableau's solutions targeted at healthcare providers, payers, pharmaceuticals, and medical devices. He has over 20 years of prior enterprise software innovation strategy, solutions portfolio management, and go-to-market strategy, planning and execution leadership experience at GE Healthcare, SAP Health-Sciences and i2.

Andy is passionate about healthcare innovation and authors the [health sciences strategy blog](#) and its companion twitter feed ([@HITstrategy](#)) with a readership audience across 47 countries, that has been referenced by the Harvard Medical School, the Ohio State University (OSU), the Healthcare Information Management Systems Society (HIMSS), Partners Healthcare, and the Washington Post. He has been extensively quoted and published in leading Healthcare publications like Healthcare IT News, Health Data Management (HDM), Healthcare Informatics, Modern Healthcare, Search Health IT, Fierce Healthcare, Health Management Technology, and Hospitals and Healthcare Networks (HHN). Andy was recently recognized as 'one of the [Top 55 Healthcare IT experts and thought leaders on Twitter in 2016-17](#)' by Health Data Management (HDM), and as one of the [2018 HIMSS Social Media Ambassadors \(SMAs\)](#) by the Healthcare Information Management Systems Society (HIMSS). His professional profile can be accessed at [www.andyde.com](http://www.andyde.com)

## About Tableau

Tableau helps people transform data into actionable insights. On the Tableau platform, it's easy to explore your data, build dashboards, and perform ad hoc analyses in just a few clicks. Healthcare organizations are using Tableau to enable data-driven decisions at scale that can reduce costs, enhance quality, and ultimately improve the patient experience.

[Download a free trial](#) and experience the power of Tableau for yourself.

## Relevant Resources

[Tableau Healthcare solutions page](#)

[Driving Population Health Management with Visual Analytics at Mount Sinai Health](#)

[Piedmont Healthcare Improves Care with Proactive Insights](#)

[Spreading Visual Analysis throughout Barnes Jewish Hospital](#)

[Michigan Medicine Optimizes Workforce with Tableau, Saving 5,000 Analyst Hours in a Year](#)

