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Customer Analytics and Customer Insights
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Assignment 2
Identifying drivers of outcomes and developing segmentation and targeting strategy

Data for the assignment

AirBnB_TravelerData.csv (same as in Assignment 1)

Page Limit

The assignment should not be longer than 5 pages. The suggested length for single tasks is just that – a suggestion.

What to submit

The report in PDF format and an R script (.R file) that reproduces the analysis. Include meaningful comments, so we understand which part of the code is related to which task.

Background

Airbnb is an Internet firm that helps travelers discover and book unique accommodations offered by hosts with a room, apartment, or house available worldwide for short-term rental.

To grow the local marketplace, Airbnb wants to do more market research. Suppose Airbnb embarks on an analytics exercise in Eugene, Oregon (US), and partners with Alaska Airlines to promote the firm. As a pilot test, Airbnb pays Alaska Airlines $9,000 for the ability to send promotional emails to the next 3,000 passengers booking a flight from Seattle to Eugene.

There are three different promotional emails:

1. $25 off an Airbnb booking

2. Free transportation from the airport to the Eugene destination booked on Airbnb (taxi cost is $25, pre-arranged through Oregon Taxi)

3. A simple welcome email from Airbnb with a 30-second video that shows some of Eugene's highlights (no additional cost)

The promotional emails are randomly distributed to the first 3,000 passengers who booked a flight to Eugene on Alaska Airlines and did not already have an Airbnb account based on an email-matching algorithm. Each promotion was mailed to 1,000 passengers. After the email campaign, Alaska Airlines shared the following information about the collected data.

Data Description and Codebook

Variable name (as in the csv)	Description
id	Unique customer identifier
Choice	A dummy variable indicating whether the customer responded to the email by booking a stay on Airbnb in Eugene: 1 = yes 0 = no
AlaskaFF	Alaska account status 1 = not an Alaska frequent flier member 2 = frequent flier member 3 = MVP frequent flier member
Age	Age in years
Tickets	Number of tickets booked on the itinerary
RoundTrip	A dummy variable indicating the type of the booked ticket 1 = round trip ticket departing Eugene in less than 14 days, 0 = one-way ticket to Eugene
Promotion	Indicates the email promotion type 1 = $25 off, 2 = free taxi, 3 = welcome email (no promotion)
CustomerEmail	Indicates the customer's email account domain: 1 = @gmail.com 2 = @yahoo.com 3 = .edu 4 = other
Address	Indicates whether the home address of the customer is in 1 = Oregon state (but not Eugene or Springfield) 2 = Eugene or Springfield 3 = Out of state (of Oregon)

Tasks

After analyzing the data descriptively (Assignment 1), we want to study the impact of promotional emails on consumers' choice to book a stay on Airbnb.

1. **Model specification (1-1.5 pages)**

   1.1. What is an appropriate model to utilize and why?

   1.2. What other variables do you think you should control for (i.e., include in the model)? Hint: you may want to consult the descriptive analysis you did in Assignment 1.

   1.3. How would you include these variables in the model (i.e., assumed relationship/link with choice)? What is an appropriate coding for each?

   1.4. Specify the model and write it down (use proper math notation, not R).

   Note: You can also compare several models and discuss your choice.

2. **Model estimation and key results (1.5-2 pages)**

   2.1 Estimate the selected model(s) and present the estimation results. Use tables and/or figures to enhance the readability and the reader's ease of understanding.

   2.2 Evaluate your model(s), e.g., face validity, model fit, parameter estimates, etc.

   2.3 Discuss your results. In particular, provide answers to the following questions:

   - Does email targeting affect the likelihood of booking on Airbnb, and how much? Could we interpret this effect as causal? Briefly argue why yes or no.

   - How are customer characteristics related to customers' likelihood to book on Airbnb, and which act as statistically significant predictors?

3. **Plan of attack to attract travelers to Eugene to book on Airbnb (2 pages)**

   3.1 Utilize your model to suggest to the management which customer segments Airbnb should target with its promotional email campaign. Explain in detail why they should target specific segments and how you come to this conclusion.

   Also, consider the costs of the campaign. For example, you can compute the acquisition costs per customer for each customer type and type of promotional email. Recall that:

   $$Costs\ per\ customer = \frac{Fixed\ costs\ +\ Variable\ costs}{Number\ of\ acquired\ customers}$$

   $$Nr.\,acquired\ customers = Acquisition\ prob.\ \times Nr.\ targeted\ customers$$

   Present the results in a meaningful and effective way that helps you to get your arguments across to the reader.

   3.2 What strategies (action plan) for targeting your identified customer segments would you suggest to Airbnb?