Uber and Yellow Taxi Trip Data Analysis for New York City

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Facts and Motivation

- Uber is available in 65 countries, and in over 600 cities.
- 14 million Uber trips are completed every day.
- Over 10 billion trips have been completed worldwide.
- To sum up, Uber has a huge impact to the economy, as well as in our daily lives.

Focus

- **Overview about Dataset**
- Uber
  - Analysis of Number of Trips
  - Traffic Distribution
  - Popular Pick-ups and Drop-offs
- Yellow Taxi
  - Boroughs with most pick-ups
  - Zones with most pick-ups
- Conclusion

Dataset

- 31 Million Entries
- From 9-1-2014 to 9-1-2015
- Source and Destination are encoded
- Dataset has missing fields
  - NULL Trip Distance is replaced with mean distance
  - NULL Trip Duration is replaced with mean duration
- Includes rides in Boroughs of New York city

id	origin_taz	destination_taz	pickup_datetime	trip_distance	trip_duration
252581	7C	6A	2014-09-01 09:00:00	4.2500	0:15:11
252582	7B	15	2014-09-01 18:00:00	10.1700	0:34:05
252583	11	2A	2014-09-01 17:00:00	4.0200	0:17:06
252584	3B	4A	2014-09-01 13:00:00	1.4600	0:06:32
252585	2A	10	2014-09-01 14:00:00	8.3100	0:26:17

#Source: http://www.nyc.gov/html/tlc/html/about/trip_record_data.shtml
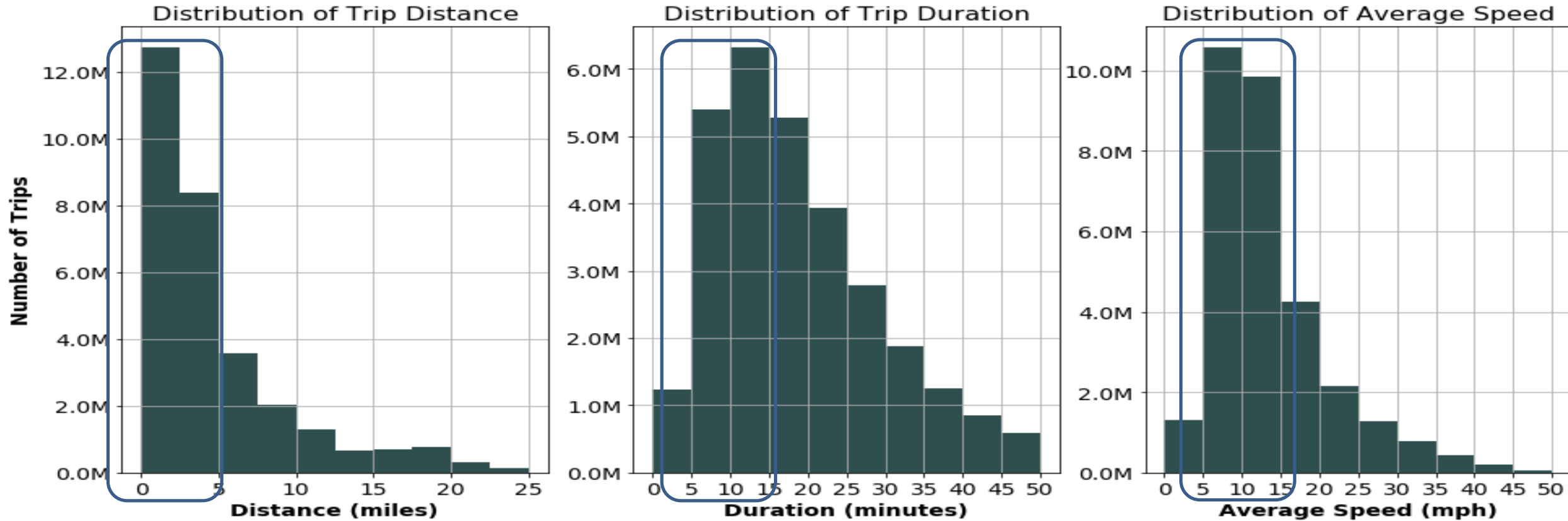

Boroughs in NYC

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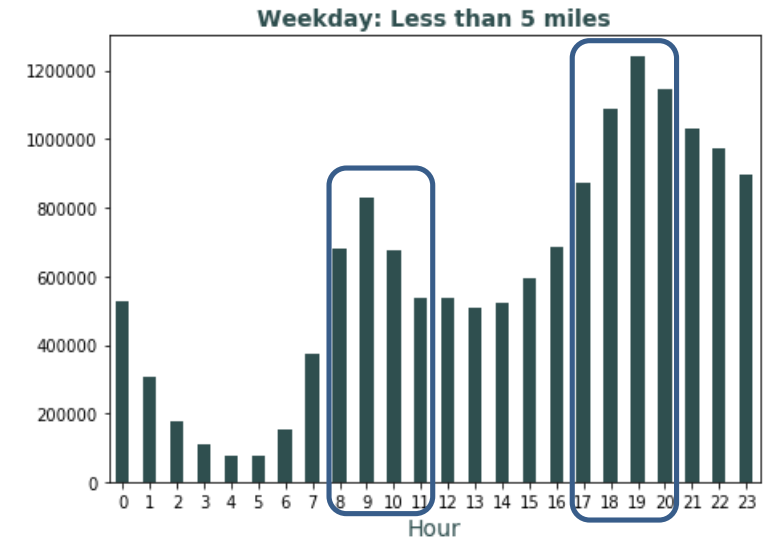 - Zones with most pick-ups
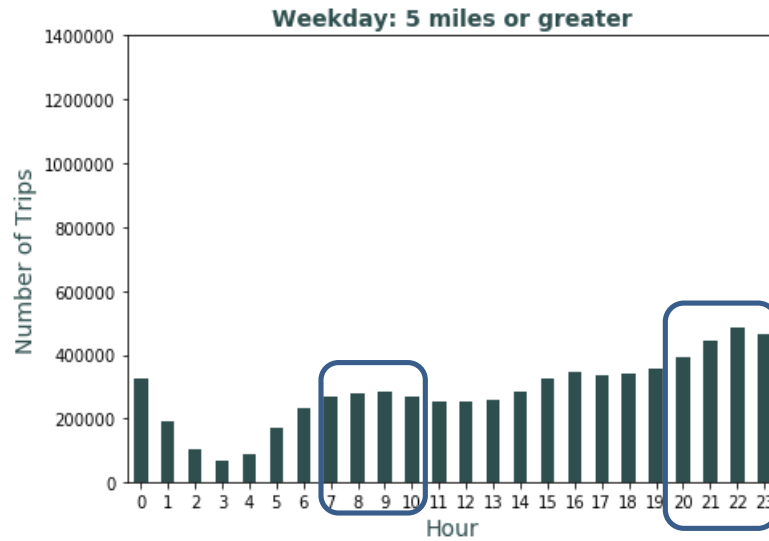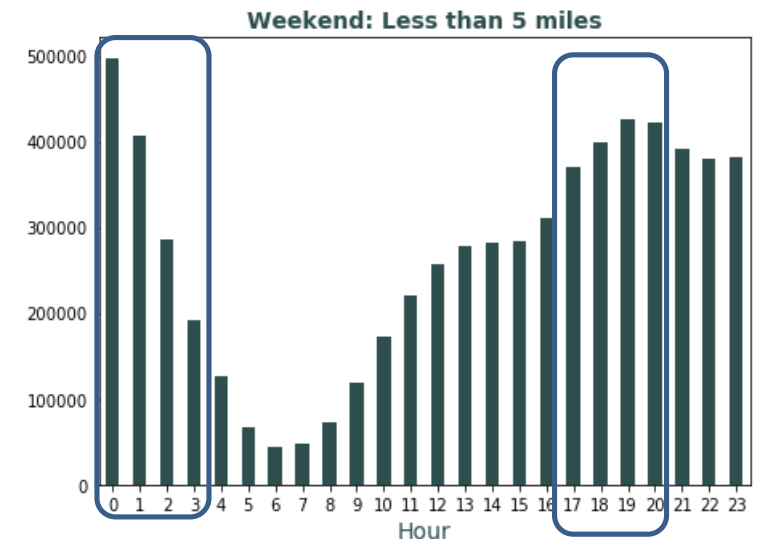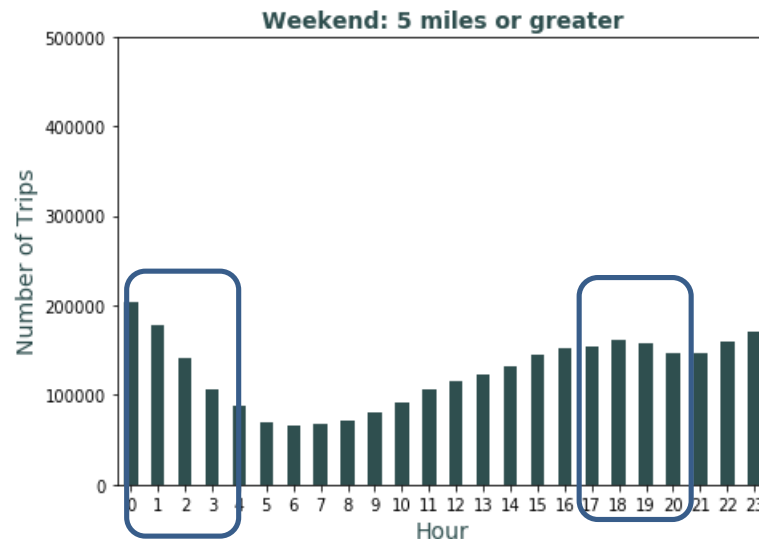- Conclusion

Analysis of Number of trips

- Maximum number of trips:
  - Are short (<5 miles)
  - Have low average speed

Analysis of Number of trips

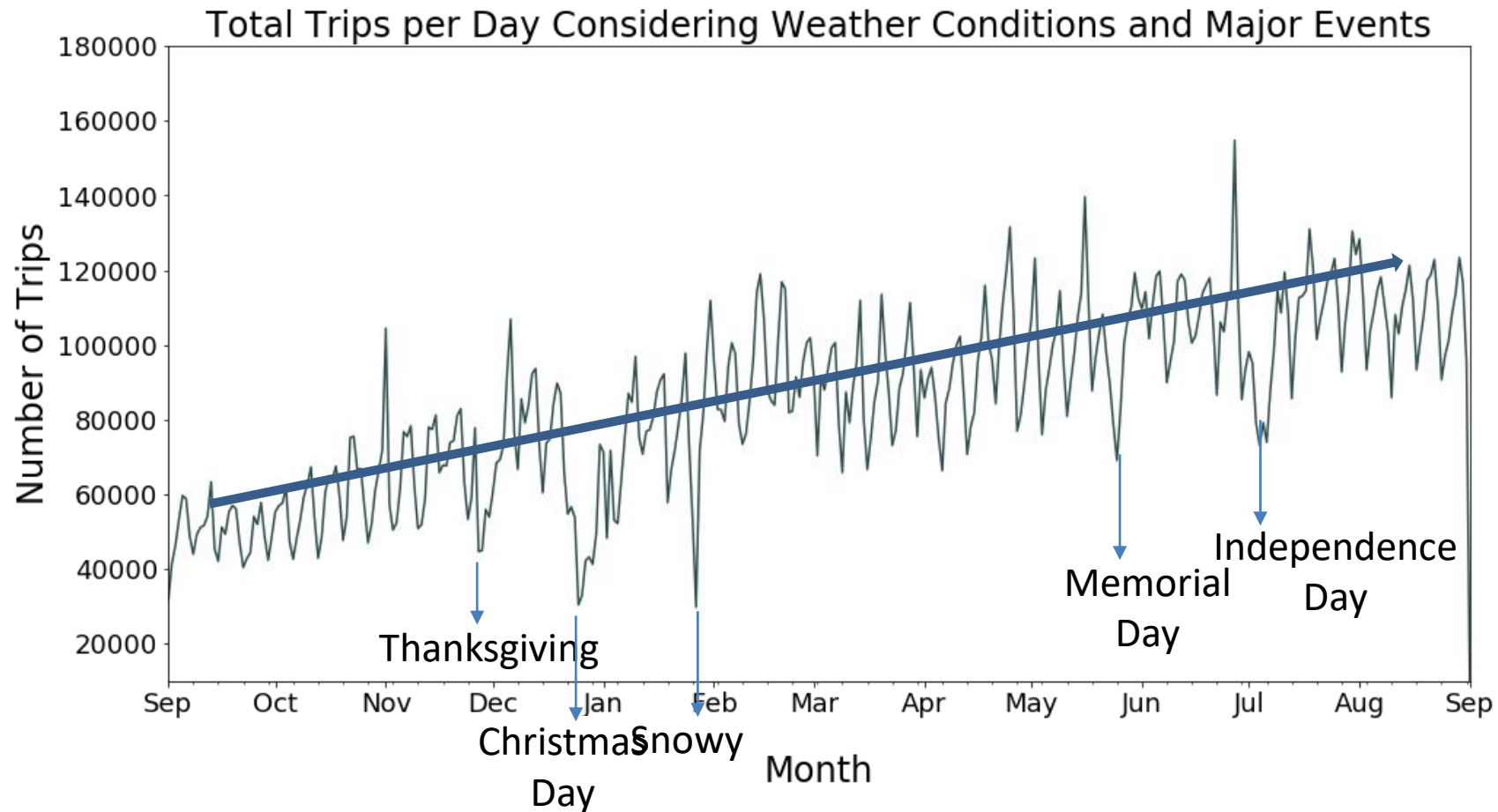- Weekday:
  - More trips during peak hour

- Weekend:
  - More trips during midnight
  - Why????

Analysis of Number of trips

Total Trips per Day Considering Weather Conditions and Major Events

- Number of trips are increasing every month
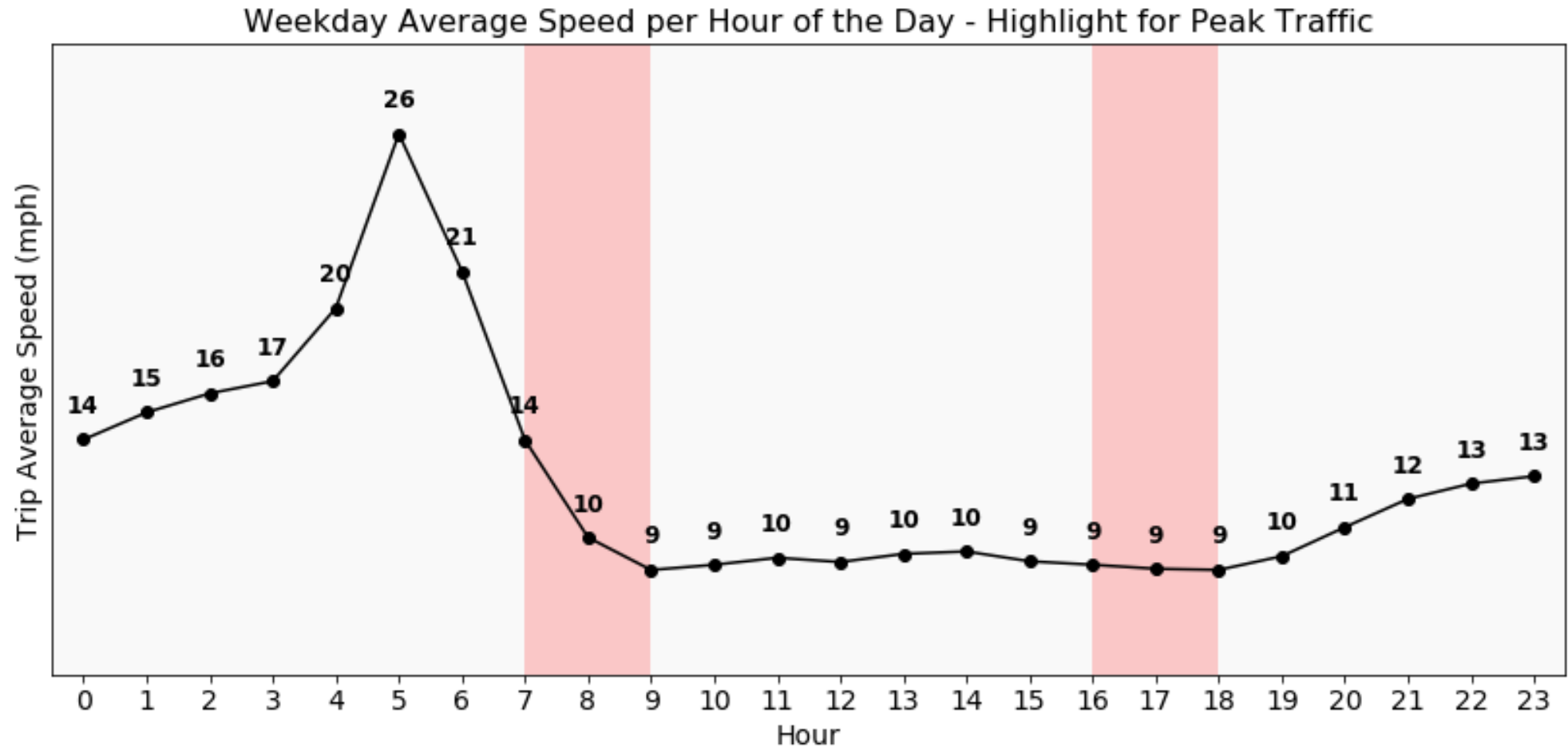- Number of trips each day depends on what day it is

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#Source: http://www.google.com/images

Traffic Distribution

Weekday Average Speed per Hour of the Day - Highlight for Peak Traffic

Traffic Distribution

- Traffic speed is:
  - Higher in early morning
  - Lower in peak hours
- Weekends have higher commute speed than weekdays

Traffic distribution during the week

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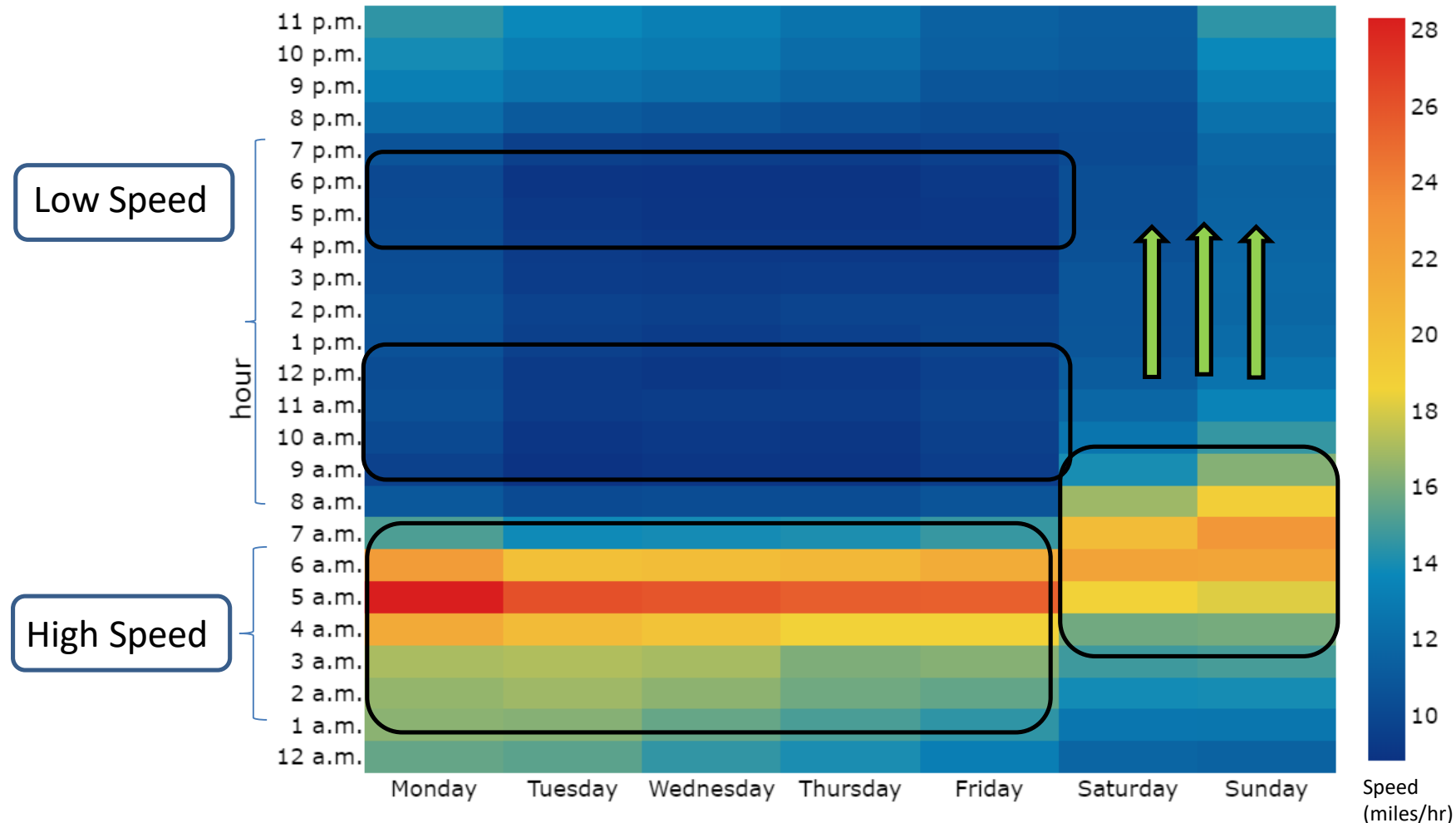- Conclusion

#Source: http://www.google.com/images

Popular Pick-ups and drop-offs

- 2A, 15, 4c are popular pick-ups and drop-offs zones.

- Pick-ups and Drop-offs behaves similarly

- Lookup table to map zone IDs to regions of New York

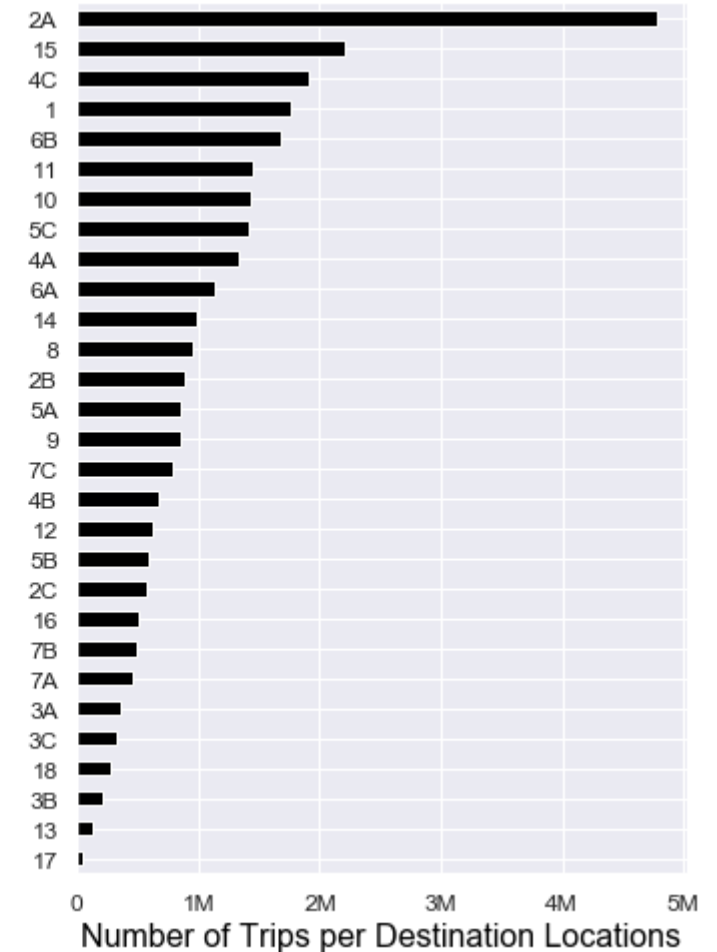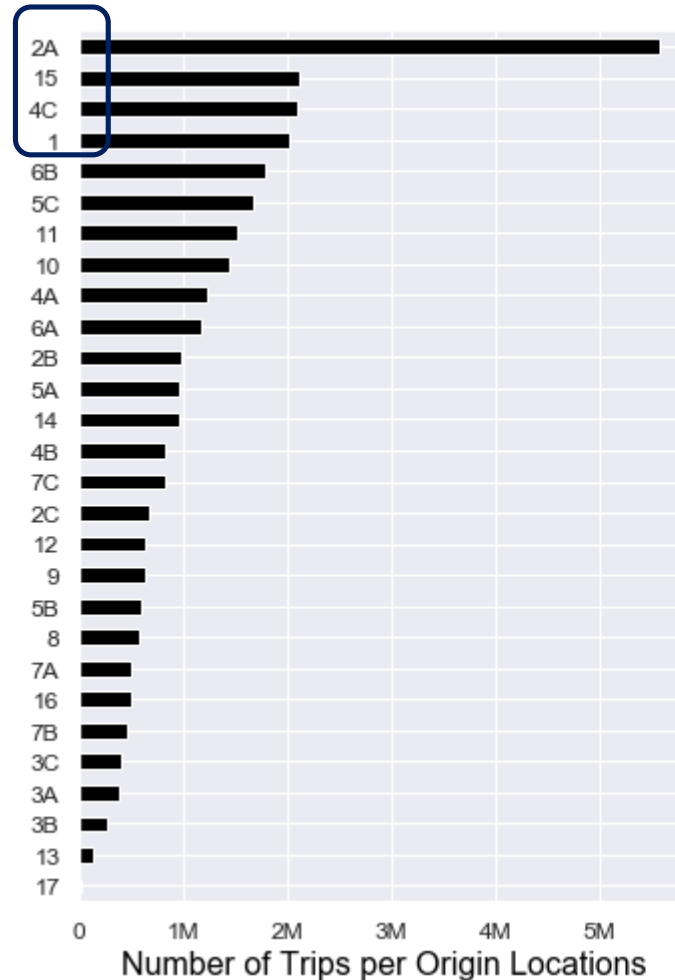- But the mapping is unavailable in the dataset

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#Source: http://www.google.com/images

Boroughs with most pickups

- Count shows the number of pickups for each borough.
- Manhattan is the most popular Borough.
- Pattern is similar for drop-offs as well.

Boroughs with most pickups

Bronx (151.059K)

Manhattan (160804.434K)

Queens (10505.769K)

EWR (12.558K)

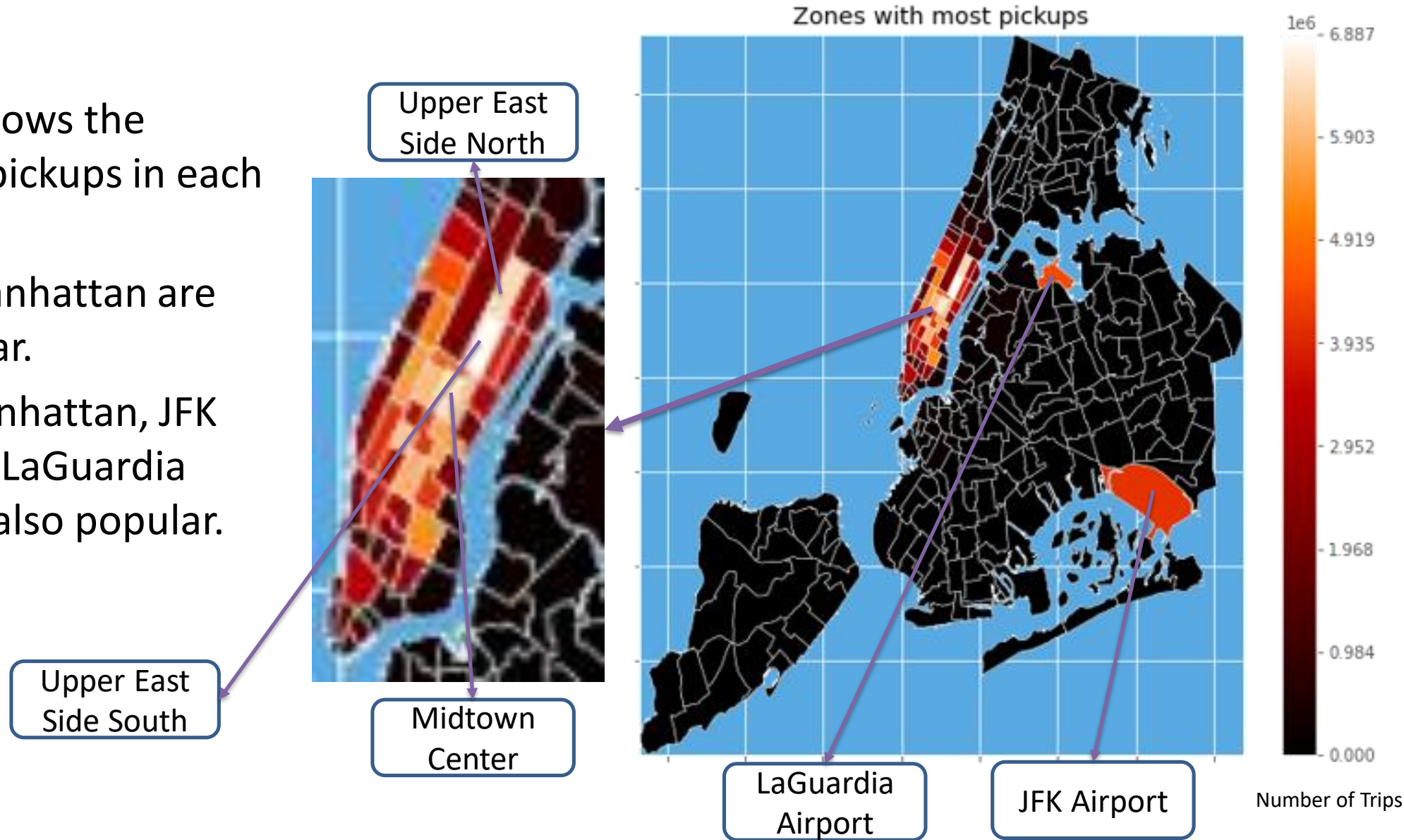Brooklyn (2629.674K)

Staten Island (5.091K)

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#Source: http://www.google.com/images

Zones with most pickups

- Heatmap shows the number of pickups in each zone.

- Zones in Manhattan are most popular.

- Outside Manhattan, JFK Airport and LaGuardia Airport are also popular.

Zones with most pickups

Upper East Side North

Upper East Side South

Midtown Center

LaGuardia Airport

JFK Airport

Number of Trips

Conclusion

- Uber is having a huge impact world-wide
- Most of the Uber trips are short and within the city (particularly in Manhattan)
- There exists a temporal shift in the distribution of trips between weekdays and weekends
- Weather conditions and major events play a significant role in determining the number of trips
- Majority of the trips in New York happen in Manhattan

Thank You