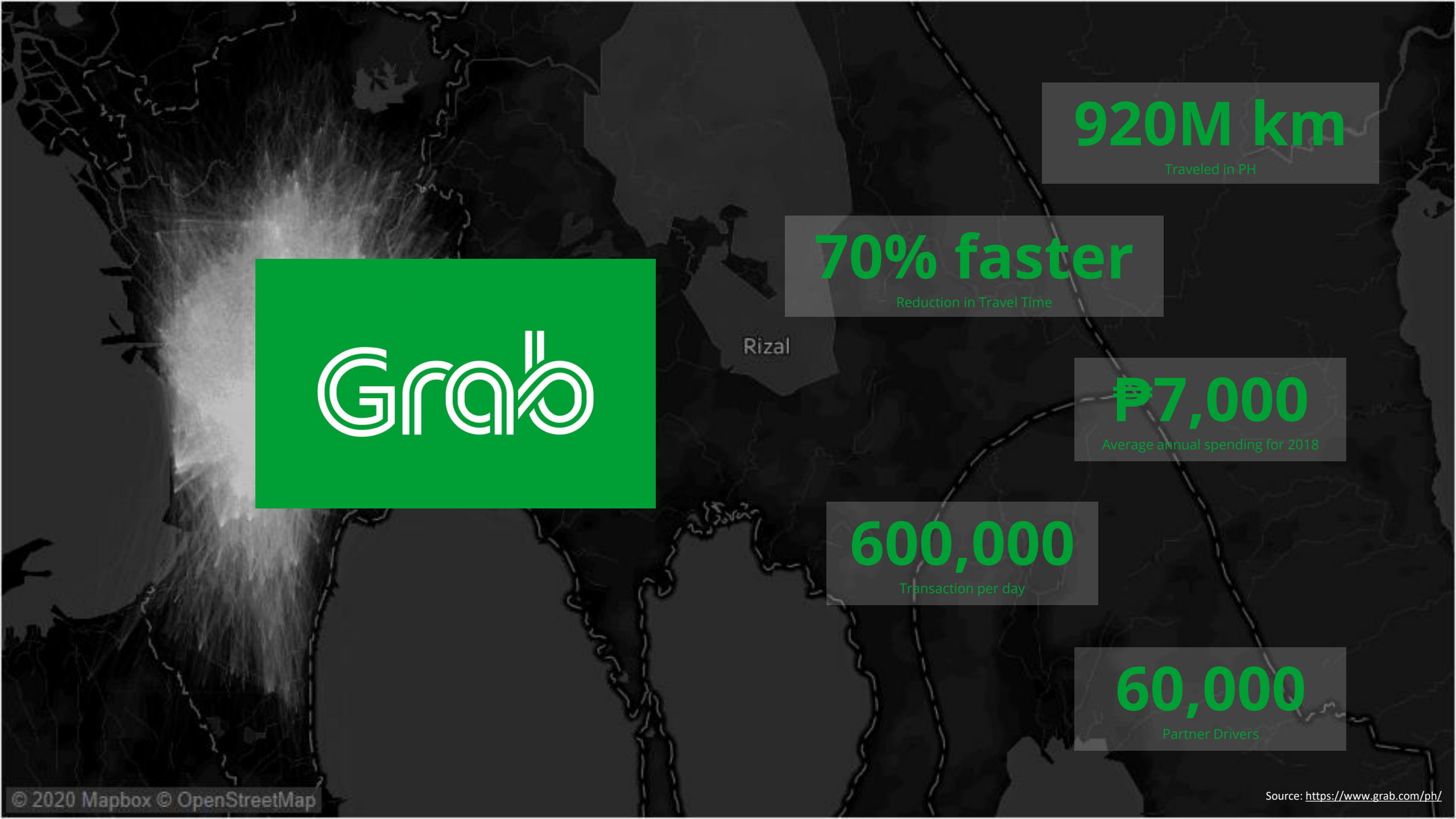

RAQUEL


BAKHAW NORT
FOR HIRE
R2-2655



Grab

920M km
Traveled in PH

70% faster
Reduction in Travel Time

₱7,000
Average annual spending for 2018

600,000
Transaction per day

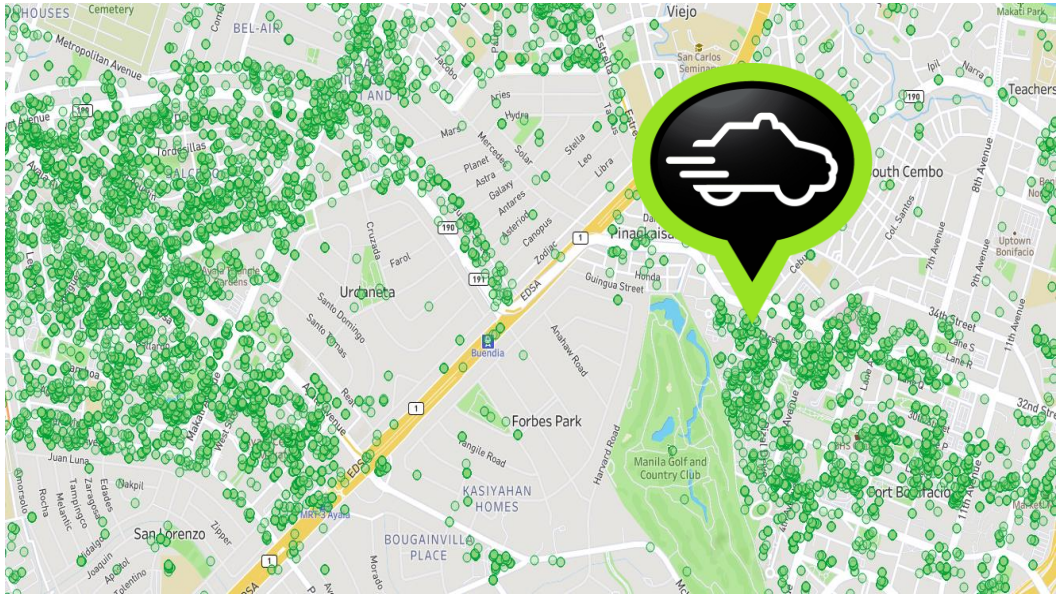
60,000
Partner Drivers

Source: https://www.grab.com/ph/

PREDICTING GRAB TAXI ALLOCATION

PRESENTED BY: JASPER KRISTIAN PANGAN

THE GRAB DATASET



- **194,976** booking transactions from August 8 to December 20 2013 which are tagged whether unallocated or allocated

- **Dataset Features**

  - date and time of the booking
  - pick-up and drop-off latitude and longitude

- **Feature Extraction**

  - performed **reverse geocode** and **geohashing** with precision = 5
  - estimated trip distance using **Manhattan** distance

EXPLORATORY DATA ANALYSIS

Distribution of Allocated and Unallocated in the dataset

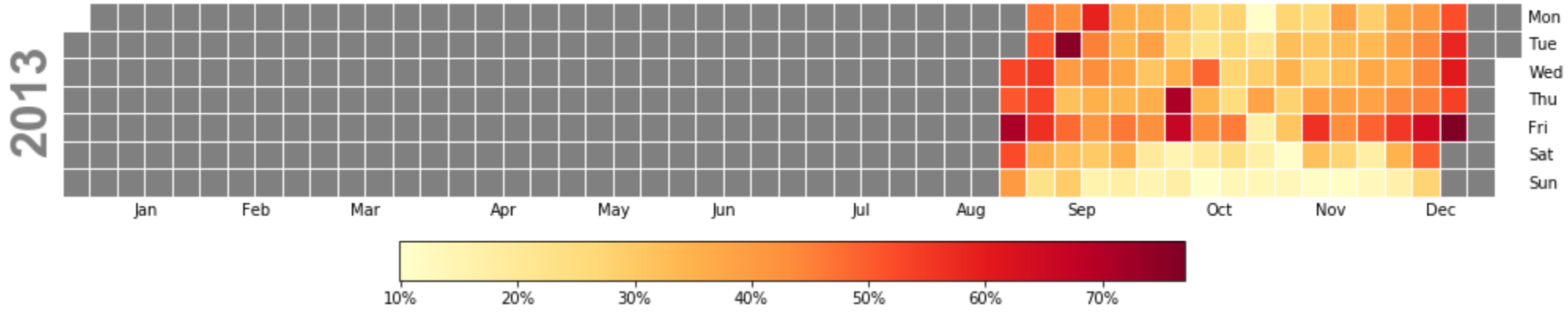
DATASET IS BALANCED

57% allocated rides and

43% unallocated rides

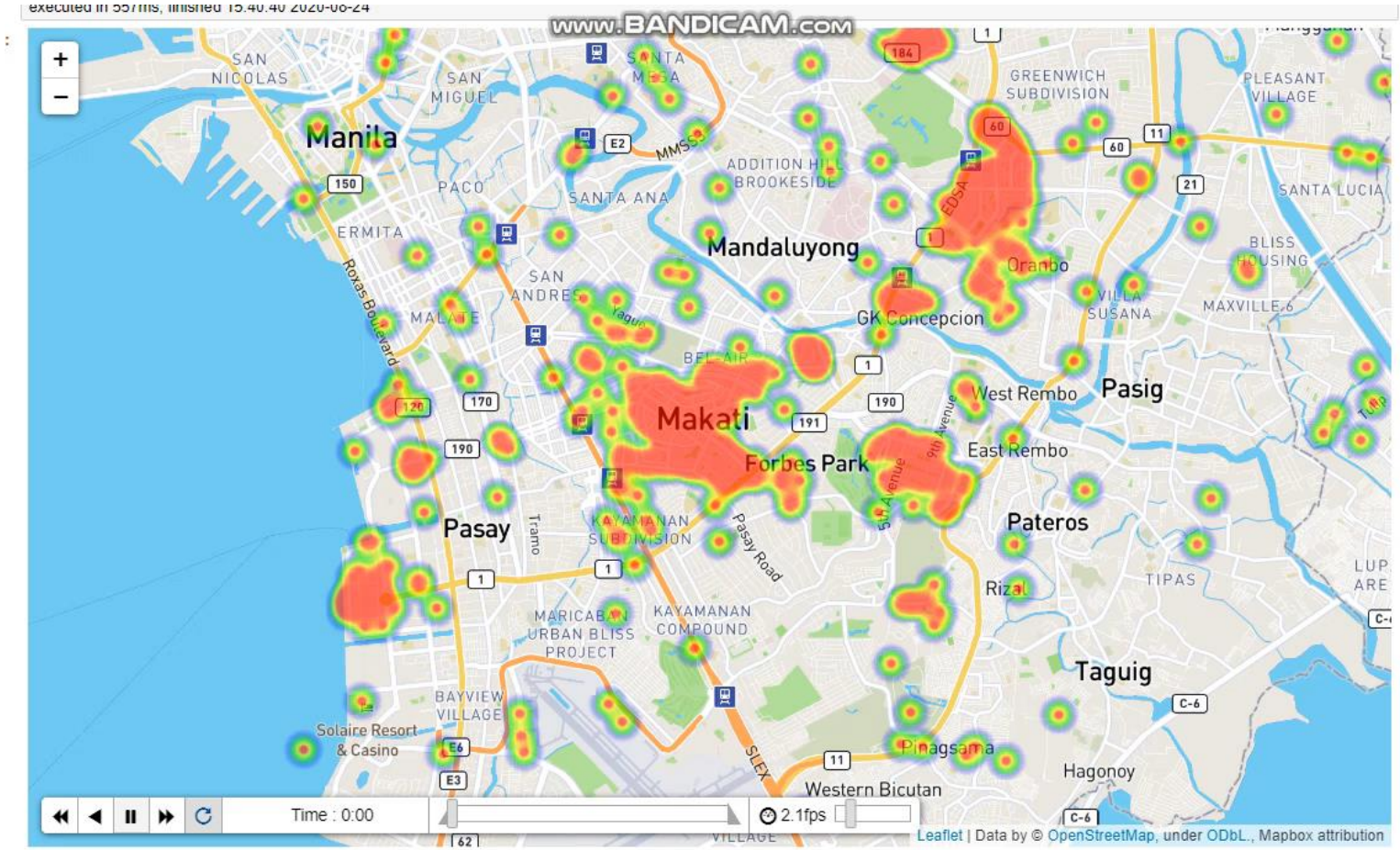
EXPLORATORY DATA ANALYSIS

Calendar Heatmap of Unallocated Rides



THERE ARE **MORE UNALLOCATED**
RIDES DURING **WEEKDAYS**

EXPLORATORY DATA ANALYSIS

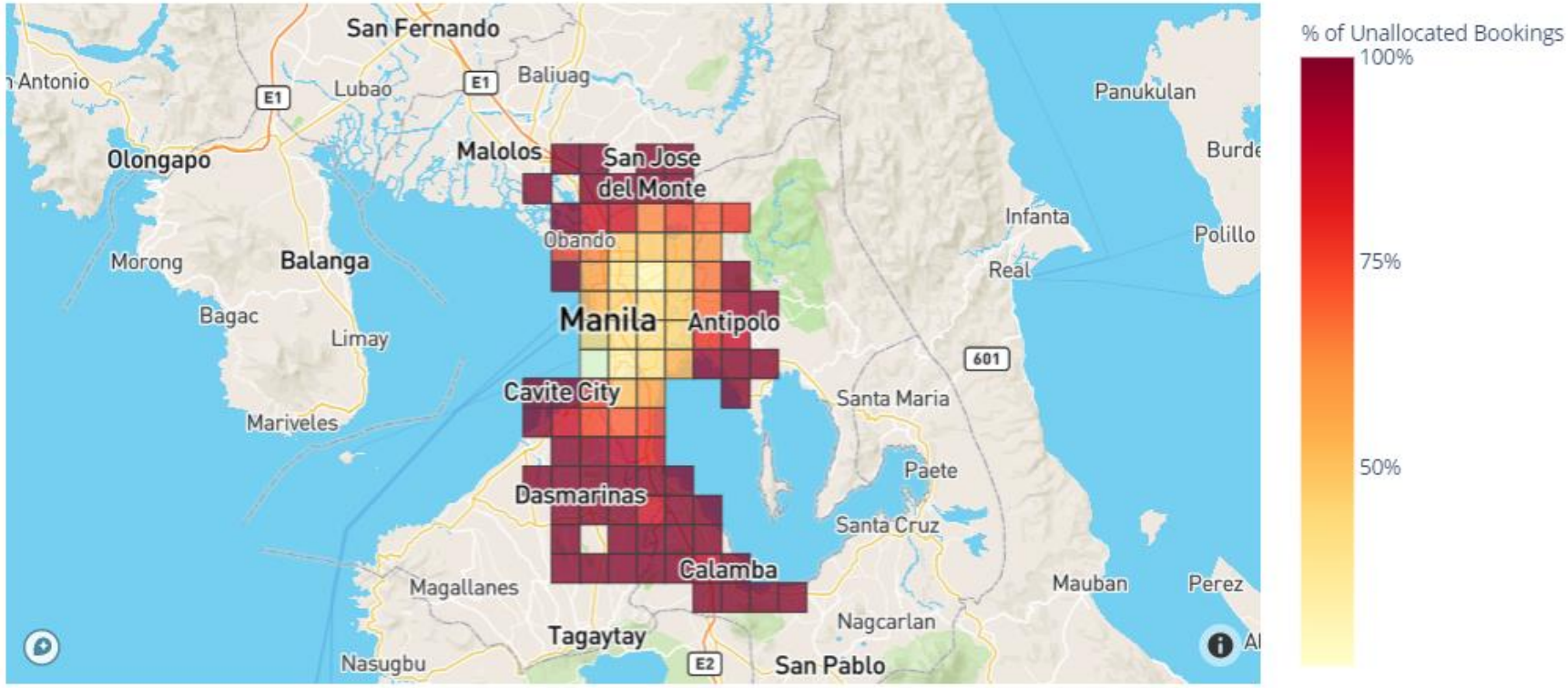


WHERE AND WHEN ?

THE UNALLOCATED RIDES START TO PEAK AT **7 – 9 AM** THEN AT **3 PM ONWARDS** NOTABLY IN **BUSINESS DISTRICTS**

EXPLORATORY DATA ANALYSIS

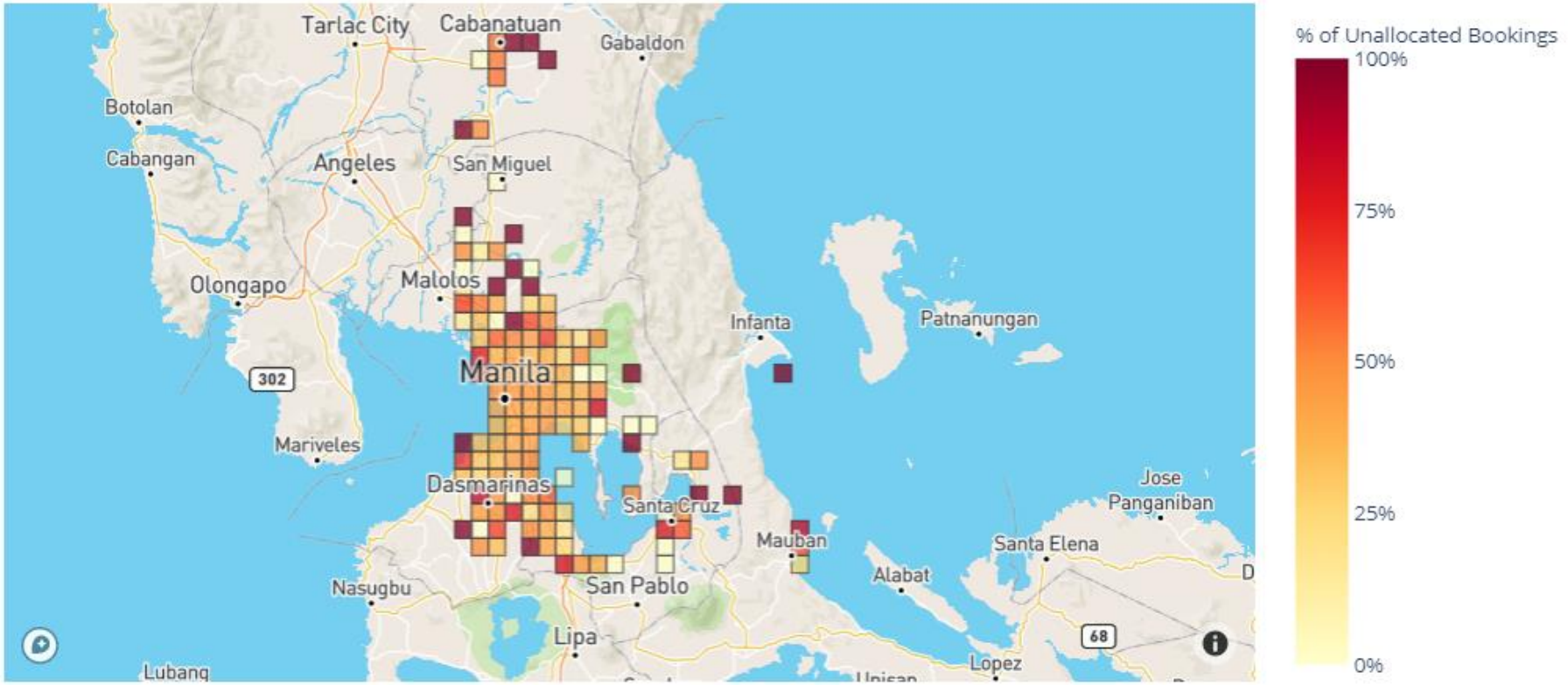
Heatmap of Unallocated Bookings (Pick-Up Geohash, precision = 5)



Pick-up points **outside Metro Manila** tend to unallocated

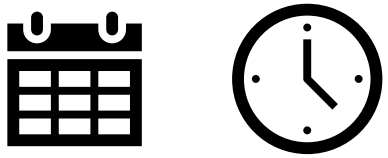
EXPLORATORY DATA ANALYSIS

Heatmap of Unallocated Bookings (Drop-Off Geohash, precision = 5)



Consistently, drop-off points **outside Metro Manila** tend to unallocated

FEATURES USED



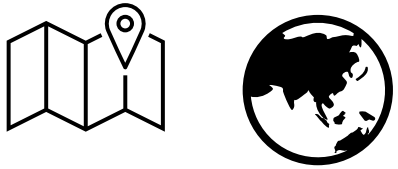
TEMPORAL DATA

Hour

Month

Day

Day of Week



SPATIAL DATA

Pick Up Geohash

Drop Off Geohash

Location w/in MM

MODEL RESULTS

63%
Baseline
1.25*PCC

68%
Test Accuracy

LightGBM
Algorithm

TOP FEATURES*

hour_18

day_of_week_Friday

day_of_week_Sunday

*Based on Gain

BUSINESS VALUE

Passengers can use the system to be able to plan ahead and check if their bookings will likely be allocated or not based on date, time, pick up location, and drop off location

Grab can use the findings from this study to be able to better implement their **demand-capacity planning**

Local Government Units can use insights from this study to push for **localized initiatives that can provide better transportation system** than the current options

RECOMMENDATION

DATA

- More recent dataset
- Additional features such as data for weather, holidays, amenities nearby, etc.
- Use a more precise geohash or use clustering

STUDY

- Explore other ML models
- Classify whether an allocated ride is **completed or cancelled**


THANK YOU!
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QUESTIONS?
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