# Project Objectives:

1. What key metrics can track the success of a team's effort in improving the guest-host matching process and why?
2. What areas should the company need to invest in to increase the number of successful bookings in Rio de Janeiro?
   - What segments are doing well?
   - What could be improved?
3. What other approaches can help the company get more clarity on the matching of supply and demand, thinking beyond the data provided?

Objective 1: Key Metrics

The guest-host matching process for Airbnb consists of two parts: guest booking decision and host acceptance decision. For the process to be successful, the guest must book the place and the host must be willing to accommodate the guest. Hence, to track if the team is successful in improving the matching process, the metrics must account for the features that affect these two types of decisions.

This project follows the assumption that accepted inquiries mean that the host has allowed the guest to book the listing. This assumption is made so that there is a target column for the acceptance decision during correlational analysis. The analysis reveals that the features that mostly influence host acceptance decision are user type (old booker or new booker), number of messages in guest's conversation with host, and whether the host has replied to the guest's inquiry. The same factors such as the number of messages and the host's reply also affect a guest's booking decision. Additional features such as number of reviews for the listing and host's acceptance decision contribute to the booking decision.

Number of Interactions

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Number of Interactions (range 0 to 40)
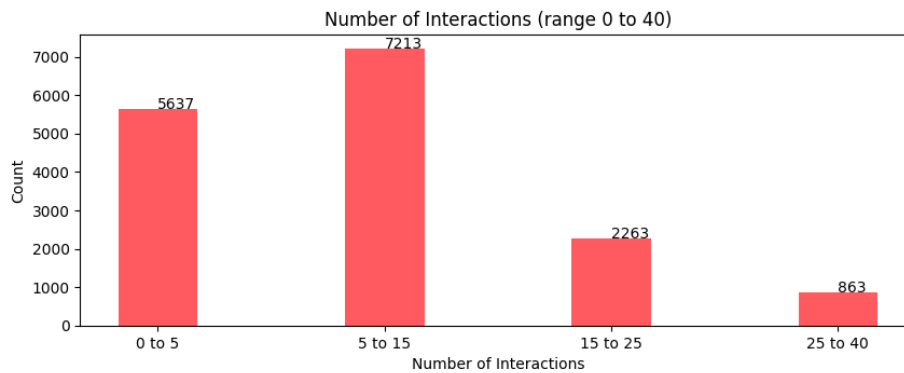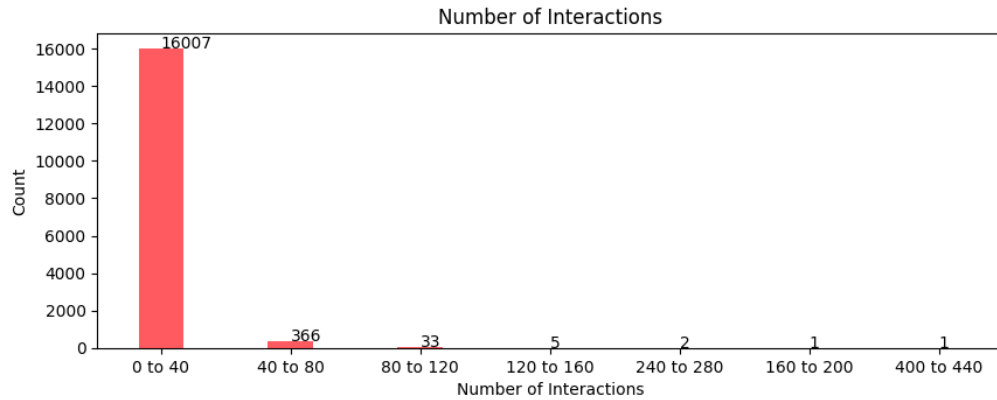
Almost all conversations of the successful booking transactions between the host and guest are within the range of zero to forty messages. Forty five percent of messages are within 5 to 15 in length and 35% are between 0 to 5 in length. The results are an indication that guests are satisfied with the host's reply even in such short engagement because most conversations are less than the maximum allowed messages sent per day which is 25.

Inquiry - Booking Conversion
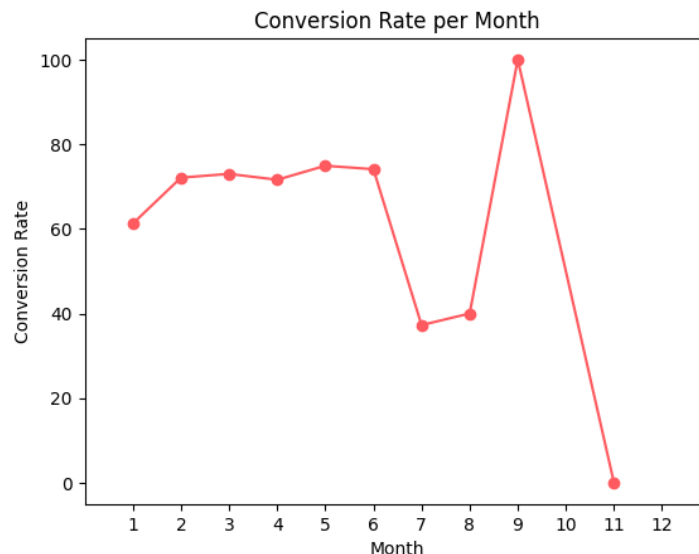
The inquiry - booking conversion metric measures the percentage of inquiries that turn into bookings. The conversion rate is at an uptrend from January to May with May having the highest conversion rate of 74.92%. Conversion starts to decline in June but it becomes apparent in July with an almost 38% decrease from May. September has the highest conversion rate but it can also be observed that there is only 1 inquiry and 1 booking for this month. On the other hand, December is the quietest month for the whole year for Airbnb hosts as there are no inquiries and bookings recorded for the month. Most of the months have conversion rates above 50%, indicating that the strategy is effective in converting guests to occupants.

New and Repeat Bookings

The graph above demonstrates the number of new and repeat bookings per month. Guests tend to stay in places they have booked before than go to new ones and usually reserve the listing in June, January, or May. June has the highest number of booked listings where 53.4% of those are reserved by return guests. January has the second highest number of bookings, 54% are booked by past bookers. On the contrary, monthly take up by new bookers is not too far behind those for repeat bookers. New bookers for June account for 47% of the total bookings, which is only a 0.6% difference from the number of past bookers for the month. Moreover, the bookings for January consists of 46% new bookers and bookings for May consists of 47% new bookers.

The numbers show that there are a lot of loyal customers on the platform exhibiting high customer satisfaction with the service. The high number of new bookers also imply that users are booking listings that they never booked before.

Count of Repeat Bookers by Country

Count of New Bookers by Country
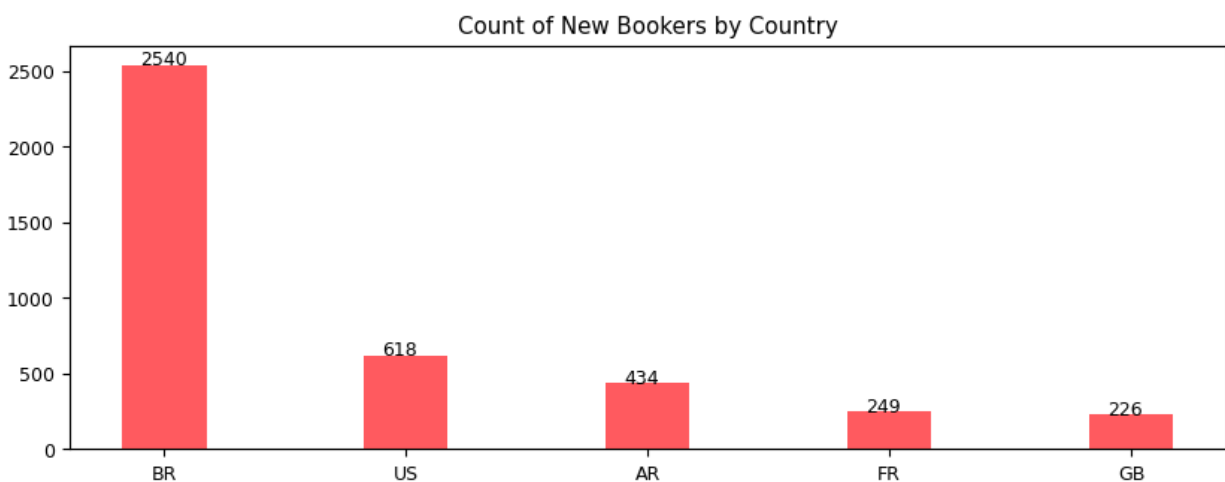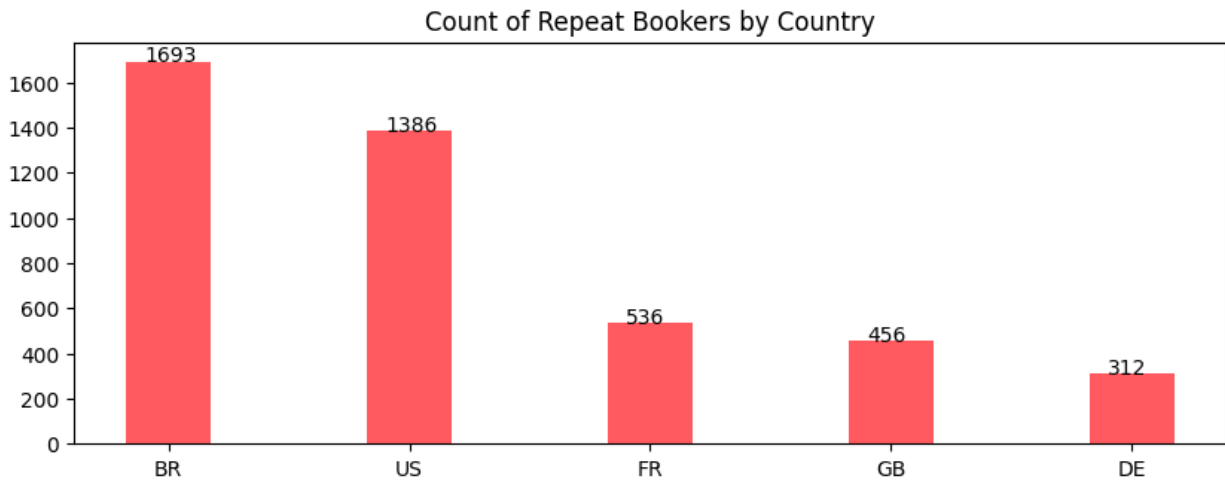
Repeat bookers are usually from the parent country, Brazil, accounting for 1,693 bookers. This is followed by the US with 1,386 bookers, then France with 536 bookers, Great Britain with 456 bookers, and Denmark with 312 bookers. On the other hand, most of the new bookers are still from Brazil, accounting for 2,540 bookers. This is followed by the US with 618 new bookers, then their neighbor Argentina with 434 bookers, France with 249 bookers, and Great Britain with 226 bookers.

The huge discrepancy in the number of domestic and foreign new bookers for Rio de Janeiro may indicate that international guests are being vigilant as crime rates are high in the area. Brazil ranked 11 for highest homicide rate at 28.4 per 100,000 people in 2015 (The Global Economy). In addition, the annual robbery rate in the City of Rio has increased to 1,258 in 2015 from 1,225 in 2014 per 100,000 inhabitants as reported by Statista.

Response Rate
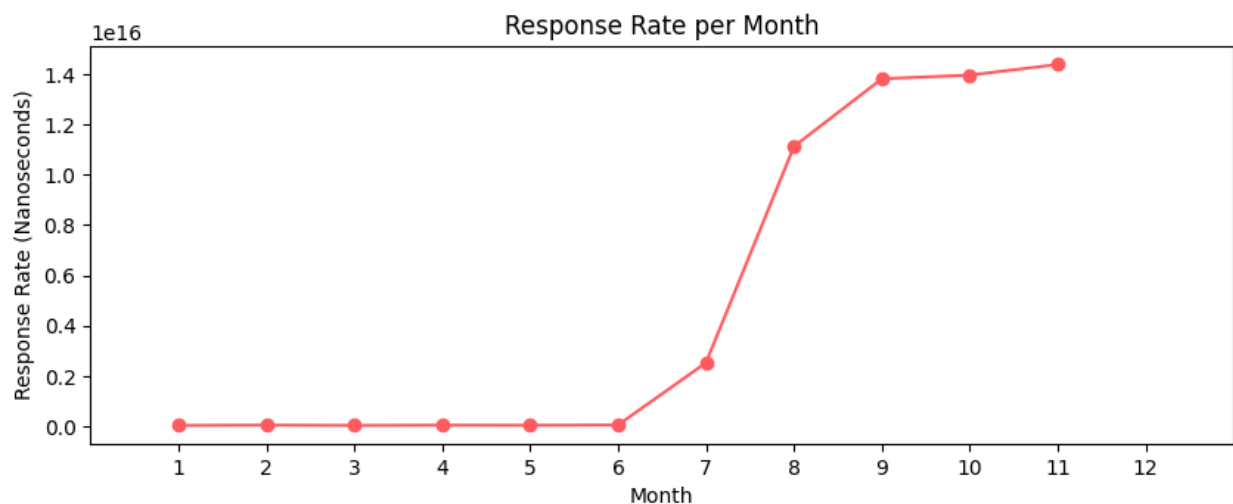
The line graph above shows the response rate in nanoseconds per month. The months of January to June have the lowest response rate which is less than 0.0 x 10^16. The rate starts escalating in July to greater than 1.0, and continues to increase to 1.4 in November. Airbnb considers replies after 24 hours as late. So, it is better to keep the response rate lower than 24 hours or less than less than 0.00 nanoseconds because it affects the host's visibility on the platform and earning potential.

What segments are doing well?

- Most conversations are below the maximum allowable daily messages which is 25.
- Conversion rate is increasing from January to June
- New bookers are not that behind count of repeat guests

- Response rate is within 24 hours for January to June

What is not doing well?

- Number of bookers has dropped in July and no bookings has been recorded for the last three months of the year
- Rio de Janeiro is not that popular among foreign bookers
- Conversion rate has decreased after June
- Response rate has gone up starting July

Suggest improvements
- For foreign bookers: Organize targeted social media marketing campaigns such as offering promo itineraries (accommodation + experiences) for foreign guests such as the US, France, and Great Britain to entice them to visit Rio. Aside from helping guests to maximize their time while staying in Rio, offering a planned out vacation allows the company to showcase how much they know about the place by including 'rare' experiences that guests can try in the area and new spots they can visit.

- Customer Retention: Since repeat customers have already visited Rio in the past, customizable itineraries where guests can choose activities and tourist spots from a set of choices may be a good choice to have since they already have knowledge about the place. This will allow them to tour places they want to revisit along with new ones and add in new activities in between.
- Response Time: Have automated messages to be sent to accepted inquiries to lessen response time since response rate is dependent on the response time. These automated messages should contain sections answering FAQs (frequently asked questions) and the guest can click on the FAQ sections to view the answer of the host. (note that this project assumes that accepted inquiries mean that the host has allowed the guest to book the listing but is not required to do so. This assumption is made so that there is a target column for the acceptance decision during correlational analysis.)

References:

- https://www.statista.com/statistics/1381984/robbery-rate-rio-de-janeiro/
- https://www.theglobaleconomy.com/rankings/homicide_rate/