Root Inc. -- 2021 Bootcamp Project

ACME Insurance Company

Root Inc. is the first mobile-focused telematic auto insurer

- Before determining your rate, you download our app and take a “test drive”, where we’ll use your smart phone’s sensors to identify patterns of driving behavior that we’ve found to be highly indicative of risk. By understanding this driving risk, we can more accurately match price with expected losses. Currently licensed in 32 states, but aiming to be nationwide by end of year.
- **Company Domain:** InsureTech

Description of Project

- Overview
    - In this problem, ACME Insurance Company wants to optimize its marketing spend in the Vertical Search channel. In this channel, customers enter information about their insurance needs, and insurers bid in a first-price auction to have their ad shown to the customer. The placement of the ad is determined by the insurer’s bid, with the highest bid showing in the first ad position and the lowest bid shown in the lowest position (in the data for this problem, 5th). The marketing channel manager for Vertical Search wants to understand how to improve the efficiency of the channel by bidding differently.
- Specifics
    - Acme Insurance Company sells auto insurance directly to consumers via Vertical Search websites. On these websites, consumers who are already shopping for auto insurance enter some information about themselves and then are shown ads from insurance companies. Each ad shown is called an "impression" and each record in this table represents one ad impression.
    - These ads are shown based on an online auction where insurance companies bid to have their ad shown, and the ads are shown in order based on highest bid amount. The insurance companies only pay if their ad is clicked on, but bidding higher will cause the ad to be shown higher in the ranking and is more likely to be clicked on if it is in a higher position.
    - Acme currently bids $10 for all customers, but is able to set different bid prices for different types of customers. For example, Acme could bid $10 for all customers with 1 vehicle and $12 for all customers with 2 vehicles.

    - Acme would like to come up with a bidding strategy which optimizes the cost per customer acquired while ensuring that for every 10,000 ads shown they are expected to acquire at least 400 customers. How should Acme set prices by customers segment?
    - The channel manager who buys advertising on this vertical search website would also like to know if in the course of your analysis you come across any other interesting findings!
- Data science professional “domain(s)”
    - *Machine Learning (ML) Research* (e.g., designing new ML/AI algorithms)
    - *Decision Science* (e.g., data science to define KPIs, make a series of recommendations to business stakeholders)
    - *Business Intelligence* (e.g., data science to understand the efficiency, profitability, and productivity of your company)
    - *User Experience/Customer Insights* (e.g., data science to learn about consumer behaviors for your company, experimental design, wireframing)
    - *Market Research* (e.g., data science to analyze consumer behavior or brand perception for other companies, discovering market trends)

Description of Data

- This dataset includes information that the customers have entered into the Vertical Search website, and includes 1 record for every customer who searched. Each row contains the bid ACME made, the rank their ad was displayed, whether or not the customer clicked on the ad, and whether or not the customer bought a policy.

Suggested Implementation

- We want to understand what the optimal bid strategy is by customer segment in order to get the best return on investment in this channel. We also want to understand how the new bidding strategy will impact volume of policies sold.