Title: Advertisements based on Consistency

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Incentive:
We want to investigate what types of customers typically use edmunds.com as an independent online research source for their car purchases. Dividing them into different groups allows us to look into how various factors affect different types of customers in their decision-making process and hence categorize customers based on their behaviors throughout their shopping journey. In the end, we hope to make the shopping experience easier for customers by tailoring the information displayed on our website to their needs.

Process:
- The units of analysis are the visitors who bought cars through edmunds.com.
- By investigating how many configurations a visitor submits, we divide them into two groups: the consistent (those who consistently only looked for one vehicle of one certain make, model and style) and the inconsistent group (those who submitted more than one distinct configuration).
- We found out that the following variables (in the visitor table) are significantly different between the two groups: total number of page views; how many times a visitor has visited the website; total amount of time spent on the site; total advertisement clicks; total page view count where the page subcategory is classified as 'price', 'research' , 'option', 'consideration' , or 'configuration' . These variables can be used in logistic regression to predict the customer's behaviors and further categorize them into subgroups. This model reduces AIC by half from the null model and its ROC curve has an AUC of 0.96.
- The proportion of customers who bought cars within the price range 40k - 60k is higher in the inconsistent group (23%) than in the consistent group (15%).
- We also found there is a significant difference between the mean purchase price of the consistent group ($30400, SD=86), and that of the inconsistent group ($33622, SD=240).

Conclusion: We learned that most people (88.1% of 99,396) who visited edmunds.com are not typical car-shoppers in their consideration stage, i.e. these people knew what types of car they wanted and consistently looked into that model during their searches. Hence, a good dealership is more important for them. The remaining 11.9% were inconsistent in their searches, apparently more easily influenced in their decision making by different advertisements and expert reviews. We recommend that edmunds.com and dealers provide them with more advertisements and suggestions in search results that pertain to price, models and car researches.

Based on the preliminary model we built, edmunds.com can identify whether a potential customer is consistent or not and provide information accordingly.

Discussion: Many explanatory variables in our regression model are strongly right-skewed and need proper transformation. Their correlations also need further inspection. While we discovered the distribution of purchase price in the inconsistent group is bimodal, further investigation could be made to determine what contributes to the pattern.

Further research into how the two groups of customers can be further categorized based on other variables such as their concern for price. In terms of page count, a count of significantly greater than 20 can potentially indicate an inconsistent price-aware customer (median = 20).