Citi Bike Predictor

Planning your bike-friendly visit to NYC

Brian Lewis | June 7, 2021

Why Create a Citi Bike Predictor?

1
You decide you want to plan a trip to NYC

2
You see taxi prices and decide to bike the city with NYC's Citi Bike program

3
Citi Bike has maps with real-time inventory

4
But how do you know if there will be bikes available when you visit?
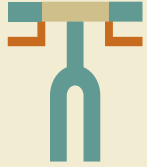
Live App!

Inventory Data = Stations + Trips

Stations

- Source: City of New York feed (.json)
- 509 bike locations
- Includes ID, geography, # of docks

Trips

- Source: Citi Bike's AWS S3 Bucket
- March 2020 – March 2021
- Includes start ID, end ID, and times
- Allowed for calculating bike inventory over time

Algorithm and Model Performance

ARIMA

Regresses a time series variable on past values of itself

Integrates seasonality components to forecast future values

MAPE

Accuracy as a percentage of absolute differences

Success: MAPE < 15%

Insight: Load Rebalancing

Drains: Upper East/West Side
(High Elevation) Frequently lose 200%+ of their bike stock in one day, esp. in summer

Stable: Most of NYC
Generally have organic rebalancing, with several available bikes during the day

Pools: South Brooklyn
(Low Elevation) Frequently gain 100%+ of their bike stock during each day, esp. in summer

Thank you

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(Me, this summer)