



The State of Healthcare analytics: Opportunities and Headwinds

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Healthcare analytics has tremendous potential. The market has been estimated to be over 20 billion by the year 2020 according to industry research firms¹, and the promise of improved population health, reduced healthcare costs, and patient safety seems very attractive.

A March 2015 survey on analytics in healthcare² indicated that over two-thirds of healthcare decision makers considered analytics among their top 3 priorities, with rising costs of healthcare being the biggest motivating factor. The report highlighted that by using analytics, 82% of the respondents saw improved patient care, with 63% seeing reduced readmission rates.

A separate study³, specifically on the use of predictive models in healthcare, indicated that readmissions, along with sepsis, were the top use cases for predictive modeling (We believe that penalties imposed by the Centers for Medicare and Medicaid Services (CMS) for exceeding threshold levels largely drives this focus on hospital readmissions).

Market research and surveys further indicate that:

65 % of healthcare providers and 60% of healthcare payers plan to increase analytics spend in 2015

The top analytical priority for providers is clinical analytics and data capture. Risk management, quality improvement, and business process innovation are key areas for analytics in payer organizations⁴

To understand and appreciate the current state of the analytics market, we have developed a structure to describe the analytics value chain from data to insights and action. In the visual shown in figure 1, the high volume activity is at the data layer and the business strategy that is derived from it sits at the top of the pyramid. Today, in our view, most of the activity around analytics is focused in the area highlighted in the area within the dotted lines. We call this the zone of activity. As we will explain in this white paper, the biggest opportunities today lie within this zone as healthcare continues to struggle with the infrastructure aspects of analytics, specifically around interoperability, data privacy and security.

What are some of the big trends driving this growth in analytics, specifically in the healthcare sector?

Margin pressures:

The industry is going through a dramatic change in reimbursement models that is based on value instead of volumes. This is resulting in a redistribution of financial risk that requires data and analytics driven decision making for improving clinical, operational and financial outcomes.

Payer-Provider convergence:

With the growth of Accountable Care Organizations (ACO), and a consequent focus on population health, payers and providers are working together to stratify patient populations based on health and medical risks for proactive intervention programs.

The relentless pressure on healthcare costs:

The Affordable Care Act (popularly known as Obamacare) has squarely set its sights on bending the cost curve on the runaway inflation in healthcare costs while linking reimbursements on public health programs such as Medicare to improvements in patient outcomes. This is driving providers and payers alike to analyze their operations for opportunities to save costs and qualify for increased reimbursements.

Although the overall news is encouraging in terms of the increase in adoption rates for analytics, there are some disturbing negative trends as well.

Our own research and industry reports indicate that adoption levels for analytics vary widely, with the larger hospitals showing greater adoption and corresponding benefits. Importantly, a large majority (85%)³ of the respondents are not using predictive modeling techniques but are relying more on basic reporting and Business Intelligence (BI) solutions.

A caveat for any analysis of the findings of such reports is that there may not be common definitions. The term analytics could refer to anything from infrastructure to reporting to predictive modeling, and to that extent, one needs to be circumspect about arriving at common conclusions.

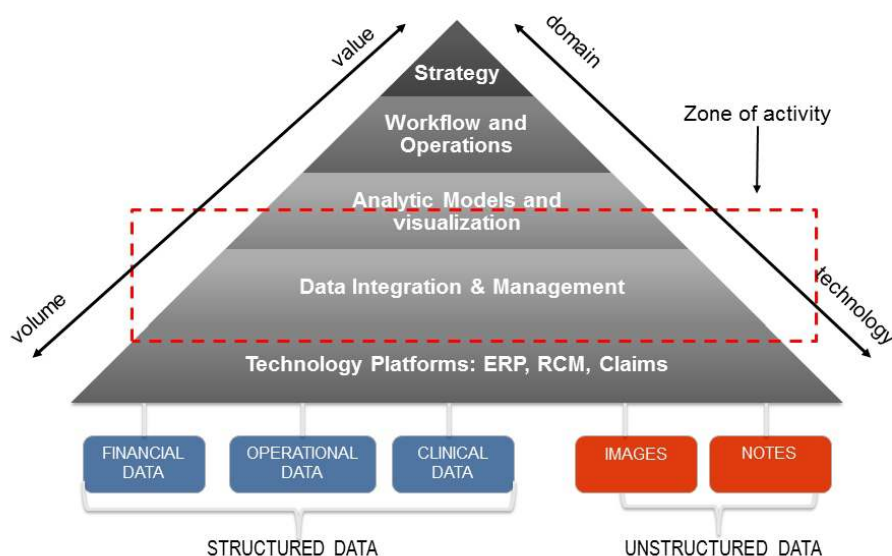
Having said that, it is worthwhile to look at factors that these reports highlight that could be impacting the adoption rate in healthcare analytics today.

Data integration challenges:

Multiple studies have highlighted this to be the # 1 challenge in the adoption of analytics.

Without access to unified datasets, the ability to derive analytical value from the data is severely constrained.

Interoperability between technologies is one of the major factors impacting the adoption of analytics today, and remains one of the healthcare sector.



Damo Consulting Analytics Value Pyramid, 2015

Figure - 1

Recognizing this, the Office of the National Coordinator of Health Information Technology (ONC) has set up an interoperability standards advisory committee⁵ which in 2015 will be focusing on clinical information systems.

Vendors, for their part, are trying to demonstrate their good intent through the The Commonwell Health Alliance, a 2-year-old consortium to develop a proprietary interoperability platform that was launched by five leading vendors at the 2013 HIMSS show and whose mission statement is to enable scalable, secure and reliable interoperability while recognizing the need to protect sensitive healthcare data.

In the meantime, a vendor ecosystem is emerging that is creatively addressing data integration challenges through the development of API's and interfaces for the major electronic health record systems (EHR) such as Epic. This is enabling large healthcare enterprises such as Sutter Health, a not-for-profit health system in northern California that deals with over 200,000 discharges a year, to effectively harness the data by orchestrates in the integration of data from multiple systems on a real-time basis. The end to process has proven to effectively identify patients at risk of readmission who can be targeted for proactive intervention.

Platform infrastructure and data security:

Recent high profile data breaches at leading health plans such as Premera and Anthem have raised anxiety levels about data security in general.

Since 2009, data on about 120 million individuals has been compromised and 2015 is being labeled the year of the healthcare hack⁶.

We believe that healthcare IT is highly vulnerable today. This comes on top of predictions that IT spend is likely to drop by 1.3 % in 2015⁷. End-of-life and out-of-support software and hardware is a reality of the healthcare IT environment today. CIO's are compelled to "sweat" the assets as long as they can simply because there are no budgets available for systems upgrades, so all this is not encouraging news.

This problem is likely to be exacerbated by the coming explosion of data: EMR data, consumer health data from wearables and other devices, and internet of things data will soon overwhelm healthcare enterprises. While healthcare enterprises are battling to keep their systems secure from hackers, they are also showing a definite inclination to move to cloud-based solutions. More than 80% of respondents in a recent survey indicated they are using some sort of cloud services⁸, and this seems to be the default model for newer areas such as analytics, however it remains to be seen whether cloud adoption will accelerate the growth of analytics.

Data sciences talent:

In 2013, The McKinsey Global Institute (MGI), published a report⁹ that by 2018 the United States will experience a shortage of 190,000 skilled data scientists, and 1.5 million managers and analysts capable of reaping actionable insights from the big data deluge.

This came after a 2012 Harvard Business Review (HBR) study that declared that "data scientist" was the sexiest job of the 21st Century¹⁰ (one of the authors of the paper, Dr. DJ Patil, was named Chief Data Scientist for the nation by the White House in February 2015). This was largely based on the notion that data scientists – people with a unique combination of statistics training, technology skills, and data knowledge – would be required in large numbers for the promise of analytics to be fulfilled.

All this has whipped up a frenzy of hiring in the last couple of years, with compensation packages going through the roof.

However, creative solutions are emerging, such as a "team approach" which tries to fulfil a data scientist's job requirement with two or three individuals instead of one. India, a superpower in offshore-based delivery of IT and business process services, has also seen an industry spring up around analytics outsourcing that is generating a growing pool of data scientists with advanced analytics and statistical capabilities.

The proliferation of online courses on data sciences by MOOC's such as Coursera will also eventually add to the talent pool.

The emergence of standard risk stratification frameworks, such as the LACE index¹¹ for hospital readmissions, will accelerate the adoption of advanced analytics without having to invest in building models from scratch.

Notwithstanding all this, competition for talent is likely to be robust for people with experience in healthcare data and analytics, and the CDW healthcare analytics study mentions that 37% of the respondents indicated a lack of qualified staff as a factor in adoption rates for analytics.

Operationalization of analytics investments:

In our work with healthcare enterprises, we have realized that the term "analytics" means all kinds of things depending on who you speak with, and the term "predictive modeling" tends to carry a certain mystique about it. The former usually means Business Intelligence (BI), which more often than not simply means "reports". The latter, on the other hand, conjures up images of geeks in labs (people with a PhD in applied math, for instance), toiling away at complicated statistical models for extended periods of time, and finally producing an algorithm, or a formula that "predicts" an outcome.

At the same time, the term also implies certain expectations, including an expectation that some absolute truth will be revealed by a statistical model that can be a panacea for a vexing problem – such as high rates or readmissions in a hospital.

Savvy business stakeholders are wary about all the jargon, because they are unclear about how to use these complex models to actually influence clinical or operational outcomes. In other words, they don't know how to operationalize these algorithms in an end to end process. For an analytics program to be effective, multiple aspects of the program, from platform infrastructure to data integration and analysis, to easily consumable dashboards and charts on a

Kristen Wilson-Jones, RD & D Technology Strategy Director at Sutter Health, has coined the term "plecosystem" – an acronym for platform ecosystem – to refer to a suite of integrated platforms that serve as a digital health orchestration framework with real time instant access to data via API's.¹²

variety of devices, are some pre-requisites. in other words, taking complex mathematical models and algorithms and making them actionable by integrating them into an end to end process that addresses core aspects of care management in hospitals.

The gap in the operationalization of analytics is one of the big headwinds for healthcare analytics today.

The inevitable hype cycle:

Over the past couple of years, the hype around big data and predictive models (and more recently, the Internet of Things (IoT)) has tended

to set up expectations that analytics is some sort of a silver bullet that can solve all kinds of problems faced by the industry. Healthcare analytics is still in early stages, and many large enterprises are yet to operationalize analytics. Even those that are doing so, such as Sutter Health, admit they are in "pilot" mode at this time, and while the initial results are encouraging, there is significant work to be done in measuring the fidelity of the system before an enterprise-wide dissemination and deployment can be undertaken.

For now, our view is that we need to forget Hadoop, big data and all of that. Compared to

sectors like retailing, healthcare deals in relatively small data at this point, notwithstanding the impending deluge of data from the Internet of Things (IoT), and the like. The focus needs to be on demonstrating the value of analytics with "small data" to demonstrate tangible benefits in terms of improved patient outcomes and reduced healthcare costs at a systemic level.

Having said that, we believe healthcare analytics is on the cusp of a major inflection point and it is only a matter of time.



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