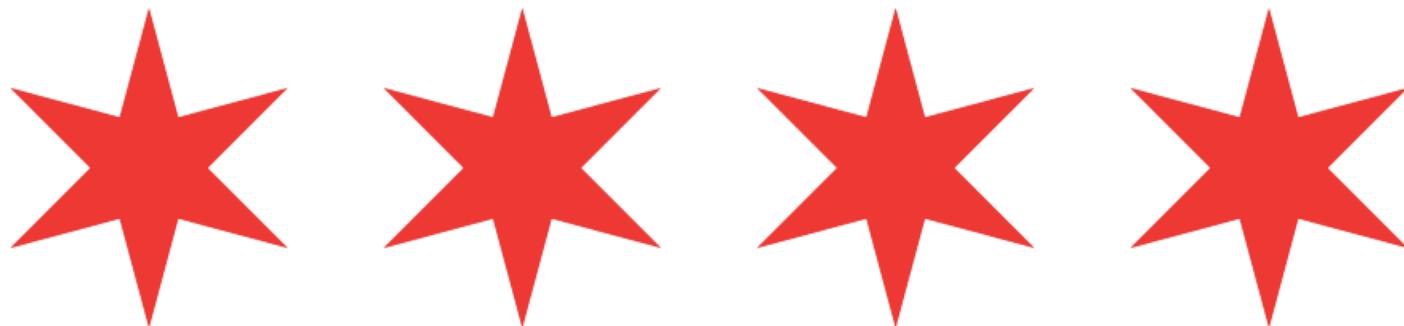


# Analysis of E-Scooters and Transportation in Chicago



By: Amy Zasadzinski

# Background

## Trends in Chicago Transportation:

### Trends:

- Use of public transportation has been increasing but still below national average
- Use of public transportation in areas of high unemployment is lower than areas of low unemployment
- Ride-app services have been increasing traffic congestion, with the majority of rides only transporting one person at a time
- Citizens who live far from CTA stops are in need a safe method of transportation to get to the stops

### Implications:

- Chicago needs to increase usage of public transportation to decrease road congestion
- Chicago must provide a safe means of transporting citizens to CTA stops
- Chicago must provide an attractive alternative to single-rider Ride-app trips

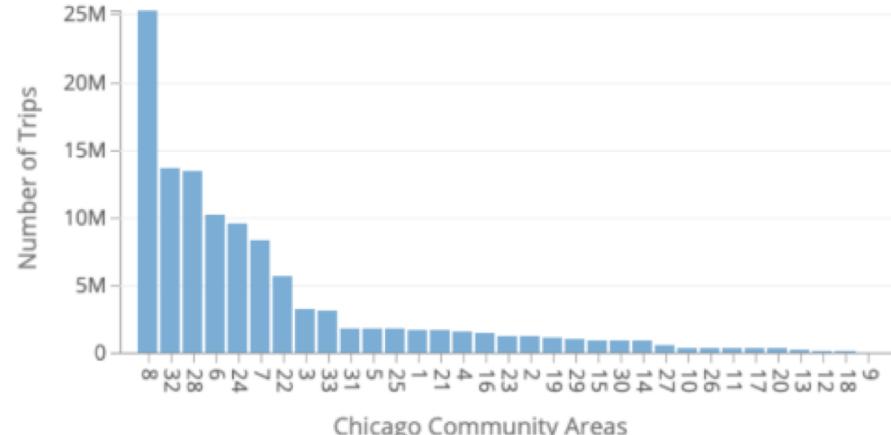
In 2019, Chicago debuted the first Electric Scooter pilot test to see if E-scooters could be a solution to any of the above problems

Interestingly... the most popular areas for E-scooter use were also three of the most popular areas for Ride-Hail App use

Popular Starting Points for E-Scooter trips



Number of Ride App trips taken from Chicago Community Areas 1-33



# Hunt Statement

## I am trying to...

Understand both the patterns of E-scooter and Ride-hail app usage in popular areas of E-scooter usage

## In order to...

Determine possible motives for why commuters would choose to ride an E-scooter over ordering from a Ride-hail app

## Why?

Determine how E-scooters should be promoted to become a definitive and attractive alternative to Ride-hail apps

## Point of View:

E-scooter company data analyst tasked with researching the user motive for riding an E-scooter



Why do people choose E-Scooters?

Possible Contributing Factors

Questions

Indicators to Research

Measures

Sources

**Price**

Are short trips riding an e-scooter cheaper than a ride app trip?

Prices of e-scooter trips and ride app trips

- Cost of ride app trips lasting 15 minutes or less
- Cost of ride app trips starting and ending in same community neighborhood
- Price per minute of e-scooter brands (Bird, Lime, Lyft)

Ride App Dataset  
Ride App Dataset

Make short trips

Convenience

Are E-scooters more readily accessible?

E-scooter availability

- Number of ride app trips starting in popular areas
- Number of ride app trips starting and ending in same community neighborhood
- Number of ride app trips starting in popular area and lasting 15 minutes or less
- Number of e-scooter trips starting and ending in same community neighborhood
- Number of e-scooter trips starting in hotspot area and lasting 15 minutes or less

Ride App Dataset  
Ride App Dataset

**Time**

Does it take a shorter time riding an e-scooter to travel the same distance by car?

Duration of e-scooter and ride app trips

- Number of e-scooters available in popular areas during different times of the day

E-scooter Pilot Evaluation

Lot of car traffic

Traffic levels of popular areas

Number of cars passing through area

- Average duration of trips made by ride app cars
- Average duration of trips made by e-scooters
- Average distance of trips made by ride app cars
- Average distance of trips made by e-scooters

Ride App Dataset  
E-scooter trips 2019 Pilot  
Ride App Dataset  
E-scooter trips 2019 Pilot

Time of Day

Speed of cars passing through area

- Average volume of cars that pass through area per day
- Average speed of cars traveling through area at certain times of day

Chicago Traffic Tracker (Historical)  
Chicago Traffic Tracker (Historical)

Warm Chicago Months

Number of trips occurring at different times throughout the day

- Popular times of day for ride app trips to begin
- Popular times of day for e-scooter trips to begin
- Ride app trips taken during May, June, July, August, September
- E-scooter trips taken during May, June, July, August, September

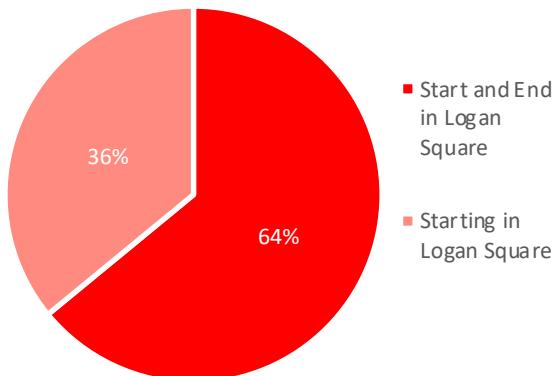
Ride App Dataset  
E-scooter trips 2019 Pilot  
Ride App Dataset  
E-scooter trips 2019 Pilot

Weather is warm

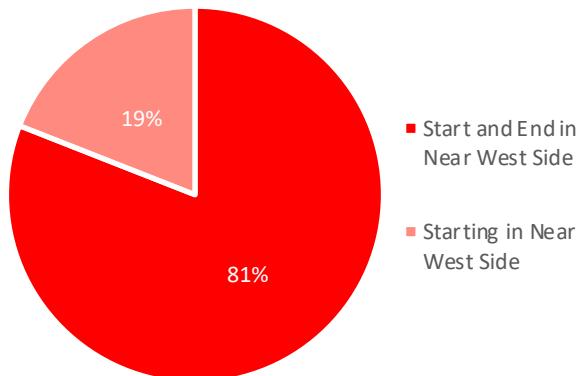
Trips taken during late spring, summer, and early fall months

# Short trips – Distance (same area)

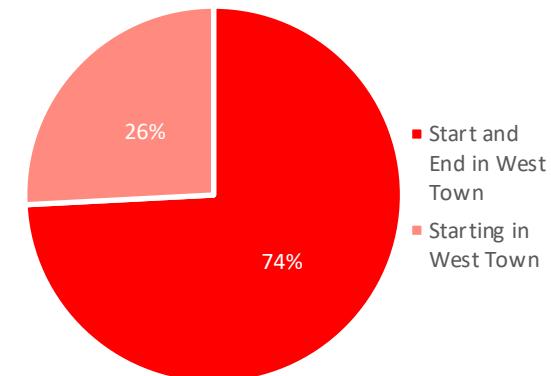
E-Scooter Logan Square Trips



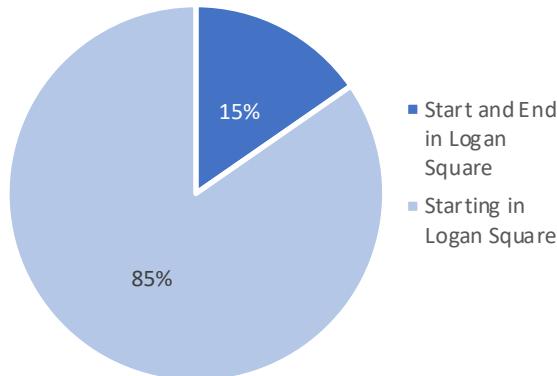
E-Scooter Near West Side Trips



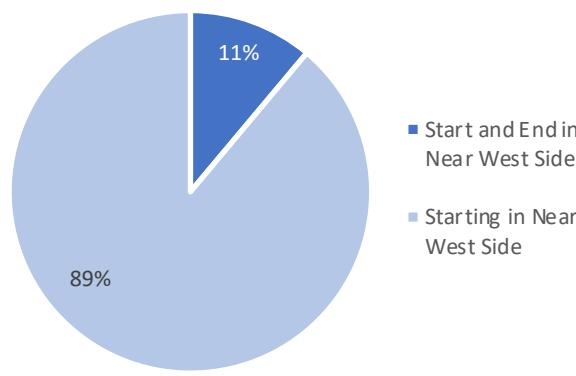
E-Scooter West Town Trips



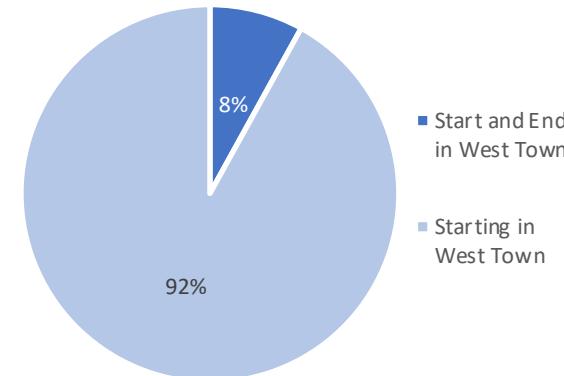
Ride App Trips - Logan Square



Ride App Trips - Near West Side



Ride App Trips - West Town

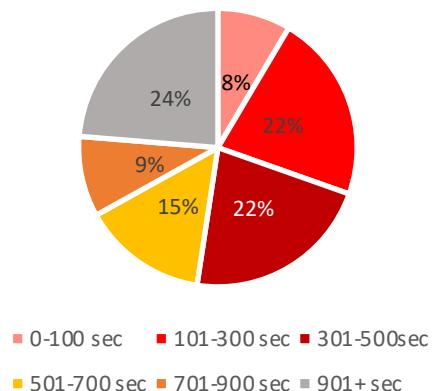


E-Scooters are used more for making trips that start and end within the same community area. Ride-app trips are more likely ordered to make trips out of the community area they start in.

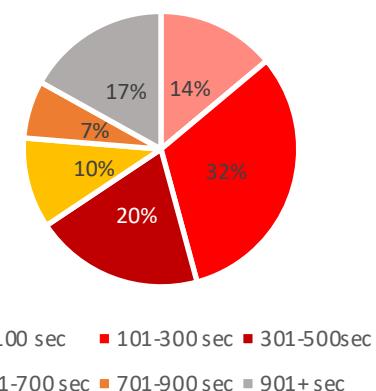
For total trip summaries of the three areas, see the Appendix

# Short trips – 15 minutes (900 sec) or less

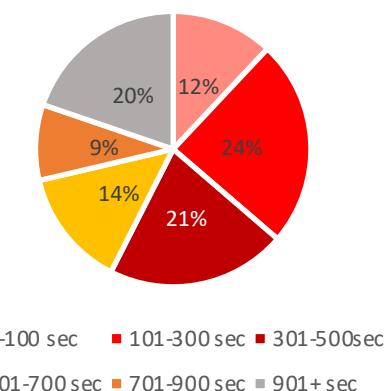
E-Scooter Logan Square Trip Duration Percentages



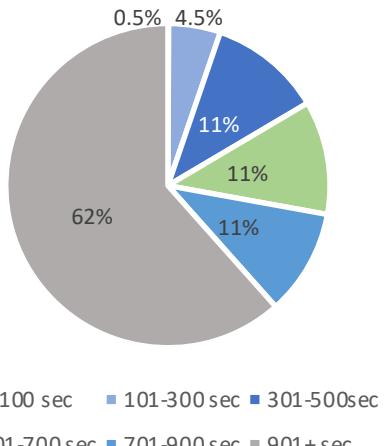
E-Scooter Near West Side Trip Duration Percentages



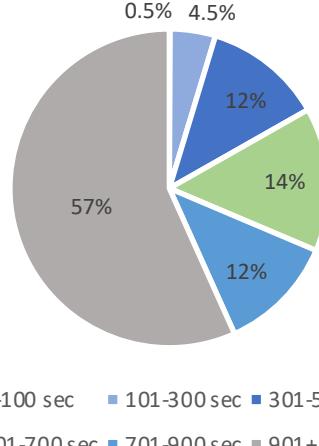
E-Scooter West Town Trip Duration Percentages



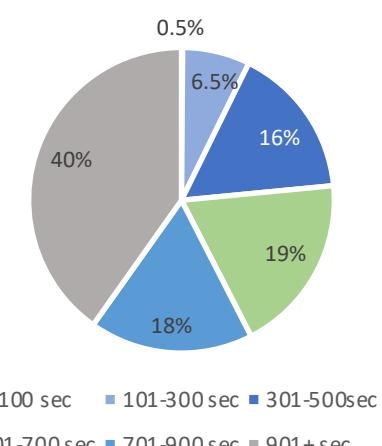
Ride App Logan Square Trip Duration Percentages



Ride App Near West Side Trip Duration Percentages



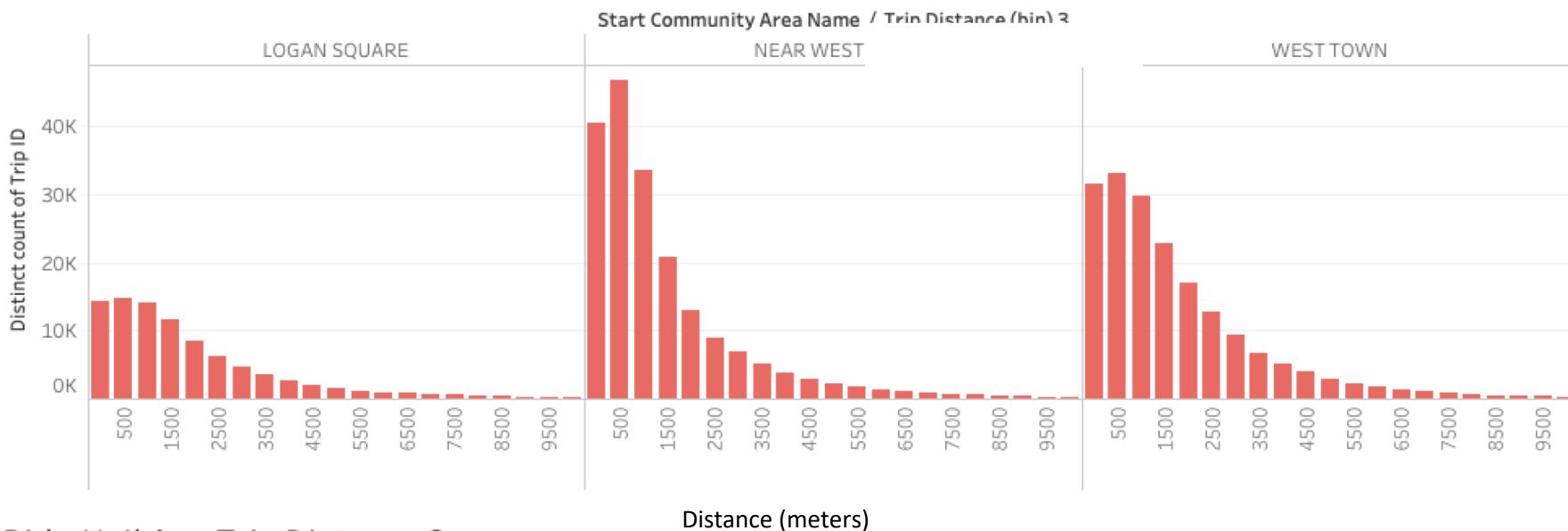
Ride App West Town Trip Duration Percentages



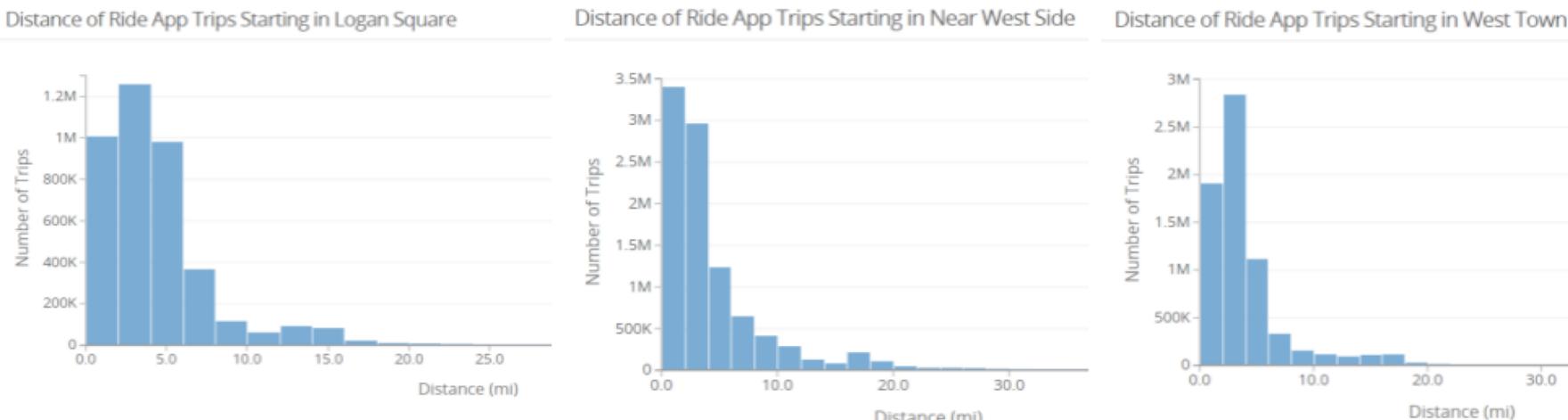
The majority of E-Scooter trips lasted 15 mins or less, whereas that was only the case for Ride-app trips starting in West Town

# Summary of Trip Distance

## Popular E-Scooter Start Area Trip Distance Summary



## Ride-Hail App Trip Distance Summary



Most popular travel distance for E-Scooters is 500m (.33 miles)

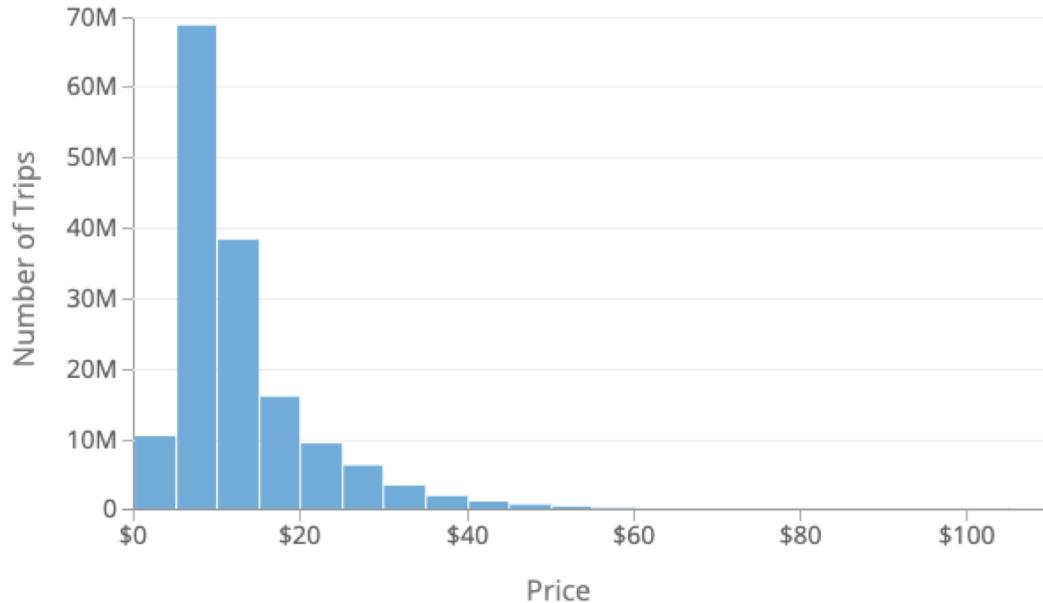
Most popular travel distance for Ride-Apps is around 4 miles

# Price of Trips

## Average Pricing for E-Scooters:

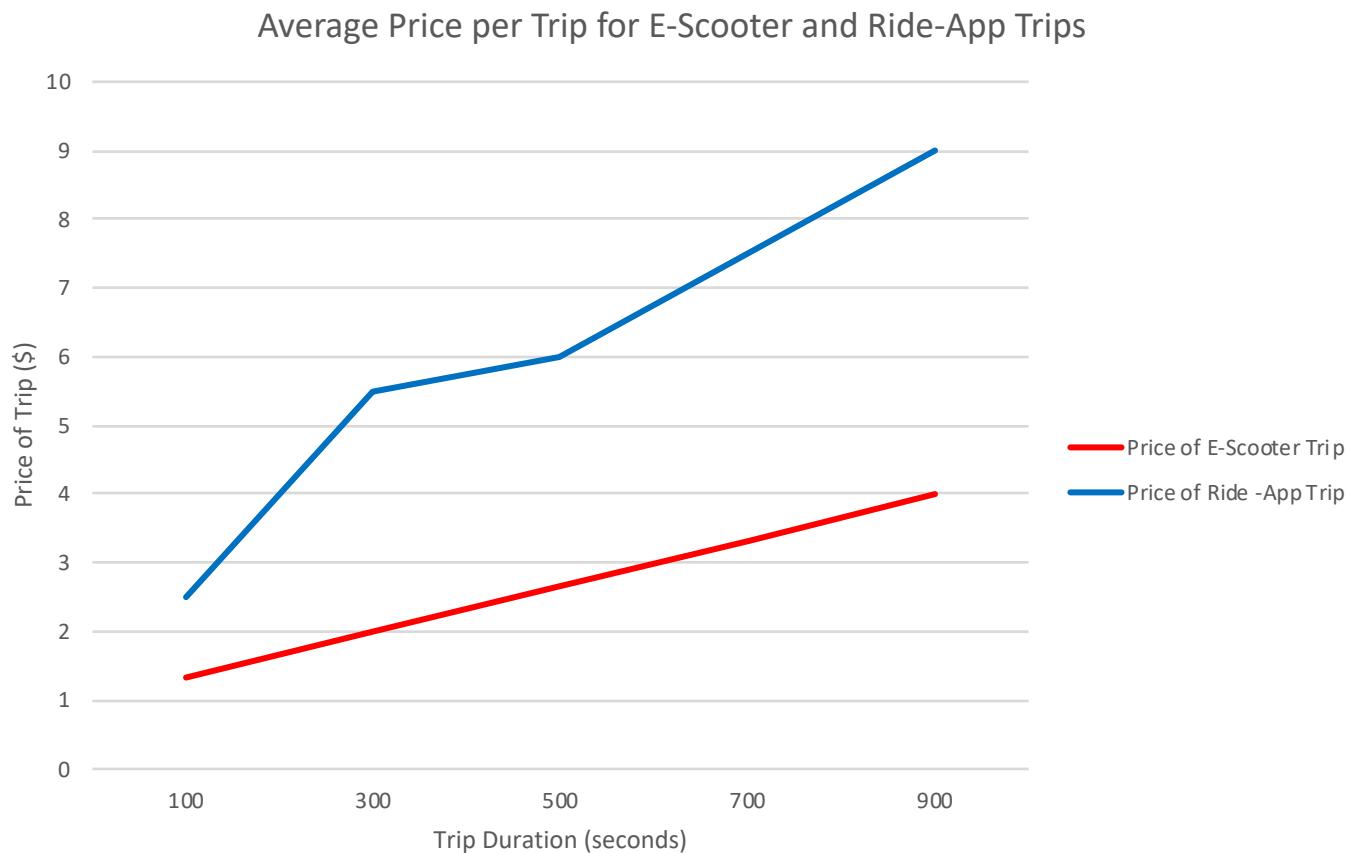
- \$1.00 unlocking fee
- ~\$0.20 per minute

Total Ride-App Trip Price Summary



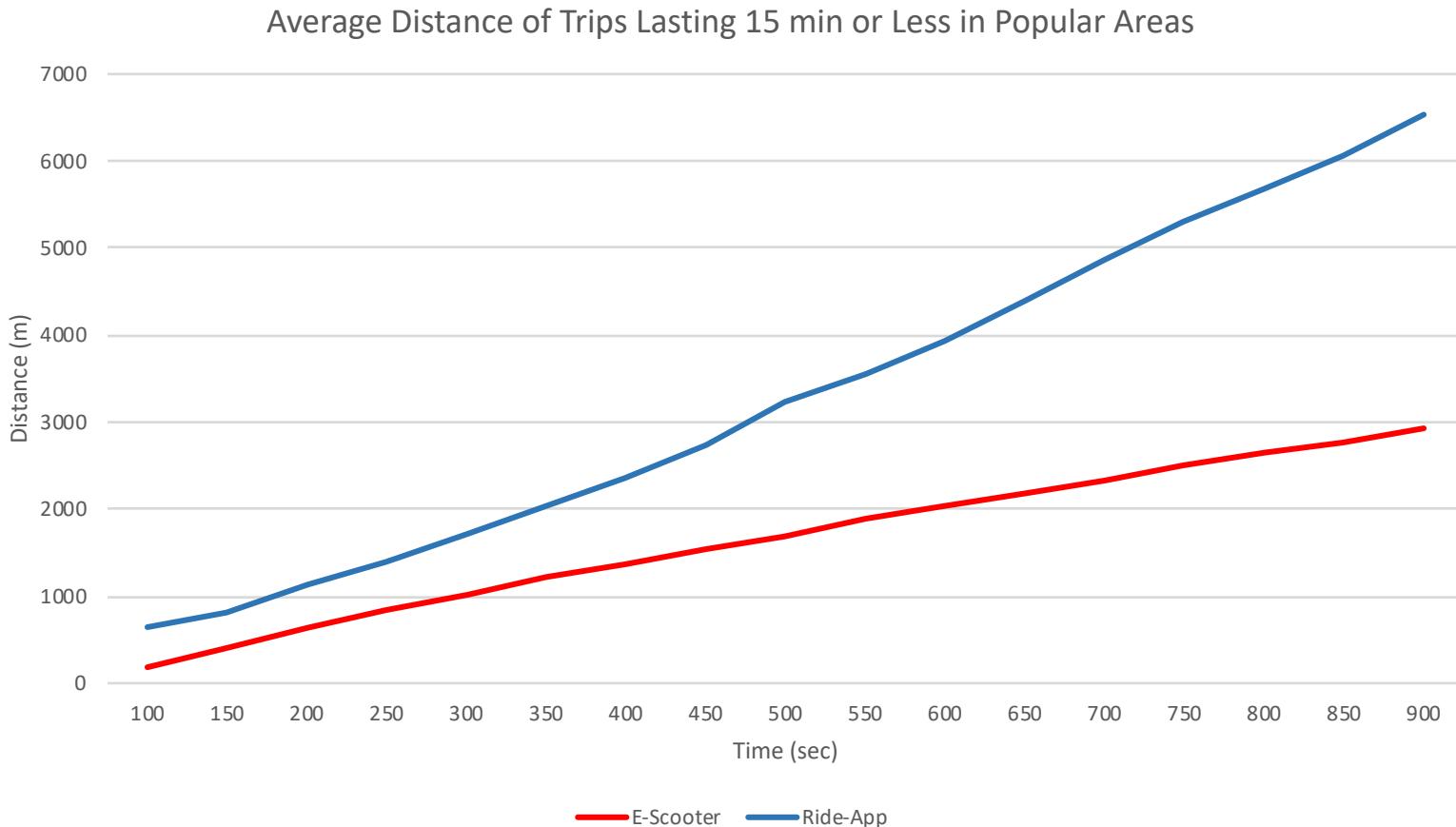
Most common Ride-App price to pay is an average of \$7.

# Comparison of Short Trip Prices



The price of riding an E-Scooter is consistently lower than the price of a Ride-App trip when lasting the same duration.

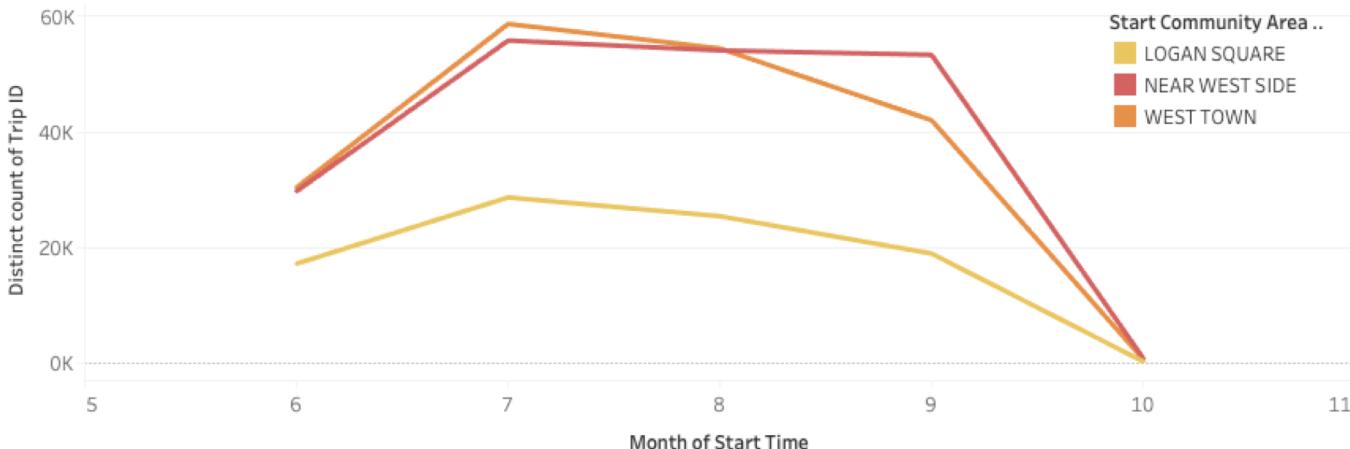
# Average Distance Covered in 15 min or Less



The Ride-App trips covered exponentially more distance than the E-scooter trips when lasting the same duration.

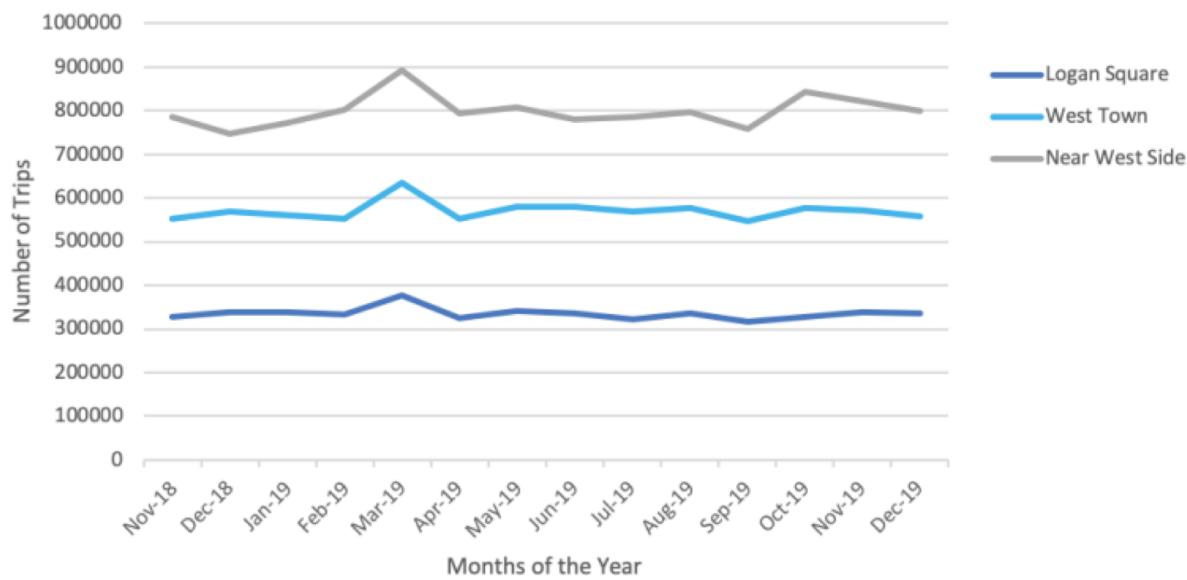
# Usage Throughout the Year

Number of E-Scooter Trips per Month Starting in Popular Areas



E-Scooter trips increase from spring to summer, but sharply decrease when the cold fall months hit.

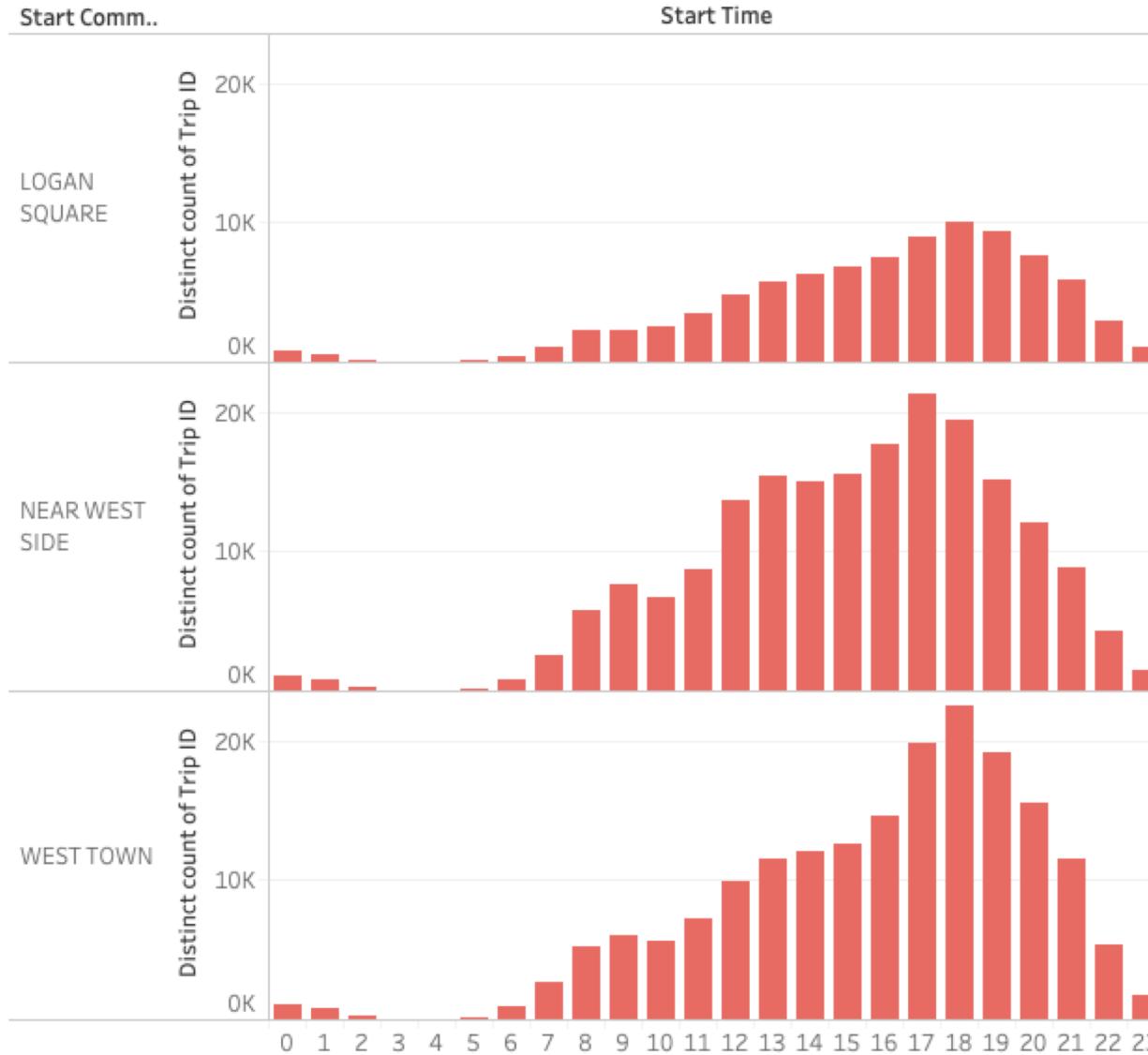
Total Number of Ride-App Trips per Month (Nov 2018-Dec 2019)



Ride-App trips stay relatively consistent all year round.

# Time of Day for E-Scooter trips

Start Time of Trips Beginning in Popular E-Scooter Areas



Most popular time of day for E-Scooter trips is between 4pm-8pm Central time.

# Conclusions

Observations	Next steps	New Hypotheses?
E-Scooters used more commonly to make trips that start and end in the same community area	Research the layout of the Community Areas: -How far away are major landmarks from CTA stops? -How are major landmarks away from each other?	Users are using the E-Scooters to travel from their homes to CTA stops  Users are using E-scooters to travel between social hotspots
E-Scooters used majority of the time to make trips lasting 15 minutes or less	Evaluate how to further encourage the use of E-Scooters for short trips	Users find taking an E-scooter for short trips to be more convenient than ordering a ride
The most common distance travelled on an E-Scooter is 5000m	Research how long users have to wait for Ride-app car to arrive (this might affect whether they choose to take the E-Scooter the short distance)	People are using E-scooters for recreational purposes rather than crucial transportation
E-Scooter price per minute is less than Ride-apps, but E-Scooters cover less distance than Ride-App cars in a certain period of time	Research perceived value of the method of transportation for the price/duration	Users will pay the price for an E-Scooter if it means they feel more safe in travelling from their home to a CTA Stop
E-Scooters are the most popular during the warm summer months	Research how to optimize promotion to greatly increase use in the summer	The number of Ride-App trips has the potential to decrease in the summer if E-Scooters gain more popularity
E-Scooters are most popular during the evening hours	Research why this is, and why morning hours are less popular	Users are less likely to ride an E-Scooter to work than ride one from work

# What direction does the data point in the effort to promote E-scooters as an alternative to Ride-Hail Apps?

In-Favor	Neutral
E-Scooters are used for short trips more consistently than Ride-App cars → users might find E-Scooters more convenient	The most common distance travelled by E-Scooter is much less than the most common distance travelled by Ride-App car → suggests different needs met by the different modes of transportation
	The price to ride an E-Scooter is lower than the price of a Ride-App car, but users pay in time when using E-Scooters → depends on what users value more, money or time  Increased E-Scooter usage in the summer months had no effect on Ride-App usage in the summer months

At this time, the data does not support the ability of E-Scooters to become a viable alternative to ride apps, but more research needs to be completed before the data can be used to definitively negate the ability.

# Data Flaws/Considerations

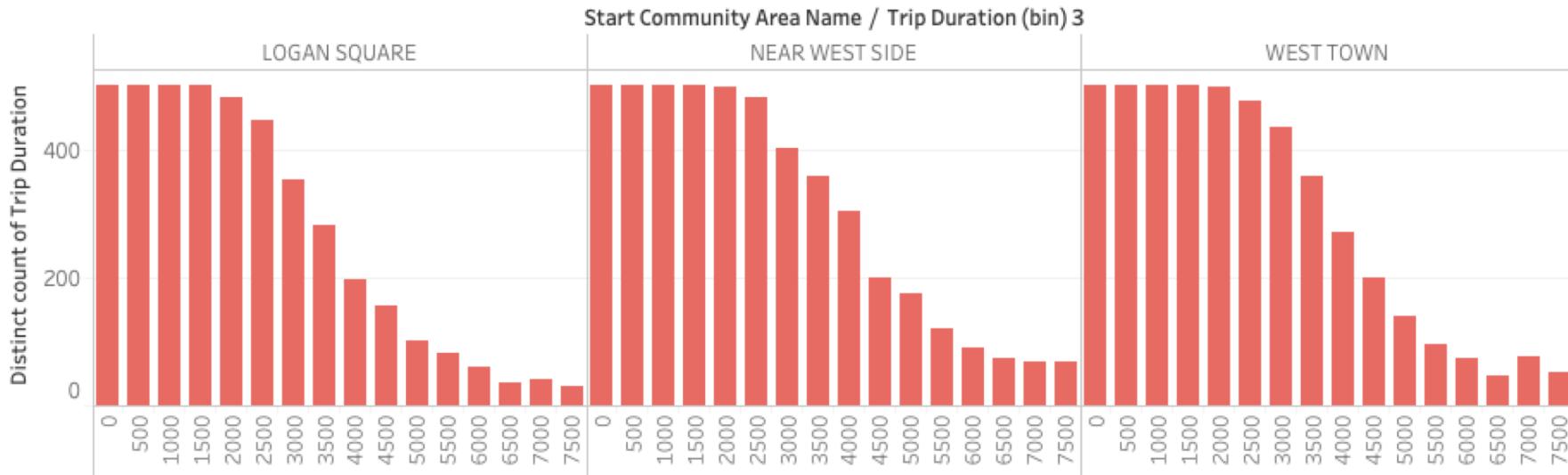
Flaws/ Considerations	Implications
Data points for start/end neighborhood area name are missing	Had to exclude data that did not include a start neighborhood area, making the trip totals for the popular areas potentially inaccurate
Specific demographic info for the individual users is not included	Will not be able to have insight into the background of the user in order to determine a potential motive
Specific brands of E-scooter used during each trip is not included	The price for riding the scooters had to be an average instead of an exact price
Trip duration includes time that scooter is standing still/ time that user might be using to understand the scooter	Trip durations may be longer than the time the user actually spent successfully riding the scooter
Cannot determine how many individual rides were taken by the same person	This might affect the potential promotional strategy moving forward

# What to work on in the future

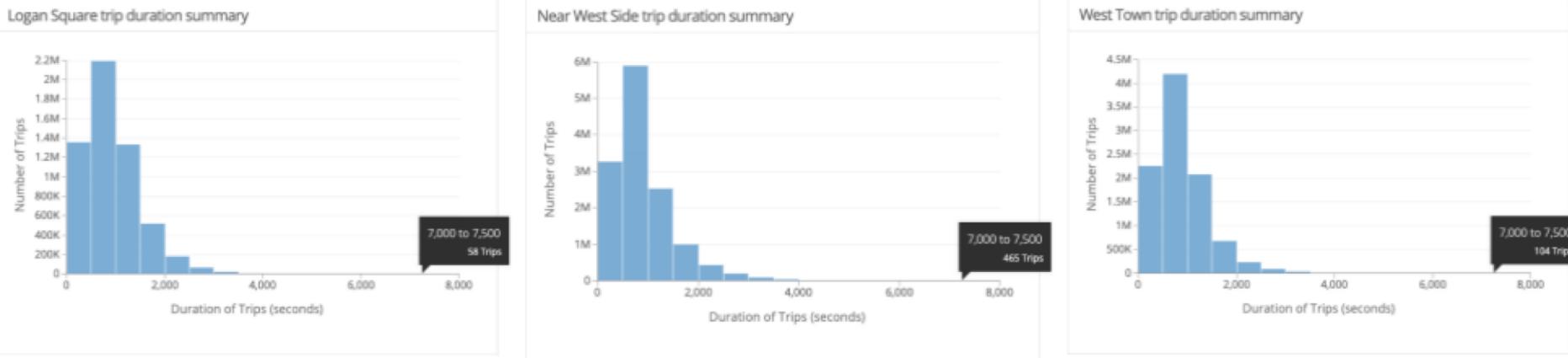
- Complete the analysis on Traffic patterns and how they affect E-Scooter Usage
- Incorporate survey data obtained by Chicago to add to my observations (raw survey data could not be obtained)
- Study trends of the least-popular E-Scooter areas

# Appendix

## E-Scooter Popular Area Trip Duration Summary



## Ride-App Trip Duration Summary



The majority of trips made in Chicago from both sources last between 0-4000 seconds (~60mins)

# Sources

- [Ride App Dataset](#)
- [E-scooter Trips 2019 Pilot](#)
- [E-scooter Pilot Evaluation](#)