Uber vs Medallion Pickup Analysis

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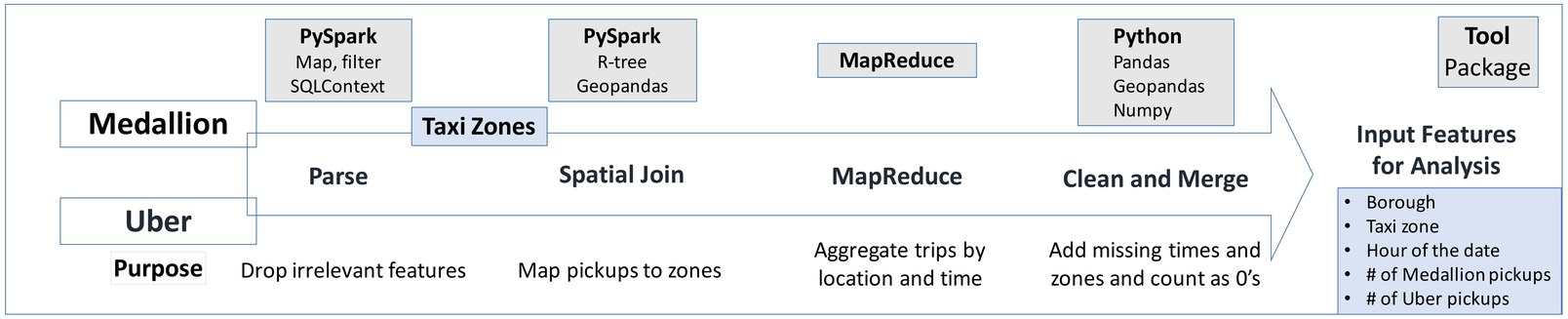
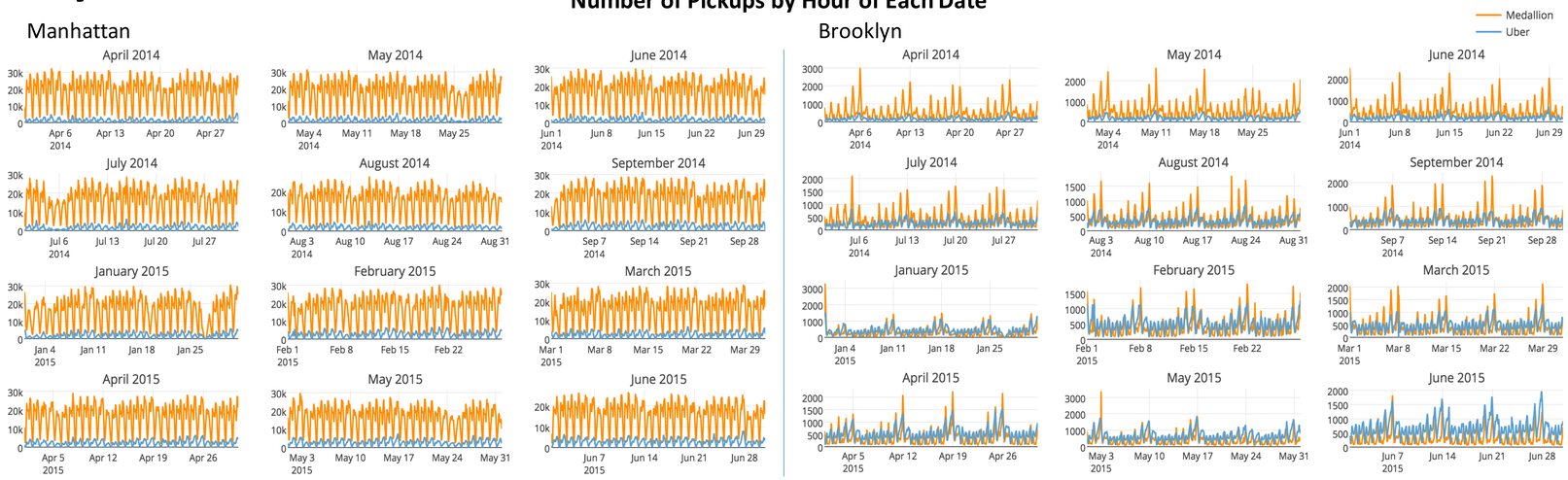
Motivation

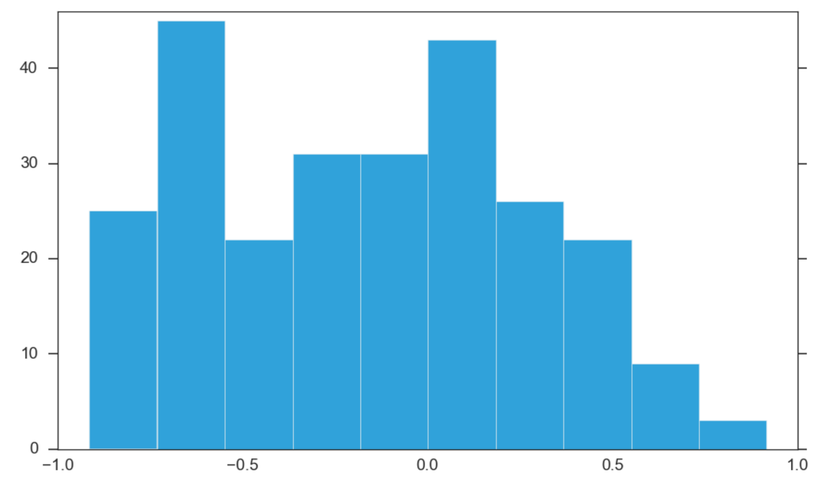
We intend to compare **Uber pickups** with **Medallion pickups** in New York City during time intervals **Apr-Sept 2014** and **Jan-Jun 2015**. Such time intervals are selected in order to be consistent with the limited Uber data provided by FiveThirtyEight. We are interested in finding out **what kind of potential impact that Uber may have on Medallion across each and every taxi zone in NYC**, by analyzing the **number of pickups** in each zone at an hourly level.



Analysis



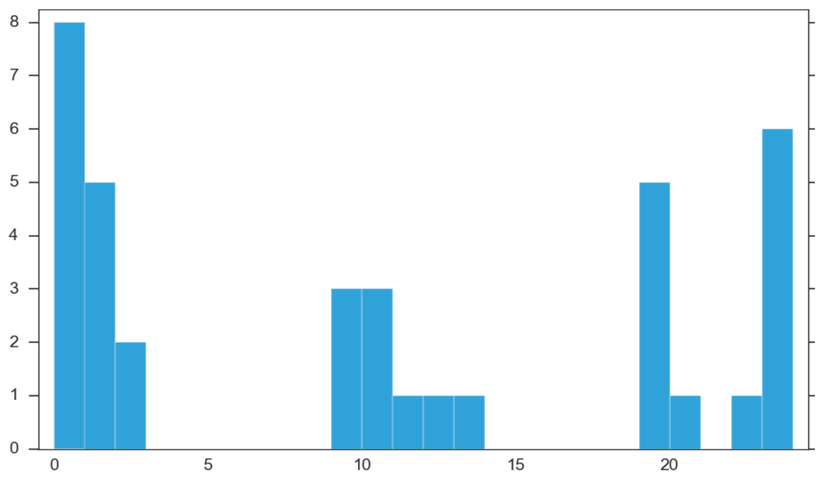
Distribution of Correlation Between Medallion and Uber Pickups in Taxi Zones



Taxi-zone Level Time Series Analysis—Month

- Aggregate the number of pickups in **each zone by month**
- Find the **Pearson's correlation coefficient** between the number of Uber pickups and the number of Medallion pickups in each zone
- Result visualized using both **histogram** and **map**

Fastest-growing Uber Pickup Percentage in "Red Zones" by Hour



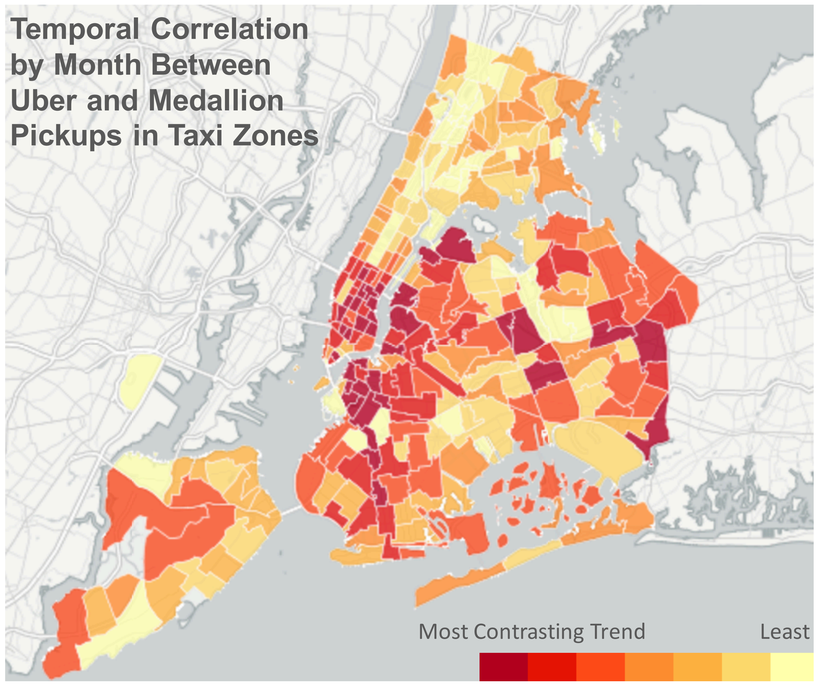
Taxi-zone Level Time Series Analysis—Hour

- Aggregate the number of pickups in **"Red Zones" by hour for each month**
- Find the **percentage of Uber pickups**, defined by #uber/(#uber+#medallion), for each hour in each Red Zone across the 12-month intervals
- Find which hour has the **largest OLS regression coefficient** for each Red Zone
- Result visualized using **histogram**

Discussion

"**Red Zones**" are the taxi zones that exhibit the **most contrasting trends** between Uber and Medallion pickups, marked as the **darkest red** group on the map. Within the **37** Red Zones, **14** of them are located in Manhattan, **14** in Brooklyn, and **9** in Queens. The top five Red Zones are

1. Little Italy/NoLiTa, Manhattan;
2. Jamaica Estates, Queens;
3. Murray Hill, Manhattan;
4. Alphabet City, Manhattan;
5. Greenpoint, Brooklyn.



We noticed that some of those top players, such as Murray Hill, Alphabet City, and Greenpoint, **do not have convenient subway access**. Therefore, the increased number of Uber pickups makes sense in these zones. Before Uber had gone popular, people in these areas might have used Medallions more often than people elsewhere. Now they may have just switched from Medallions to Ubers, because the mobile app experience has made **pickups** arguably more **convenient for riders**.

It also makes sense how **midnight hours** are the time when Uber **steals the most trips** from Medallion within these zones, because the train tend to run less frequently during late night. Building on top of the fact that some of these zones do not even have the most convenient subway access, **Uber** turns out to be **a reasonable option during midnight hours in "Red Zones."**

In conclusion, Uber has had the most amount of impact on taxi pickups in Manhattan, Brooklyn, and Queens. In addition to stealing trips away from Medallion in "Red Zones," it is more reasonable to claim that Uber has been actually **filling the gap of transportation demand** in these areas.

Acknowledgement

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