Homework Assignment for Growth Analytics Platform Manager

Introduction

Welcome to Bolt's Take Home Test! We are excited to have you in this process and we would like to explore further if you would be a great fit for the role. This test contains a real problem that Growth Analytics at Bolt deals with and we would love to see how you approach the problem.

Expectation

Submission:
- A PDF file / Word Doc / Slides
- Additional attachments (spreadsheets, Jupyter notebooks, etc.) only if it is necessary

What we would like to see:
- Your thought process
- Your hands-on skills working with data (with any tools you prefer)
- Your communication skills

What we value:
- Structure and clarity in communicating your thought process
- Understanding of our business given the brief context
- Additional insights you can get out of the datasets

Context

Bolt is a ride hailing platform that connects riders (demand) with drivers (supply). At times, our service quality and hence rider experience depend on the supply that we have. We might not have sufficient supply to service the demand volume that we have during some peak hours, and therefore we might need to offer extra incentives or adapt our pricing strategy in order to attract more supply.

Part 1: Peak Hour Problem

In this task (at the end of this document), you are given 2 sample datasets that contain aggregated activities of riders and drivers over a few weeks in a city where Bolt operates. Using this data, we expect you to build a good understanding around the state of demand and supply in the given city. Most importantly, we need to understand if our supply volume matches the demand that we have. If it does not, we need to pinpoint the peak hours and come up with recommended actions.

1. Please identify the time periods that are critical to us, i.e. when we are undersupplied, and explain your reasonings. The following visualizations might be important to give us a better illustration of the demand-supply state:
   a. 24-hour curve of average demand and supply volume (to illustrate if there is any match/mismatch)
   b. Undersupplied hours during a weekly period (Monday to Sunday) so that we can send to drivers and inform them when to be online for extra hours
2. Please calculate the number of online hours required to ensure that we have a good Coverage Ratio during the peak hours you identified above.
3. During peak hours, we can guarantee the drivers a certain amount of income. If the drivers make less than the guaranteed amount, we will pay them the difference. Please calculate how much earning we can guarantee so that we can attract more supply. Please explain your reasonings and you can assume the following:
   a. Finished Rides have an average value of €10 (80% goes to drivers, 20% is our revenue)
   b. With extra online hours available we will be able to capture the "missed coverage", i.e. "People saw 0 cars" in the demand sample data

Dataset

- Demand data
  - The data shows how many people saw at least a car in the app when setting the pickup marker on the map. If you saw a car at one point and did not see a car later, you are counted in both columns in that period.
  - Fields:
    - Date – date and hour
    - People saw 0 cars (unique) – number of users who did not not see a car
    - People saw +1 cars (unique) – number of users who saw at least a car
    - Coverage Ratio (%) – proportion of users who saw at least a car
- Supply data
  - The data shows aggregated driver activities at hourly level during the same period as the demand data above.
  - Fields:
    - Date – date and hour
    - Active drivers – number of active drivers (any level of activity) available
    - Online (h) – total supply hours available
    - Has booking (h) – total hours when drivers had a client booking (any state)
    - Waiting for booking (h) – total hours which drivers spent waiting for booking
    - Hours per active driver – average number of hours each driver was online
    - Rides per online hour (RPH) – average finished trips per online hour
    - Finished Rides – number of finished trips

Part 2: Scaling Growth Analytics Operational Support

Bolt operates in 50+ countries across 600 cities. Growth Analysts can only manage 100 markets in terms of campaign execution and their focus is on the largest cities. Your team needs to decide how to automate campaign execution for the remaining 500 cities such that we can provide support in terms of campaigns operational setups for rider discounts and driver bonuses without increasing the analyst's headcount. Describe your approach to this challenge in terms of:

- Necessary considerations to enable automated discounts for riders and drivers and what teams to involve;
- What should a platform for campaign management for these cities look like;
- What mechanisms of monitoring and intervention might be relevant to put in place and why;
- What would be the main metrics are relevant to track and why;
- How should the process of continuous improvement look like in the context of this project;
- Explain how would you quantify and determine the impact of this project;

The output should be a presentation (slides or document) in which you ideally cover the points stated above.