



Case Study: Healthcare

Using Data Science to Improve Patient Care and Satisfaction

By applying data driven insights to pinpoint problem areas in patient care, a major health network is improving vitally important satisfaction metrics.

In healthcare, one of the most important measures of success is patient satisfaction. Every hospital patient in the U.S. is asked to complete a survey — the Consumer Assessment of Healthcare Providers and Systems (CAHPS) — to describe his or her experience and rate the institution’s effectiveness in providing care.

In 2017, a large health network asked us to analyze its CAHPS data using advanced computer science techniques. The goal was to help them fully understand their patients’ needs so they could improve their CAHPS rating and develop better, more customized care.

At a glance

A major health network wanted to analyze and improve upon its patient satisfaction ratings. We analyzed feedback from 60,000 patients over a six-month period, measuring and prioritizing the issues causing patient dissatisfaction. With this information, we were able to provide targeted recommendations enabling better, more customized services.

Outcomes

- Recommendations for customized patient servicing are expected to significantly improve their CAHPS scores.
- Identified factors leading to lower patient satisfaction.
- Classification and insights on patients based on clinical and demographic traits.

Using data science to improve patient satisfaction

We analyzed data from 60,000 patients who visited the organization's health centers over the course of six months. Our team evaluated key patient care issues such as communication, responsiveness and pain management, and compiled a holistic set of analytics correlating the patients' clinical and social backgrounds along with their satisfaction feedback.

As a result, we were able to identify and target very specific patient care issues. We showed our client where they ranked on these issues in relation to national averages. More importantly, we were able to recommend specific actions they could take to improve patient care delivery, health outcomes and business operations.

Turning data into business intelligence

The central challenge in this engagement was: How do we deliver specific, actionable recommendations and advice to our healthcare client using a combination of patient feedback and clinical background data?

We analyzed 60,000 CAHPS patient survey forms over a six-month period. Along with this data, the client shared clinical background information on these patients, including the kind of treatment they were receiving, their medical history and demographic data such as age, gender and race. In addition, we looked at logistical factors such as time of admittance and time of discharge, and how the discharge formalities were conducted.

The power of statistical analysis

In analyzing the data, we used decision tree models and regression models, as well as intensive hypothesis testing using Chi Square, Kruskal Wallis and Wilcoxon tests to fully understand all the variables and how they interact with each other. For instance, if a patient has a negative response to a healthcare facility, that might influence his or her view of the doctors and nurses, even if those people did not contribute to the negative experience.

Our analysis was designed to distinguish between these variables when evaluating patient responses. We delivered a detailed set of patient satisfaction analytics, along with a set of observations and very informed and specific recommendations for the health network. We made a number of suggestions regarding communications with patients, especially during the discharge process from the hospital.

For example, older patients who are not being discharged to skilled nursing facilities need to be carefully briefed on the potential side effects of their medications. New mothers also require extra attention on discharge day. We advised the client on resource planning to ensure they are not short-staffed at these important moments.

Our recommendations for this healthcare provider have helped them fine tune their operations and are expected to significantly improve their CAHPS scores.

For more information, visit www.cognizant.com/ai.

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