

# Healthcare Insights

Harnessing Big Data cuts healthcare costs, reduces readmissions and fraud.



## Challenges

- Needed to lower healthcare costs by reducing hospital readmissions
- Wanted systems to improve patient outcomes
- Required algorithms to identify highest risks, reduce fraud

## Solutions

- Cloudera's data lake, portal hosted on premises
- Diverse Wavelengths & MPLS services connect data centers
- Managed services for ongoing support & maintenance
- Constructed predictive models & algorithms to identify at-risk patients
- Created sophisticated fraud-detecting algorithms

## Results

- Saved \$10 million in fraud investigations unit
- Fewer hospital readmissions
- More patients redirected to outpatient services

## Challenge

### Using data to control costs, improve patient outcomes

Two of the biggest issues driving up healthcare prices – hospital emergency room readmissions and health care fraud – cost taxpayers billions per year. One California-based insurance provider is turning to data science to reduce costs without sacrificing quality of care.

The provider noticed a spike in readmissions from those with common conditions such as chest pains, Chronic Obstructive Pulmonary Disease (COPD), pneumonia, and diabetes. If this continued, Medicare might stop paying the insurance claims, driving up costs. Healthcare plan managers believed that by analyzing patient data, they could identify who was at the highest risk of readmission and take measures to prevent it by directing them to less expensive outpatient services.

They also wanted to address fraudulent claims that cost the company millions of dollars each year. By analyzing data on claims made for prescription medicines and medical devices, they could identify patterns of abuse and reduce fraud. While the provider had the data, they lacked the right data structure and algorithms to analyze it in a useful way.

## Solution

### Harness data with a cost-effective BDaaS solution

With Lumen® Big Data as a Service (BDaaS), a data lake was built within their data environment on premises using Cloudera to capture the information on patient claims and hospitalization rates. Cloudera, provider of a leading Apache Hadoop solution for Big Data analytics, is a long-term partner. Lumen Wavelengths and MPLS services provide data center connectivity. The project is part of a three-year managed services contract that includes ongoing maintenance, support, software licensing and training.

Lumen data scientists constructed predictive models to help the provider identify patients at the highest risk for readmission and redirect them to preventative outpatient services. They used the same data science techniques to help the internal fraud-detection team identify potential fraud-based abuse in prescription and medical supply companies, applying sophisticated algorithms to look for unusual transaction patterns and sharing the results with the investigation unit for follow up.

### Lumen Solution Set

- Cloudera's data lake and portal hosted on premises
- Lumen® Professional Services: Certified Cloudera engineers and data science experts
- Lumen® Wavelengths & MPLS services for connecting data centers

## Results and future plans

### Major cost savings, better care for patients

From the outset, the provider was able to realize \$10 million in savings from the fraud investigations unit alone. Eliminating fraud-based abuse helps drive down costs without impacting patient care and may even help lower premiums.

The ability to identify and flag at-risk patients reduced the number of readmissions by redirecting them toward outpatient services. With these savings, the provider is able to focus its efforts on providing quality health programs through their community resource centers.

Lumen continues to work with the provider to help hire and train data scientists. They are also considering moving the solution to the cloud, which will require additional privacy and security considerations to comply with industry and government regulations as well as managing the cloud solution. Lumen is ready to help them move into the future of healthcare innovation.