

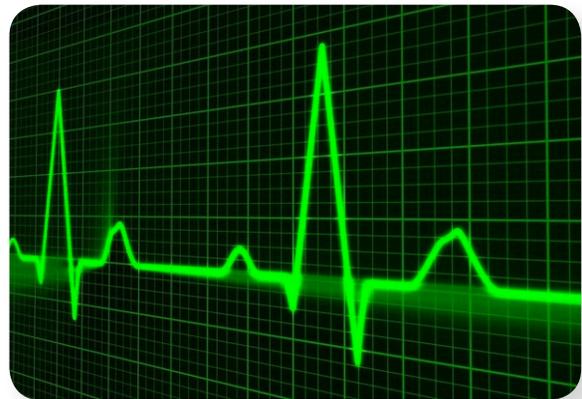


4 big reasons why healthcare needs data science

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In the healthcare industry, what could be more important than having better healthcare outcomes? Each and every day healthcare workers around the globe are striving hard to find more ways of improving our lives. However, the world is changing, and frankly, at a faster rate than most of us can keep up. Intuition alone will no longer be enough for quality patient outcomes. The amount of healthcare data continues to mound every second, making it harder and harder to find any form of helpful information. Big Data is not to be romanticized; it can be a blessing and a curse. It can contribute to both the insight and the fog of visibility.

In truth, data science is proving invaluable to improving outcomes due to its ability to automate so much of the heavy lifting – in fast, scalable, and precise ways. All one has to do is look at our ability to predict epidemics, advance cures, and make patient stays in hospitals safer and more pleasant. In healthcare, data science should be seen as a beneficial intelligence rather than only artificial intelligence, providing an augmentation of services to the healthcare experts already in play.



Reason 1: Hospital Claims Data

In 2010, there were 35.1 million discharges with an average length of stay of 4.8 days according to the National Hospital Discharge Survey. That same survey went on to note that there were 51.4 million procedures performed. The National Hospital Ambulatory Medical Care Survey in 2011 stated the number of outpatient department visits were 125.7 million with 136.3 million emergency department visits. These are some of the basic figures showing the amount of care the U.S. health care system has provided. Using Data Science to annualize this sort of data allows healthcare providers to start building a new intuition built on a data narrative that could possibly help avoid the spread of diseases or address specific health threats. Using a combination of descriptive statistics, exploratory data analysis, and predictive analytics, it becomes relatively easy to identify the most cost-effective treatments for specific ailments and allows for a process to help reduce the number of duplicate or unnecessary treatments. The power in predicting a future state is in using that knowledge to change the behavior patterns of today.

Reason 2: Clinical Data

This sort of data takes the form of doctor's notes, lab results, and medical images gathered during a patient's encounter with a healthcare provider. For example, it is routine for hospitals today to use natural language processing algorithms to analyze patient records so they may identify certain individuals at risk for medical conditions. Recently it was reported that healthcare providers failed to recognize three high-blood pressure readings at separate visits in 26% of pediatric patients reviewed by the American Medical Association. Recognizing these types of patterns in the face of growing data will only become more difficult over time for healthcare providers.

Reason 3: Pharma R&D Data

In recent years, there have been a number of partnerships developed between pharmaceutical companies. Consider Project Datasphere, an initiative to share, integrate, and analyze historical cancer trial data sets for the purpose of accumulating research findings and accelerating cures. The power of this rich dataset is in the analysis and the global focus on finding solutions for cancer patients.

Reason 4: Patient Behavior and Sentiment Data

A study by AMI Research suggests that "wearables" are expected to reach \$52 billion by 2019. Wearables monitor heart rates, sleep patterns, walking, and much more while providing new dimensions of context, geolocation, behavioral pattern, and biometrics. Combine this with the unstructured "lifestyle" data that comes across social media and you have a potent combination that is more than just numbers and tweets.

It is obvious that we will experience huge benefits from analyzing the in's and out's of healthcare data. In my judgment, we will continue to see a push for prevention over cure which puts predicting outcomes front and center. After all, catching things in the earlier stages is easier to treat and outbreaks can be more easily contained.

It may not resonate as widely today, but in the future we will look back on data science as something significant for healthcare. It is reasonable to expect that we will likely recover more quickly from illness and injury, live longer because of newly discovered drugs, and benefit from more efficient hospital surgeries – and in large part this will be because of how we analyze Big Data.

What makes living in the era of Big Data such a delight is that the healthcare industry is being pressed to find better tools, skills, and techniques to deal competently with the deluge of patient data and its inherent insights. When healthcare makes the choice to fully embrace data science, it will change the future for everyone.