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Problem:

Expedia's business model is commissioned-based, so any time they make a sale on hotels, airline tickets, car rentals, etc. they keep a percentage of the revenue earned. Thorough observation of the data revealed that Expedia users are booking significantly more hotel-only options than the package option which includes hotel, car rental and/or airline tickets.

Question:

How can Expedia increase the number of packages booked? Can they convert people who are clicking on options to people who book packages? Can they convert non-package bookings to package bookings?

Hypothesis:

Family composition and other socioeconomic factors like family income will be correlated with hotel rating, destination, package status and ultimately, booking rate.

Methods:

We cleaned and parsed through the data provided by DataFest to remove any unwanted noise entries via Pandas extension for Python. We created data frames out of four subsets that had distinct family compositions: (1) two adults, no children; (2) two adults, one to three children; (3) one adult, no children; (4) one adult, one to three children. We chose these four compositions to generalize the data and remove outliers. For each of these sets we determined the 15 most popular cities where people are shopping. We found median family income statistics for each city from the United States Census Bureau and used this data as a new metric indicating the estimated user income. This more accurate metric allowed us to make a deeper connection between the cost of booking and the customers. We used both R and Python to analyze the four data frames.

Conclusion and business recommendations:

Currently, packages are thought of as "value" products. This is evidenced by trends displaying low-income customers and their higher likelihood of purchasing packages. Selling packages would immediately increase EXPEDIA's profit per sale by both increasing total price of booking and commission.

Hive Mind Analyitics suggests that EXPEDIA creates a new product called "premium packages". These packages should target high-income shoppers in order to optimize revenue. The "Premium Package" is to be placed at the top of the list of options for the shopper and is algorithmically customized to fit the shopper's estimated socioeconomic conditions.

For example, a two adult, no children family from New York will likely book a package with a three to four star hotel of high popularity, a value car rental and more flexibility airfare preferences. Presented with this bulk-value option and the idea that the shopper can get all their trip payed for in one place can be a powerful tool to increase packages booked.