



Figure 1: Moving from Reactive to Prescriptive Analytics

In the graph above, a rise along the Y axis represents an increase in analytic value. The X axis represents a combination of technical skill and contextual understanding of how the information will be used.

Reactive Analytics

The simplest type of analytics is reactive analytics, such as a count of activities or list of patients. Reactive analytics includes basic calculations on industry accepted metrics such as a heart-failure admission, answering pre-anticipated questions and generally confined to a single source of data. Many reactive analytics are included as part of a vended system, particularly EMRs. Consequently, the report writer’s contextual understanding of what is being measured in the report, and why it matters is often remarkable low. Reactive analytics explains some of the what but does not explain the why.

Descriptive Analytics

The next type of analytics is descriptive analytics. This type of analytics is moderately complex and attempts to describe the world of healthcare around us. Analytic work of this nature is usually performed within a dedicated analytic environment.

Descriptive analytics leverage highly-customized data models. These data models are populated with multiple sources of data (EMR, claims, human resources, lab, professional billing, etc.,) all organized around a given domain. Data provisioning and integration efforts into an Enterprise Data Warehouse (EDW) affords a more

position that would allow them to catch the best waves. In his words, “Surfing is 90% paddling, which is gut-busting work ... all for a brief ride that is only seconds long.”

Are you developing the important skills and knowledge base to position yourself to identify and capture opportunities?

Great healthcare analysts, like great surfers, are good at helping the organization get into position to capitalize on opportunities. To the untrained eye, they seem to have a knack for where the next opportunity will crop up and somehow, they’re in the right place at the right time. That knack is actually the result of two things. First, they’ve obtained a fundamental knowledge of the healthcare system. And second, they are technically “in shape” enough to maneuver to where the opportunities might arise around their system. This is where technical aptitude plays an important role. The best surfers are in top physical condition and the best analysts are in top technical condition.

Lead with “What Problems Need to be Solved?”

I’m going to say something that may sound surprising: health systems don’t hire analysts to run reports or build dashboards. They don’t hire analysts to leverage the fancy technology they purchased. These may be duties assigned to an analyst, but that’s not where their value lies. They hire analysts to solve problems—period.

My conversations with executives and analytics directors this past year has validated that their top healthcare analysts use a common approach to adding value. It’s a pattern of thinking to solve problems that looks something like this:

- **Healthcare Operations** – First, their top analysts ask lots of questions that seek to understand, “What is the problem we’re trying to solve?” and “Why does it matter?” This deliberate questioning helps to tease out the best opportunities.
- **Healthcare Data** – Next, the analyst asks, “What information would be needed to help solve this problem?” Top analysts turn data into information so what they’re getting at is, “What data do I need to begin to address the issue and where do I find it?”
- **Technical Skills** – After finding the data, the analyst then asks, “How does this data need to be organized, analyzed, and presented to address the problem?” And, “Who do I need to present this information to so they can make a decision based on the information I’ve shared?”
- **Tools** – The last step top analysts take is reach for their tools. This process re-frames the role of technology. When analysts see their role as problem solvers, they effectively become partners for clinical, financial and operational teams.

The pairing of technical fitness with domain expertise becomes a sustainable model for analysts to become a tremendous asset to be leveraged. In the words of Jim Collins in *Good To Great*, “Technology cannot turn a good enterprise into a great one, nor by itself prevent disaster.” The same holds true for analysts. No technology will make someone a great analyst.

Healthcare Operations	Healthcare Data	Skills	Technology
<ul style="list-style-type: none"> • Acute care • Primary care • Population health • Risk-based contracting 	<ul style="list-style-type: none"> • ICD codes • CPT codes • Rx orders • Rx fills • Lab order • Lab result • Vitals • Problem list 	<ul style="list-style-type: none"> • Data query • Data movement • Data modeling • Data analysis • Data visualization 	<ul style="list-style-type: none"> • Data ingestion and integration platform • Data relationships • Statistical modeling • Dashboards and KPIs • AI and NLP

Figure 2: Healthcare Analysts must have technical fitness coupled with knowledge of healthcare data and operations.

Five Necessary Technical Skills Data Analysts Need

The best surfers are in top physical condition and the best analysts are in top technical condition. Below are the top five technical skills absolutely necessary for analysts to catch the best waves of opportunity within health systems.

1. Data query, or SQL.
2. Data movement
3. Data modeling
4. Data analysis
5. Data visualization.

Lessons Learned

To summarize the lessons the world of surfing can lend to healthcare data analytics:

- Analysts should develop the skills and knowledge they need to support improvement in healthcare.
- Understand that the business needs will help you better position the organization for opportunities ahead.
- Technology accelerates but doesn't supplant the knowledge and value of the five key data skills.
- Leaders need to invest in education for analysts to grow into a deeper understanding of healthcare data and operations.

A Catalyst for Change

I feel blessed. Every year, I'm fortunate to ski the greatest snow on earth right here in Utah, some days, choking on powder turn after turn. Wonderstruck, I've sat at the

Rim of the Grand Canyon gazing on the cavernous divide and serpentine water below. I've hiked in the Canadian Rockies and lapped my feet in the cobalt lakes beneath the peaks. I've canoed in the still waters of the Snake River and watched the sun set on the Tetons in Jackson Hole. These are breathtaking vistas. And I've loved them. They've inspired me.

Even more inspiring and far more lasting are the views afforded me within healthcare systems. I hope you feel the same. As analysts, we have the most amazing jobs in the world. We get to work with passionate people, the educated elite of the world who have chosen to put their time and talents to use for the betterment of society.

The cause of clinicians is noble. Your role as analyst is equally noble, and in a real way, far more reaching and lasting. Your hands, your work, your ingenuity can touch the lives of tens of thousands of patients. As you come to better understand the system of care delivery, you hold caregivers in your hands, in your SQL, your data models and in your analysis. Your scrutiny of their data and protocols will influence their care delivery. After one such analysis, early in my career, the Medical Director for Primary Care sat quietly studying my analysis of his co-morbid diabetes and depression patients, he looked up at me with tear-filled eyes and said, "John, this changes the way I practice medicine." In that moment, I found my career.

Analysts—you're a Godsend in this healthcare crisis. Your analysis truly can help systems lower costs, making care more affordable. You really are finding ways to make care accessible to the masses. Your technical fitness will help administrators find new waves of opportunity to better serve the patients in their communities. No, you're not just an Analyst. You are the Catalyst for change. Thank you for choosing this career path. Thank you for your courage and compassion. 🙌

About The Author



John Wadsworth is the VP of Technical Operations at Health Catalyst. John joined Health Catalyst in September 2011 as a senior data architect. Prior to Health Catalyst, he worked for Intermountain Healthcare and for ARUP Laboratories as a data architect. John has a Master of Science degree in biomedical informatics from the University of Utah, School of Medicine.