CITIBIKE INSIGHTS

for JERSEY CITY, NJ

Harry McKaig
January 2023

Pre and Post Covid Analysis

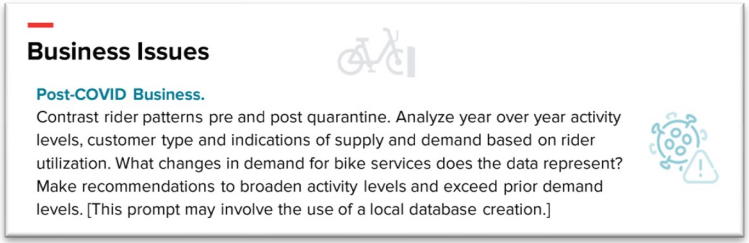
PROJECT OVERVIEW

As part of capstone project as a Data Analyst fellow in the General Assembly Advanced Analytics Immersive program.

The project goal was to
- Select a Business Scenario & Bikeshare Program to research
- Create Tableau dashboard and

For this project, I selected
- Pre and Post Covid changes in rider patterns
- Citibike Bikeshare: A Bikeshare Program to research (4+ available!)

Business Scenario: Stakeholder request for information
- Contrast Rider Patterns
- Overall activity usage
- Evaluate supply and demand
- Highlight changes in demand
- Recommend ways to increase rider participation and usage



PROJECT DELIVERABLES

Goal of the Project

- Apply Analytical Workflow to create insights.
- Select a Business Issue from provided scenarios.
- Consider Goals, Constraints, Costs and Risks.
- Research supporting industry facts, costs, standards or other industry “normals” for your analysis.
- Create analysis of market and revenue opportunity.
- Make a recommendation to your client, with any appropriate caveats and next steps.

Project Deliverables

- Set context: market description, business issue
- Specify goals and questions for analysis
- Data – sources, description, limitations or assumptions
- Analysis: 4-5 analytical questions or data story points, highlight insights
- Secondary support: market context, stats, images, maps, etc.
- Conclusion: Summary, recommendations and next steps.

PROJECT SCOPE

- The project goal was to compare and contrast rider patters and changes is bikeshare demand in a pre and post covid environment.
- The data set we are looking at is publicly available system data files from the Citibike System Data website.
- Looking exclusively at the Jersey City bicycle share data from 2019 (full pre pandemic year) to the most recent 2022 (full year of data)
- Data Process - Overview of Procedure:
  Download, clean and load Citi bike Trip Histories to load into SQL server (local host)
  Trip data is available in zipped format by month (data dictionary located in 4.5)
- Connect to local database or upload CSV into Tableau for visualization and processing.

Jersey City, NJ

Citibike public system data

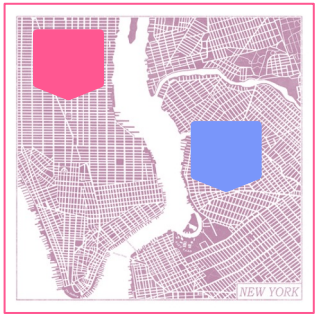
Focus: demand changes pre and post pandemic

CITIBIKE PROFILE

citi bike

Located in New York City, Citi Bike is the nation's largest bike share program, with 27,000 bikes and over 1,700 stations across Manhattan, Brooklyn, Queens, the Bronx, Jersey City and Hoboken

New York City



$111 MM	41,640	552k	2,453
REVENUE	ANNUAL MILES RIDDEN (thous)	BICYCLE INSPECTIONS	AVE RIDES PER DAY

GOALS FOR THE PROJECT

Compare Pre and Post Covid

01

OVERALL DEMAND

Overall trends from 2019 (Last Normal Year) vs 2022 (latest Year)

02

STATION DEMAND

Discern trends on locations and usage

03

TRIP DETAILS

Average time and distance of usage

04

RIDER TYPES

Define and attempt to understand rider types

05

MEMBERS

The behavioral differences in members vs non

06

OTHER

Any other effects of demand

RIDER TYPES

Membership

Member = Pays annual fee for reduced rate

Non Member = Pays per use at higher rate

Trip type category was defined for this project

Trip Type

Commuter = A -> B Station
“Getting from one point to another”

Leisure = A -> A Station
“Returning to the same point”

About the Data

What can we answer?

Dates/Times
Starting and Ending Locations
All Station Locations
Member or Non-Member

What we CANNOT answer?

Any demographic information
Any unique rider information aka. Rider id
Financial Information (not itemized and incomplete)
Rider Purchase Distinction (day, weekend or Lyft pass)

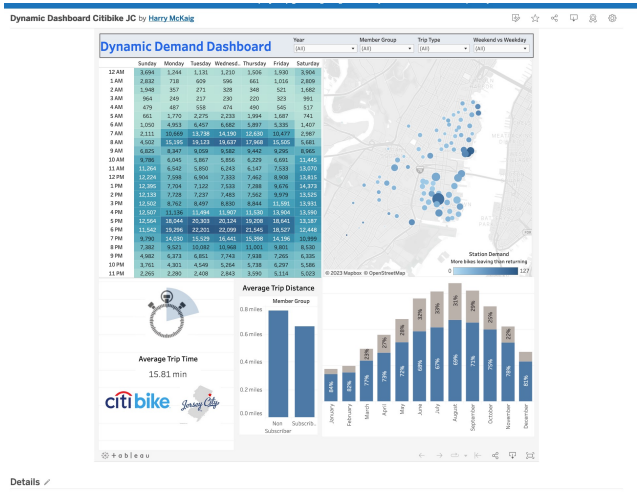
Data Definitions

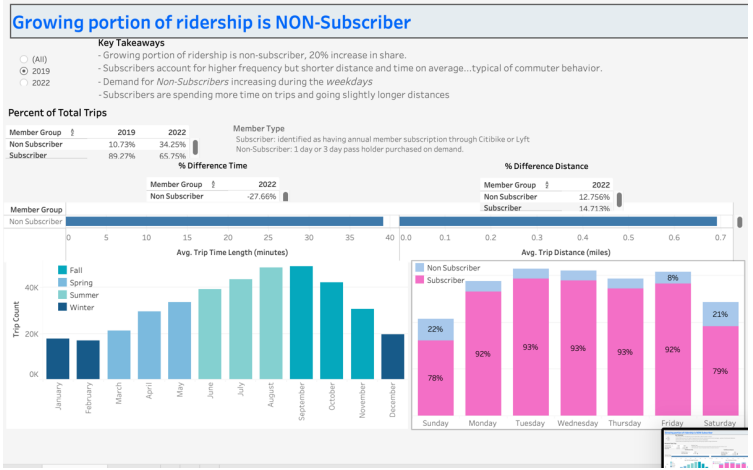
- **Start_station_id & Station_name** = unique identifier where a bike was unlocked and the trip began
- **End_station_id & Station_name**= unique identifier where a bike was locked and returned, ending the ride
- **Geographical Location**: latitude and longitude of the station_id and station_name
- **TimeStamps:** calendar and time stamp of the beginning and end of a trip. With this we can confirm the date of the trip and the length of time of that trip.
- **Member Type**: Whether the trip was taken by a 1x or single use purchase or trip taken by a subscribing member
- **Bike Types:** Whether the trip was on a classic or electric bicycle. Coerced “Docked” stations into classical bikes.

TABLEAU

Please visit Tableau public for Dashboards and Story Mode presentations to compliment this slide deck.

Harry McKaig Tableau Public LINK - Click Here





INSIGHTS

- **Usage is up:** Bikeshare program is seeing a Compound Annual Growth Rate (CAGR) of 8% per year since 2019.
- **Increase in Range:** 25% greater range between stations. Total Radius area of stations was up .7 miles from 2.8.
- **Increase in stations:** 33 new stations since 2019. New stations now account for 44% of all new rides. New stations are balancing the demand by improving range and availability.
- **Riders are traveling greater distances:** covering 3X more miles and spending 15% more time on the bike.
- **Travel Time is up 50%**: driven by number of leisure rides but also effected by the increase range and station availability.
- **Increasing Number of Non Subscribers:** now accounting for 30% of all rides with increased weekday and afternoon demand during the summer months.
- **Electric Bikes:** Introduced in May 2022 and already accounting for 14% of bikes and 30% of total rides!

RECOMMENDATIONS

Bikeshare is growing at 8% per year: The increase in demand will be about 150k new trips by 2024

- With the average stations doing 10k trips per year, we recommend adding 15 new stations in 24 months

With Demand increasing near popular transit centers

- Increase capacity vs footprint target current locations along the greenway and around public transit hubs

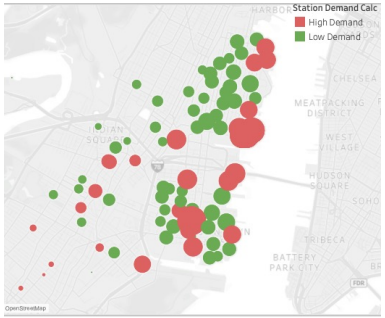
Non-Subscribers and Leisure Rides

- Convert non-subscribers with the advantage of longer and less expensive rides.

Electric Bikes: 8 months new and 30% of total trip share!

- Add e-Bikes to the fleet as cost vs benefit options.
- Cheaper and more convenient alternative in bikeshare vs ownership

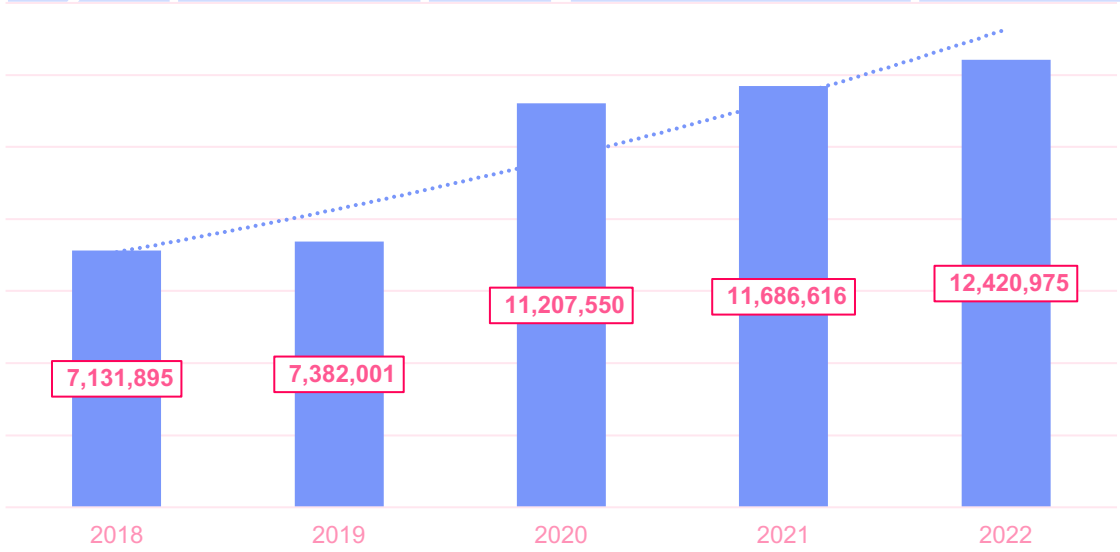
Ave Trip per Station			
Year	Station Count	TTL Trips	Year
2019	51	393,122	7,708
2020	84	895,475	10,660
Dif	**33**	**1,288,597**	**18,369**



Appendix

Extra Stuff for More Detailed Information

Total NYC Bicycle Count



NYC DOT conducts regular bike counts, which are summarized in *Cycling in the City*, an update ond cycling trends in New York City that was first released in May 2016. Bike count data is available for the East River bridges and Midtown

E-bike Introduction: March 2022