



“Presentation for Executives” Envisioning High Demand Areas in NYC CITY

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Situations

- There can be many yellow taxi cab in the low demanding zones which will force the driver to stand idle for a long period of time.
- Also many zones require more taxis than the current number of taxis present.
- In above case the passenger will be forced to move to Uber or other services if they can't find yellow cab taxi on the street.
- In both situations yellow cab agency will lose revenue.

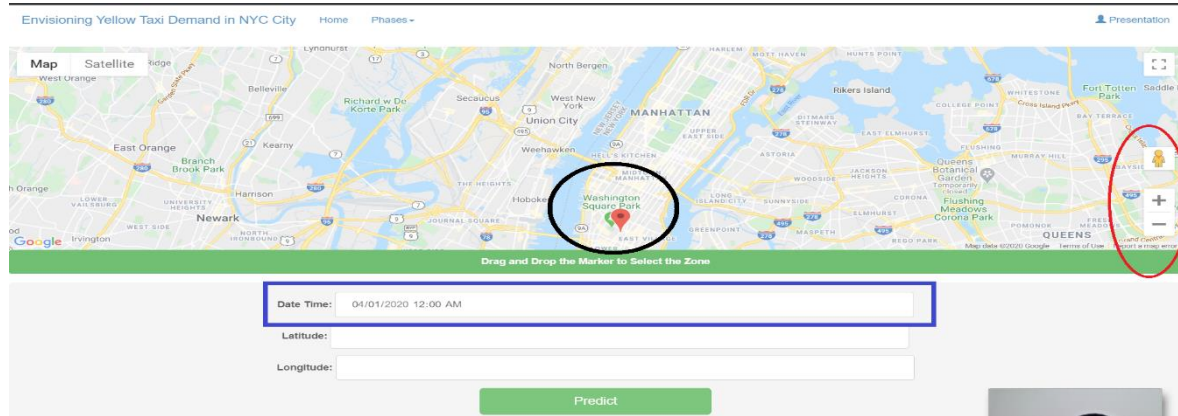
Project Goals

- Send the required number of taxis to each zones of NYC city.
- Like for instance, (But how many ???)
 - High Demanding Zone – More yellow cabs.
 - Low Demanding Zone – Less Yellow cabs.
- The web application will show how many pickups are predicted in each taxi operating zones so that yellow taxi cabs are present at the right location at right time.

Executive Summary

- The Dashboards enables the yellow cab agencies to find how many taxis are needed in the zones for the upcoming week.
- The Web application makes it easy for the cab drivers to switch their position depending on the predicted pickup time.
- The Dashboard updates regularly based on the temperature and everyday a new prediction is made regarding the next weeks data.
- Initial tests show acceptable speed, but further testing is suggested for the real-time advisor dashboards

How can Drivers find pickups ?



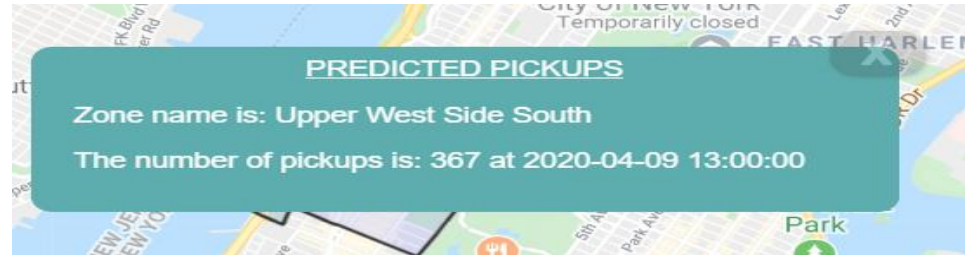
- Drag and drop the marker pin and move around in the map to automatically select the location in the NYC (see the figure circled Black)
- Select the date and Time in the field highlighted in the blue box
- Hit Predict and the web application will predict the number of pickups.

Approach

- By analyzing the dashboard, TLC can also know how much medallions for yellow cab should be issued.
- Also it provides the insights of what time are the most effective and which day the taxi drivers can relax due to low demand.
- Developed predictive model to identify pickups in each zones of NYC city for yellow cab.
- Provides greater explanatory power for analyzing influence of specific factors on taxi pickups across the NYC City.

How Prediction works

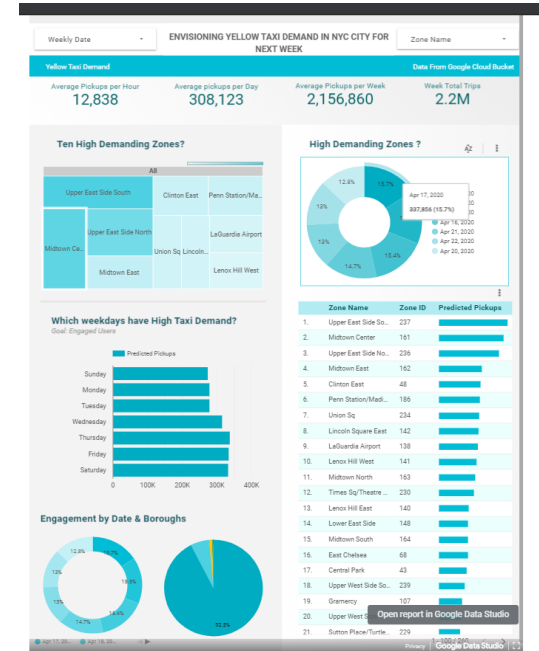
- When Predict button is pressed. A dialog box showing the number of pickups at the entered time is shown.
- Also the location is marked on the map in which the taxi can find those 367 pickups.



Dashboards for Executives

- The Dashboard showcase the next week predicted passenger pickups so that the yellow can agency can send the correct number.
- Also this dashboard helps to analyze the trend of the taxi pickups by weekly.
- It can be viewed at :

[Yellow Taxi Dashboard Weekly Projection](#)



Insights that Dashboard Provides

User can make use of filters as well

Weekly Date

Zone Name

Average Pickups per Hour

12,838

Average pickups per Day

308,123

Average Pickups per Week

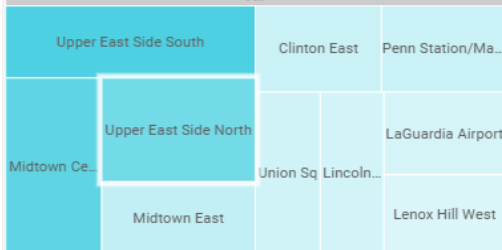
2,156,860

Week Total Trips

2.2M

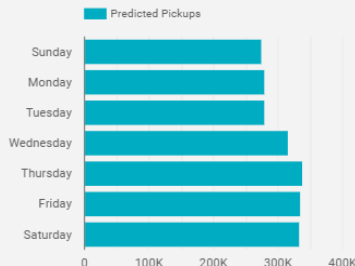
Ten High Demanding Zones?

All

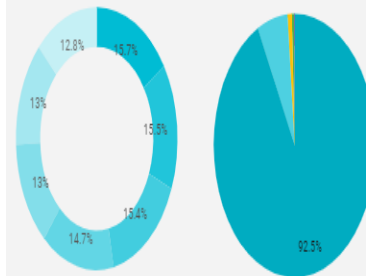


Which weekdays have High Taxi Demand?

Goal: Engaged Users



Engagement by Date & Boroughs

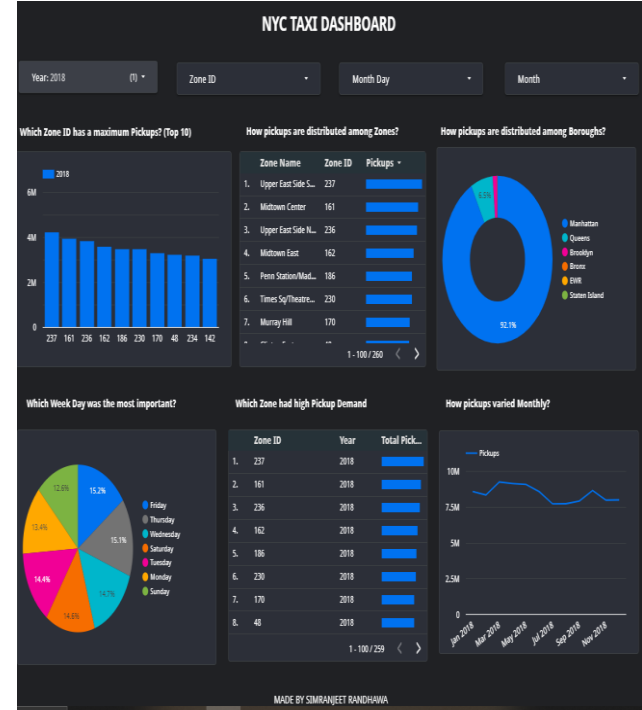


Zone Name	Zone ID	Predicted Pickups
1. Upper East Side So...	237	
2. Midtown Center	161	
3. Upper East Side No...	236	
4. Midtown East	162	
5. Clinton East	48	
6. Penn Station/Madi...	186	
7. Union Sq	234	
8. Lincoln Square East	142	
9. LaGuardia Airport	138	
10. Lenox Hill West	141	
11. Midtown North	163	
12. Times Sq/Theatre ...	230	
13. Lenox Hill East	140	
14. Lower East Side	148	
15. Midtown South	164	
16. East Chelsea	68	
17. Central Park	43	
18. Upper West Side So...	239	
19. Gramercy	107	
20. Upper West Side N...	238	
21. Sutton Place/Turtle...	229	

Executive can check for Transition

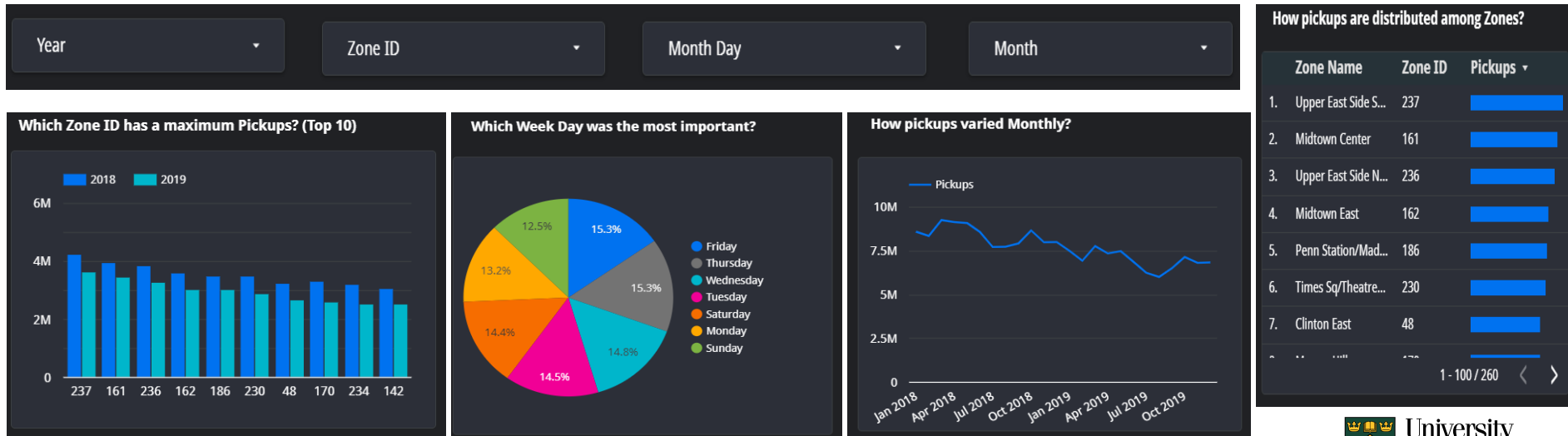
- Another Dashboard was prepared so that the Executive can get an idea of how the pickups are changing as compared to 2018-19.
- This will give the clear picture of whether the business is growing or declining.
- The Dashboard can be viewed at:

[2018-19 Yellow Cab Dashboard](#)



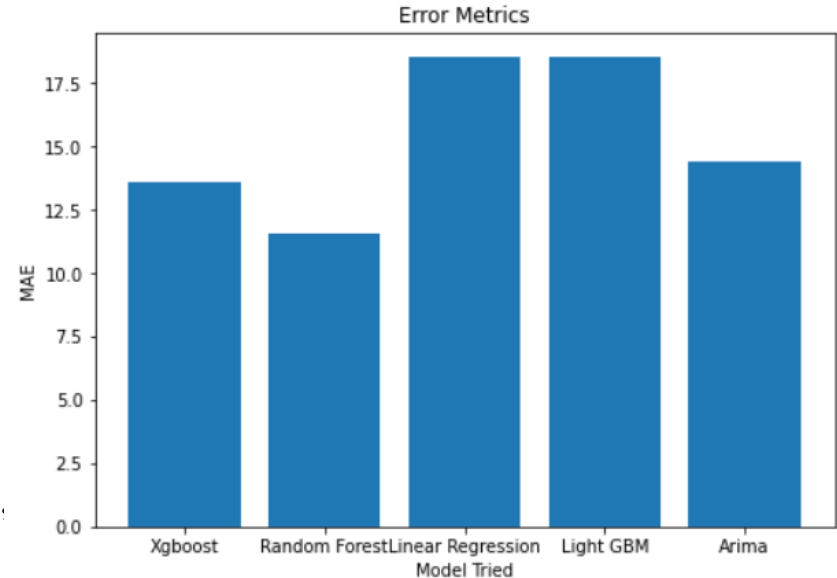
Insights that Dashboard Provides

User can check the previous year Data to get an idea of how business is involving.



Model Description

- Model Used : Random Forest Regressor
- Scope & Sampling
- Training sample: 80% of data
- Testing sample: 20% of data
- Also Cross Validation was performed.
- Influencing Factor – Day of the Week, Time, Operating Zone, Temperature, etc.



Recommendation

- Utilize the Dashboard and send the correct number of taxis so that the Demand in the zone are met.
- The passenger should not call other cab services if they can find the yellow taxi standing right Infront of them.
- The Forecasted weekly dashboard and the web application gives the ability to know beforehand the demand in the zones of NYC city.
- Over time, model can be refined to allow to add additional features that can also contribute to predicting the passenger count more efficiently.



THANK YOU



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