UNIVERSITY OF MARYLAND

Info Challenge 2025

# TREND ANALYSES OF WASHINGTON METRO RIDERSHIP


Team IC25060

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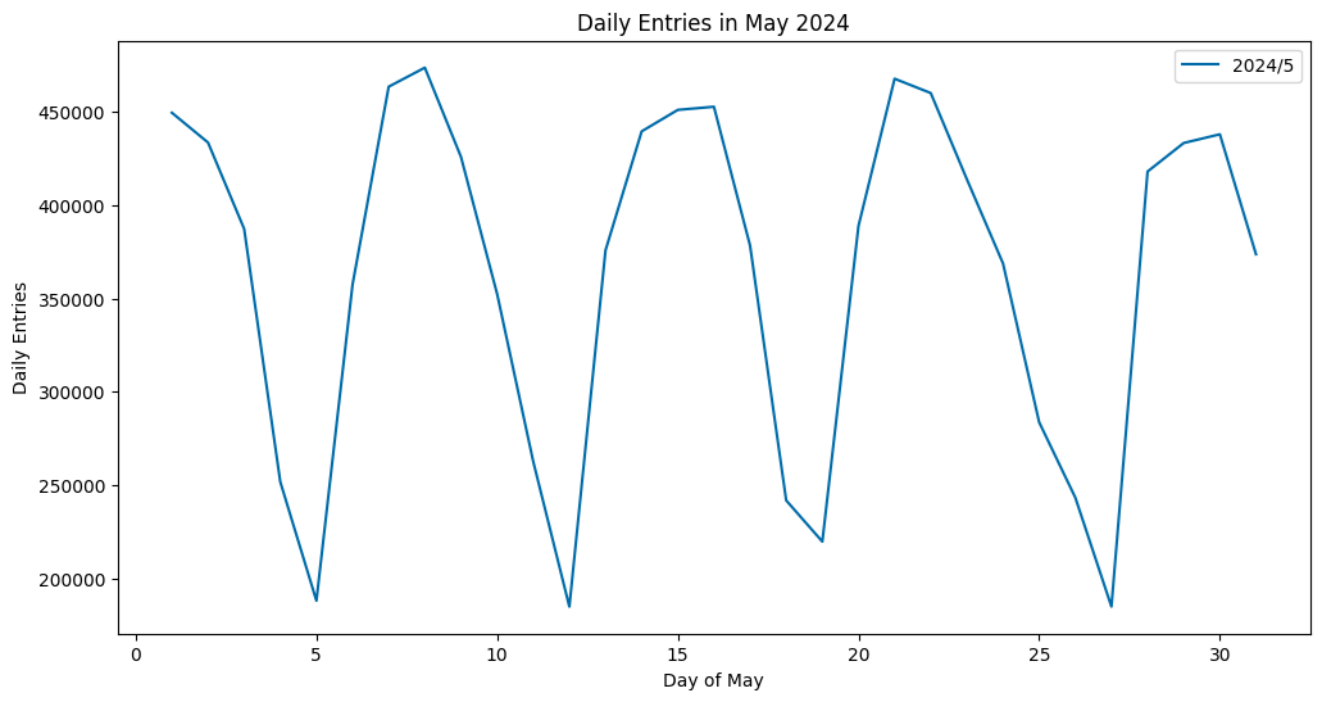
# PRELIMINARY ANALYSES

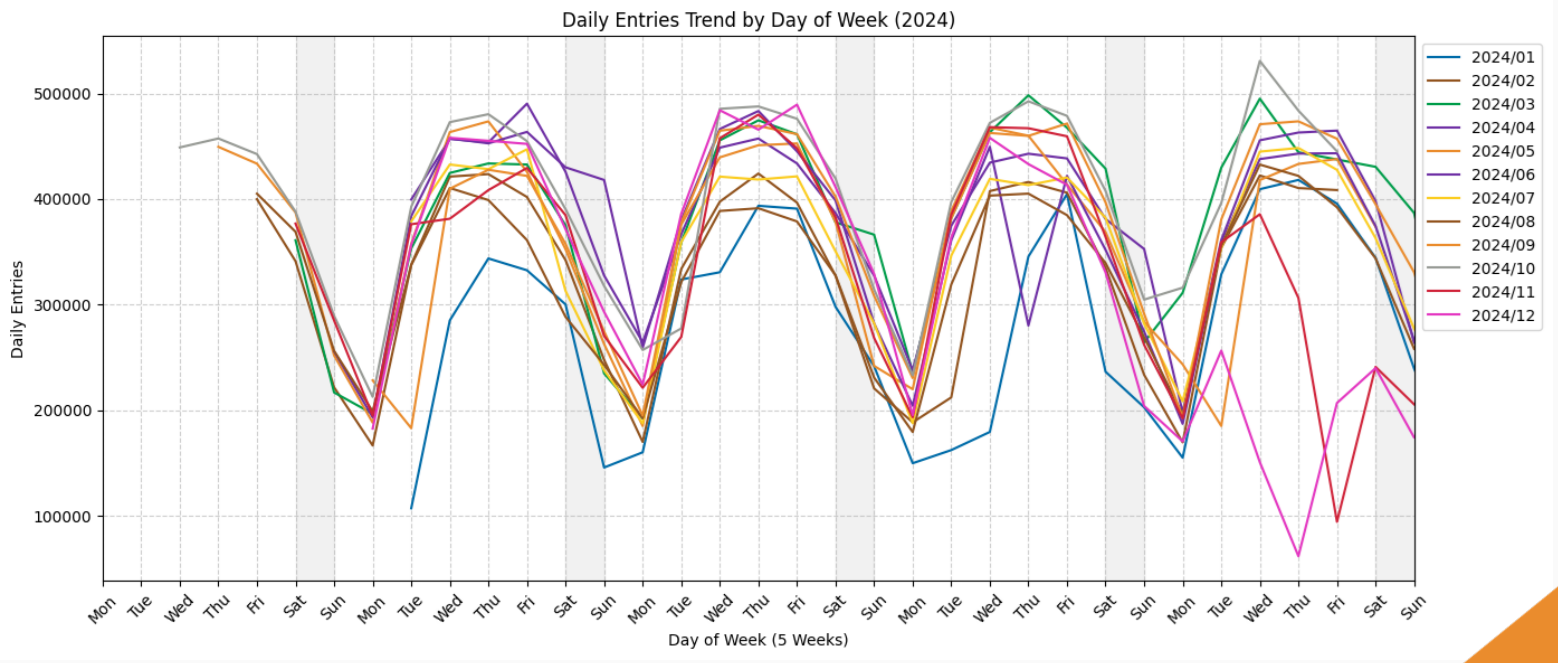
PRELIMINARY ANALYSES

# Daily Trend of Ridership (May 2024)



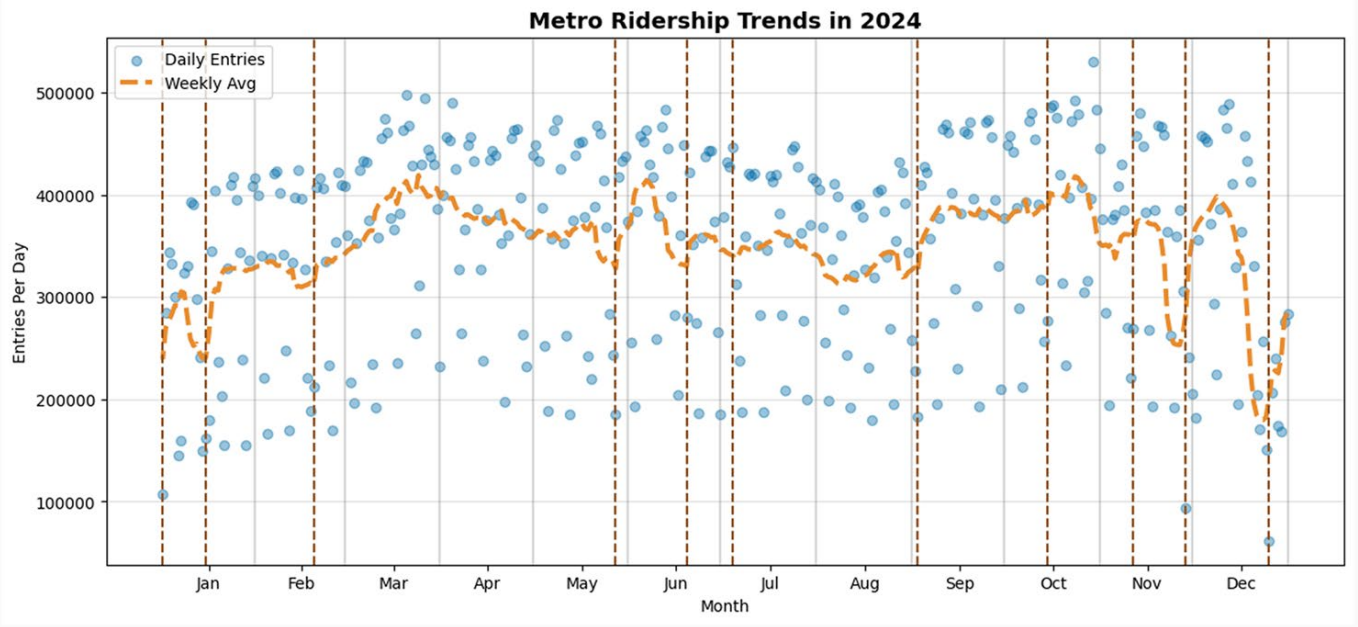
PRELIMINARY ANALYSES

# Daily Trend by Day of Week (2024)



PRELIMINARY ANALYSES

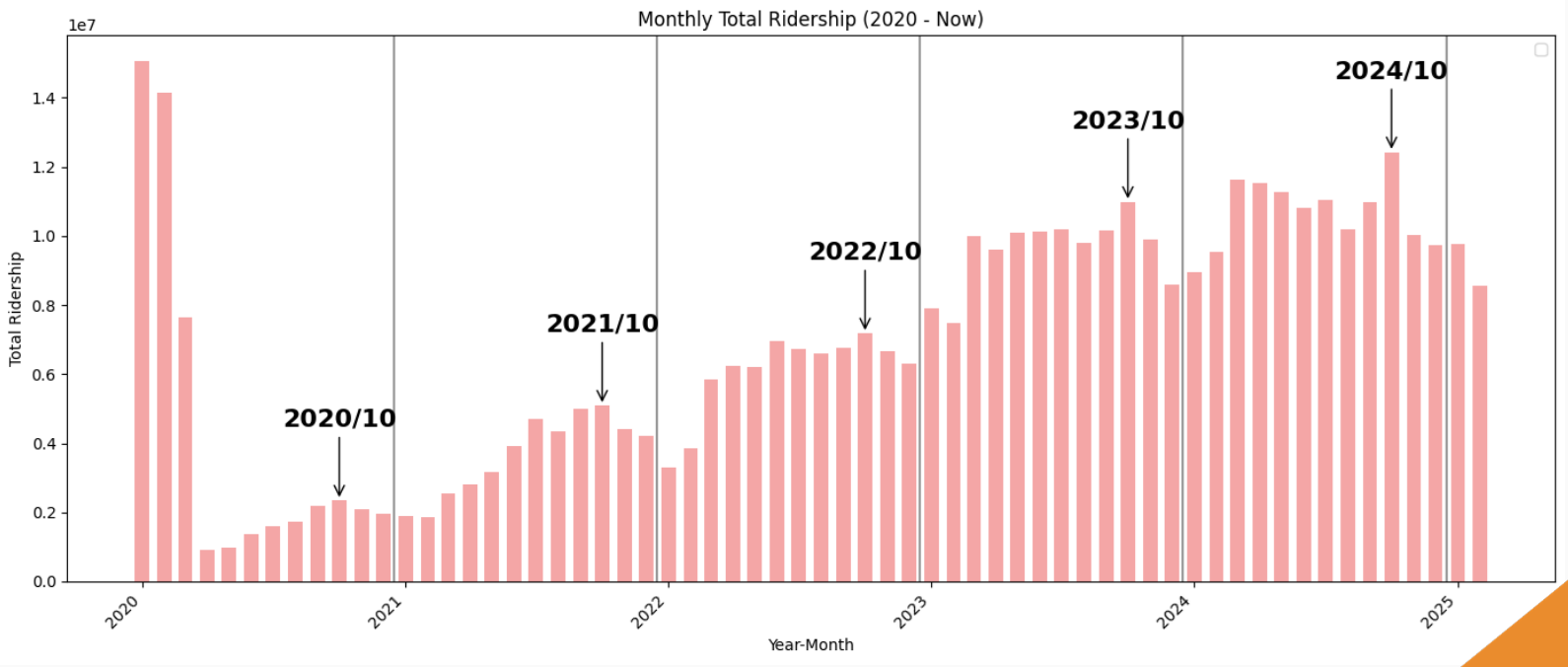
# Ridership Trends (2024)




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

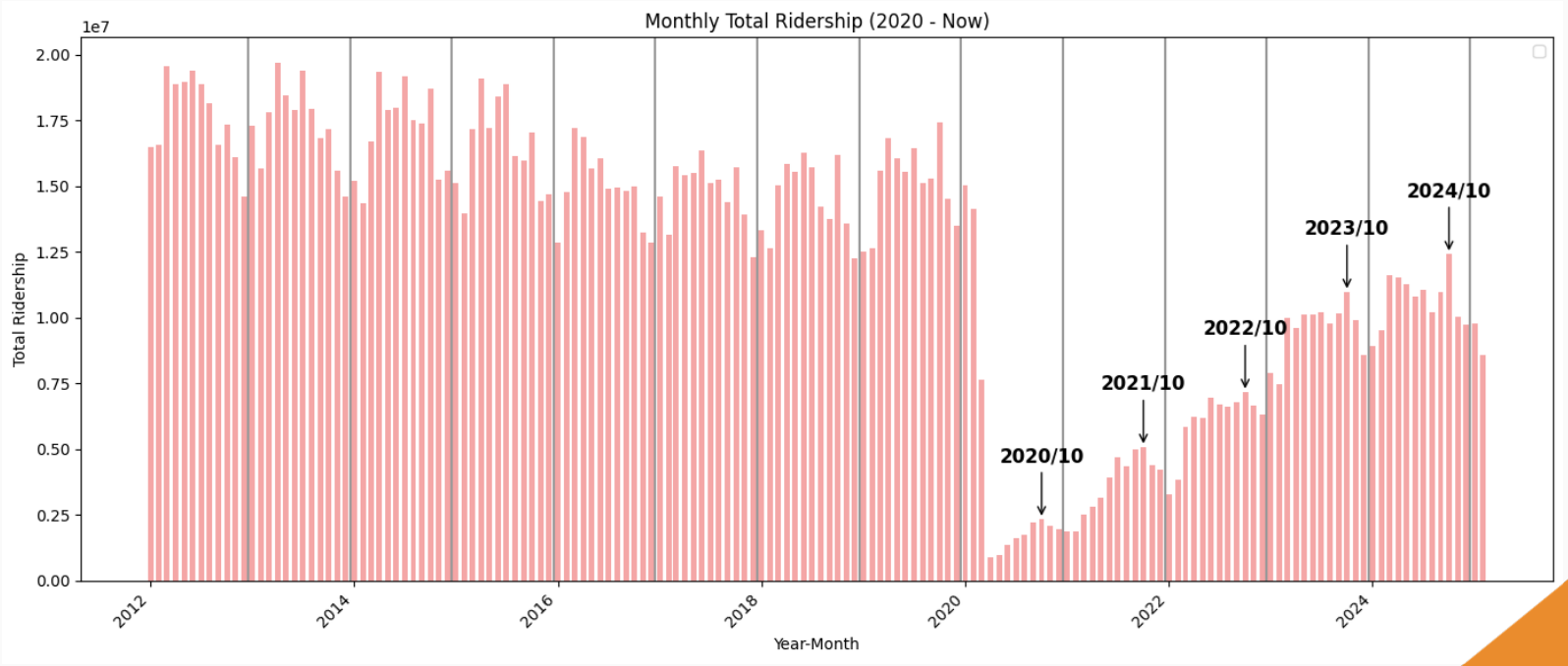
PRELIMINARY ANALYSES

# Ridership Trends (2020/1 - Now)



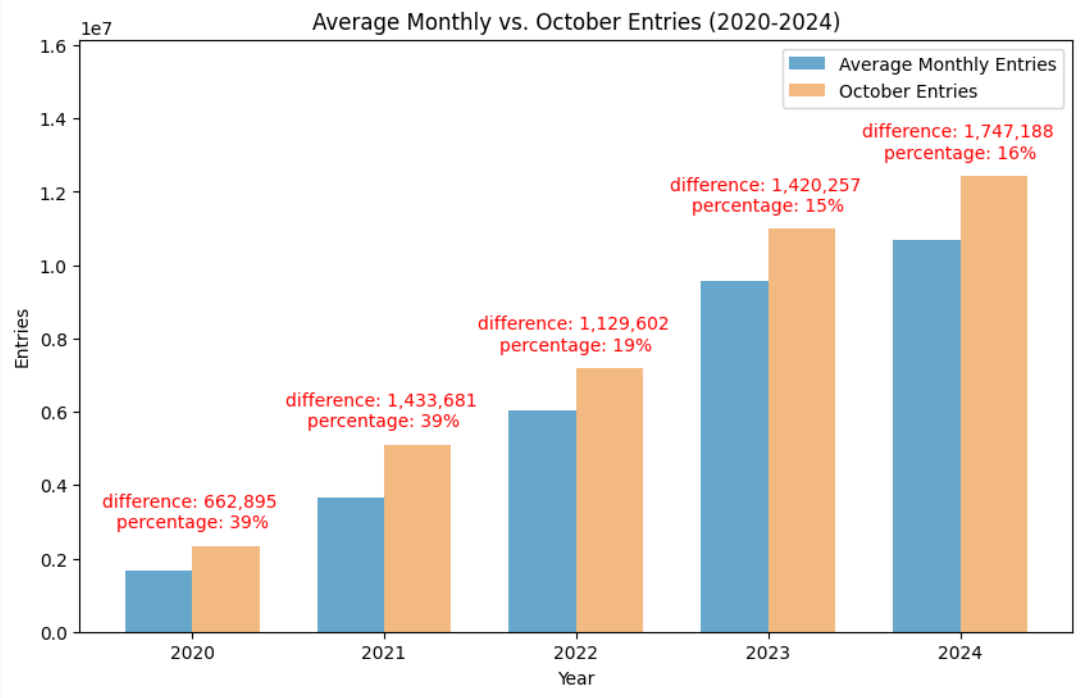
PRELIMINARY ANALYSES

# Ridership Trends (2012 - Now)



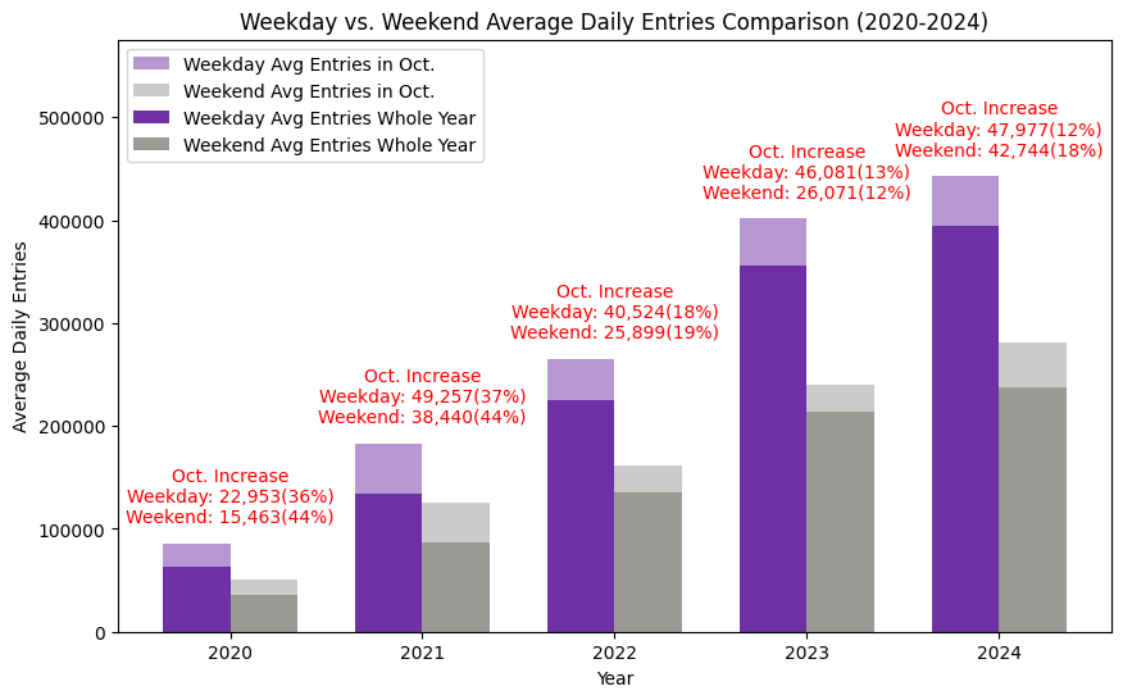
PRELIMINARY ANALYSES

# Comparison: Monthly Average v.s. Oct.



PRELIMINARY ANALYSES

# Comparison: Weekday v.s. Weekend



PRELIMINARY ANALYSES

# Possible Reasons

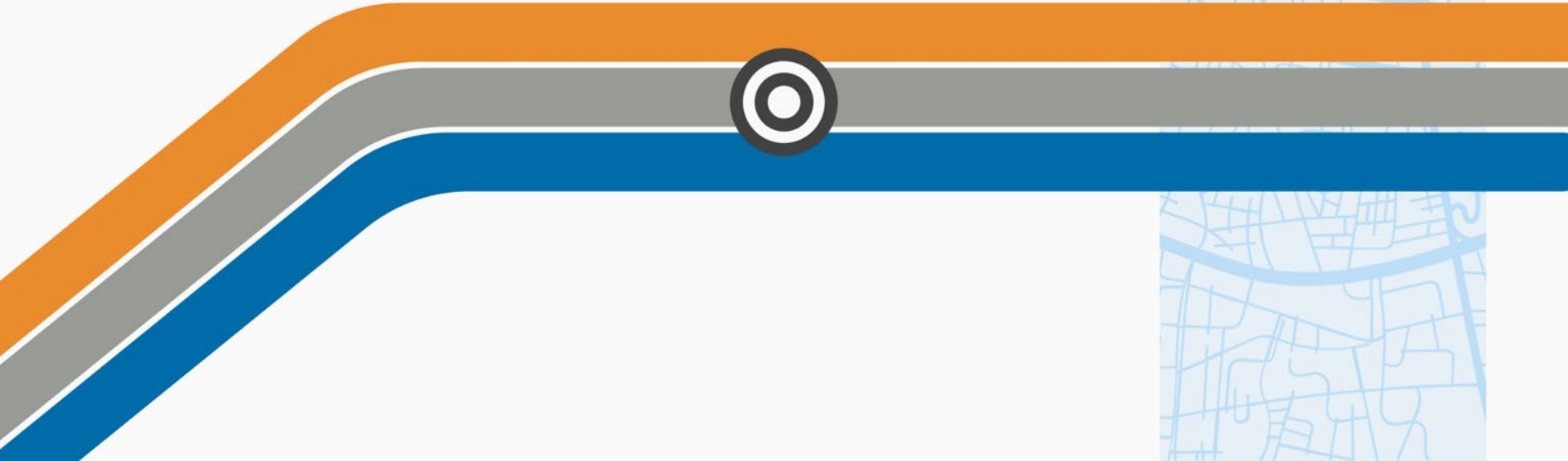
Climate impact

Peak season for tourism and activities

Increased work and government activities

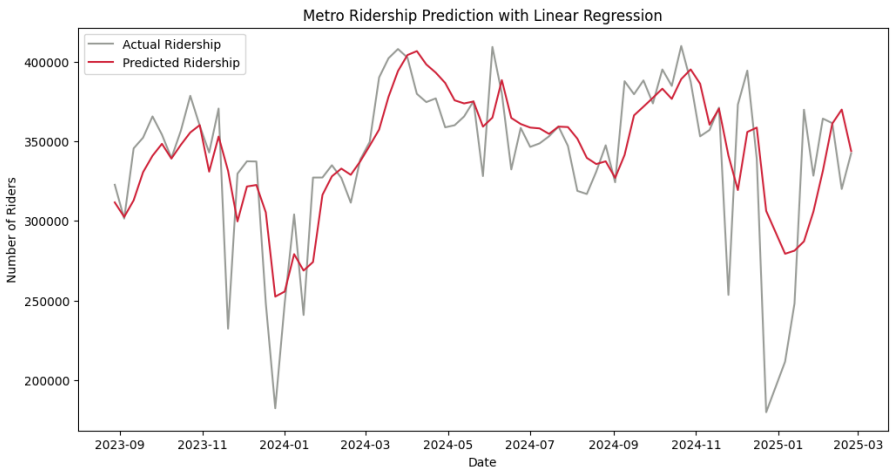
Back-to-school season and school year activities

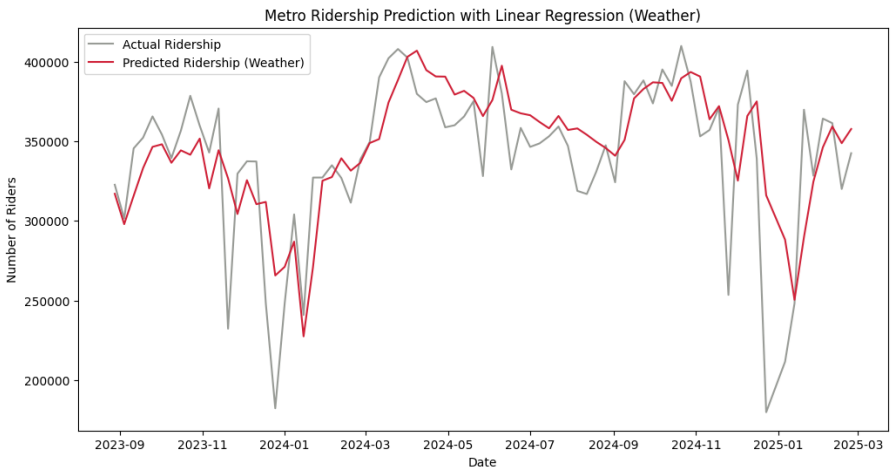
# PREDICTION



PREDICTION

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




Ridership Data only

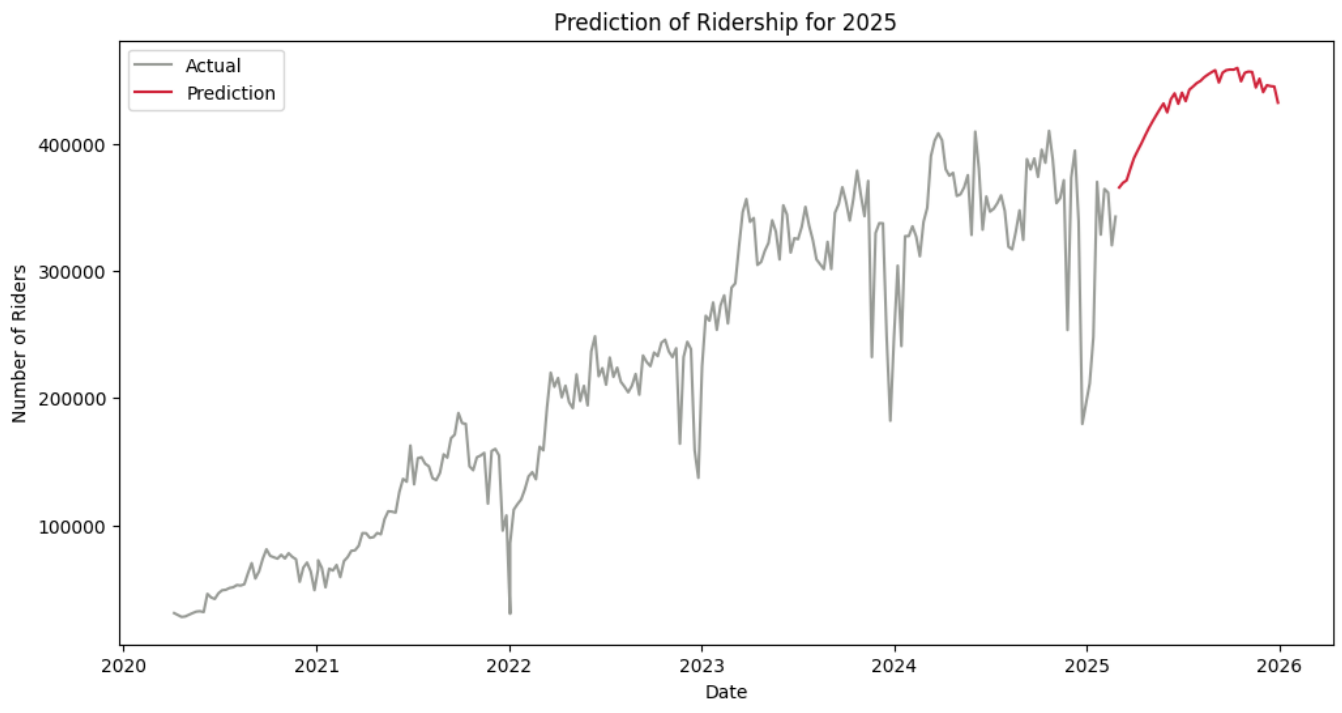
$R^2 = 0.53$

Ridership & Weather Data

$R^2 = 0.50$

PREDICTION

# Prediction of W. Metro Ridership: 2025



# FURTHER ANALYSES

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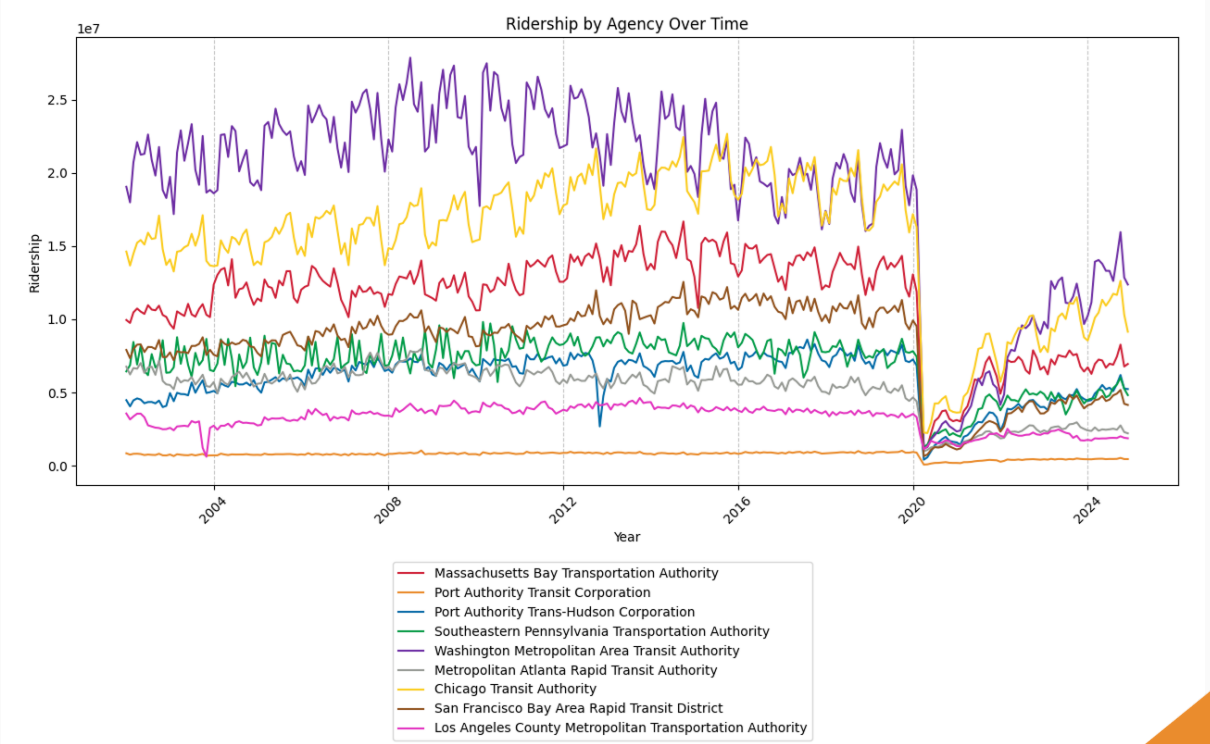
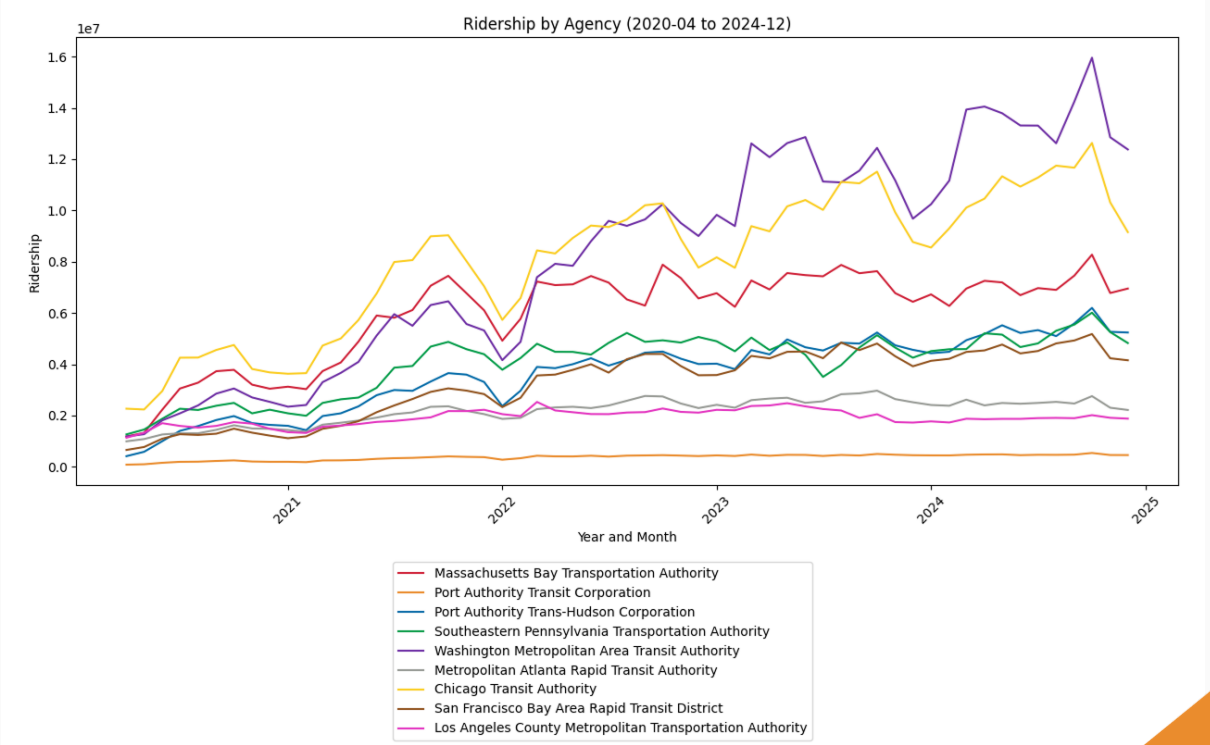
# Compare Ridership Growth Since 2002 Against Other Rail Agencies



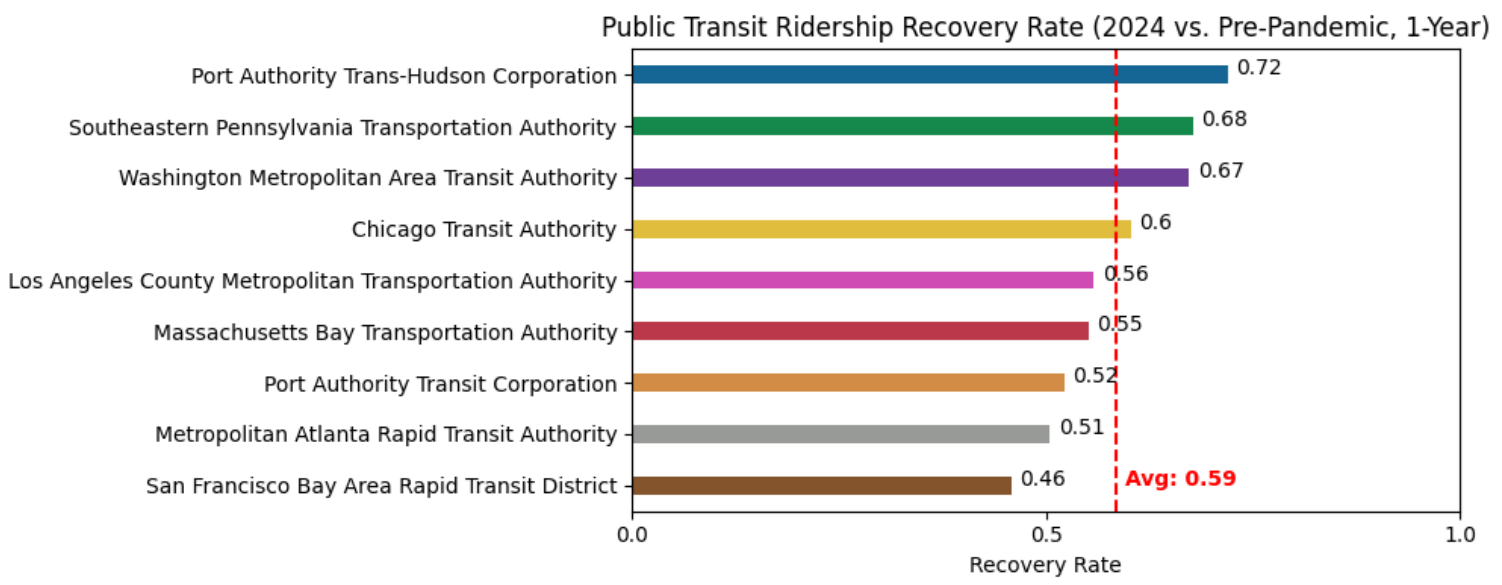
FURTHER ANALYSES

# Compare Ridership Growth Post-pandemic



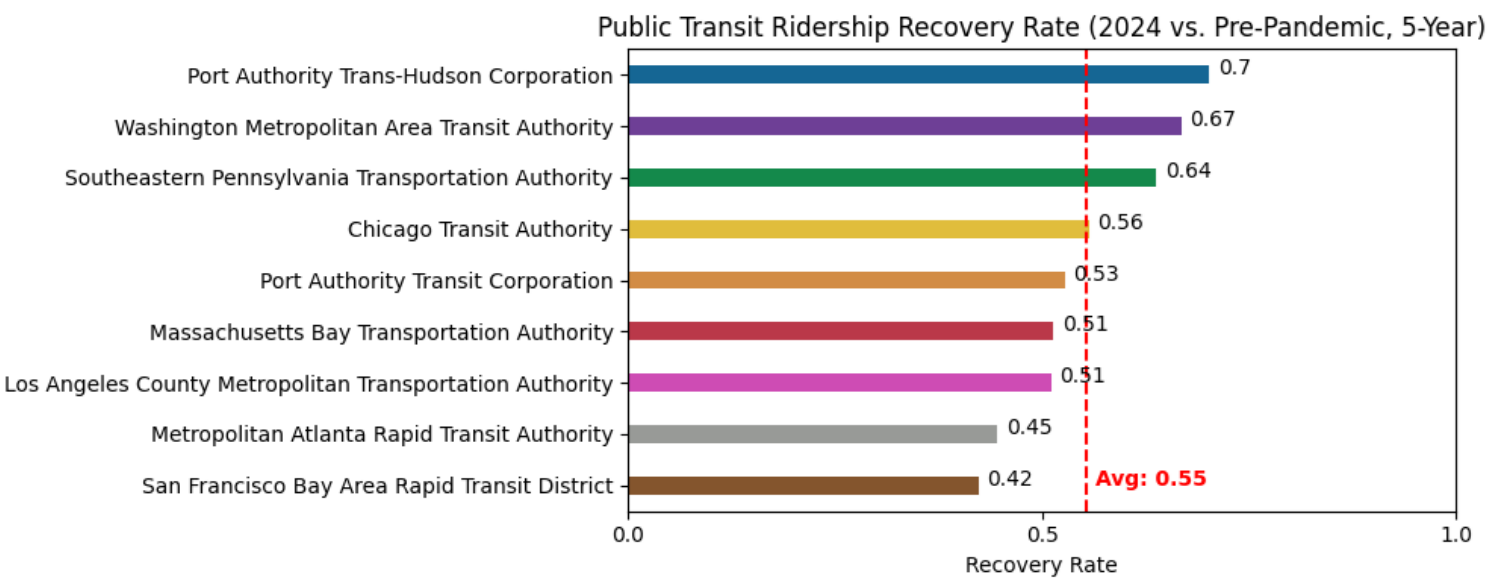
FURTHER ANALYSES

# 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

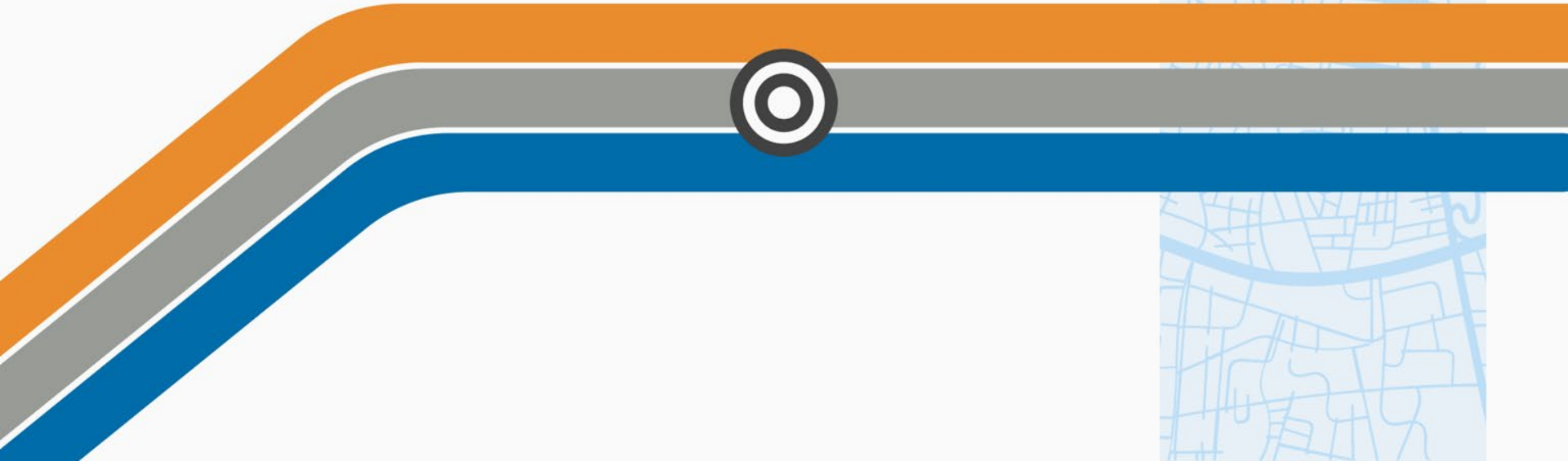
Focus on tourist:

- 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