

# Data-Driven Approach Identifies Nearly \$33 Million of Savings Annually




## EXECUTIVE SUMMARY

Today's healthcare industry, in which a lack of insight into clinical variation has contributed to increased expenses, has significant opportunities to use data and analytics to improve outcomes and reduce costs. As part of its ongoing commitment to improve clinical value, Allina Health has employed a systemwide process to identify, measure, and improve clinical value. The health system has been able to quantify the value of clinical change work to improve outcomes, while reducing costs and increasing revenue for reinvestment in care.

Allina Health achieved the following meaningful results with this collaborative, data-driven opportunity analysis process:

- Identified nearly \$33 million in potential cost savings for the first three quarters of 2017.
- Achieved over \$10 million of confirmed savings during the first three quarters of the year.
- Elevated discussions of cost concerns, leading to the development of standard processes, and significantly reducing unwarranted clinical variation.

### HEALTHCARE ORGANIZATION

Integrated Delivery System

### PRODUCTS

- Health Catalyst® Analytics Platform, including the Late-Binding™ Data Warehouse and broad suite of analytics applications
- Key Process Analysis (KPA)

### SERVICES

- Professional Services

## USING BIG DATA TO MANAGE UNWARRANTED CLINICAL VARIATION

Unwarranted clinical variation is responsible for 42 percent of wasted healthcare spending in the U.S. The bulk of variation at hospitals comes from just 16 percent of physicians.<sup>1</sup> Most healthcare documentation is within an EHR, leading to a growth of clinical analytics, techniques for analyzing large quantities of data, and new insights from that analysis—a phenomenon known as big data. As a result, the industry has unprecedented opportunities to use big data in clinical opportunity analysis to reduce the costs of healthcare.<sup>2</sup>

A not-for-profit health system, Allina Health is dedicated to the prevention and treatment of illness, and enhancing the greater health of individuals, families, and communities throughout Minnesota and western Wisconsin.



Providing our clinicians actionable data analyses has helped engage them in identifying opportunities for improvement.

Sarah Jenson MS, PMP  
Lead Clinical Data Analyst  
Allina Health

## LACK OF VISIBILITY INTO CAUSES OF VARIATION HINDERS IMPROVEMENT

Healthcare organizations must closely monitor margins to remain financially viable. Allina Health leadership recognized the need to focus more precisely on finding ways to fund its mission. As a large health system with limited resources, Allina Health was challenged to identify improvement opportunities to impact outcomes and reduce costs. Allina Health recognized that a lack of insight into clinical variation contributed to increased costs. Additionally, previous attempts to identify opportunities for improvement were not specific enough to target clear cost categories with the greatest variation.

## CLINICAL OPPORTUNITY ANALYSIS—BRINGING BIG DATA, ANALYSTS, AND CLINICIANS TOGETHER TO REDUCE WASTE, VARIATION, AND COSTS

As part of its ongoing commitment to improve clinical value, Allina Health employs clinical opportunity analysis—a systemwide process to identify, measure, and improve clinical value by quantifying the value of clinical change work to improve outcomes, while reducing costs and increasing revenue for enhancing patient care.

Clinical opportunity analysis identifies actionable opportunities to reduce cost. The Health Catalyst® Analytics Platform, including the Late-Binding™ Data Warehouse and broad suite of analytics applications, is a critical component of the Clinical Value Program used to identify opportunities.

Allina Health uses two pathways to initially explore potential opportunities:

- Identifying clinical variation by using an analytics application which employs the “80/20 rule” to identify cost-driving clinical areas and variation in care processes. The tool combines clinical and financial data highlighting the best opportunities for improvement and cost reduction, guiding the prioritization of outcomes improvement opportunities (see Figure 1).
- Conducting organized discussions with clinicians to identify waste.

## FIGURE 1. SAMPLE KEY PROCESS ANALYSIS VISUALIZATION

- 1 Tabs for selecting visualizations.
- 2 Filters and selected values.
- 3 Visualization variable direct cost pareto by care family.

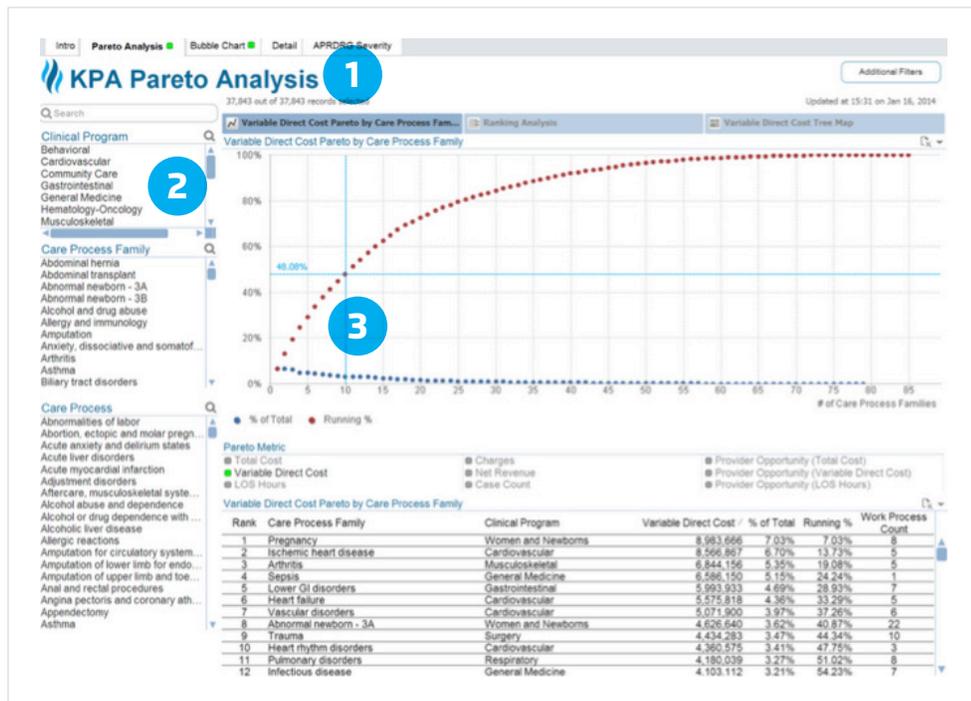


Figure 1. Sample Key Process Analysis visualization

Allina Health identifies and further refines potential opportunities with the following measures:

- Focusing on clinical conditions with high cost and high variation.
- Identifying drivers of cost by analyzing a nine-part cost break (room, supplies, operating room, medications, lab, radiology, therapy, respiratory, and other) and exploration of deeper levels of detail, drilling down into 29 additional cost details.
- Examining care variation by facility and/or provider.
- Drilling down to homogeneous patient populations by segmenting on severity, diagnoses, and procedures.
- Analyzing the impact of other factors, such as LOS, potentially preventable readmissions, or potentially preventable conditions.

On a quarterly basis, Allina Health's data analysts use the rich data within the analytics platform to identify undesirable variation in high-cost, high-volume clinical care processes. Leaders of the improving Clinical Value Program meet with the analytics team to select and assign areas of focus. The areas of focus could include service lines, facilities, types of services and events, literature reviews, or other identified areas of special interest. The analytics team then reviews, critiques, develops, and finalizes the opportunity analysis, and presents it to the Clinical Value Program team and clinical leaders.

The analytics team provides clinicians with suggestions on areas to dig into deeper, defines a methodology, and identifies where additional input from clinical expertise is needed. By involving clinicians and clinical leaders, Allina Health ensures correct clinical decisions, allowing it to address unwarranted variation.

Focusing the analysis on cost category levels, such as supplies, labs, pharmacy, radiology, therapy, room costs, and operating room costs, enables Allina Health to explicitly target areas of greatest clinical variation. Initially, the opportunity identification process focused primarily on inpatient cost variation. Allina Health has since expanded the opportunity analysis process to explore other revenue generating opportunities and cost savings areas, such as referrals, care coordination, and reducing total cost of care.

Allina Health reduces care variations by reducing outliers or shifting the mean:

- Outlier reduction provides more immediate results, focusing on reducing variation in a smaller number of facilities or providers. While the results are more immediate, they diminish over time, as outliers are reduced. The opportunity calculations are generally based on reducing cases above the 75th percentile (after removing outliers) to the 75th percentile variable cost.<sup>3</sup>
- Shifting the mean requires a change in practice among the majority and a continuous focus on improvement. These changes take longer to accomplish, but will drive long-term results.<sup>3</sup>

For each opportunity, data analysts identify variation by developing an understanding of similarities or differences between populations. To understand true variation, rather than the perception of variation when comparing groups that are too dissimilar, Allina Health drills down to as homogenous of a clinical population as possible. To present a full picture of the variation and opportunity, analysts share their analyses visually—via bubble graphs and box plots—with Clinical Value Program members and clinical leaders. These graphs are used together to help guide improvement opportunity identification, and are presented in a consistent manner with each opportunity analysis.

The Clinical Value Program and clinical leaders use the information to develop quarterly plans for improvement projects targeting improved outcomes and decreased costs. The identified opportunities may or may not be acted upon right away. Items that are not immediately acted upon are retained in service line portfolios and are moved to the forefront when resources become available to focus attention on the opportunity.

## RESULTS

Using a collaborative, data-driven approach to improve clinical value, Allina Health has achieved the following results:

- Identification of opportunity for \$33 million in cost savings for the first three quarters of 2017.
  - Over \$10 million of confirmed savings during that time.
- The opportunity analysis process allows for meaningful, elevated discussions of cost concerns, enabling the development of standard processes, and significantly reducing unwarranted clinical variation.

## WHAT'S NEXT

Allina Health plans to continue to use a data-driven, multidisciplinary team effort to strengthen the utilization of the opportunity analysis process, embedding it into routine business operations. 📌

## REFERENCES

1. Advisory Board. (2017). *Standardizing practice for a tighter grip on cost and quality*. Retrieved from <https://www.advisory.com/consulting/clinical-variation-consulting>
2. Bates, D. W., Saria, S., Ohno-Machado, L., Shah, A., & Escobar, G. (2014). Big data in health care: Using analytics to identify and manage high-risk and high-cost patients. *Health Aff*, 33(7), 1123-31. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/25006137>
3. Advisory Board. (2015). *The care variation short list – Targeting high ROI opportunities for reducing care variation*. Retrieved from [https://www.advisory.com/-/media/Advisory-com/Technology/Crimson-Continuum-of-Care/Success-Pages/CCC\\_CareVariation\\_CG\\_011615.pdf](https://www.advisory.com/-/media/Advisory-com/Technology/Crimson-Continuum-of-Care/Success-Pages/CCC_CareVariation_CG_011615.pdf)

## ABOUT HEALTH CATALYST

Health Catalyst is a next-generation data, analytics, and decision support company committed to being a catalyst for massive, sustained improvements in healthcare outcomes. We are the leaders in a new era of advanced predictive analytics for [population health](#) and [value-based care](#). with a suite of machine learning-driven solutions, decades of outcomes-improvement expertise, and an unparalleled ability to integrate data from across the healthcare ecosystem. Our proven data warehousing and analytics platform helps improve quality, add efficiency and lower costs in support of more than 85 million patients and growing, ranging from the largest US health system to forward-thinking physician practices. Our technology and professional services can help you keep patients engaged and healthy in their homes and workplaces, and we can help you optimize care delivery to those patients when it becomes necessary. We are grateful to be recognized by Fortune, Gallup, Glassdoor, Modern Healthcare and a host of others as a Best Place to Work in technology and healthcare.

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