BIG DATA AND HEALTHCARE PAYERS
EXECUTIVE SUMMARY

This OrangePaper looks at the potential benefits that Big Data tools and techniques offer healthcare payers. It looks at examples of early adopters in other industries that have used Big Data to achieve valuable insights and gain competitive advantage, and it identifies analogous opportunities within the healthcare market. It also surveys how some early adopter organizations in the healthcare payer industry are already starting to apply Big Data to their businesses, and it breaks down the primary benefits into three broad categories: Cost Reduction, Time Reduction and New Product Development.

Healthcare payers can apply Big Data techniques to reduce cost by early detection of fraud, abuse and waste-related transactions, improve time taken to conduct an audit and develop new customer engagement models to improve the quality of life of its members. There are some unique challenges in the healthcare industry, admittedly, and payer organizations embracing Big Data must be extremely cautious of the stringent regulatory and compliance requirements around members’ data. As the Big Data technologies mature over time, though, we believe the tool’s capabilities to adhere to data security and privacy needs are also maturing to help alleviate some or all of the data security and privacy concerns. For a successful implementation of a Big Data initiative, organizations have to identify their main objective for the initiative, stake out clear security and privacy controls and establish a focused team to implement the target environment that meets these objectives.

INFORM

Most healthcare payers today are just beginning to dip their toes in the waters of the Big Data pool, following the lead of other industries that have invested in developing the people, process and technology required to successfully extract value out of Big Data. Although the challenges and characteristics of Big Data are not necessarily new, for many years the cost of developing and sustaining data environments to solve those challenges was very high. Traditionally, organizations decided what to capture, built processes to capture that data, developed tools and techniques to analyze that data and finally used the insights from that analysis to gain competitive advantage. These processes usually took years to mature and were very expensive initiatives. With recent advancements in storage and processing technologies as well as enhancements in cloud computing techniques and open source software, the operational cost of Big Data environments has significantly lowered. We are now seeing more and more organizations adopting “capture now and ask later” methodologies and collecting huge volumes of data. IBM estimates that we generate about 2.5 quintillion bytes of data every day, but we process less than 0.5 percent of that data. The key to successful implementation of a Big Data initiative is being able to extract insights to gain competitive advantage from processing large structured and unstructured data sets, which change frequently. These insights can be broadly classified into three categories:

- Cost Reduction
- Time Reduction
- New Product Development

TRANSFORM

BENEFITS

COST REDUCTION

One big benefit that other industries have realized through their use of Big Data tools is reducing the cost of doing business. Analyzing large amounts of structured and unstructured data captured through various sources can offer a wealth of actionable insights to more efficiently manage a business process, which leads to tangible and considerable cost savings. UPS, for
instance, uses Big Data appliances for the routing of trucks for package delivery and pickup using real-time analysis. The company estimates it saved about 8.4 million gallons of fuel by cutting 85 million miles off of daily routes.

UPS also gathers huge amounts of data about driver behavior by using a multitude of sensors installed in its fleet. Analysis of that data helps the company define the parameters for best fleet performance in various road and weather conditions.

Though their businesses are very different, care management organizations actually have operational processes that are very similar to logistic companies like UPS and FedEx—that is, scheduling and routing their employees to visit a series of locations. Using techniques pioneered in the logistics industry, care management companies are starting to take advantage of optimal routing of providers to member homes who need care. Studies have shown that home nurse visits to check on the newborn and new mother’s health after discharges from the hospital have reduced the overall cost of providing postpartum care. By applying Big Data tools to efficiently route nurses to these homes, the time the nurse spends traveling from one appointment to the other is greatly reduced. This saved time can be used to provide better care and improve the outcome of the visit as well as increase the number of patients covered during a shift, decreasing the company’s total cost of providing care to its members.

Conceptually, data-driven fleet management means using data generated from a large number of nodes (that is, devices and sensors in trucks and service vehicles) in a network (that is, the fleet). Managing a provider network has many similarities, and healthcare payers can take advantage of Big Data tools for analyzing providers in the network for quality of care. Today, most healthcare payer organizations provide incentives to a provider to improve the outcome of a member’s visit to the provider for care. The analysis to determine whether a member’s health has improved due to the visit is largely based on analyzing claims data over the period of care. This data at times is fragmented or lacks the entire history of the member to determine the quality score.

Just as companies that manage fleets are putting in a range of sensors to gather reams of data about each vehicle, healthcare companies are now starting to gain access to a much richer set of member experience data. This may take the form of surveys, health risk assessments and online interaction data member portals. Entirely new streams of data from wearable devices and mobile apps, as well as investing in collecting, storing and processing missing claims information can help improve the quality of care, which will eventually lower the cost of care. Already, innovative healthcare providers are beginning to tap into the sources and using them to better manage their network. Centene, for example, is using Big Data tools to analyze and rank providers within their network to provide incentives to providers who reduce cost through better outcomes.

Perhaps the ripest area for savings is in reducing fraud, abuse and waste, which today accounts for about 3 percent of healthcare expenditure in the U.S. The Centers for Medicare & Medicaid Services (CMS) reports that it has recovered $7.70 for every dollar it spent on healthcare fraud and abuse investigations and recovered $3.3 billion in fiscal year 2014. Most healthcare payer organizations spend a considerable amount of effort and funds in fraud and abuse investigations. Based on some estimates, fraud accounts for a significant percentage of ongoing cost of care increases, and all parties involved in the healthcare ecosystems—consumer, providers, payers, government entities and private companies—are susceptible to healthcare fraud, abuse and waste.
Currently, the majority of the time and resources spent in fraud, waste and abuse reduction efforts are spent recovering the cost retrospectively after claims have already been processed and paid. Most screening for fraud and claims errors that occur during claims processing is relatively simplistic in nature, looking for claims with characteristics falling outside a handful of a rather arbitrary range of values. Big Data techniques like correlation analysis and machine learning allow the profile of fraudulent or incorrect claims to emerge from the data itself and implement a continuously improving set of screening algorithms to catch bad claims before they get processed and paid. Such Big Data techniques can prevent fraud, abuse and waste from occurring and has the potential to significantly lower the cost of care in the long run.

**TIME REDUCTION**

Another benefit of Big Data tools and techniques is that they can dramatically reduce the time it takes to complete complex data processing tasks. By applying Big Data tools like high performance analytics, for instance, Macy’s was able to reduce the time for updating sale prices on its inventory from over three days to under a couple of hours. This reduction in time has helped Macy’s update prices on its inventory based on market conditions in almost real time.\(^\text{vii}\)

Within the health insurance industry, the pricing and renewal quote generation process is a very time and labor-intensive aspect of operations, and it makes it difficult for insurers to respond rapidly to requests for quotes and pricing adjustments. Similarly adjudicating a claim is also a very time-consuming process. Limitations to existing adjudicating engines, frequent changes in mandates, product portfolio and member eligibilities make auto adjudicating claims difficult, and payer organizations design and develop policies that almost invariably touch every claim that is adjudicated. Big Data offers great promise in shrinking what is a multi-week process down to a rapid analytic job.

In almost any industry, audit in general is a very time-consuming process. It is primarily conducted on transactions that are more prone to errors, abuse and fraud, and it usually is performed on just a sample of such transactions. Audits conducted by healthcare payers are no different. Claims audit is one aspect of many audits performed in healthcare payer organization. Auditors identify a sample of claims in a given time period, look for inconsistency and flag any claim that is deemed to have paid inconsistent with the company’s policies. These items are then reviewed with the team performing claim adjudication. If deficiencies are found, new policies and procedures are developed and implemented. Similar audits are performed in the future to see if the corrective actions have been implemented and have addressed the issues. By applying Big Data tools, auditors can run the entire claims transactions for a given time period and flag items that inconsistently paid in that period. This analysis will allow for identifying and fixing procedural issues with claims adjudication.

**NEW PRODUCT DEVELOPMENT**

One area where innovative firms outside of healthcare have gained great value from Big Data tools and techniques is in harnessing data to drive new product development, both by enhancing their current product offering and by launching entirely new products. Google disrupted the online search and advertising industry by applying Big Data tools and techniques for providing better search results and being able to provide relevant ads for giving search phrase. Another example of data driving product development is the launch of LinkedIn’s “People You May Know” feature.\(^\text{viii}\) Apart from high tech companies, industry conglomerates like GE and companies in industries like retail, banking, insurance, healthcare and travel are taking...
potentially wearable health devices—are highly confidential and subject to tight regulatory control. Security must be a first and foremost consideration for any Big Data project; especially in ensuring any Big Data tools selected have enterprise-strength security.

The good news is that as Big Data technologies have matured, their capabilities for enforcing security and privacy roles has grown stronger and can now meet the stringent demands of protecting sensitive healthcare data. The data management and administration tools have matured at a rapid pace as well, making implanting and operationalizing Big Data initiatives within healthcare organizations much less onerous and time-consuming. Considering the huge potential value that these tools and technologies offer and the fact that so many healthcare companies are now taking the plunge into Big Data initiatives, it seems likely that the next 18 to 24 months will see the full flowering of Big Data as a core part of healthcare operations.

OUTPERFORM

Although Big Data has already proven its value to many consumer-centric industries, most healthcare organizations are at best cautiously optimistic that such technologies can live up to their hype. One of the key things that makes healthcare different from these pioneer industries is that the streams of data they receive from members—claims, health risk assessment surveys, references

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ABOUT OPTIMITY ADVISORS
Optimity Advisors is a rapidly growing, multi-industry strategy, operations and information technology advisory firm with multiple locations throughout the United States, United Kingdom and Europe. We specialize in the critical set of services that sit between high-level strategy and delivery and execution. We provide a strategic outlook through proven methodology, knowledge and instinct, helping to craft an actionable future vision that aligns with your long-term goals and objectives. We bring an end-to-end industry understanding to help you rise above the day-to-day, focus on the opportunities ahead and align your organization for success.

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