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CASE STUDY

Global Pharmaceutical Company Uses Panalgo's Data Science Module to Leverage Real World Data to Design and Execute Prospective Observational Study

For a new medication, a global pharmaceutical company was organizing a study that would help inform the design and execution of the product's prospective observational study – comparing patients exposed to a new product to those following the standard of care. Specifically, the company needed to better understand the patient population that would best fit the study and minimize uncertainty in its execution through studying real world data.

Propensity Score Matching Using Machine Learning

For the observational study, the research team planned to assess outcomes in exposed and unexposed patients after implementing propensity score matching. This technique helps remove the possibility of bias by ensuring comparability of the treatment groups with respect to confounding variables. While propensity matching is becoming an increasingly popular method of preventing unintended bias in clinical research, determining and mitigating the effect of confounding variables in study design can be a complex and time-consuming process.

Researchers leveraged claims data and Panalgo's Instant Health Data (IHD) Analytics platform for cohort identification and analysis. The IHD Data Science Module was used to evaluate a menu of analyses with different propensity score matching parameters and to visualize matching rates.

The IHD Data Science module enabled the researchers to tune machine learning models and select the model and key baseline variables that optimized treatment exposure predictions. Further, the team was able to implement and test the model on new data, all without custom programming. Once the final model was determined, the propensity scores were then used in various matching scenarios of the exposed and unexposed patients to visualize the matching rates and choose optimal matching ratios.

Speedy and impactful analysis

This research project was critical to the organization and required a rapid turnaround. Whereas similar custom projects can take many months to complete, IHD's Data Science module enabled the company to complete the analysis in approximately six weeks.

This project enabled the research team to use novel methods to inform their observational study. By optimizing propensity score estimation and testing different matching ratios, researchers were able to make quick decisions regarding their recruitment strategy and inform important implications in study length and cost with increased certainty.

Invaluable support from Panalgo team

At the start of the project, the company's researchers discussed their project goals with the Panalgo solutions team. With over two decades of experience in designing and conducting research, Panalgo's insight helped the researchers understand how to best utilize the IHD platform and capitalize on its various capabilities to investigate their questions, including the integrated machine-learning techniques of the IHD Data Science Module. As the pharma company had not used the module and its menu of machine learning techniques previously, a dedicated IHD Data Science Module support team was able to provide the expertise needed to effectively and appropriately implement the project.

The Panalgo team worked one-on-one with the company's research team to demonstrate how to conduct analyses in the module and how to best use its breadth of features. Panalgo also provided step-by-step instructions where necessary to implement certain study specifications in the module. Beyond this individualized support, the Panalgo data science team worked with the broader real-world evidence group at the company to more widely share information about the Data Science Module and its utility.

Panalgo's support optimized and expedited the time-sensitive research. Additionally, with the support and insight gained during this project, the company's research team is now able to conduct similar analyses more easily in the future.

Global pharmaceutical company

Global pharmaceutical leader

Tens of thousands of employees worldwide

Challenge

Better understand the patient population needed to enroll in an observational study and minimize uncertainty

Determine the appropriate patient sample size, the case-to-control ratio, and the propensity score match rate to ensure the patient sample population is reflective of the real world

Project required a rapid turnaround time

Solution

IHD Data Science module enabled the team to test multiple predictive models, including novel machine learning models, to identify and choose the best model for the study's needs and validate that chosen model

Panalgo solutions team expertise expedited and optimized the project

Results

Accelerated project from months to approximately 6 weeks

Set stage for increased productivity for future analytics projects

Helped the company win an internal innovation award for its cutting-edge use of analytics for observational study design

Speed to insights drives productivity and access to medicines faster

With IHD and the Data Science module, the company was able to conduct complex analyses that informed their observational study design in six weeks rather than months. Finally, the speed to insights and the productivity gained for future projects allowed the company to provide timely communication to multiple stakeholders, impacting the ability for patients to obtain care and access beneficial treatments.

About Panalgo

Panalgo provides software that streamlines healthcare data analytics by removing complex programming from the equation. Our Instant Health Data (IHD) software empowers teams to generate and share trustworthy results faster, enabling more impactful decisions. To request a demo of IHD Analytics or the Data Science module, email us a demo@panalgo.com.

IHD Data Science enables researchers to leverage the full potential of data and work easily with a large number of covariates, identify predictors and perform advanced analysis using a variety of machine learning techniques – all without the need for custom programming.

Notably, the module provides a single environment to easily train, validate and test models against multiple datasets, as well as allow users to seamlessly expand IHD projects to generate new findings. As a result of these advanced machine learning techniques, researchers and analysts uncover novel insights to drive product success.

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