



CTA Rework

By Evan Meyer



Project Overview

- Used Chicago-based data
- Analyzed the Chicago Transit Authority (CTA) stations throughout the city of Chicago and nearby suburbs
- Aimed to highlight the city's most dangerous and ineffective stations
- Once a target station was picked, I analyzed city blocks and streets near the station to suggest improvements

TABLE OF CONTENTS



01

OVERVIEW

02

DATA

03

SCORING

04

TRENDS

05

RELOCATION



Data |

Data Sets

I worked with data on the following variables:

- Daily ridership
- Crime
- Nearby bus stops (0.3 mi)
- Nearby bikeshare (Divvy) stops (0.3 mi)
- Nearby grocery stores (0.5 mi)
- Nearby police stations (1.75 mi)
- Nearby public housing (0.5 mi)



Data Cleaning

After downloading the data and uploading it into PGAdmin, I cleaned the data down significantly. The most notable changes were:

- Time period 2016 - 2022
- Crime data was cleaned to just “relevant” crimes in “relevant” locations
- New station-id system through Excel
- I removed stations that, as of 2022, are closed and no longer running
- I removed any outliers

Scoring System

→ Daily ridership

- ◆ The 20 stations with the lowest daily ridership received a score of 4, with the next 20 receiving 3, the next 20 receiving a 2, and so on.

→ Crime

- ◆ The 20 stations with the highest daily crime received a score of 3, with the next 20 receiving 2, and so on.

→ Bus Stops

- ◆ The 20 stations with the least nearby bus stops received a score of 2, with the next 20 receiving a 1

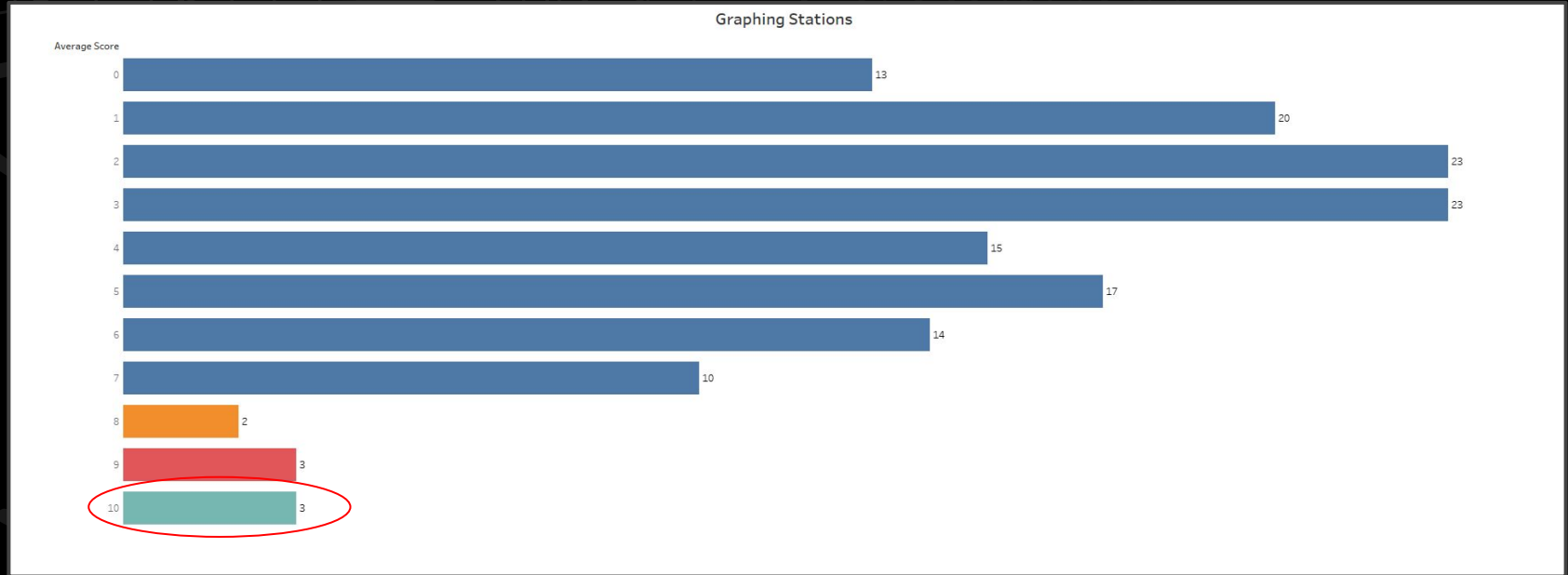
→ Bikeshare stops, Grocery stores, Police stations, + Public housing

- ◆ Only the 30 stations with the lowest amount of the above received a 1, and all other stations received a 0



Results

All CTA Stations by their scores

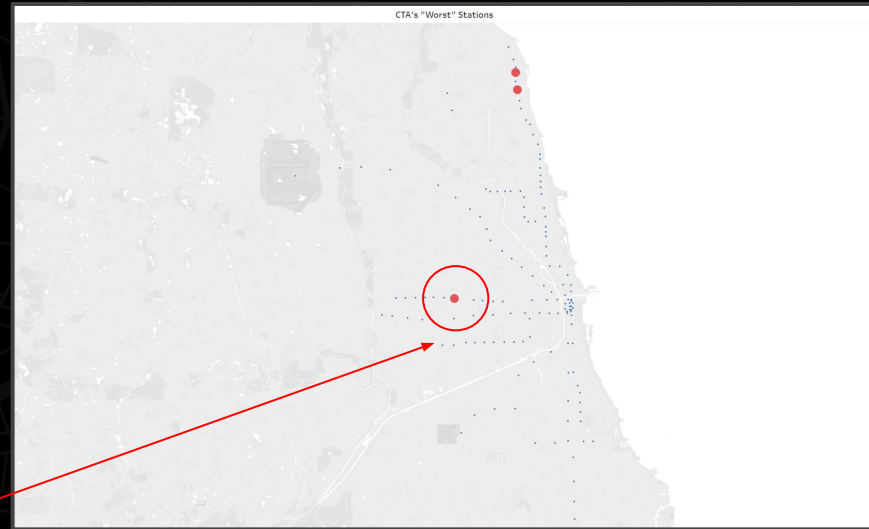


The Highest Scoring Stations

Cicero, Dempster and Foster all had the highest score of 10/13

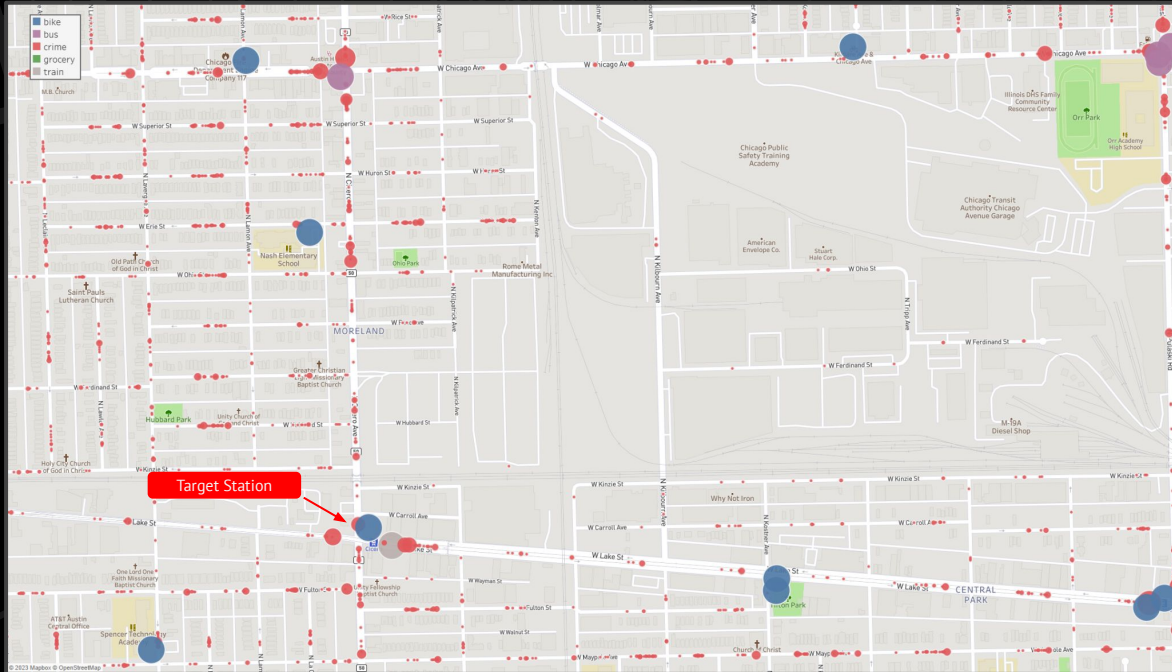
The table below shows how their statistics match up to the averages across the city

When you combine their low daily crime with their location on the map it's clear Dempster + Foster are only high scorers due to their suburban location



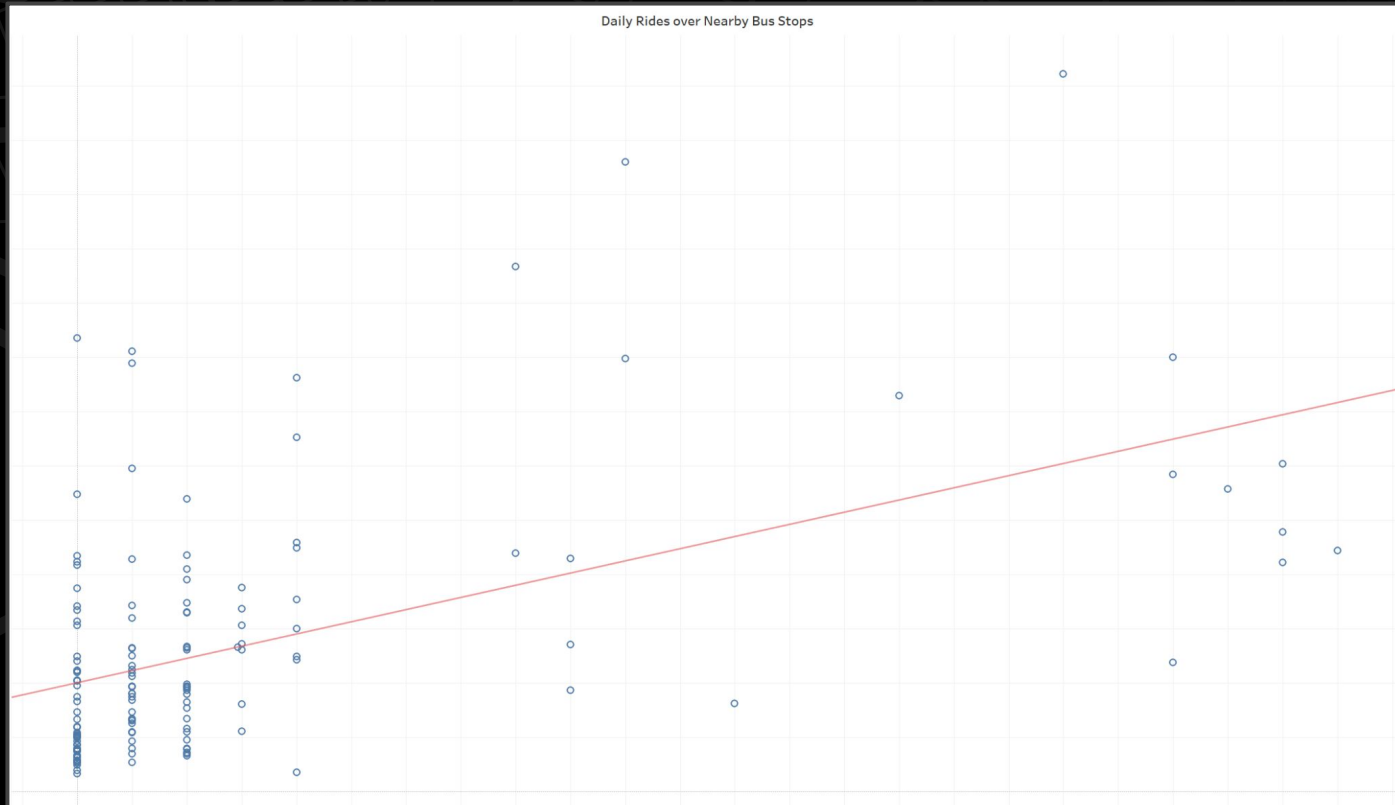
Station Name	CTA's "Worst" Stations						
	Daily Crime	Daily Rides	Nearby Bikeshare Stations	Nearby Bus Stops	Nearby Grocery Stores	Nearby Police Stations	Nearby Public Housing
Total Averages	0.071	2,658	4	3	1	1	3
Cicero (Green Line)	0.107	852	1	0	0	1	0
Dempster (Purple Line)	0.000	562	0	0	0	0	0
Foster (Purple Line)	0.000	549	1	0	0	0	0

Analyzing the neighborhood around our target station

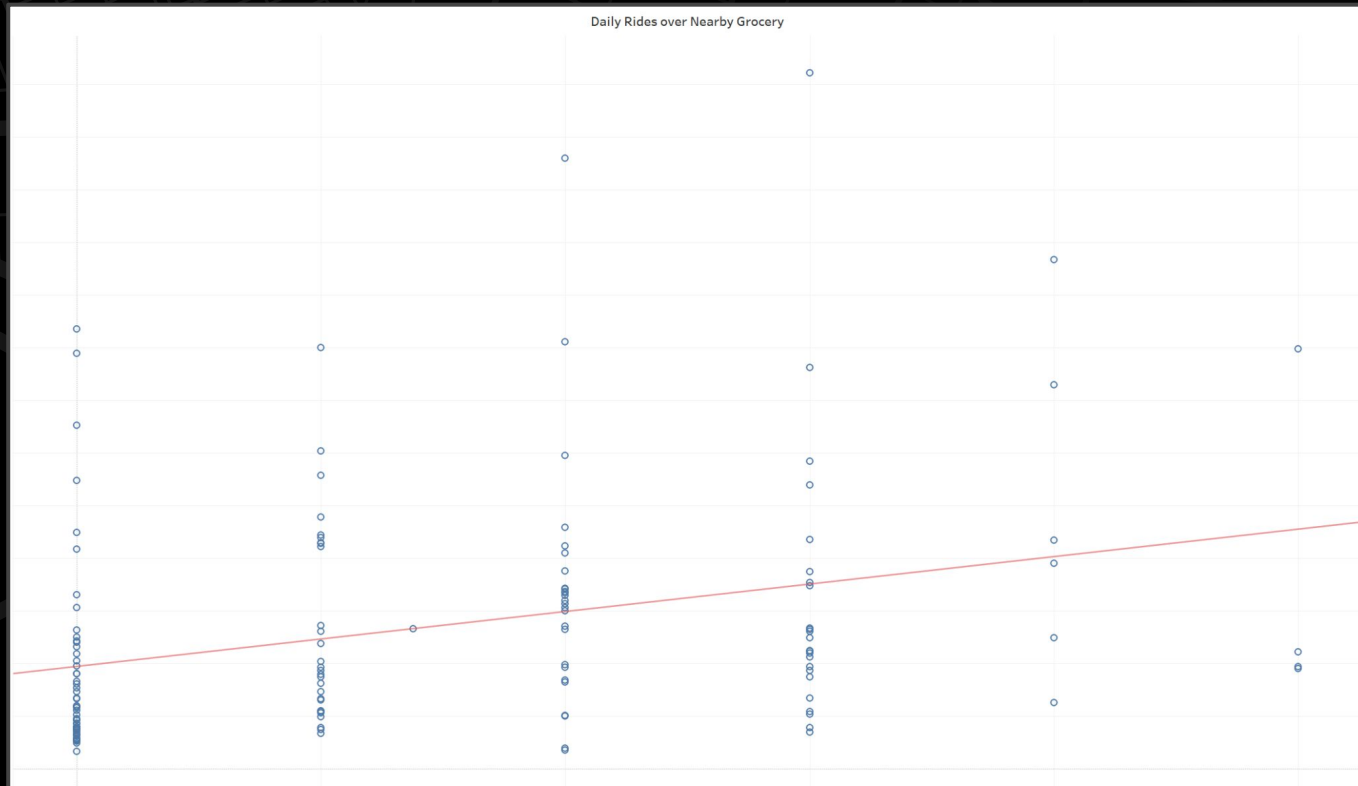


- ➔ Lack of bus stops on Lake St.
- ➔ No grocery stores within almost 2 miles
- ➔ High crime at and around the station
- ➔ Multitude of vacant lots
- ➔ Huge industrial neighborhood

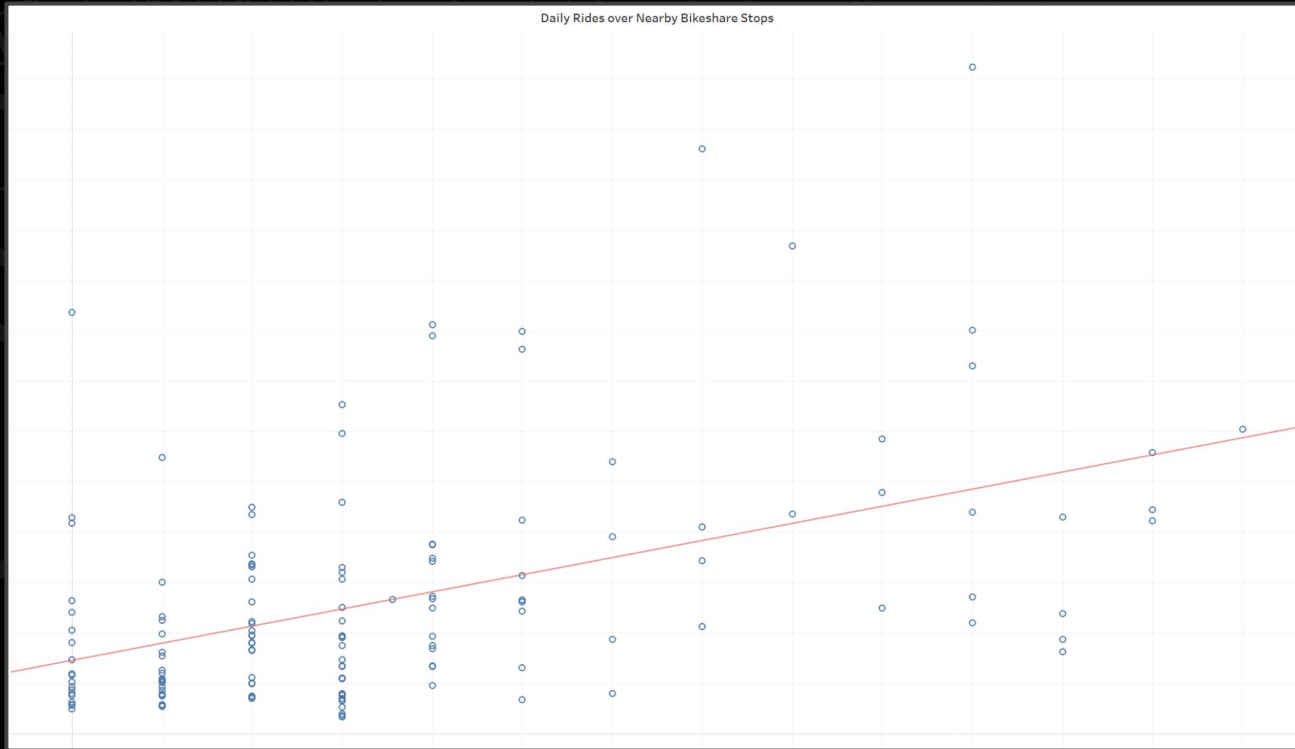
Stations w/ more bus stop see higher daily ridership



Stations nearby grocery stores see higher daily ridership



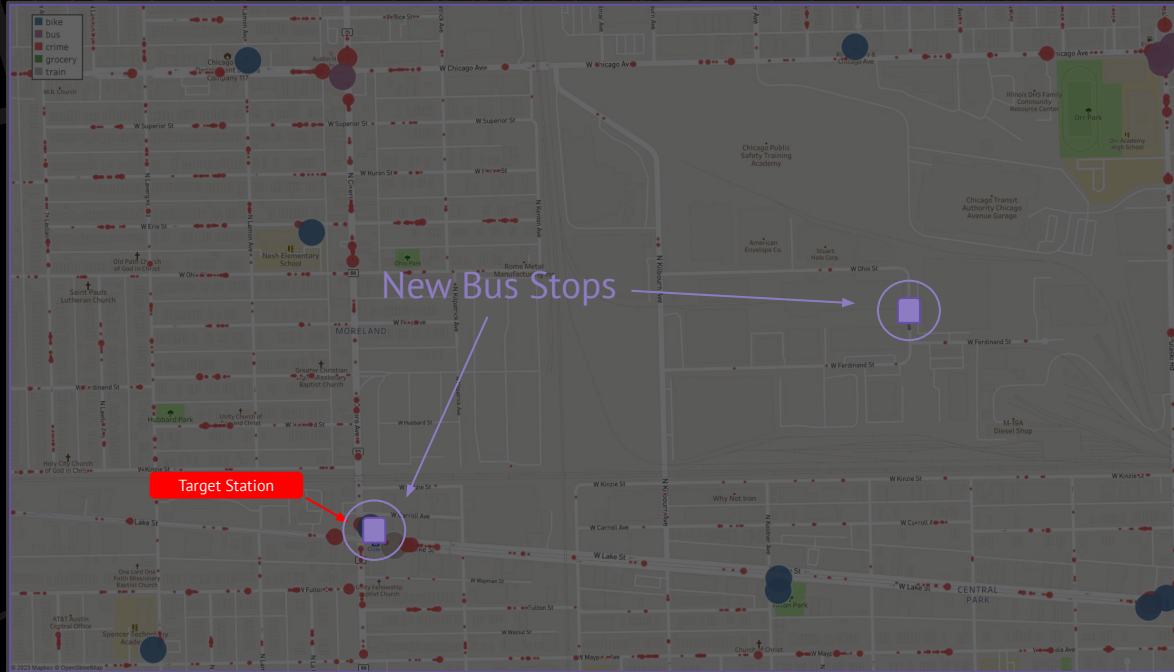
Stations w/ more bikeshare stops see higher daily ridership





Recommendations

New bus stations



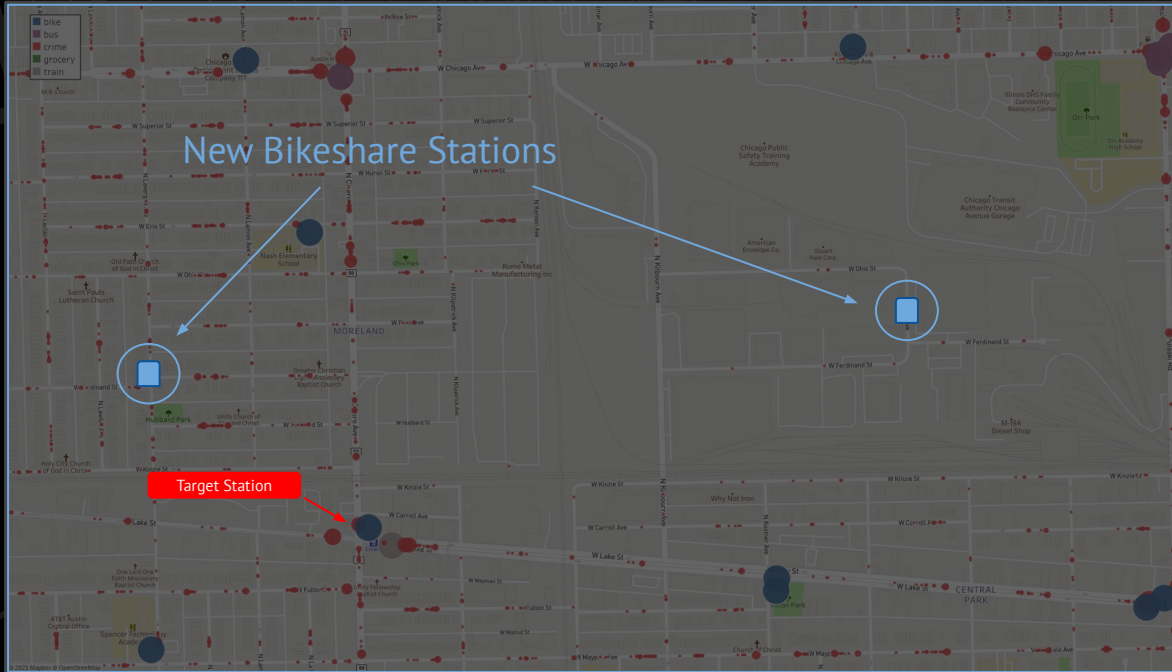
Cost:

- Shelter - \$10,100 ea
- Maintenance - \$9,534

Revenue: ~\$14,000 ea

Both profitable in ~ 14 months

New bikeshare stations



Cost:

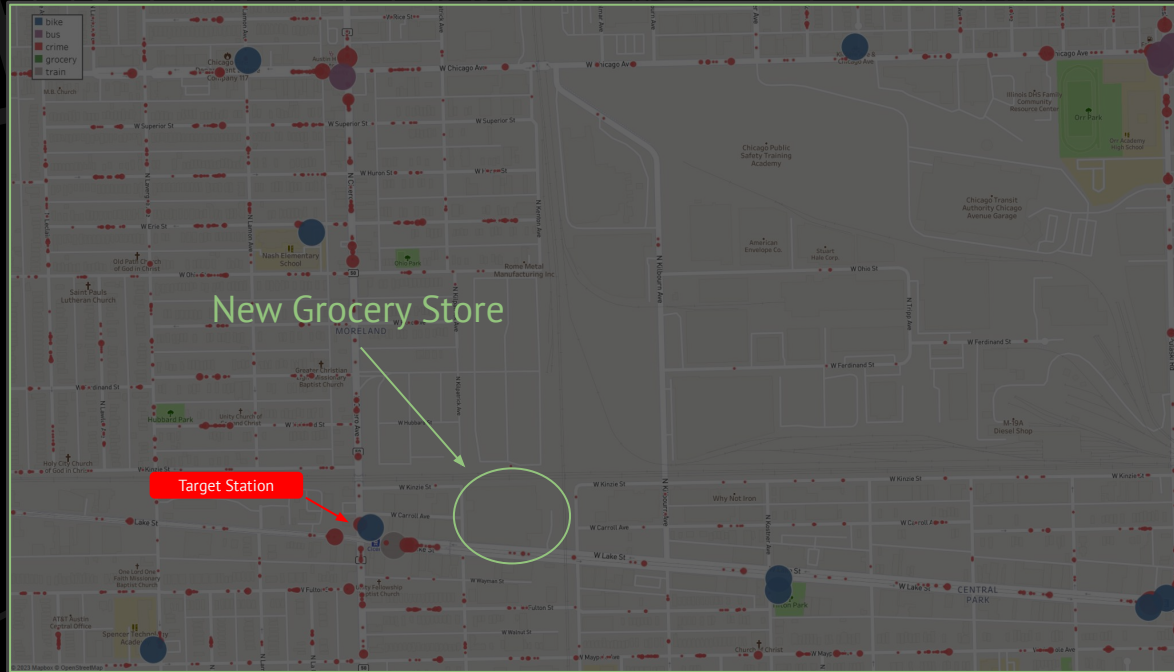
- (Used) \$34,000/station + 10 bikes
- (New) \$55,000/station + 10 bikes

Revenue: ~\$13,344.88/year

Used profitable in ~ 30 months

New profitable in ~ 49.5 months

New grocery options



Cost:

- (Upfront) \$300,000
- (Monthly) \$75,000

Revenue: ~\$105,000 month

Profitable in ~ 10 months

Train Station Revenue Projections

Current (~852 daily rides)	X	\$1.325/ride	=	\$412,048.50/year
Average (~2657.580 daily rides)	X	\$1.325/ride	=	\$1,285,272.13/year
25% Above (~3321.975 daily rides)	X	\$1.325/ride	=	\$1,606,590.16/year
50% Above (~3986.37 daily rides)	X	\$1.325/ride	=	\$1,927,908.19/year

Conclusion

- Based on low ridership, high crime, and low access to bus stops, bikeshare stations, and grocery stores Cicero-Lake was selected as the target station for improvement
- Investment in the neighborhood around the Cicero-Lake station will increase daily ridership:
 - ◆ 2 new bus stops
 - ◆ 2 new bikeshare stations
 - ◆ 1 new grocery store



Thanks!

Feel free to ask any questions or lead any feedback!
Additional information is located on the technical
write-up.