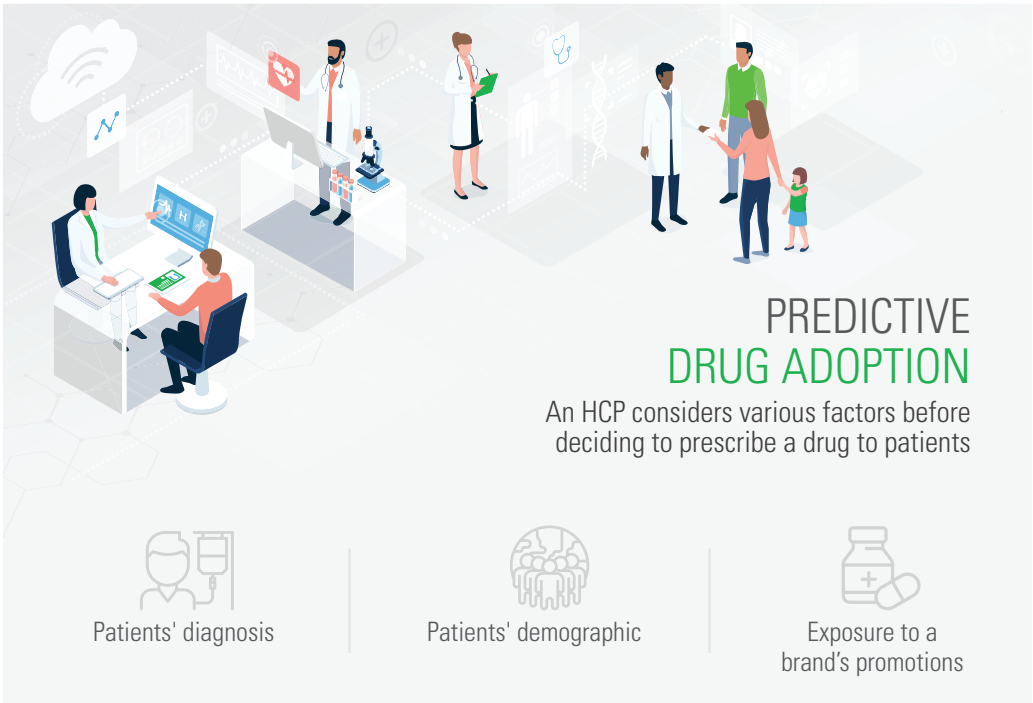
CASE STUDY

TARGETED FIELD OPERATIONS WITH PREDICTIVE DRUG ADOPTION

USING MACHINE LEARNING (ML) ALGORITHMS TO IDENTIFY NON-PRESCRIBING PHYSICIANS LIKELY TO ADOPT A DRUG

INTRODUCTION

Pharma companies heavily rely on Healthcare Professionals (HCPs) to drive product adoption. An HCP considers various factors before deciding to prescribe a drug to patients. These factors include the patients' diagnosis and demographic, along with the level of exposure to a brand's promotions. A medication may qualify to be the most appropriate for a patient's condition. Yet, the HCP's prescription decision will take into consideration the possible patient outcomes or benefits. Bridging the gap between patient outcomes and brand messaging to outline the benefits is, therefore, critical. More so, standing out from the competition is crucial for product leaders to promote their drugs effectively.



Understanding the factors that influence HCPs to prescribe a drug can highly benefit promotional efforts. By following the pain areas and addressing them meaningfully, sales reps can deliver highly relevant messages to and ensure maximum adoption. Using an insight-driven promotion approach can not only increase the likelihood of growing their total prescriptions but also get non-prescribers on board. Relevant data and intelligent technology can work together to identify prescription behavior influencers and predict HCP conversion rates.

AXTRIA
INGENIOUS INSIGHTS

This study illustrates Axtria's innovative ML solution, designed for a lung cancer drug. The solution helped identify high-probability, likely-to-adopt physicians for targeted field sales operations, increased prescription revenue, and a chance at expanding market share.

BUSINESS SCENARIO

- The manufacturer wanted to increase the market adoption rate for one of their lung cancer drugs.
- The Analytics team were using a dashboard tool to track opportunities such as high-value physicians (prescribers), drug-level prescription data, and therapy-level market share.
- The dashboard was also being leveraged to train the sales teams on targeted field interventions for various physician types.
- As part of an existing engagement, Axtria had added several features to the dashboard, such as:
  - » Prediction of drug adoption trends
  - » Patient-level information
  - » Patient and physician-level segmentation

OBJECTIVE

- The Analytics team wanted to identify non-prescribing physicians, most likely to adopt the drug within a three-month period. This information would help the sales teams make informed decisions to:
  - » Target their promotion efforts towards opportune physician segments
  - » Significantly increase drug prescriptions over time

APPROACH

As a solution, Axtria developed an ML-based predictive algorithm framework. This process involved the following steps:

DATA IDENTIFICATION AND SCOPING

To understand the lung cancer market behavior, and various datasets were studied for the analysis.

Market potential from claims and Specialty Pharmacy (SP) data.

HCP demographics data such as therapy areas and ZIP-level information.

Promotions data from various campaigns such as emails, print, and newsletters.

Other datasets, which included account affiliation and population demographics.

To ensure the model accuracy, multiple layers of filters were applied to arrive at a focused set of highly relevant HCPs, and the following types of HCPs were removed:

- HCPs accessed only by non-personal promotions.
- HCPs without the ability to prescribe.

The prescribing and non-prescribing HCPs were divided into two distinct groups of data for model training and testing going forward.

MODEL DESIGN, TRAINING, AND TESTING

1. Model Design

- Defining performance measures for the model was the first step for model design. 'Model accuracy' was given more importance than 'sensitivity' to avoid false positives.
- Only the latest 12-month data was considered for training the model.
- The most relevant factors influencing the HCPs to adopt the drug were identified. These factors included:

2. Model Training And Testing

- Permutations of various ML techniques were used to train the datasets to arrive at multiple versions of trained datasets.
- Each of the trained datasets was tested to predict the new likely-to-adopt HCPs for the next three months.
- The findings from each tested dataset were logically combined to arrive at a final list of new HCPs with varying probabilities to prescribe the drug.
- Probability cut-offs were defined to bucket the new HCPs' list into low, medium, and high probabilities of prescribing the drug.
- Model validity was thoroughly tested to find the high accuracy of the results.

KEY TAKEAWAYS

- Axtria identified over 200 HCPs, including 16 high probability HCPs likely to prescribe the drug within three months.
- The identified new adopters had the potential to contribute over $4M to the drug's long-term prescription revenue.
- The predictive ML model's finding helped prioritize specific HCPs for the field force, supporting the sales reps with a data-driven targeting approach.
- Successful conversion of non-prescribing HCPs to prescribers would help the client expand its market share in the highly competitive lung oncology market.

CONCLUSION

Relevant data and intelligent technology can do wonders when the objectives are clear! In this case, since the manufacturer's team knew the existence of an entirely new set of potential HCPs, the AI/ML intervention to identify potential customers and predict stakeholder behavioral patterns added significant value with minimal effort, and highly evolved and scalable models. Further, developing scalable and predictability models helped the Home Office (HO) focus commercial planning in the right direction and maximize promotional Return on Investment (ROI). Actionable insights were delivered in real-time on mobile applications that enable agile data-driven decisions by sales reps on the field.

To learn more, read Axtria's case study on *Expand Market Share With Right Customer Targeting*.