The Tale of Time

Analyzing the time pattern of customers

Team : OLSors

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Time is a scarce resource, especially so as our societies are abundant with material goods but not an increasing supply for time. Our work is thus motivated by the scarcity of time. We investigated the time spending pattern of Edmunds customers. To that end, we find that Edmunds as an intermediary saved a great deal of time for both customers and car dealers. Our aspect is novel and our result is significant. In particular, we find that one specific feature of Edmunds – "Price Promise", shortened customer's deciding time by nearly 50%, or 26 days.

We generated a series of novel time related variables from the raw data. Two questions can be answered with our work:

1. How much time a user spends on the website before buying a car?
2. Does Edmunds's special feature "Price Promise" saved time for dealer or customers? To what magnitude?

Approach:

The useful information from the raw data are those time related variables, such as start session time, end session time, dwell time, purchase date. We assumed that the time distribution of a user visiting the website is Gaussian and computed the distribution for each user for a specific car model, d_v, where v is the customer buying the car, c_i.

Overall distribution for each car can be represented by a simple sum of these distributions

$$D_{c_i} = \sum_{v \in c_i} d_v$$

We have yet successful at estimating the parameters and interpret the meaning of parameters. What is interesting as a preliminary result can be seen from the figures in our presentation. There are some peak sessions for each car model during the year. We think it could be very useful for Edmunds company to push relevant advertisements pertaining to those cars which could help the customers in taking right decisions in a fast manner.

To quantify the impact of "Price Promise" feature, we track each successful deal, transactions with car dealer, from the beginning of the 1st lead(inquiries) that customer send through Edmunds. From that, we calculate how long does it take from

the 1st lead to the point when the deal is closed. It is measured by days. On average, customer spend 1-2 months from the initial contact to transaction. However, with price promise feature that Edmunds provided, this time is cut by half. The surprising result is that this difference is significant at 1% level even after correct for heteroskedasticity.