Case Study

Key Features

INDUSTRY
Health Services

LOCATION
United States

IMPACT
- Efficient staff allocation
- Improved patient experience
- Focused patient follow up

Predictive Analysis for Patient Scheduling

Predictive analytics in healthcare has long been the wave of the future. The landscape is changing and more healthcare systems are looking to harness the power of predictive analytics to improve patient care and optimize resource workload.

Staffing accounts for over 50 percent of an average hospital's costs. Too little staff can significantly impact the quality of care and patient experience while too much staff can jeopardize a hospital's financial viability. More than 50 percent of administrators still schedule manually based on the number of beds available or on historical averages. The process is time-consuming, cumbersome, inflexible and inaccurate. New advances in predictive analytics can revolutionize hospitals' ability to predict patient demand, reduce staffing shortages and overages and improve the scheduling process for hospital staff and their managers.

One of the effective implementation in the health care space is to predict the show or no show on the scheduled appointments to effectively allocate resources and manage the demand based on the influx of the patients. Determining if a patient will be a "Show" had a deep impact on the operations of the pediatric hospitals and clinics.

By using the historical data and the current data in combination with the data related to the patient , predictive models categorized the patient as "Likely, "Not Likely" and "For Sure" to keep appointment which helped the scheduling staff to determine the number of appointments that can be taken up to keep the resources engaged optimally without compromising patient care.

The data was extracted from the EMR system and loaded into the Hadoop framework and the datasets were created using Hive. Population based and individual based data models were used and factors affecting No-Shows and Cancellation were determined. Using the functions distribution in appointment scheduling through hybrid probabilistic modeling provided the

- Initial no-show probability estimation
- Bayesian update of the no-show estimation
- Weight optimization

The model is now used with the Individual model to determine the outcome and compared with the historical records to check and improve the estimation accuracy.

This modeling helped the pediatric health care system to optimally schedule and effectively manage the workload of the staff without compromising on patient care.

DATA SOURCES	INTEGRATION	DATA STORAGE	ANALYTICS	PRESENTATION
Structured	ETL	NoSQL DBs	Query & Reporting	Self Service
Semi Structured	Messaging	Distributed File System	Distributed File System	Web Service
Unstructured	API	Relational DBs	Relational DBs	Extracts
				Reporting