



Analysis of Interaction between Newly Introduced Taxi Modes and Yellow Taxi

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ABSTRACT

As a major trade center in the United States, New York City's convenient transportation is essential for people living in such a fast-paced lifestyle. Yellow taxi, a major means of transportation in NYC, has been widely used by people for many years. However, as new modes of transportation being introduced, such as green taxi and Uber, people's preference of taxi mode has changed. We found that although yellow taxis still dominate the market of vehicle for hire, green taxis and Uber taxis hold an incline to prosperity.

YELLOW TAXI & GREEN TAXI

According to the TLC record data on NYC.gov website, green taxis first came out in August 2013. They are also called "boro taxis". According to Wikipedia, "The vehicles can drop passengers off anywhere, but will not be able to pick up new passengers within the "yellow zone" (south of East 96th and West 110th Streets) or within airports." This is shown clearly in both Figure 1 and Figure 2.



Figure 1: Green pickup Counts in June 2014

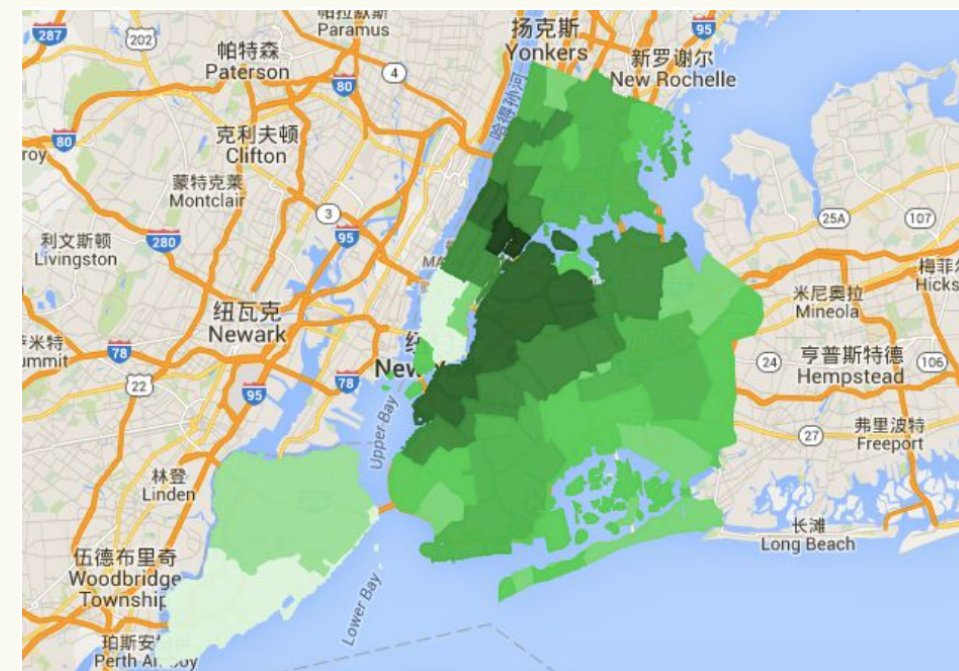


Figure 2: Green pickup Counts in June 2015

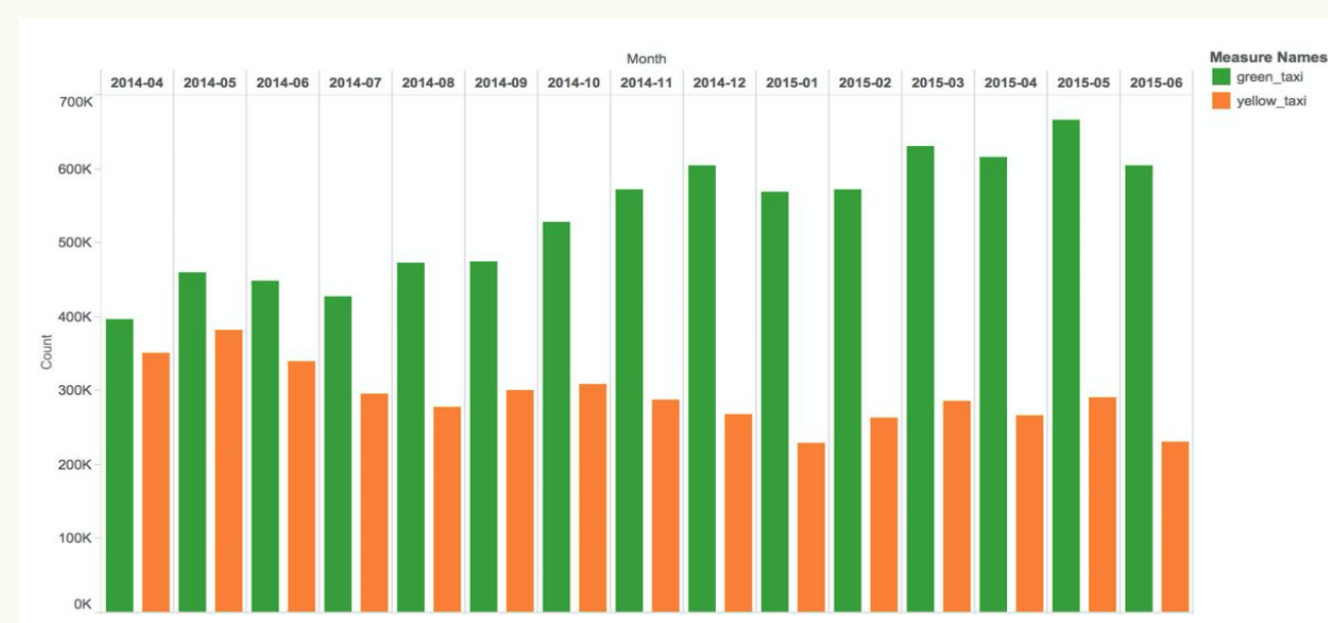


Figure 3: Pickups in Brooklyn (2014/04 to 2015/06)

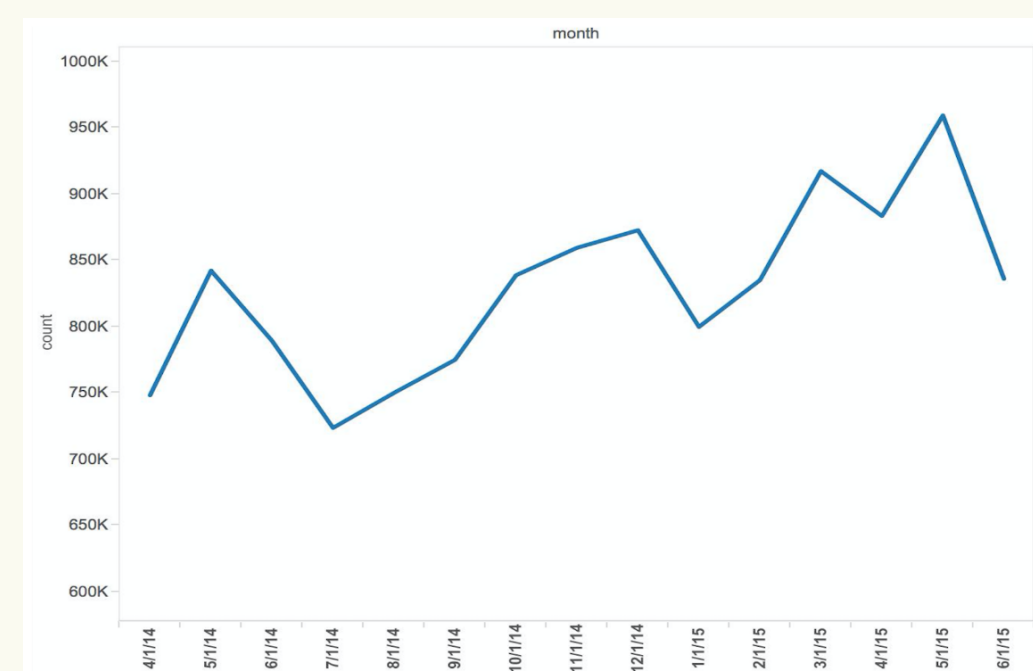


Figure 4: Total Pickups in Brooklyn (2014/04 to 2015/06)

Fig. 3 and Fig. 4 shows the pickup service for both yellow taxis and green taxis in Brooklyn.

- Green taxis has an incline of service in Brooklyn, while yellow taxis has a decline since April 2014.
- Although yellow taxis usage in Brooklyn decreases over time, the total usage of the both taxis indeed increases. People living in underserved regions like Brooklyn have been served better than the old days.

YELLOW TAXI

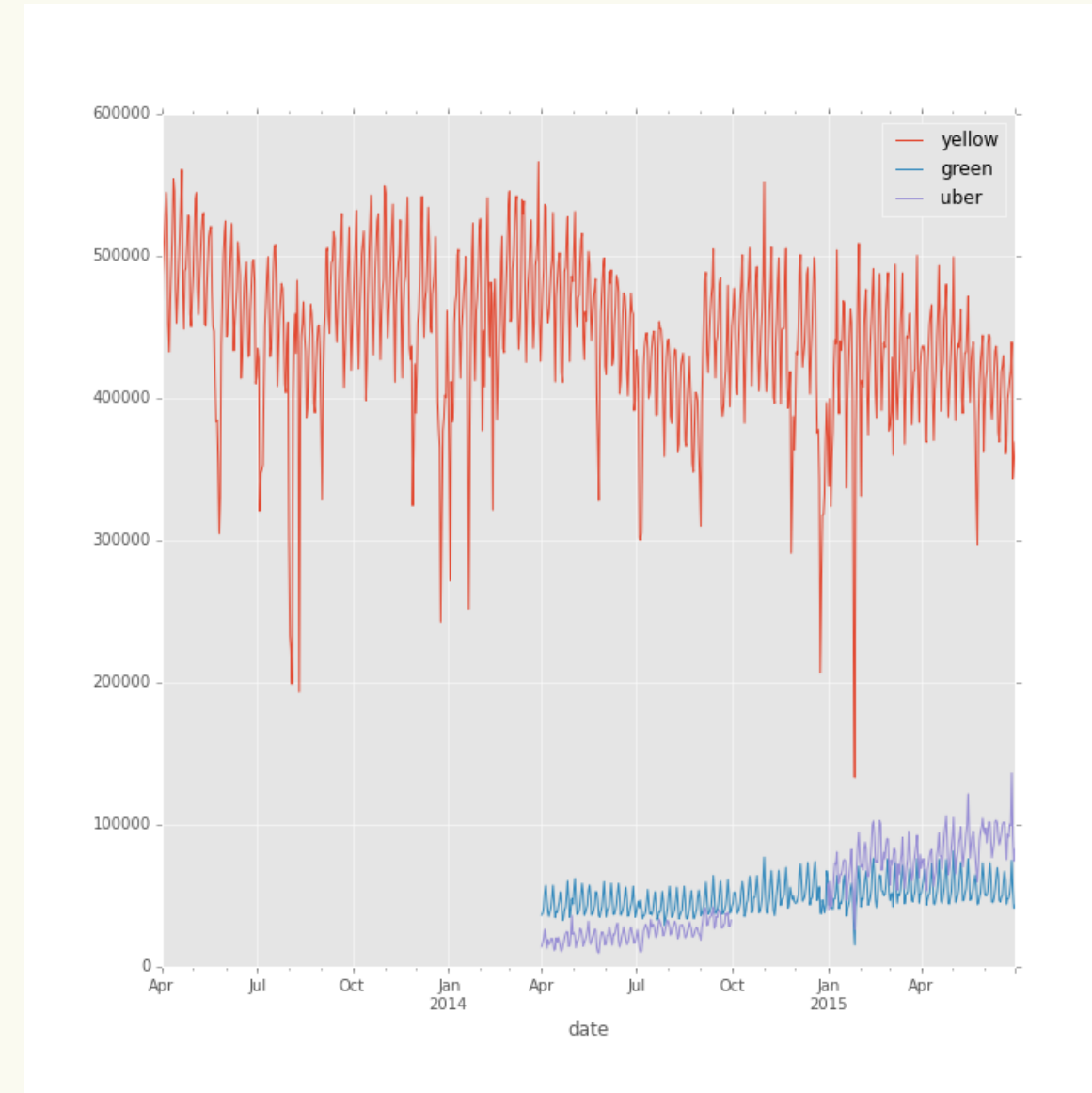


Figure 5: Yellow Taxi Pickup Counts

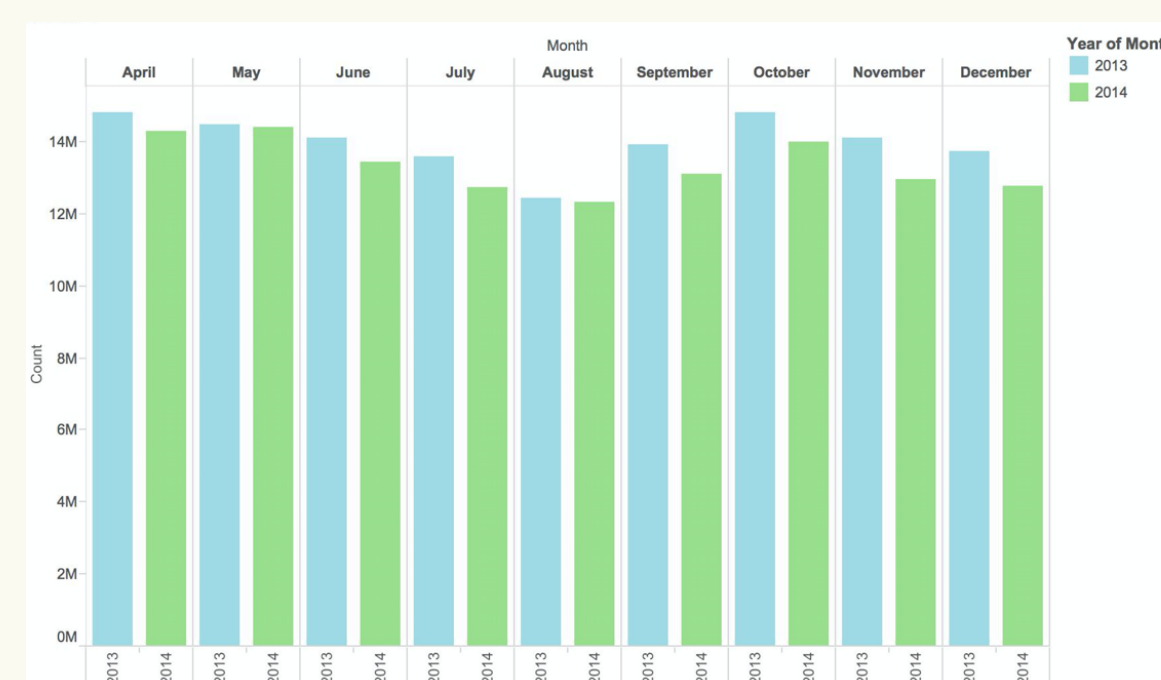


Figure 6: Yellow taxi in 2013 and 2014

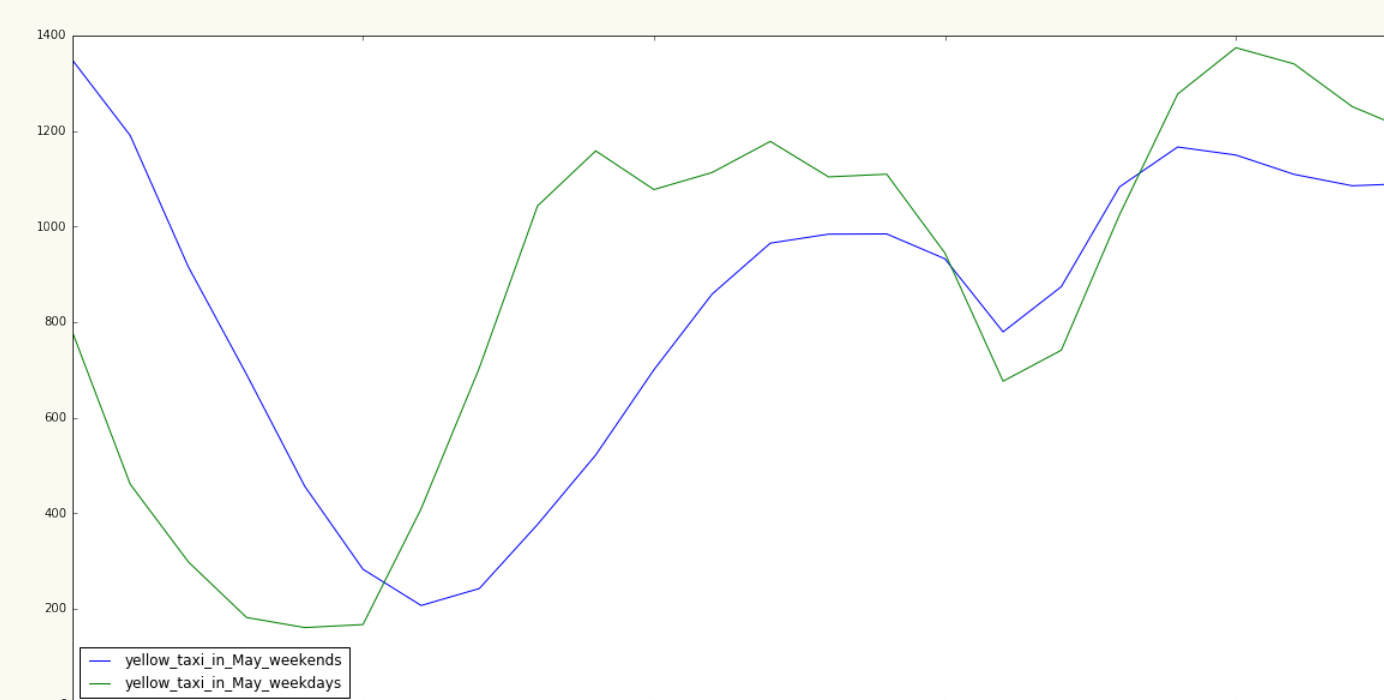


Figure 7: Yellow taxi pickups in 2 days

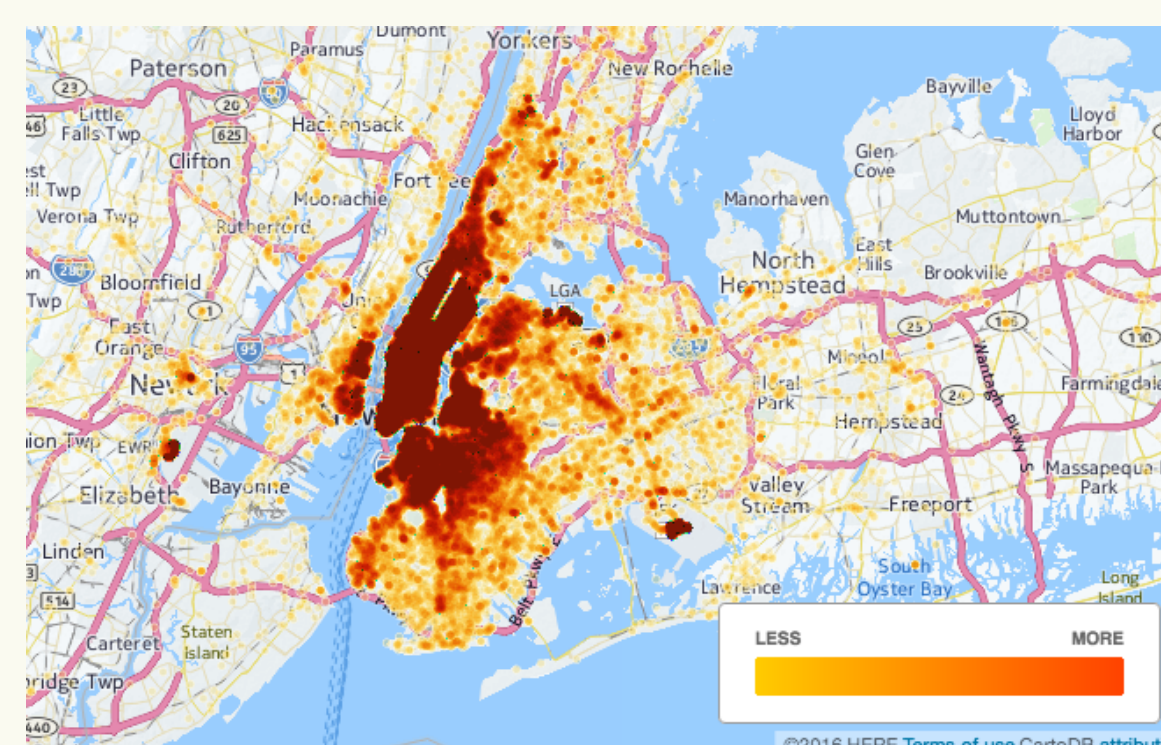


Figure 8: Yellow taxi distribution in 2014

- Yellow taxi pickup counts declined from April 2014.
- Yellow taxi pickup counts decreased obviously from April 2015 because of the introduction of Uber program in Apr 2014.
- Yellow taxi pickups still occupy the most part of all the taxi modes.

- Compared to 2013, each month of yellow taxi pickup counts decrease in 2014.
- The evident reduce in 2014 is a coincidence of the fact that other newly introduced Taxi Modes start to come into the market in 2014.

- One of the day is on weekdays and another is on weekends.
- Rush hours are 10 am, 8 pm and 12:00am.
- From 4 pm to 6 pm, there is a decrease in both days.
- Yellow taxis may be less likely to cater students and younger office workers than other newly introduced taxi modes in in the period of 4 pm to 6 pm

- A heat map of the distribution of yellow taxi pickups in NYC.
- More yellow taxi activities in Manhattan and Brooklyn than in other boroughs of NYC.

YELLOW TAXI & UBER

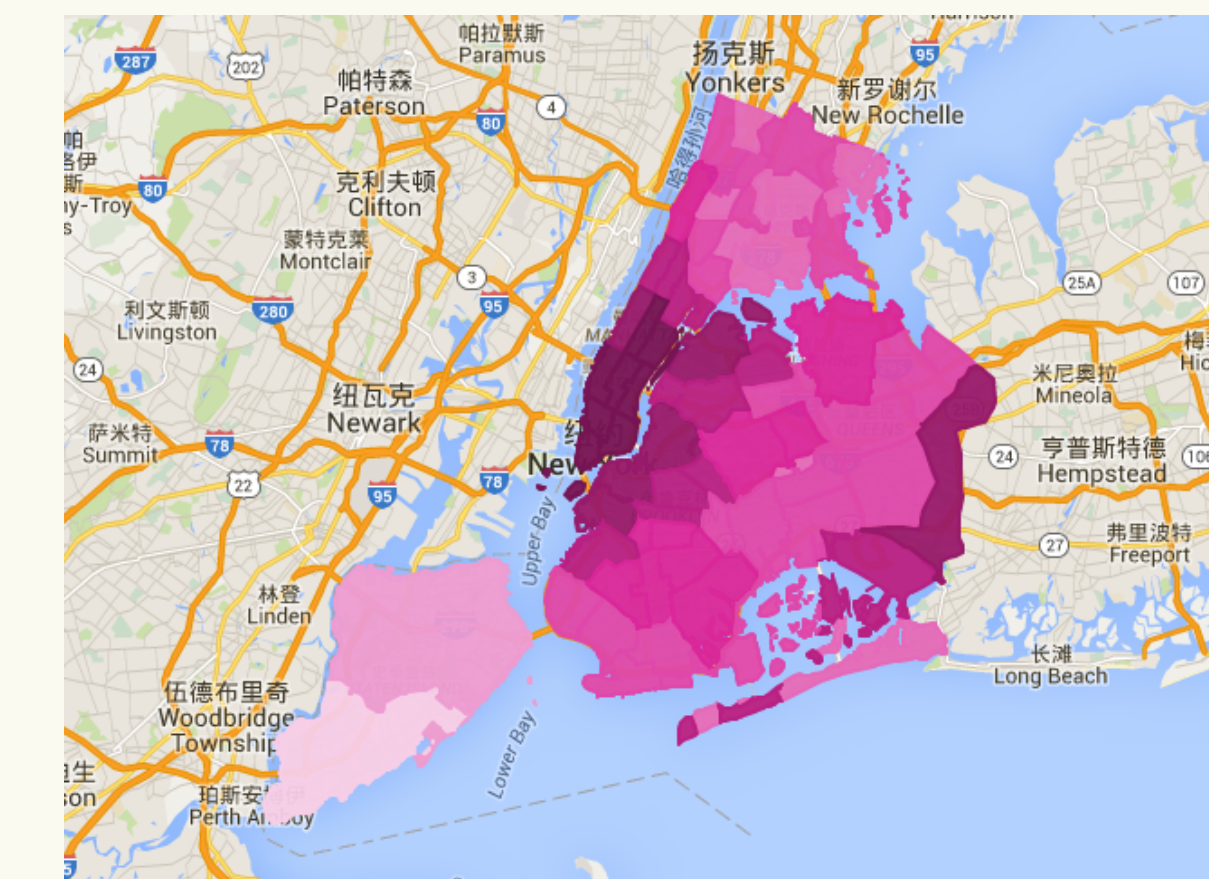


Figure 9: Uber Pickup Counts in June, 2014

- A distribution map of Uber pick-

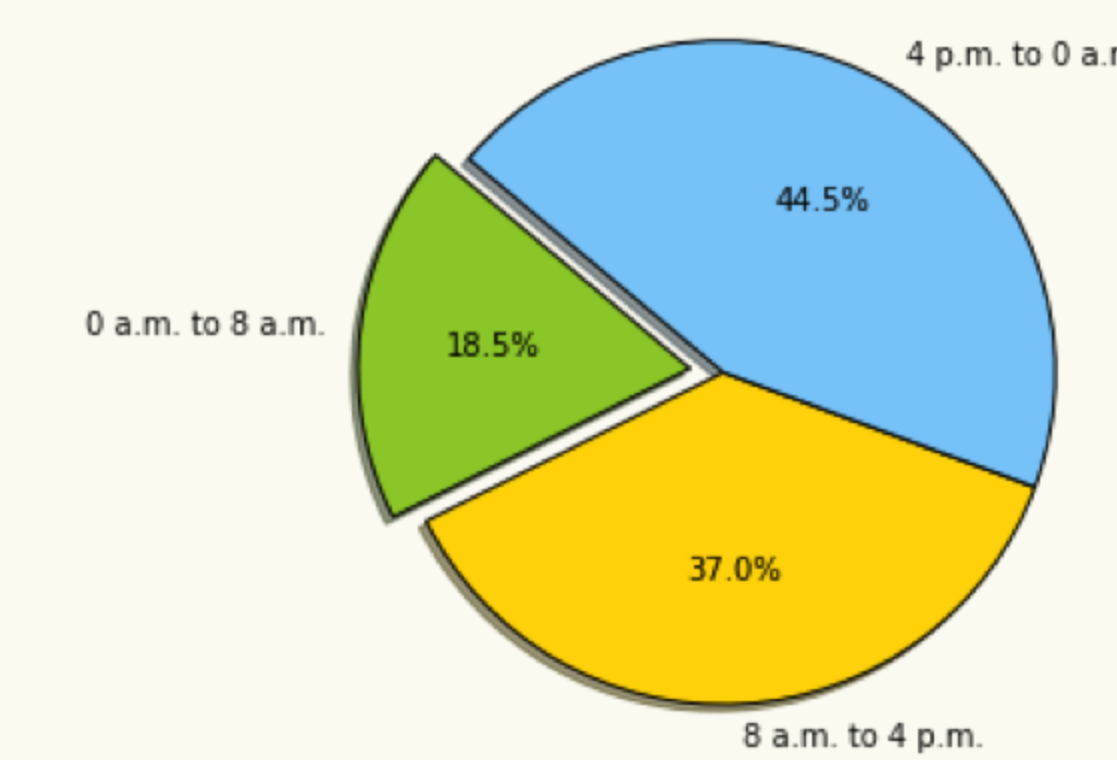


Figure 10: Uber Pickup Counts Pie Chart

- ups in NYC from Apr 2014 to Sept 2014.
- For each point of latitude and longitude, sum up all the counts together and draw a scatter plot of the Uber pickup activities.
- The brighter the region is, the more pickup activities there are.
- Uber serves mainly in Manhattan and JFK airport.

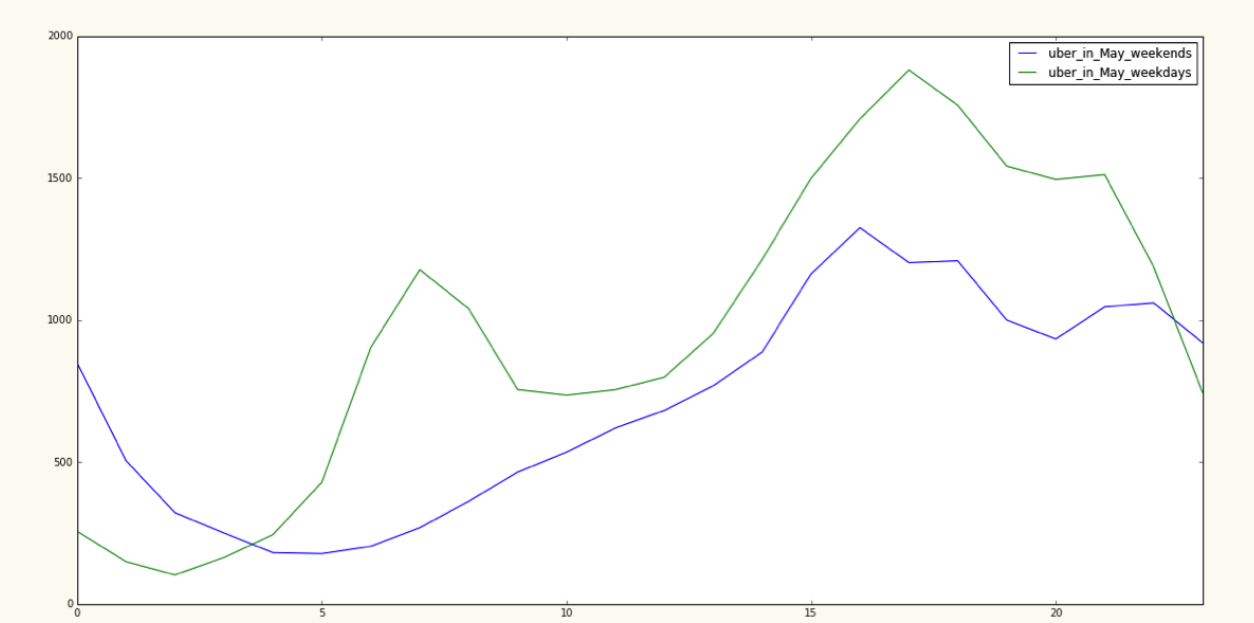


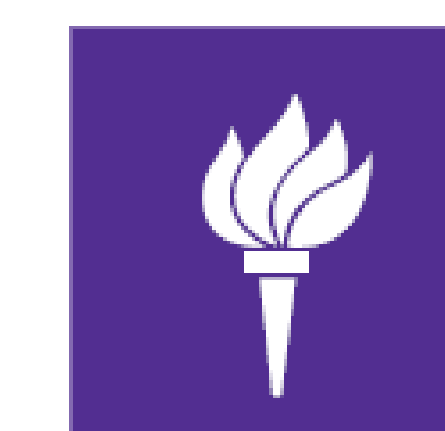
Figure 11: Uber pickup counts on weekdays and weekends in May, 2014

CONCLUSION

- Yellow taxis as a major taxi mode in NYC has been experiencing a decrease demand since the introduction of new modes of taxis. However, it still dominates the market of vehicle for hire.
- Green taxis help serve better in underserved regions such as Brooklyn.
- Uber taxis hit their peak hours after 4 p.m. during a day, while yellow taxis seems to serve people with regular working hours (From 8 a.m. to 5 p.m.)

ACKNOWLEDGEMENTS

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