

Tiger Analytics enabled a top US health insurer to predict risk events and enable interventions with Power BI insights

Tiger Analytics designed and deployed a solution to streamline the overall care and disease management process. This robust Analytics platform made it easy for the client to quickly identify risk events. The solution also helped prevent any potentially avoidable hospitalizations, thereby reducing significant clinical and economic burdens.

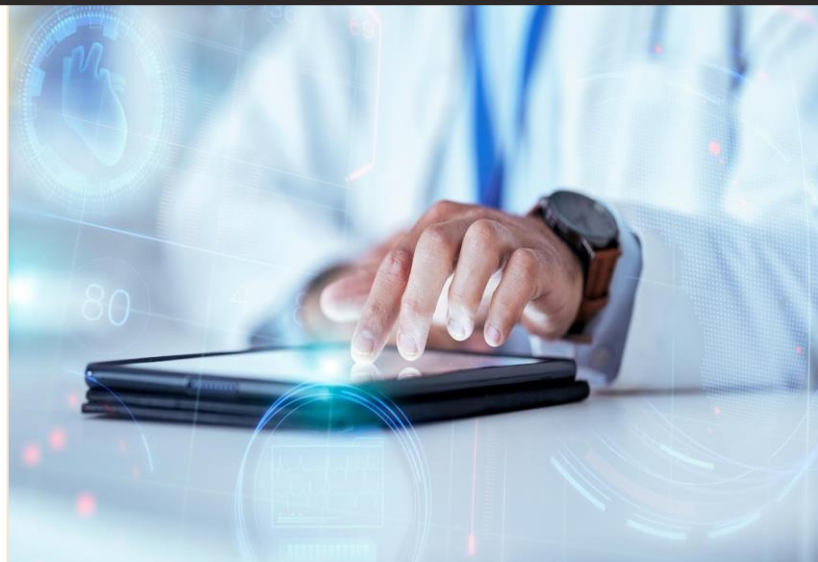


The Background

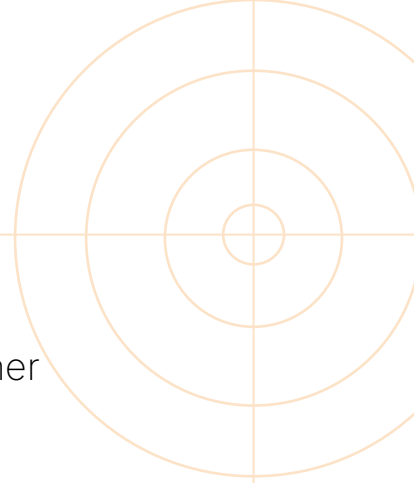
Based in the US, the client is a major health insurance company, providing individual and group health insurance plans. They were eager to improve the care and disease management processes by developing models to predict risk events and provide a list of impacted patients for timely intervention. The client also wanted to create a robust analytics platform through code restructuring while establishing best practices for model development and management.

Key Challenges

- \ **Delayed feature execution:** Effort-intensive and long execution times were involved for each feature entity, such as diagnosis, procedures, and events.
- \ **Interpretability vs. performance trade-off:** Retaining model interpretability while improving performance was not possible.
- \ **Environmental limitations:** Implementing the model interpretability framework was restricted due to environmental constraints.



Our Solution



Tiger Analytics created a solution to extract features based on socio-demographics, diagnoses, procedures, surgeries, and other health attributes. The team carried out four key steps while executing the solution.

In step one, **Exploratory Data Analysis** was conducted, and a Data Pre-Processing Pipeline was built to include Value Standardization, L1 Regularization, and Vector Assemblers. In the second step, the team conducted **Feature Engineering**, capturing all historical health attributes by creating versions of variables.

Step three saw the team initiate **Modeling**, creating three types of models: Risk of Hospitalization (ROH), Risk of ER Visits (ROED), and Risk of High-Cost Claims (ROHCC). These were coupled with the right feature selection and Hyper Parameter Tuning using Hyperopt, along with Regression for Probability Smoothing.

The fourth step focused on **Output**, as SHAP techniques were used to improve model interpretability through code restructuring while establishing best practices.



Tech Stack

/ Azure Databricks

/ PySpark

/ Azure Blob Storage

/ Jupyter Notebooks

Value Delivered

Expected payments were reduced by 25% with early Intervention models, enabling preventive actions to reduce risk events.

A robust client environment was created using Azure Data Factory, Azure Blob Storage, and Azure Databricks.

Power BI-based dashboards and embedded reports were developed to share insights.



About Us

Tiger Analytics is a global leader in AI and Analytics, helping Fortune 500 companies solve their toughest challenges. With over 4000 data technologists and consultants spread across offices in the US, Canada, UK, India, Singapore, and Australia, we help our customers accelerate their AI and Analytics journey in sectors like CPG, Retail, Insurance, BFS, Manufacturing, Life Sciences, and Healthcare. Tiger Analytics is a Great Place to Work Certified and a 'Leader' in the Forrester Wave: Customer Analytics Services Report 2023.

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