INDUSTRY BRIEF

Capture the $109 Billion Data Dividend in the Healthcare Industry

Sponsored by: Microsoft
Cynthia Burghard  Dan Vesset
May 2015

IDC OPINION

In recent years, the promise and, in some cases, the hype of big data have produced plenty of critics who doubt the benefits of big data or point to the potential pitfalls facing healthcare organizations engaged in big data and analytics projects. These critics make some valid points. For example, not every organization has big data or needs to manage and analyze big data. A more pragmatic approach would be to look at not just big data but also small data or any other metaphors that have surfaced in recent years — in other words, all data. These critics also miss the bottom line. Analytics is at the core of the healthcare industry. What was once a "nice to have" has been transformed into the difference between success and failure under the new value-based reimbursement models.

Healthcare organizations with more advanced and diverse business analytics capabilities taking advantage of all of their data assets are experiencing better performance than peers with less advanced capabilities. As providers take on financial risk for care delivery, the ability to sustain their organization relies on the availability of data to design highly personalized care plans and establish efficient and high-quality provider networks with an endgame of improving quality while reducing costs. IDC research commissioned by Microsoft led to the following insights and implications:

- Leaders in the application of healthcare business and clinical analytics will reap $109 billion more in aggregate value worldwide from their data and analytics investments over the next four years, a 53% advantage, compared with healthcare organizations with less advanced or diverse business and clinical analytics capabilities.
- Four characteristics distinguish leaders in business analytics — the use of more diverse data types and sources to include the Internet of Things (IoT); adoption of more diverse analytical and self-service tools, methods, and metrics suited to a broad range of users from data scientists to business analysts, clinicians, and executives; distribution of insights to a more diverse audience of clinical and business users; and the right-time application of most timely data.
- Looked at by type of benefit, the reduction of costs contributes $63 billion, the largest share of the $109 billion advantage, with $27 billion coming from increasing revenue and $19 billion coming from improving productivity.
- Looked at another way, by business process area, leaders reap their $109 billion advantage by applying more advanced and diverse business analytics across consumer/patient-facing processes, an $11 billion opportunity; operations, a $35 billion opportunity; product and service innovation, a $16 billion opportunity; and support processes, a $47 billion opportunity that includes functions such as strategic planning, human capital management, IT optimization, enterprise performance management, legal, and regulatory compliance.
Business success is determined not by whether an organization invests in business and clinical analytics but by how it invests in them and supports those initiatives. Leadership in business analytics requires competencies in data management, technology, human capital, process management, and strategy, budgeting, and resource allocation.

Healthcare organizations lacking mature capabilities in business analytics or well-conceived plans for acquiring them are at risk of failure particularly in light of the increased financial risk being taken by provider organizations.

IN THIS INDUSTRY BRIEF

This Industry Brief provides the results of an IDC study commissioned by Microsoft that examined the economic benefits that accrued to healthcare organizations that made base investments in individual areas of data management and analytics compared with the economic benefits that accrued to organizations that made a broader, more diverse set of investments.

For this study, we defined two groups of organizations: Leaders and Others. Leaders are organizations that invested in more new business and clinical analytics capabilities — such as new data types and new sources, new analytics and new metrics, and information shared with new users — while investing in technology that enables right-time access to the freshest available data. Others embraced none or significantly fewer of these capabilities. The results of our analysis, which included a survey of 306 healthcare organizations and an economic model based on reported benefits and IDC forecasts of IT spending trends and other macroeconomic variables, showed a clear difference between Leaders and Others.

Our goal was to identify and quantify the additional financial value that is gained from investing in a more comprehensive set of business analytics capabilities. The Industry Brief also highlights specific examples of healthcare organizations that exhibit the characteristics of Leaders.

OPPORTUNITIES FOR HEALTHCARE ORGANIZATIONS TO CAPTURE THE DATA DIVIDEND

With the availability of clinical information, including clinical outcomes through the adoption of electronic health records, healthcare organizations have significant opportunity to improve the quality of care as well as manage costs. The sections that follow provide examples of how healthcare ecosystem participants (payers and providers) are benefiting from utilizing data in new ways and new analytics to manage risk, improve operations, and make the transition from volume-based reimbursement to value-based reimbursement.

Business Process Perspective

- **Operations — $35 billion worldwide.** This category includes clinical process or operations optimization, facilities and equipment maintenance or utilization, and operational fraud, waste, and abuse. It also contains many of the processes for managing and maintaining devices and sensors that make up the Internet of Things in the healthcare sector, with benefits of lowered operational costs. This is especially true with devices for remote patient monitoring and telehealth, both of which have documented savings.
Product and service innovation — $16 billion worldwide. This category includes services and products establishing best practices or innovation and scientific research with the benefits of lowered costs to achieve innovation, increased quality and revenue, and improved research and development (R&D) or other relevant employee productivity (output per employee).

Consumer-facing processes — $11 billion worldwide. This category includes consumer/patient loyalty, service and support, and pricing transparency, as well as refocusing processes on levels of service in healthcare comparable to other industries. Omni-channel communications and highly personalized care plans are required to improve quality and manage costs.

Support processes — $47 billion worldwide. This category includes strategic planning, human capital management, IT optimization, enterprise performance management, and legal and regulatory compliance with the benefits of lowered operational costs (e.g., lower employee turnover, faster response to compliance requirements, optimized utilization of IT assets), increased revenue, and improved relevant employee productivity (output per employee).

A few examples from healthcare organizations interviewed by IDC showcase the breadth of real benefits they reap from utilizing new data, new analytics, and new metrics and extending insights to a broader set of decision makers across the organization as the demand for self-service information access grows.

Operations

Examples in healthcare are:

- Identifying and rewarding the most efficient, high-quality providers. The configuration of a provider network is critical for success in improving quality and managing costs. The degree to which providers adopt these principles and objectives can mean the difference between sustainability and bankruptcy. Healthcare organizations need to identify those providers that efficiently provide high-quality care and whose patients have improved clinical outcomes. Financial incentives must be significant enough to drive behavior change in the way physicians practice medicine and how they run their practices. The ability to set measurable goals and to provide routine performance reporting will help physicians attain their goals and benefit financially.

- Evaluating, identifying, and mitigating inefficient clinical and operational workflows. Often, clinical and operational workflows are created almost on the fly rather than as a result of analysis and careful study. With healthcare providers taking on more financial risk, they have an opportunity and a requirement to create new workflows, both administrative and clinical, as they create clinical teams, introduce care managers, and adapt their billing practices to accommodate new reimbursement approaches. As more care is being delivered outside the four walls of hospitals and physician offices, the need to establish new clinical and operational workflows is growing. It is human nature to want to hold on to the familiar work processes; change is hard, but the advantages are significant. Having data to document opportunities to improve processes addresses the often-heard refrain of "but we have always done it this way."

- Detecting and investigating fraud, waste, and abuse. The detection and investigation of fraud, waste, and abuse have historically been accomplished after a claim is paid, and as a result, the rate of collection is quite low. With advanced analytic technology, healthcare organizations are able to use pattern analysis and other analytic approaches to determine the likelihood of a claim being fraudulent and/or create profiles of physician billing patterns and look for aberrant patterns. With the application of interoperability, waste can be prevented as healthcare providers are able to avoid duplicate testing.
Consumer-Facing Processes

- **Understanding all aspects of a patient** (clinical, socioeconomic, health behavior, and environmental factors) to produce highly personalized treatment plans. Recent research from the Institute of Medicine and the Robert Wood Johnson Foundation indicates that only 20% of the determinants of health are clinical care. Socioeconomics determines about 40% of health, with health behavior and the environment contributing the rest. With the availability of data from nonhealth-related sources, healthcare organizations will have the ability to identify the true barriers to health. For example, an asthmatic with repeated emergency room visits lived in an apartment with mold and dust. Having the apartment professionally cleaned resulted in no further emergency room visits. Healthcare organizations must look at all aspects of a patient to determine the best treatment options.

- **Better managing health and care across populations** of people with similar (chronic) conditions (and across care settings). With access to data from electronic health records and other internal and external data sources, healthcare organizations have the opportunity to greatly improve outcomes across all care and community settings. For example, when providers have a patient’s gaps in care at the point of care, they can reinforce the importance of screenings and preventive services and place the order for the services while in front of the patient. With more complete information about patients, it will be possible to create more personalized care plans and at a more granular level subsegment the populations to include nonclinical characteristics.

Innovation

- **Predicting adverse health events.** The vast majority of predictive models in healthcare are simply identifying patients once they have been diagnosed with a condition. True predictive analytics will evaluate multiple measures including family history and genomics to identify patients who are likely heading for a diagnosis and could avoid the adverse health event if certain actions are taken. For example, Carolinas HealthCare System performs a risk analysis of all patients to determine the likelihood of readmission. As a result, it has deployed thousands of interventions and dropped the readmission rate. Other areas where predictive analytics can be helpful include hospital-acquired conditions, management of the length of inpatient stays, and emergency department readmissions. The application of predictive analytics in near real time allows clinicians to take action to prevent adverse events before they happen. For example, Epimed monitors and manages one-third of all intensive care unit (ICU) patients in Brazil and has been able to reduce mortality rates and time on ventilators through the use of real-time contextual analytics. Epimed sends messages to the ICU physicians and nurses suggesting what to do for patients based on what just happened.

- **Managing the cost of care.** As quality improves, costs go down. A focus on quality that includes what patients value will drive down costs. With improvements in interoperability, healthcare providers will have data available to help them avoid duplicate testing, reduce redundant radiology, and more effectively manage the patient's care. Operational efficiency and care cost management are key to managing the cost of care. In a 2013 article written by Thomas Lee and Michael Porter published in the *Harvard Business Review* entitled “The Strategy That Will Fix Healthcare,” the authors discussed the concept of the integrated practice unit (IPU). In this model, which has been successful in a number of healthcare organizations, providers organize around particular diseases or procedures. The team for any given disease or condition would consist of physicians, provide appropriate testing, and provide nutritional counseling or physical therapy or whatever combinations of services were required. The concept is that all the services necessary for the treatment of the condition are under one roof so that care can be better coordinated and services provided quickly and efficiently. One of the
findings in the report is "The impact on value of IPUs is striking. Compared with regional averages, patients at Virginia Mason's Spine Clinic miss fewer days of work (4.3 versus 9 per episode) and need fewer physical therapy visits (4.4 versus 8.8)."

- **Reducing variations in cost and quality.** Variations in the cost and quality of care are tremendous even within the same practice or hospital. Having the ability to analyze the drivers of variation helps create best practices and set goals for providers in terms of cost and quality metrics. For example, Oslo University Hospital and Helse Vest were able to decrease time to value and costs by installing self-service analytic technology. In both cases, the time to generate data was reduced from days to hours, allowing the organizations to identify variations in cost and quality and act on them more quickly.

- **Determining unmet community needs to establish new programs and sources of revenue.** With the push to reduce medical costs by reducing emergency room and inpatient services, it is critical for healthcare organizations to find other sources of revenue. Healthcare organizations may consider adding social or human services as part of the revenue replacement strategy. Recent research from the Institute of Medicine confirmed that socioeconomics is a greater determinant of health than clinical care.

**Value-Driven Perspective: Cost Reductions, Revenue Growth, and Productivity Improvement**

IDC economic analysis reveals that initiatives like those discussed in this document have generated $109 billion in value worldwide for healthcare organizations with more advanced and diverse business and clinical analytics capabilities across three core generators of business value:

- **Cost reductions** — $63 billion
- **Revenue growth** — $27 billion
- **Productivity improvement** — $19 billion

**CHALLENGES OR ROADBLOCKS TO CAPTURING THE DATA DIVIDEND**

Key roadblocks and why healthcare organizations are holding back include:

- IDC has repeatedly documented the lack of a strategy for analytics in healthcare. This is particularly true for healthcare providers that have historically relied on their core administrative and clinical systems to provide data and have not invested heavily in analytics. Many of these previously attempted analytic projects were unsuccessful due to the lack of expertise and issues relating to the data.

- Healthcare data is very heterogeneous; as a result of mergers and acquisitions, a healthcare organization may have multiple products addressing the same business/clinical issue. Most heterogeneous are the number of electronic health records that an organization must support. The level of effort to clean and normalize data is significant, and as an industry, the ability to synchronize data across multiple applications is improving. Consequently, the quality of the data is improving. Efforts to meet the objectives of the Triple Aim (i.e., improve the health of the population, improve the patient experience, and manage the growth of costs) have led to more individuals having access to claims and clinical data. The more the data is looked at and used for decision making, the greater the improvement in the quality of the data.
With the recent availability of digitized clinical data, the question of how the data can be used is raised. While real progress is being made, mining clinical data is still in the early stage. Understanding how best to use the clinical data in conjunction with other data sources will take time and experience. The healthcare market has been bombarded with new regulations and requirements and aging infrastructure, all of which have created a great deal of distraction and prevented organizations from focusing on analytics.

The acquisition, retention, and development of appropriate skills to manage and analyze data have not been priorities for healthcare organizations. Historically, only academic medical centers had the luxury of hiring sophisticated data scientists. Increasingly, healthcare organizations have begun to budget for clinical and financial analysts.

Healthcare has not been known to pay competitive salaries, and as the demand for analysts across all industries continues to rise, the ability of healthcare organizations to recruit has suffered.

The next section of this Industry Brief identifies strategies and tactics leading healthcare organizations have used to address these and other impediments to achieving higher returns on their data and business analytics investments.

LESSONS LEARNED AND RECOMMENDATIONS

While we recognize the importance of alignment and interdependency, our research points to the following lessons learned and recommendations:

- Fund and manage analytics as an organizational priority; it is not a project. Healthcare organizations must view data as one of the most valuable assets that they hold. While data also has liabilities, the opportunity for improvements in quality and efficiency and the ability to hold down costs make its value far greater than its liabilities. The risks, such as security, must of course be managed. Organizations must have a strategy in place to build and manage their analytic assets and then a road map as to how to reach milestones. Analytics is not a one and done: it requires continued investment of time and staff resources and, in particular, executive leadership to deliver on the requirements of a data-driven culture.

- Stop the proliferation of redundant data silos. Not only is there the very real danger of different results based on what analytic system is used, but the cost to an organization is staggering. This redundancy creates costs in staff time to manage so many systems and a drag on resources. Individuals need to be held accountable for the analytic assets. Many healthcare organizations are creating a chief data officer who is accountable for managing data and analytic assets.

- Improve data quality by holding individuals accountable for specific data sources. Data stewards are often assigned a specific set of source systems, and they are responsible for the quality of the data from that system. This requires an intimate knowledge of how the source system functions so they can troubleshoot root causes for data quality issues. As healthcare organizations begin to access external data (for example, data around socioeconomics), the role of the data steward becomes critical. Poor-quality data is the number 1 reason physicians are reluctant to participate in performance measurement programs.

- Add staff to develop a data management and governance approach. Often housed within the chief data officer's group, this staff develops and manages enterprise data definitions, methodologies and approaches for how analytics are deployed, and policies on access to and appropriate use of data.
- Create an approach that allows for experimentation and iterative learning (within the bounds of security and compliance standards). Historically, the health industry has relied on reporting facts, usually retrospectively, and not providing tools for discovery. Healthcare executives and clinicians have not had access to data to really drive decision making. Until quite recently, functionality such as visualization has not been available. Healthcare organizations need to have a conversation with their data.

- Move toward a new business analytics architecture that goes beyond a relational database. Healthcare organizations need to become more data driven as their ability to compete on cost and quality becomes a requirement. The Institute of Medicine and the Robert Wood Johnson Foundation recently released data that documents that only 20% of the determinants of health are clinical care. Other factors that drive health must be available to analysts if the industry is going to control costs and improve clinical outcomes. Under value-based care, healthcare organizations need to understand the drivers of health and disease to effectively manage populations. For example, providing professional cleaning services to an asthmatic who has mold and dust in his/her apartment will do more to keep him/her out of the emergency room than any change in medication. The use of unstructured clinical data showed that the major drivers of readmission for congestive heart failure (CHF) were living situation and the abuse of alcohol and drugs. This finding allowed a healthcare organization to establish screening and intervention for hospitalized CHF patients to avoid readmissions.

- Balance investments on people, process, and technology. Implementing an enterprise analytic strategy affects all dimensions of an organization.

**METHODOLOGY**

For this study, IDC surveyed 2,020 large and midsize organizations in 20 countries across a range of private and public sector industries, including financial services, retail, manufacturing, healthcare, government, and communications and media. Seventy-three percent of survey respondents were from line-of-business or executive functions, and 27% were from the IT function; 62% of respondents had the title of manager or above. IDC also developed an economic net benefits model – the basis for the $109 billion data dividend cited in this document – based on GDP, IDC forecasts for IT spending, labor and operational costs as a percentage of revenue, and spending by country on business analytics hardware, software, and services.

For a more detailed description of the study methodology, see [download.microsoft.com/documents/en-us/Making_The_Right_Analytics_Investments_Whitepaper.pdf](download.microsoft.com/documents/en-us/Making_The_Right_Analytics_Investments_Whitepaper.pdf).
About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

Global Headquarters

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-insights-community.com
www.idc.com

Copyright Notice

External Publication of IDC Information and Data – Any IDC information that is to be used in advertising, press releases, or promotional materials requires prior written approval from the appropriate IDC Vice President or Country Manager. A draft of the proposed document should accompany any such request. IDC reserves the right to deny approval of external usage for any reason.

Copyright 2015 IDC. Reproduction without written permission is completely forbidden.