

How do Expedia's customers make bookings?

Introduction

Our team was motivated by channel performance. This prompted an exploration of how conversion varied by country and more specifically how booking trends varied by destination over the span of a year. Combining with research on travel company revenues, we proceeded to investigate whether or not package bookings were related to destination.

1. Expedia should adjust its ad-bids based on channel popularity.

Using the data provided for booking info and number of events in a user session, we were able to stratify by booking and show how many events booking customers vs non-booking customers averaged. Furthermore we were interested in whether the channel source varied between these types of customers. We found that the trend of channel popularity remained unchanged between the booking and non-booking customers. Overall this indicates that 541 and 293 are the highest performing channels while 417 and 231 are lowest performing channels. We can conclude that Expedia should investigate why this is so and that they adjust its ad-bids accordingly.

2. A high conversion rate doesn't always mean more clicks.

We created a [Shiny app](#) that allows users to select a specific country to explore how conversion rates stratified by different factors differ among countries. We saw that a high conversion rate doesn't always mean more clicks and visits. For example, channel 510 and 541 are the most popular among Cambodians but channel 386 yields the highest conversion rate. Expedia may host more ads on the popular channels and do more customized marketing on the highly convertible ones. The mosaic plots show the relationship between channel and mobile usage, and between package search and banded price range. For instance, Cambodians tend to search for packages if they look for hotels in the medium and low price range; almost nobody who looks for expensive or very expensive hotels searches for packages. However, it's a different case with Australia: people who look for hotels in the very high price range are the ones who look for packages the most. In short, this shiny app is helpful for Expedia to learn the big picture of their targeted users in each country.

3. Expedia should advertise deals 50 days before a proportion shift in bookings.

This [map](#) shows us the proportion of global users who use Expedia to make bookings. We grouped dates into months, then computed the sum of bookings per state. We then created the variable "proportion of bookings across the globe per year" which is representative of the sum of bookings per state divided by the total number of bookings across the globe (approximately 95000). The mean number of days prior to check-in is 50. Given each time stamped map, Expedia should begin to advertise deals for less popular destinations (to attract clicks and bookings) and let the prices for popular destinations remain constant 50 days prior to the map date in order to increase its revenue. Additionally, customers can use the map to search for less popular destinations to save most money.

4. Customers are more interested in packages closer to home.

Expedia generates 70% of revenue from hotel bookings, but only 20% from transportation (air, car, cruise & other) ([Investor presentation](#). Expedia Inc. July 2015). Thus we analyzed the destinations of customers who booked packages (a hotel combined with a flight and/or car rental) to find strategies that could increase revenue from the transportation segment. We found that more people search for packages when the distance from their origin location is smaller. In addition, we used logistic regression and created a wordcloud to visualize how different popularity scores contributed to the probability of booking a package (each destination has more than 100 *popularity scores* of travel-related facets, such as being family-friendly, having sunny weather, or popular for fine dining, etc.) Our findings suggest that Expedia should advertise more packages for destinations closer to the user's origin and offer more package deals at destinations popular for family and outdoors activities.

Limitation and Possible Directions

We do not know whether the popular marketing channels are Expedia-owned or not, since we do not have the information on marketing channels. Due to the limitation of computing power, our Shiny App is currently available for 3 countries only. A further exploration we are interested in is creating a map that displays only the changes in proportions of bookings from month to month, instead of showing the proportions that appear to be very similar in most countries.

Conclusion

Our analyses and visualizations allow Expedia to understand users' behaviors in each country. In a bigger picture, we show how each country performs relative to the globe and customers' preferences for packages. Therefore, Expedia should adjust ad-bids based on channel popularity, evaluate marketing strategies 50 days before booking proportions shift, and provide more customized packages based on users' preferences of prices based on both origins and destinations.