UNIVERSITY OF MARYLAND

Info Challenge 2025

TREND ANALYSES OF WASHINGTON METRO RIDERSHIP

Team IC25060

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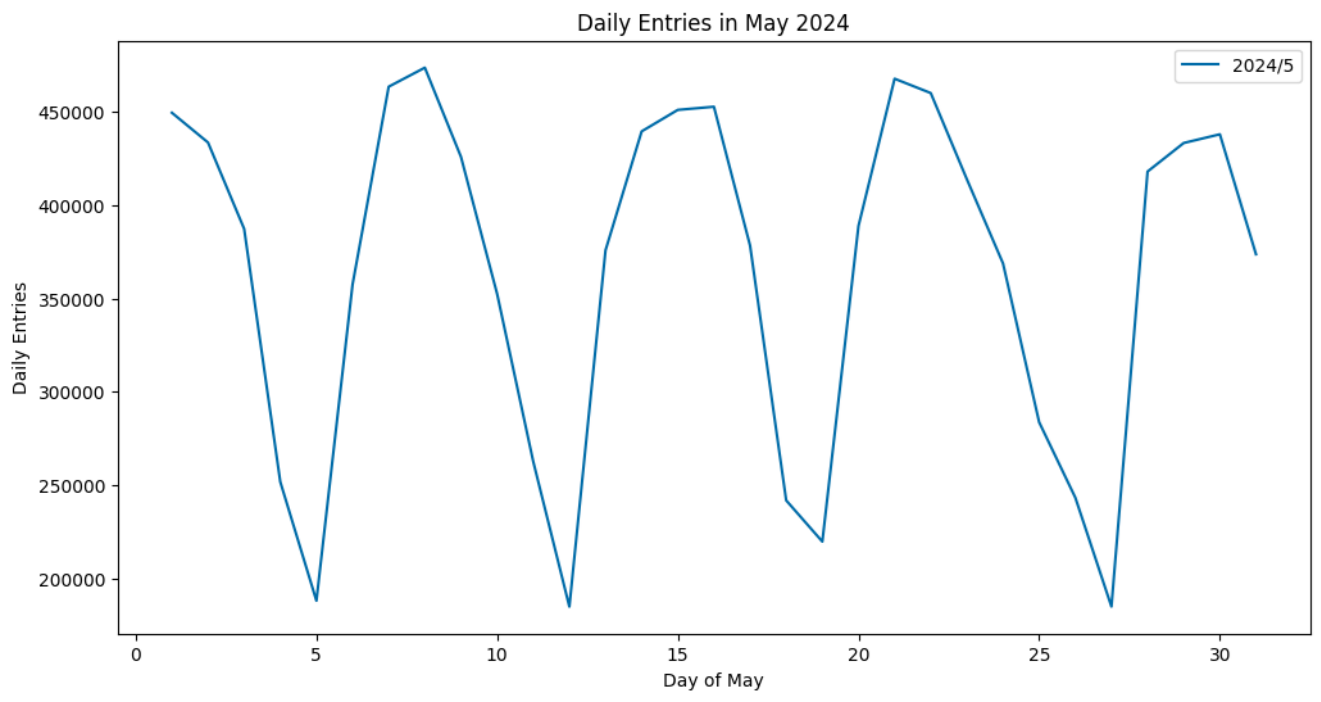
PRELIMINARY ANALYSES

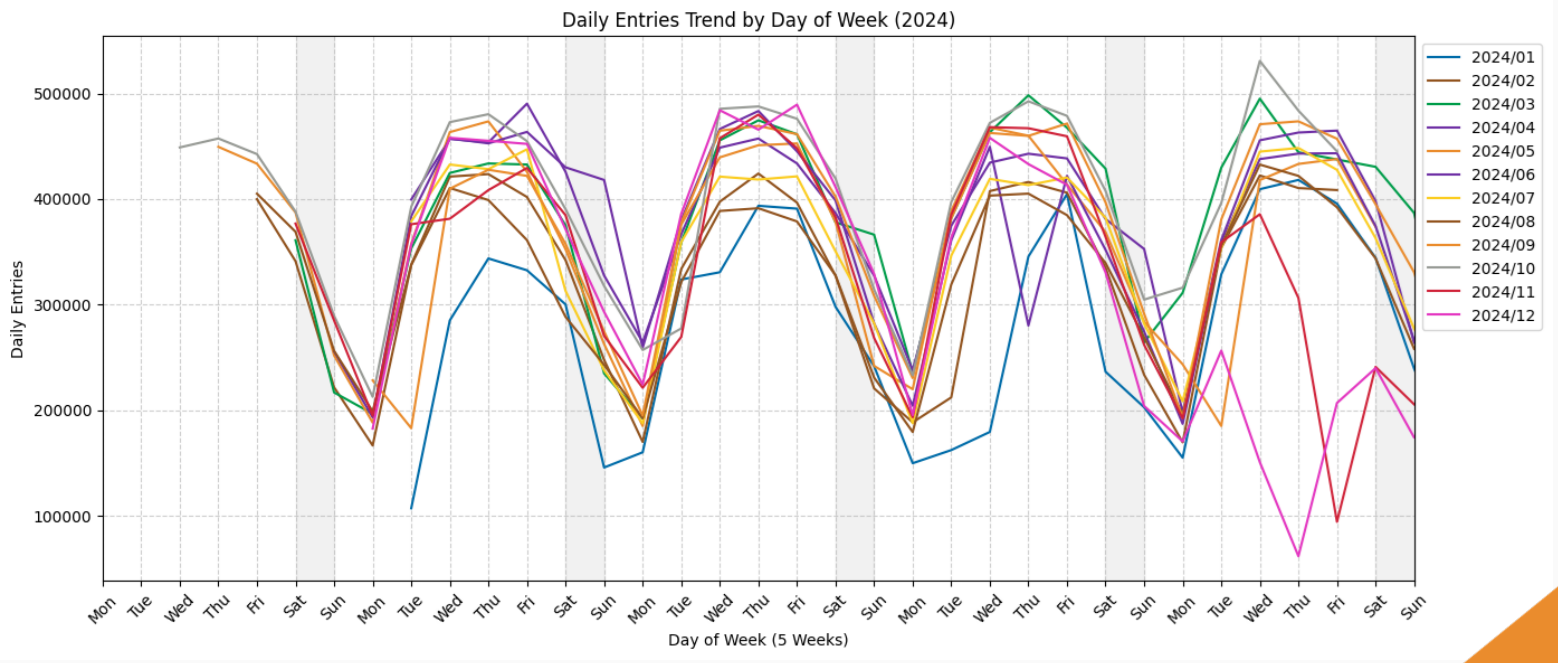
PRELIMINARY ANALYSES

Daily Trend of Ridership (May 2024)



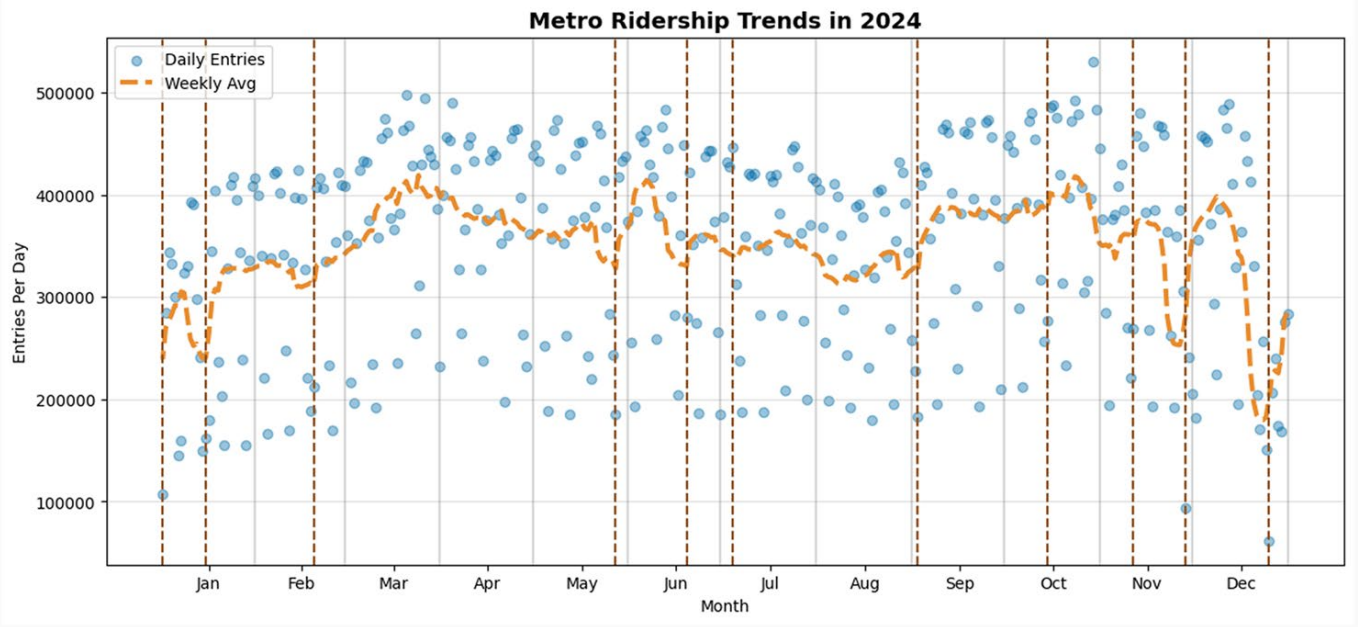
PRELIMINARY ANALYSES

Daily Trend by Day of Week (2024)



PRELIMINARY ANALYSES

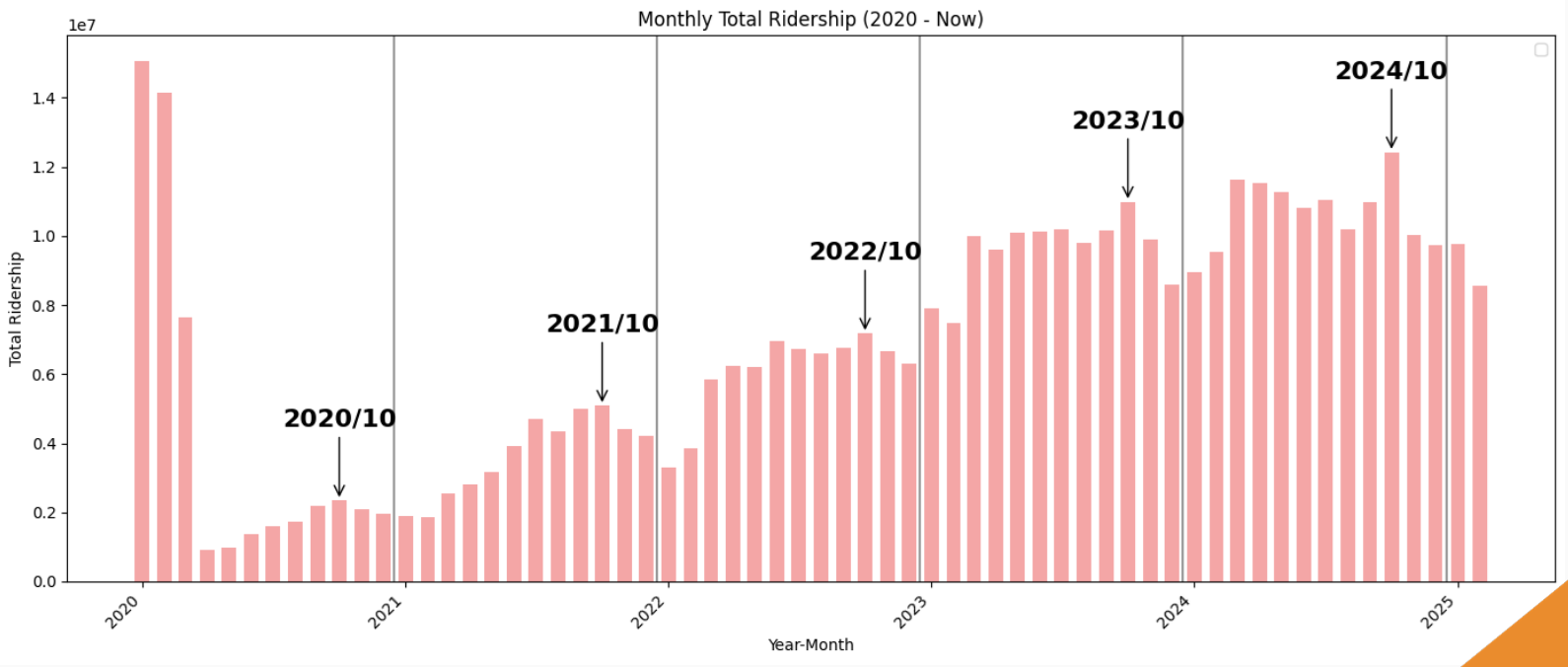
Ridership Trends (2024)



New Year's Day
Martin L. King, Jr. Day
Presidents' Day
Memorial Day
Juneteenth
Independence Day
Labor Day
Columbus Day
Veterans Day
Thanksgiving Day
Christmas

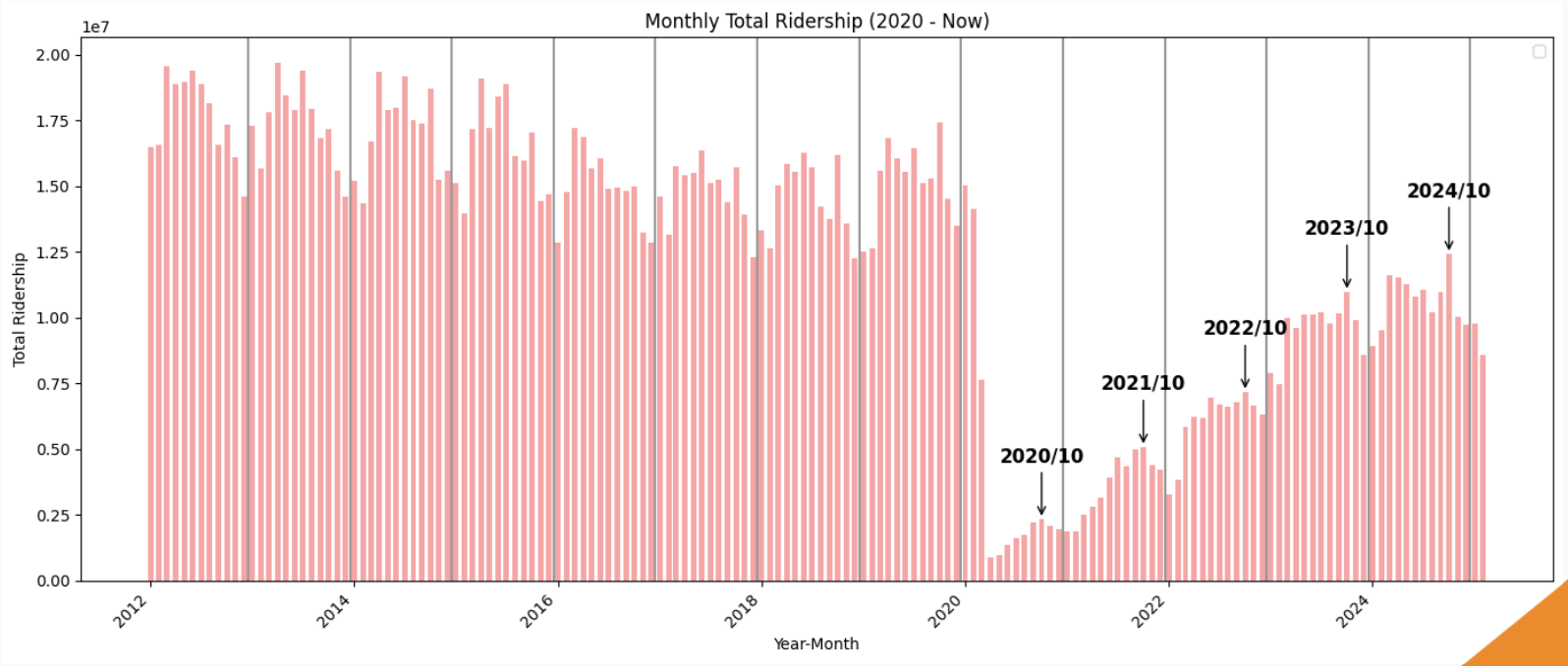
PRELIMINARY ANALYSES

Ridership Trends (2020/1 - Now)



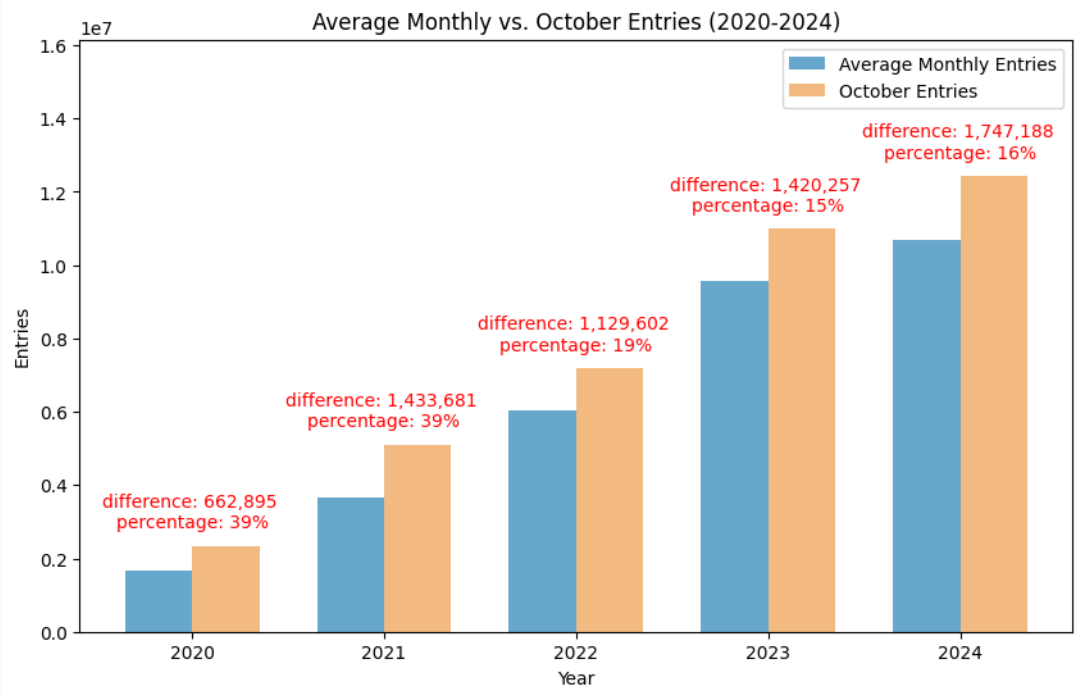
PRELIMINARY ANALYSES

Ridership Trends (2012 - Now)



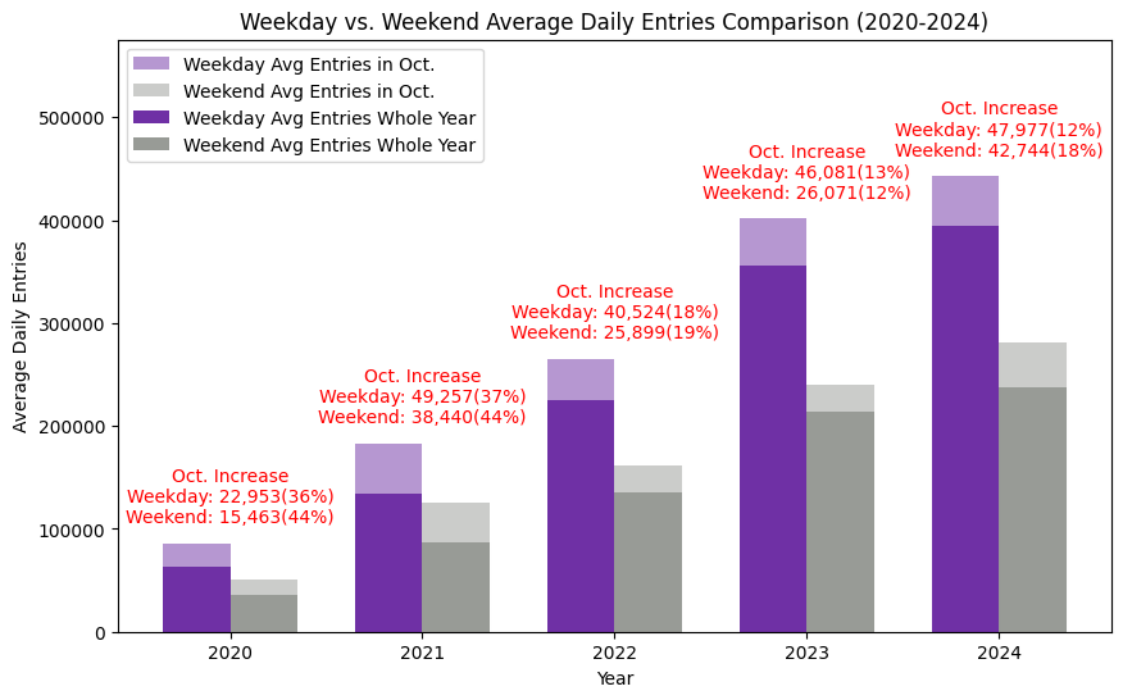
PRELIMINARY ANALYSES

Comparison: Monthly Average v.s. Oct.



PRELIMINARY ANALYSES

Comparison: Weekday v.s. Weekend



PRELIMINARY ANALYSES

Possible Reasons

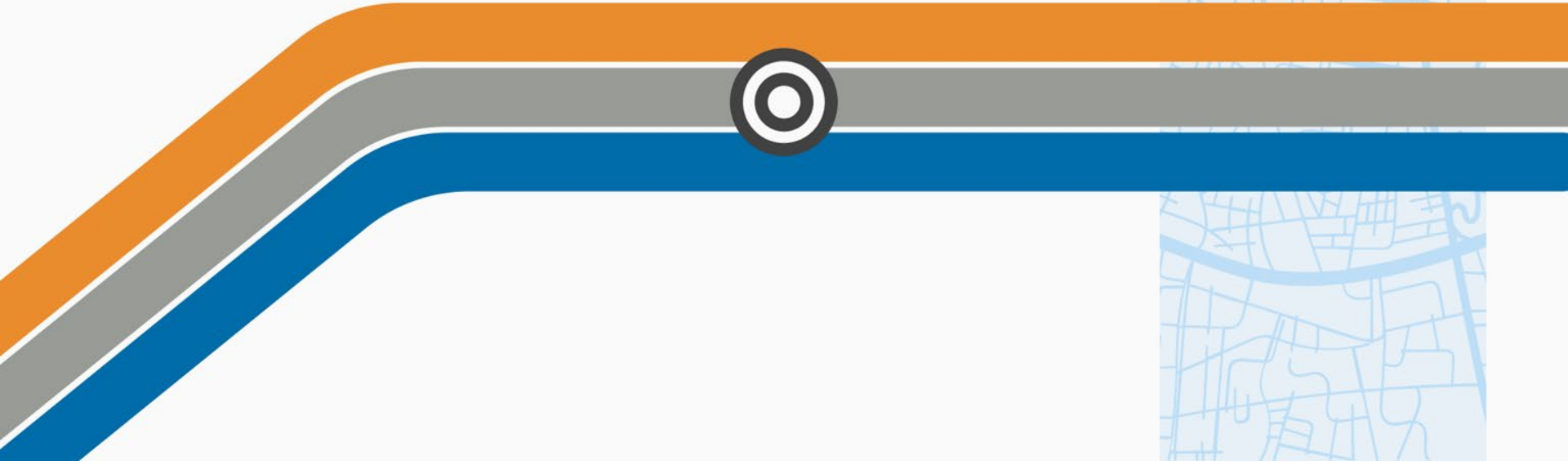
Climate impact

Peak season for tourism and activities

Increased work and government activities

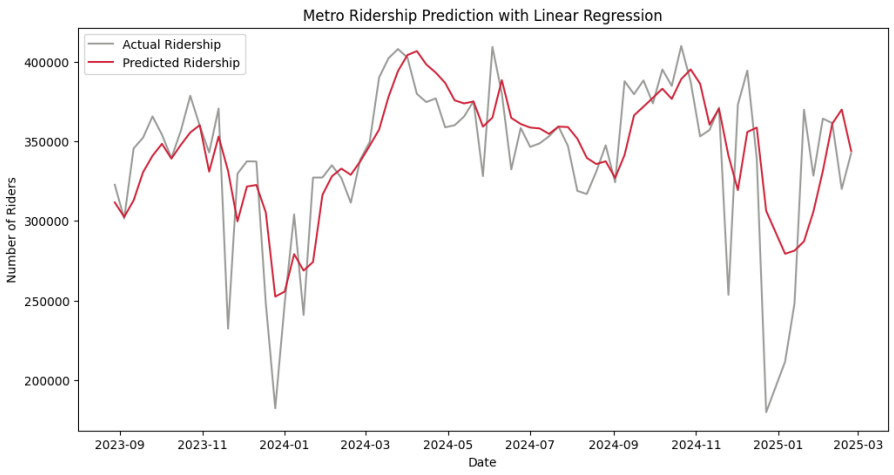
Back-to-school season and school year activities

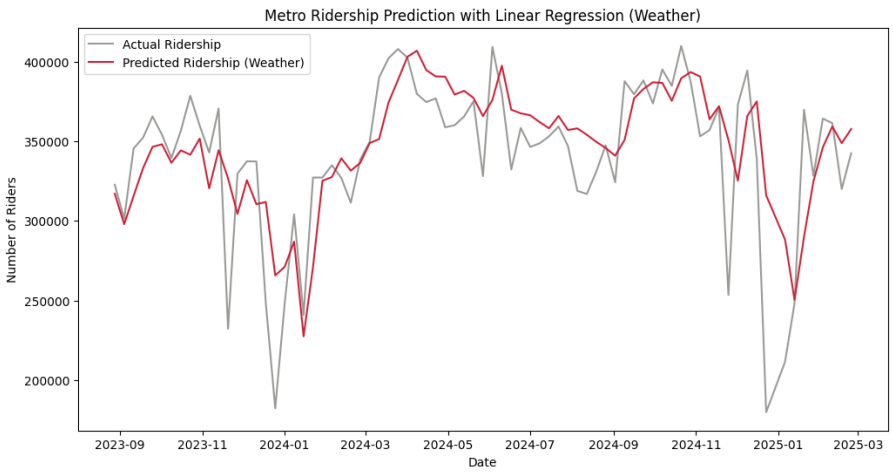
PREDICTION



PREDICTION

Prediction of W. Metro Ridership: Based on Ridership & Weather Data





Ridership Data only

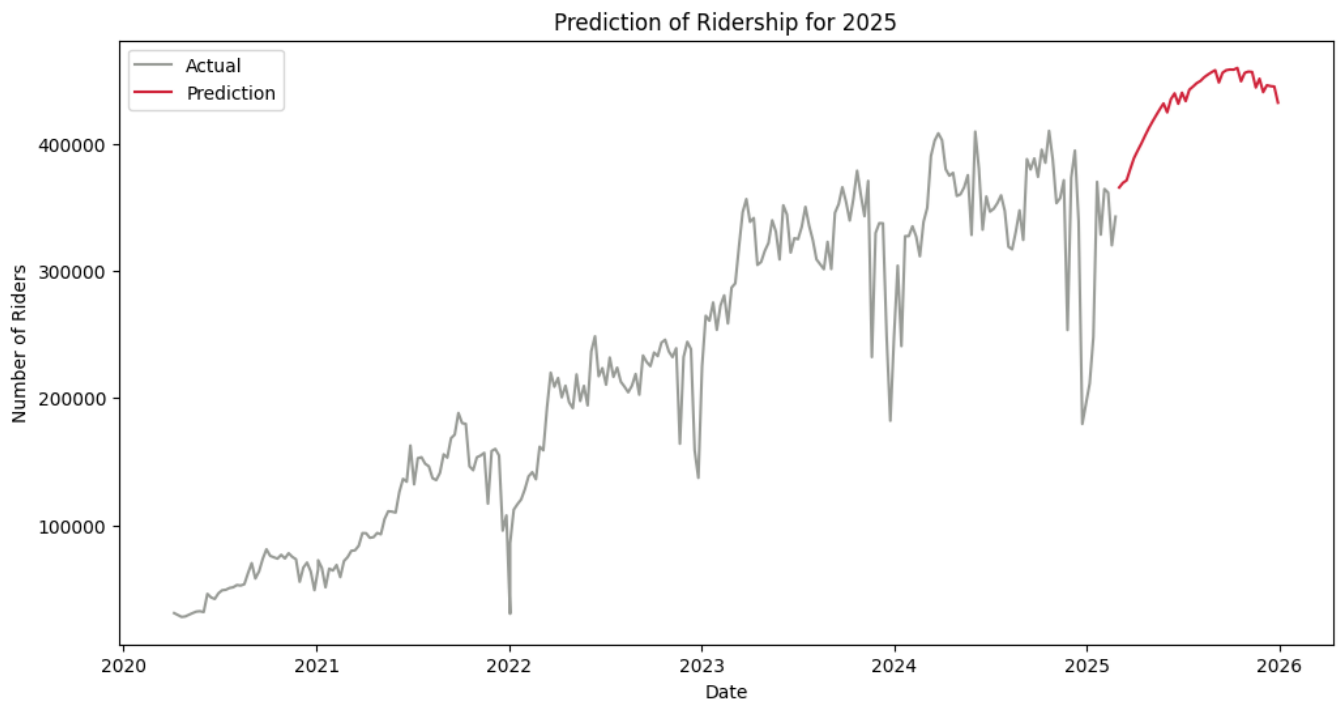
$R^2 = 0.53$

Ridership & Weather Data

$R^2 = 0.50$

PREDICTION

Prediction of W. Metro Ridership: 2025



FURTHER ANALYSES

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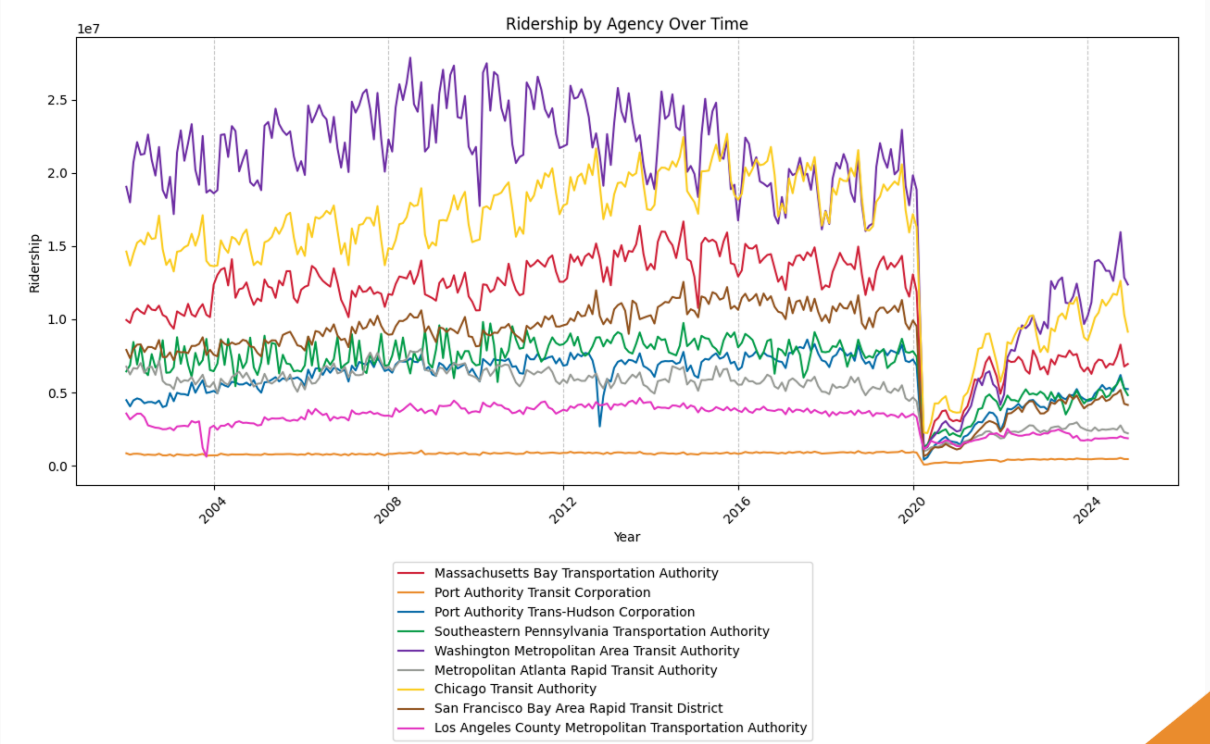
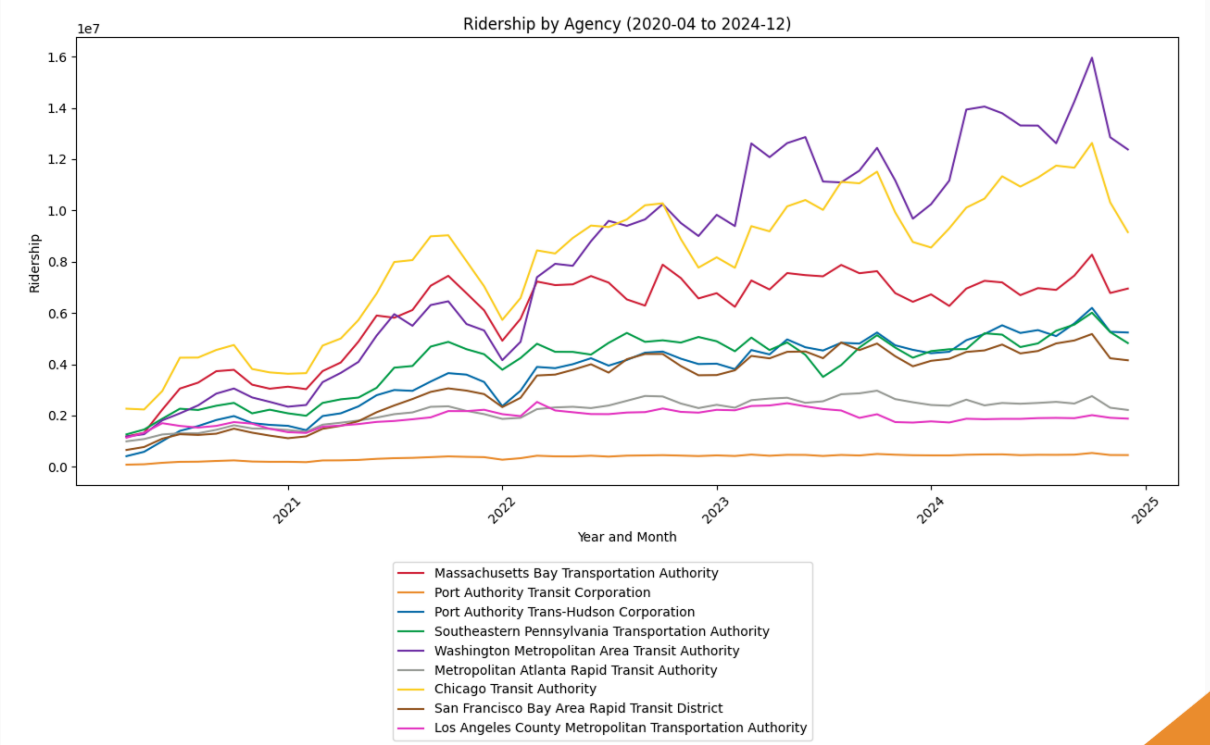
Compare Ridership Growth Since 2002 Against Other Rail Agencies



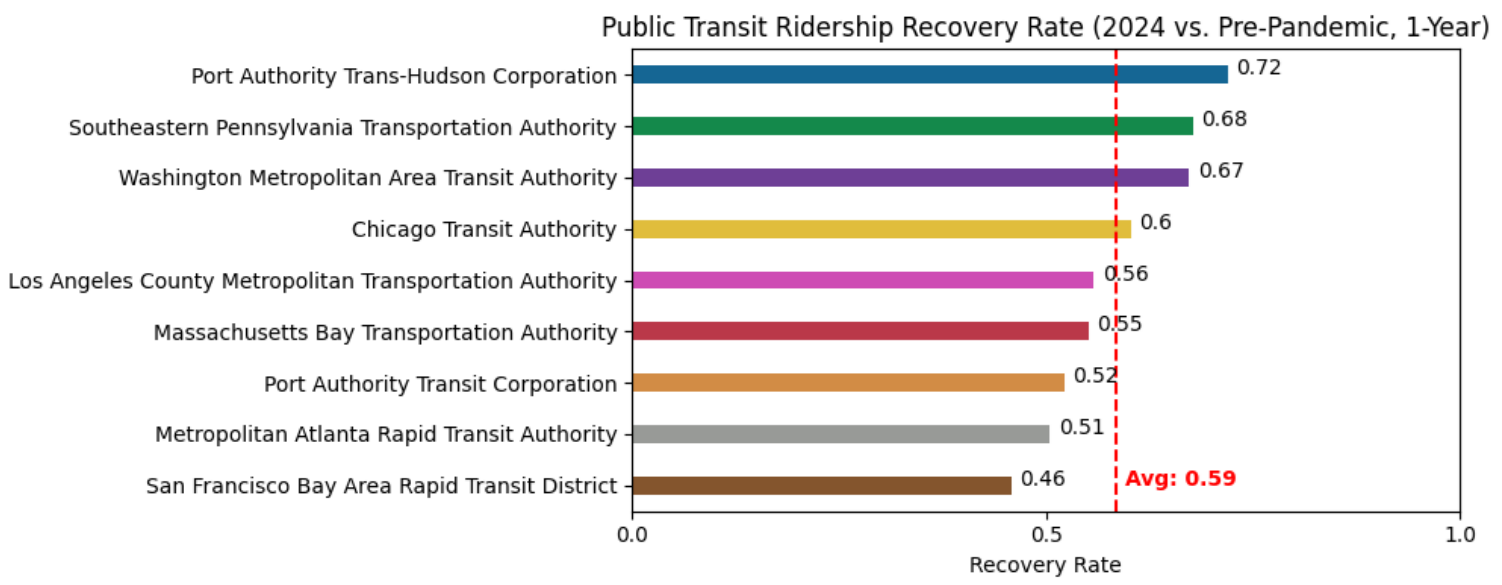
FURTHER ANALYSES

Compare Ridership Growth Post-pandemic



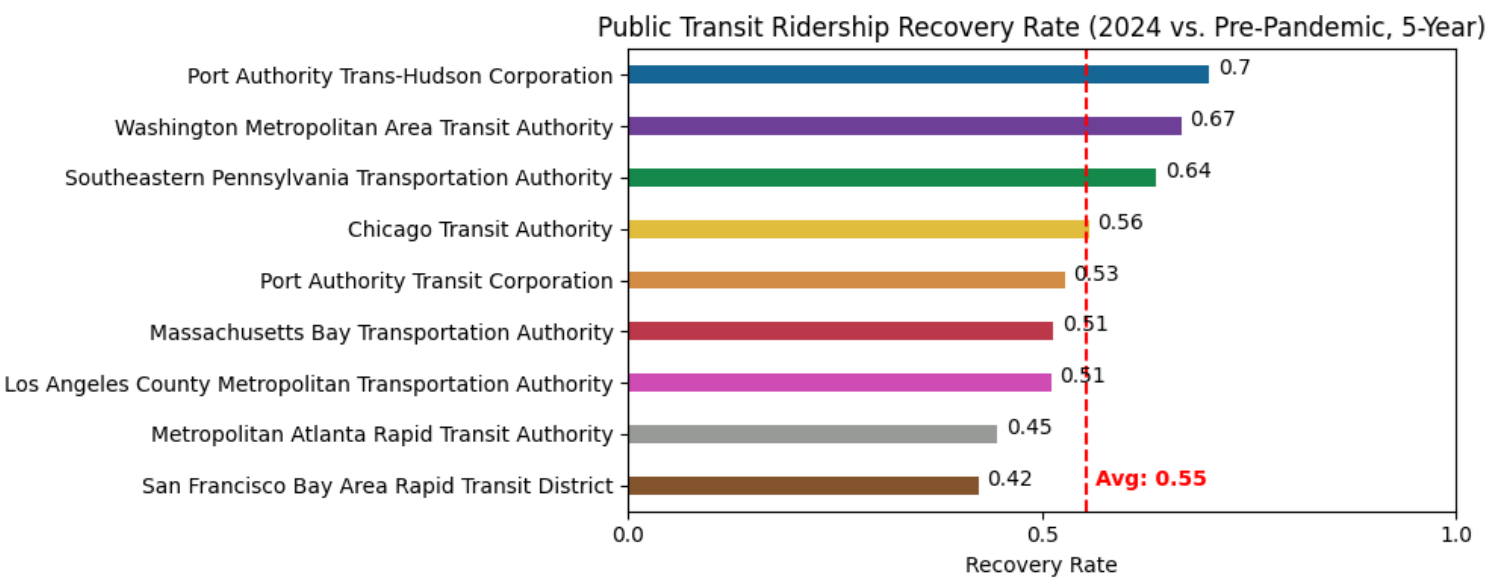
FURTHER ANALYSES

Compare Ridership Recovery Rate



FURTHER ANALYSES

Compare Ridership Recovery Rate(Cont'd)



FURTHER ANALYSES

Reasons for Higher Recovery Rate

Economic recovery

Improvements in operations and services

Geographic and transportation hub advantages

Policy and financial support

CONCLUSION / PROPOSAL

CONCLUSION / PROPOSAL

Focus on commuters:

- Improve experience for commuters: increase frequency of rides in peak hours
- Fare adjustments: Monthly Pass

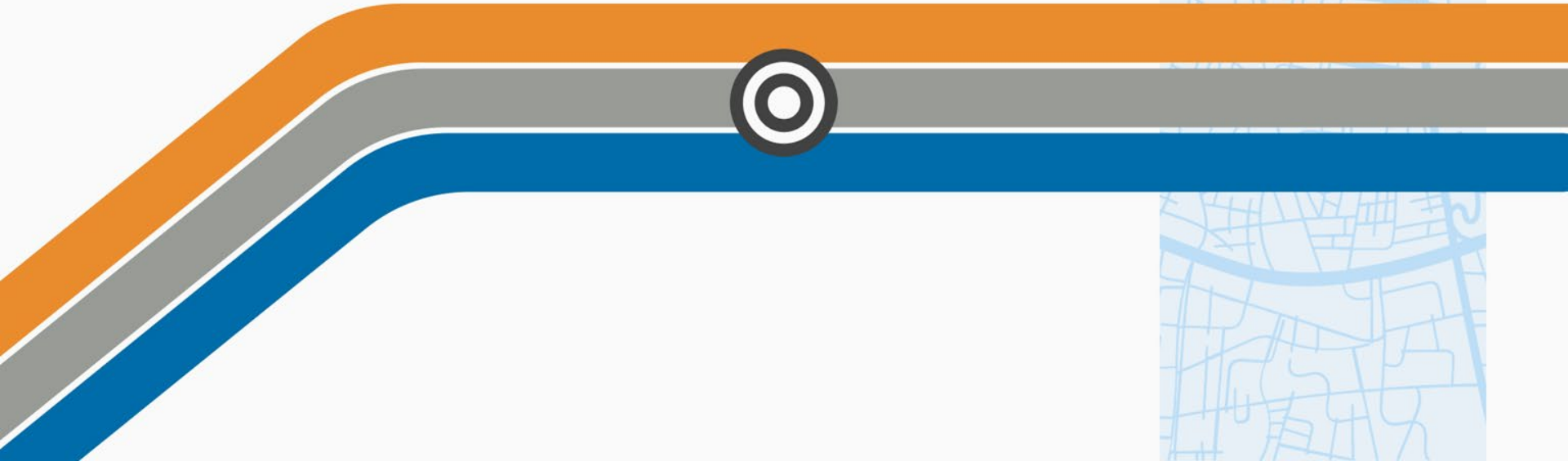
Focus on tourist:

- Promote 1, 3, 7-day Unlimited Pass
- DC Event Pass with special events in DC

Suggestion:

- Collect data regarding ratio of visitors vs residents using the metro

EXTENDED RESEARCH



EXTENDED RESEARCH

Moving Forward

1. Period
2. Hourly

1. Line
2. Region
3. Station

Data Sources

Federal Transit Administration

https://www.transit.dot.gov/ntd/data-product/monthly-module-adjusted-data-release

Weather API by Visual Crossing

https://www.visualcrossing.com/weather-api/

Q & A