IQVIA

Estimation of Dentist Potential for Non-prescribed Products

Leveraging sociodemographic data for granular insights

Challenge

A consumer health company has been targeting dentists without insight on their importance in recommending their OTC product to patients. They wished to introduce a more data-driven approach to allow more effective use of their field force.

Since the client product was not prescribed a 'conventional' prescription-based targeting exercise was not possible.

Solution

We developed a solution that made use of rich sociodemographic data and our pharmacy panel. The sociodemographic data included indicators of population size, age and wealth, and were available at census-district level. The first step was to identify the relationship between those parameters and our market sales data. We made use of a random forest algorithm to best predict sales per district.

We partnered with a third party to map catchment areas around each dental practice so that we could then allocate sales potential to each practice.

Dentists were finally segmented according to the estimated value potential of their practice.

Results

We were able to provide the client with a ready-to-use nominative target list built with high confidence based on our pharmacy panel, granular sociodemographic data and advanced statistical methods.
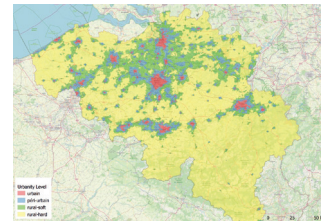
Methodology

1 Aggregate highly granular sociodemographic data to sales brick level
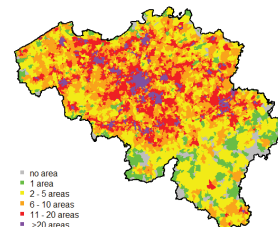
2 Use statistical models to predict sales according to sociodemographic input
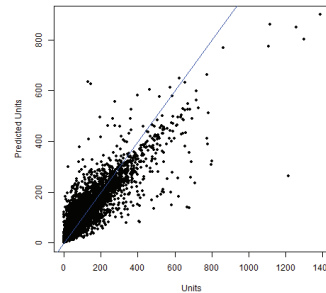
3 Define dentist catchment area based on travel times extending from location of practice

4 Distribute sales for the whole country according to the catchment areas, adjusted for area overlaps

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Promotional Impact Modelling and Estimation of Growth Potential

Leveraging AI/ML to segment physicians to ensure optimal promotional ROI

Challenge

A pharmaceutical company was facing stagnant growth for its product in a chronic disease market despite heavy promotional effort. The company wanted to know which segments could be expected to help kick-start growth and, given the high share of voice, what contact frequency was most effective.

This was in order to allow resources to be re-allocated to ensure optimal return on promotional investment.

Solution

We used a combination of client promotional data going back two years, and IQVIA's Xponent sales in two modelling exercises.
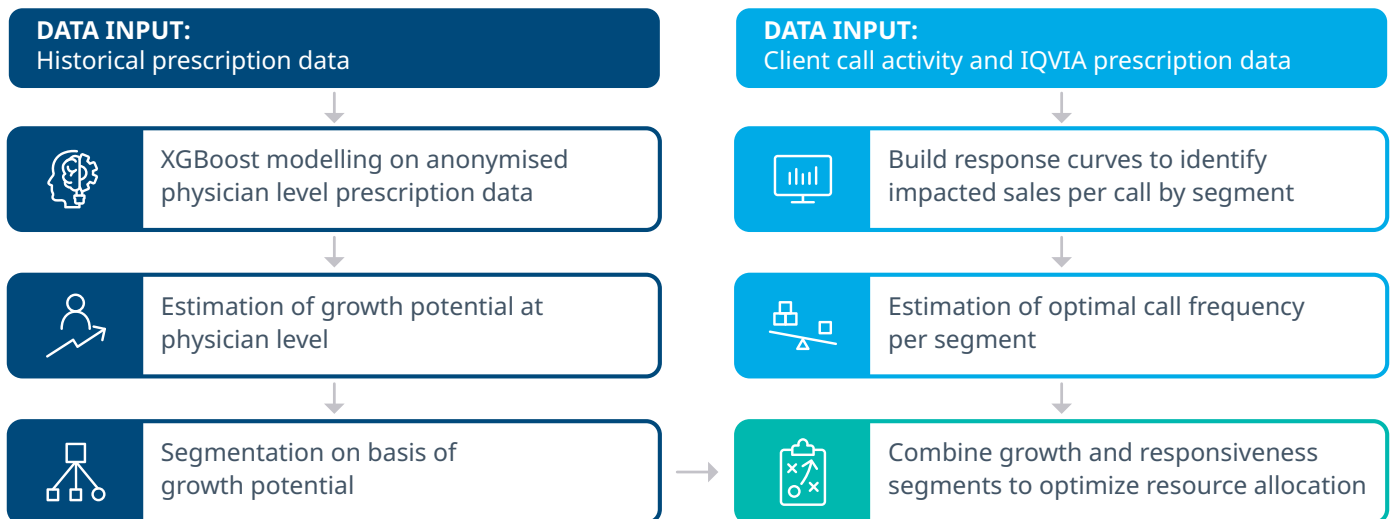
Firstly, using machine learning models we identified the features of physicians prescribing behaviour which explained historical growth of the client's product – allowing us to estimate volumetric uplift for the future at the physician level.

The second model was employed to estimate physicians' responsiveness to our client's promotion and defined the optimal call frequency for each segment.

Results

Crossing the results of these two models we were able to create new segments, reflecting growth potential and responsiveness, and recommend adaptations the client's existing segmentation in light of the new information.

Methodology

DATA INPUT: Historical prescription data
XGBoost modelling on anonymised physician level prescription data
Estimation of growth potential at physician level
Segmentation on basis of growth potential

DATA INPUT: Client call activity and IQVIA prescription data
Build response curves to identify impacted sales per call by segment
Estimation of optimal call frequency per segment
Combine growth and responsiveness segments to optimize resource allocation

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Segmentation of Specialists From a Survey Sample

Leveraging AI/ML to segment physicians to personas developed by primary market research

Challenge

A pharmaceutical company had developed personas based on a small set on specialists that were created to support the sales team understand their behaviour. motivators and priorities.

The client wanted their full target list to be segmented to these personas in order to help structure interactions by the sales force.
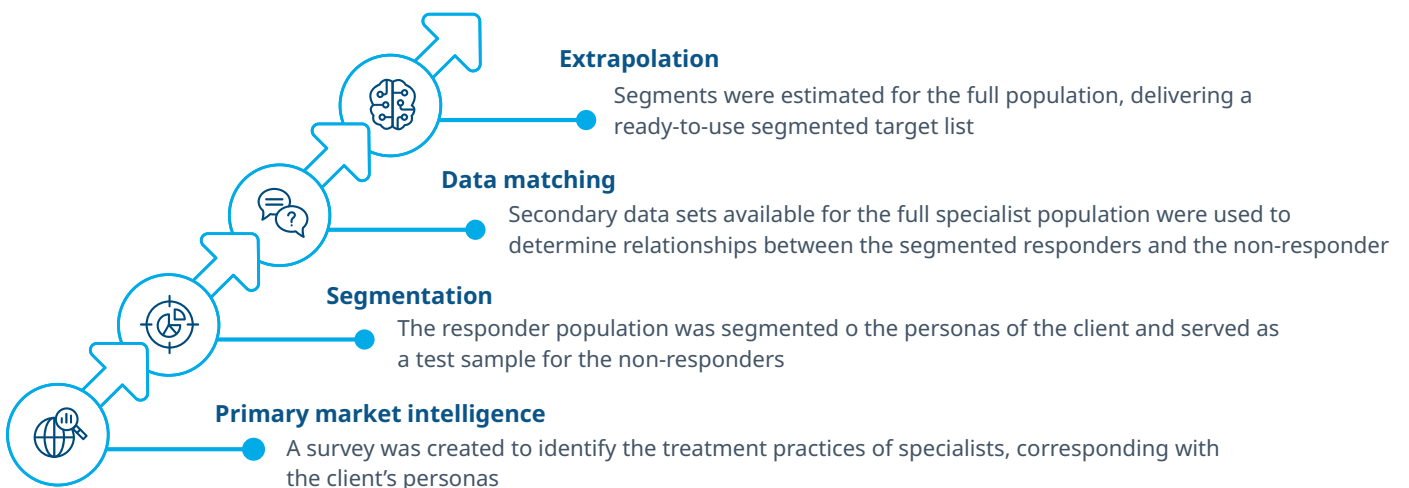
Solution

Our first task was to develop sample population through primary market research using questions designed to match what was known about the different personas. This sample could then be segmented to support extrapolation to the full target list.

For both the responder population and the remainder of the target list, IQVIA had prescription data at anonymous level, as well as OneKey and sociodemographic data which would.

We employed unsupervised clustering on the sample population, and then modelling with all available data to assign the non-responders to personas. Cross validation techniques ensured we used the best model.

Results

Using a data-driven approach enabled segmentation of a population that could not be reached in full through primary market research and removed potential bias from the field team. Use of IQVIA's prescription and OneKey data provided a rich data set for successful use of advanced analytics.

Methodology

Extrapolation
Segments were estimated for the full population, delivering a ready-to-use segmented target list

Data matching
Secondary data sets available for the full specialist population were used to determine relationships between the segmented responders and the non-responder

Segmentation
The responder population was segmented o the personas of the client and served as a test sample for the non-responders

Primary market intelligence
A survey was created to identify the treatment practices of specialists, corresponding with the client's personas

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Time Series Forecasting of Market Sales

Application of advanced forecasting techniques to improve planning

Challenge

A pharmaceutical company was employing a simple forecasting solution to estimate future sales across its different business units, but for more reliable planning it wanted to improve both reliability and model flexibility to allow specific events or trends to be captured / modeled.

Solution

The client provided sample data of daily sales for the different business units, going back 18 months. We developed an integrated modelling approach that encompassed seasonal, long-term ad specific effects.

Next, we identified not statistically significant effects and excluded them to simplify the model.

The forecast model was validated against observed and modelled sales, and demonstrated to have very good accuracy, before being applied to forecast end of month, end of quarter and end of year sales.
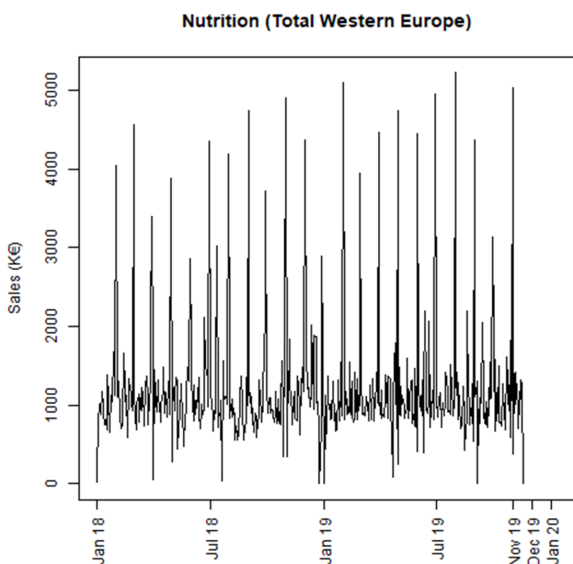
The forecasts can then be re-run on a daily basis with minimal manual intervention.
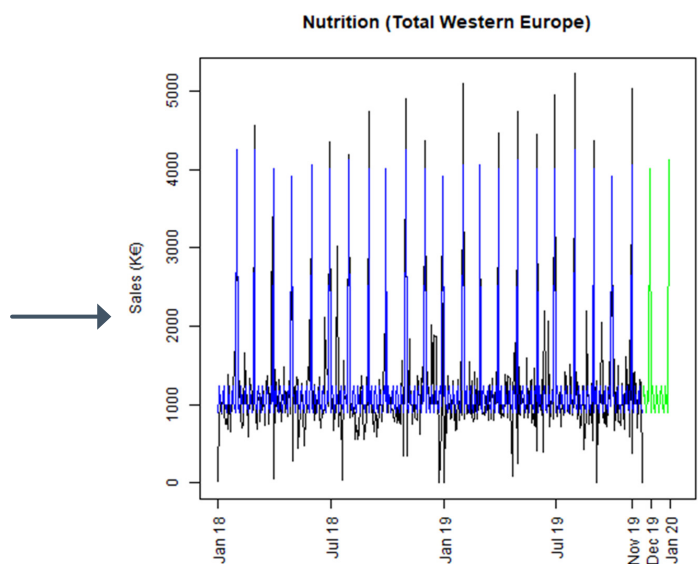
Results

The client received detailed and aggregated sales forecasts for different time intervals for each business unit and country.

The full algorithm and code was provided to the client to allow ownership and application.

Time series source data	Calibrated model and predicted series overlay

Nutrition (Total Western Europe)

Nutrition (Total Western Europe)

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