

Healthcare and Big Data— Understanding the Value Proposition

What's the story with big data anyway? Understand how its power can be realized system-wide, reaping benefits for all.

By Laura Lee Jones

It's here to stay and it's infiltrating healthcare on a daily basis. We're talking about big data. For those healthcare organizations that actively use customer

relationship management (CRM), physician relationship management (PRM), and business intelligence (BI) tools, this may not come as a surprise. For those of you just now getting your feet wet, you may be interested to discover the pervasiveness of this technology.

Before delving into how big data benefits the organization and the patient, let's make sure big data is understood. As a common buzzword or catch-phrase, big data

represents a quantity of data, both "clean" and "dirty" that is too unwieldy to manage using legacy database and/or software applications. Also, sometimes big data is referenced as a technology or toolset that is used to manage the massive amounts of data that organizations collect and store. For purposes of this article, big data refers to the actual datasets.

As big data continues to grow and its value transcends traditional marketing



opportunities to strategic planning and population health management, healthcare organizations are beginning to embrace and invest in it. Evidence is mounting that big data can drive better outcomes.

The car won't drive, however, without the engine. Enter predictive analytics. Predictive analytics give you actionable insights. At its base level, predictive analytics uses a variety of statistical techniques from modeling to machine learning to analyze current and historical facts to make predictions about future behaviors. One of the most well-known predictive analytics applications is credit scoring, which is used throughout the financial services industry. In this instance, scoring models process a customer's credit history, loan application, customer data, etc., to rank-order individuals by their likelihood of making future credit payments on time.

Predictive analytic applications work much like credit scoring. Healthcare organizations are looking to maximize relationships with low-risk populations and work with high-risk populations to influence behaviors that may move them out of the high-risk category. One can see this addressed internally from a clinical perspective as well as externally from a marketing/population health perspective. Whereas in the recent past, strategic goals for the clinical, planning, and marketing business units were clearly siloed, we see more frequently these units are, at the least, playing in the same sandbox and taking advantage of big data to help achieve their goals.

Marketing Applications for Big Data

Risk stratification. Organizations that actively use big data and analytics can stratify patient and prospect populations into low, medium, and high risk for the purpose of targeting communications based on where the consumer falls in the healthcare continuum. These segments can be disease specific or general-health specific. It all depends on an organization's strategic plan.

For example, low-risk, healthy populations could be well served by receiving screening invitations that support a preventive path. Or screening invitations could be interceptive in nature and catch a disease in its early stages, moving patients into a medium-risk category. Regardless of the goal, big data enables providers to customize

the marketing message and deliver it to the targeted audience for increased effectiveness.

Customer preferences. Communicating with consumers using their preferred method is an important goal for healthcare marketers. From an organization-wide perspective, however, the number of touch-points and opportunities for interaction can prove overwhelming. Big data, if harnessed properly, can help organizations connect with consumers through preferred channels.

The first step is to standardize the collection form. In doing so, all collected data can be queried for future communication campaigns. Remember, if the data was valuable enough to collect, it must be accessible in the future. Customers remember what they tell organizations and are more receptive to messaging that is delivered via their preferred channels.

Big Data Applications Beyond Marketing

With the arrival of big data, there is more evidence of marketing, planning, and even clinical service lines meeting at the same table to use these powerful datasets beyond the traditional marketing plan.

Improved clinical outcomes. Organizations large and small are aware of the implications associated with improved clinical outcomes. With the integration of previously disparate data sources, hospitals now have the opportunity to better manage outcomes by establishing care coordination pathways. These pathways monitor prescription adherence, follow-up appointment recommendations, and any other care instructions that are logged and available for query within the CRM database.

Population health initiatives. With financial incentives tied to the metrics of improving a defined population's health, healthcare organizations are more receptive to the benefits big data can deliver on this front. The good news is that there is a wealth of data out there that allows for development of targeted, risk-adjusted populations. One area where changes can be made is in the management of chronic diseases. By targeting those most at risk and intervening at an early stage, healthcare organizations can improve the health status of a defined population and begin to reduce costs of overall care by improving the health of the population. What results from a business

standpoint is that you start to see that entry points into the healthcare system begin to skew more toward primary care, non-critical, as opposed to emergency and critical care.

Predictive genetic testing (PGT). PGT uses a genetic test to predict future risk of disease. Without big data, this mapping capability and ultimately the matching to outcomes wouldn't be possible. Big data allows researchers to map individual genetic markers and then match to individual outcomes to predict the likelihood for particular diseases. Although PGT is relatively new, arising from the mapping of the human genome, it has rapidly emerged as a technology that carries many benefits, but many risks as well. The latest advancements in PGT include mapping multiple markers to disease states and then linking those markers to the best treatments that will result in optimal outcomes.

Geo-tracking sickness paths. Google emerged as an early innovator of tracking the spread of airborne illness via big data. It began geographically monitoring searches such as "over the counter cold remedies and flu symptoms." In doing so, they were able to "see" sickness as it spread regionally and ultimately cross-country. Social media has also jumped on the bandwagon with tracking applications such as Sickweather.com. Armed with this real-time data, providers can know weeks in advance of traditional disease surveillance tools, when illness outbreaks will occur.

What is unique and innovative in both PGT and geo-tracking sickness cases is using big data to monitor, report, and predict healthcare incidences in the absence of any clinical data.

What's Next

Moving forward, it's evident that big data is here to stay. Whether healthcare is going to embrace it wholeheartedly while under the watchful eye of HIPAA is yet to be seen. However, cases demonstrate how powerful integrating, tracking, and responsibly using this technology can be. Where will your organization land?

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