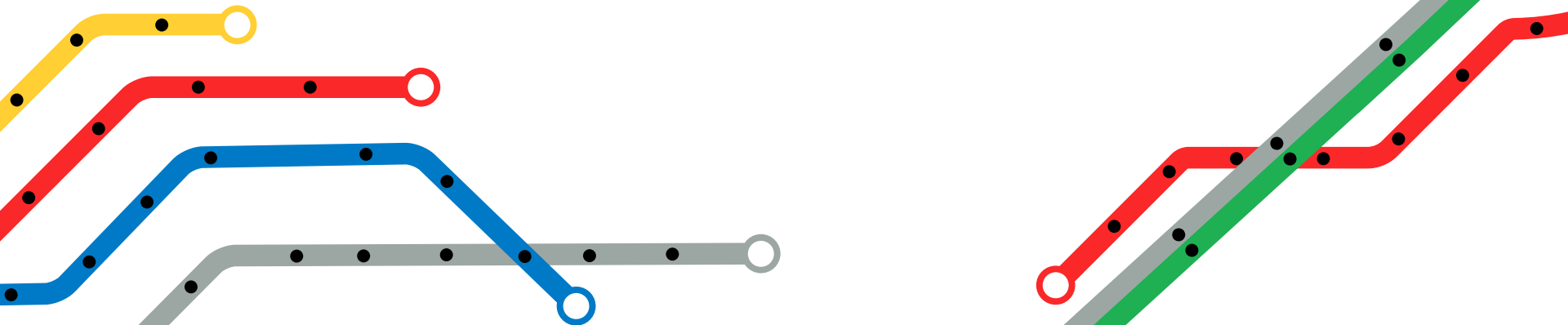


# DC WMATA Metro Ridership

Caden Chau, Michael Jagdon, Hiathan Nguyen



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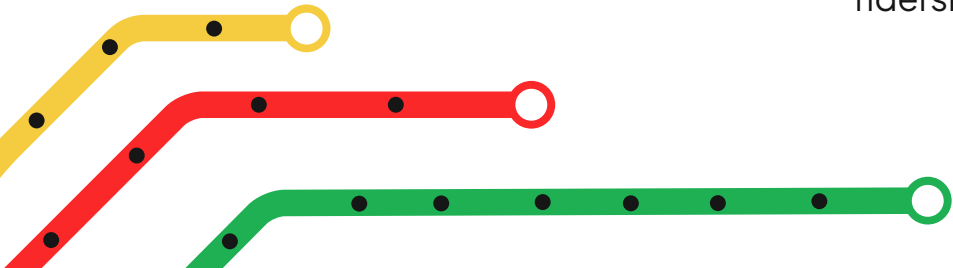
## Exploratory Data Analysis

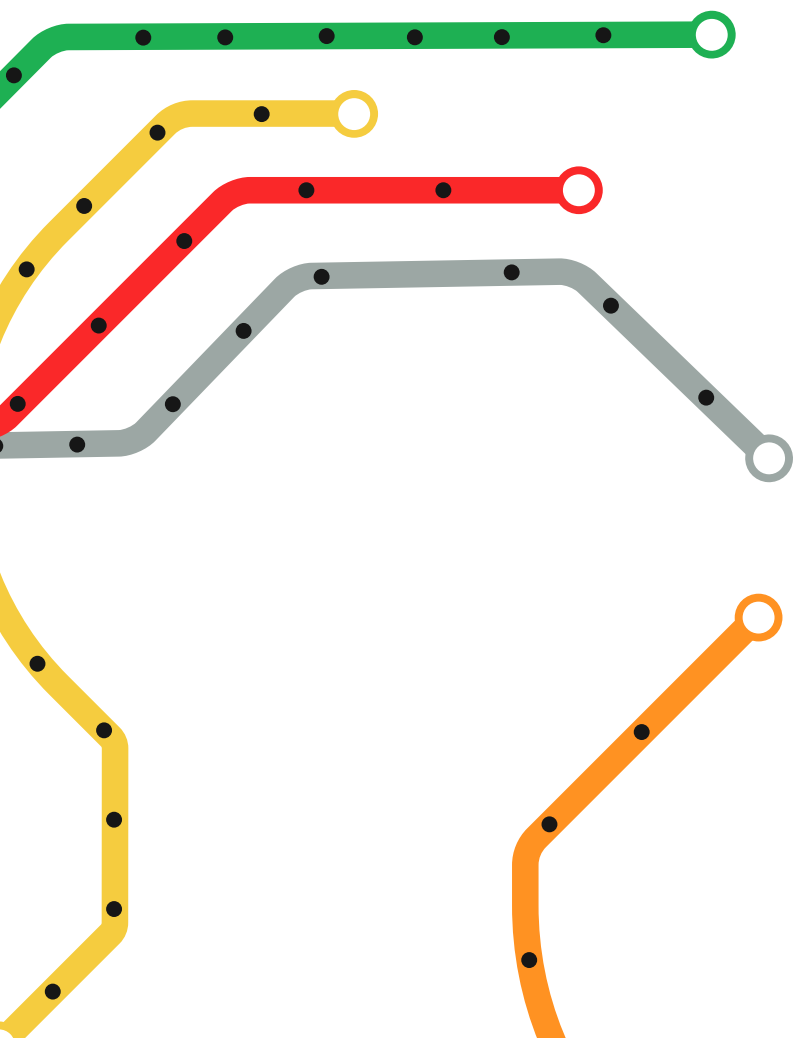
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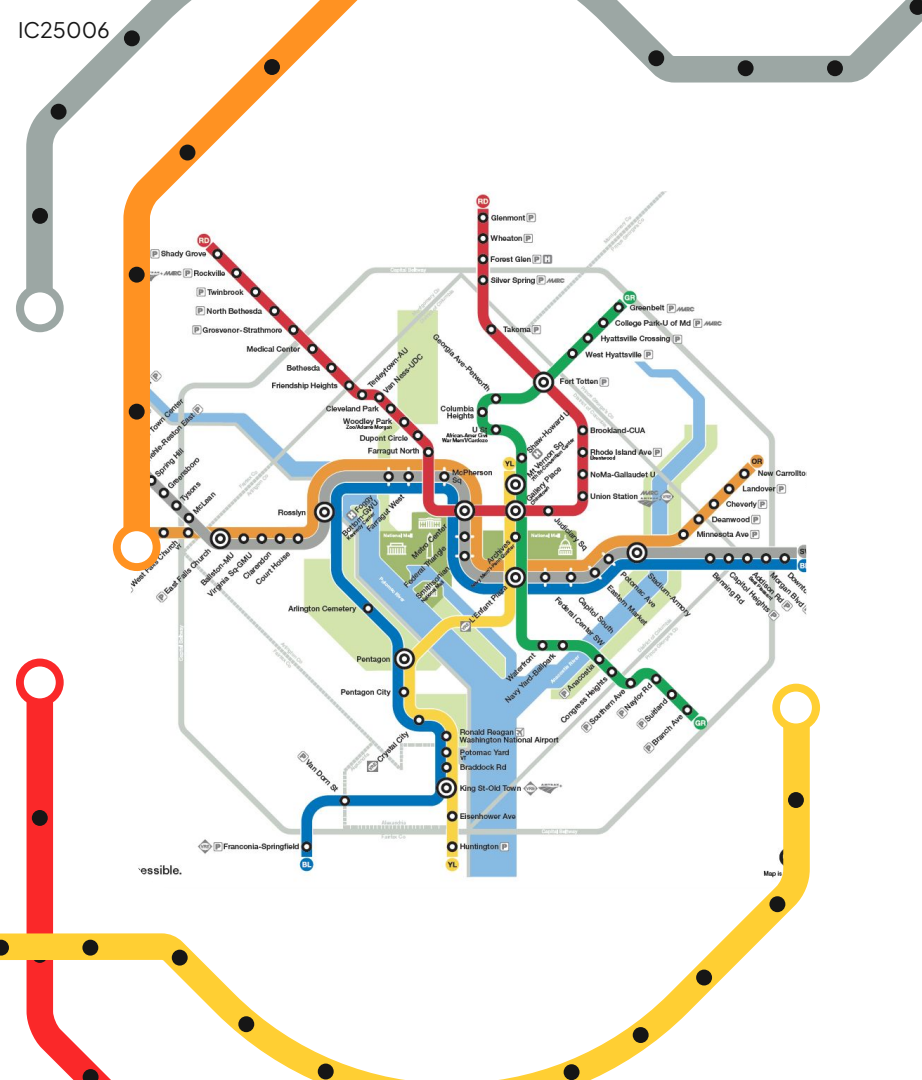
Show the results and provide advice





# 01 DC Metro



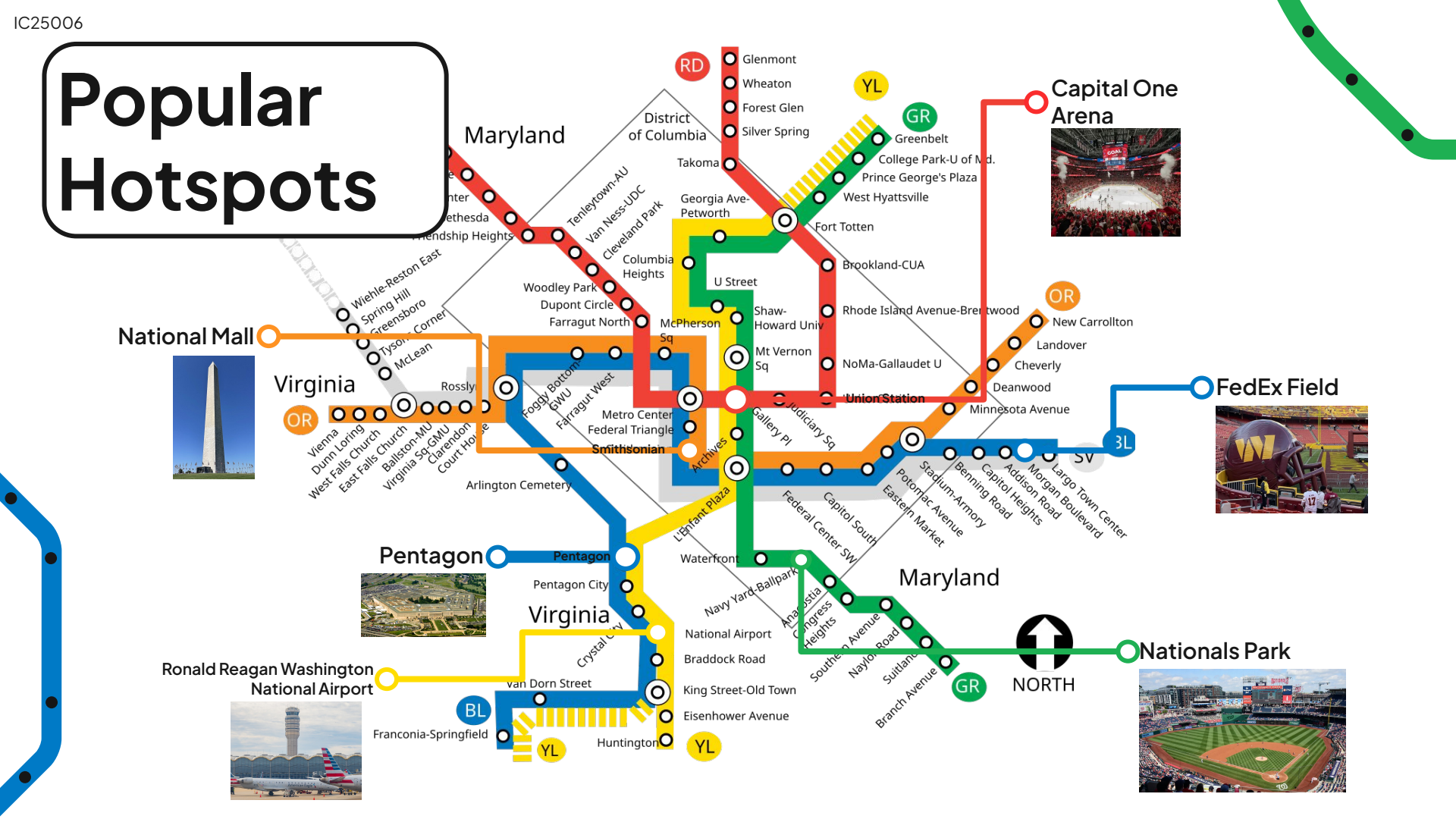


# Map of the Metro

The DC Metro Subway network connecting all areas around the Washington DC, Maryland, and Virginia area. There are 6 lines in the Metro:

- RD** Shady Grove ↔ Glenmont Union Station Metro Center
- BL** Franconia-Springfield ↔ Largo Town Center Pentagon Rosslyn
- OR** Vienna/Fairfax-GMU ↔ New Carrollton Ballston Foggy Bottom
- SV** Ashburn ↔ Largo Town Center Dulles Airport Tysons Corner
- YL** Huntington ↔ Greenbelt Pentagon L'Enfant Plaza
- GR** Branch Ave ↔ Greenbelt Navy Yard U Street

# Popular Hotspots



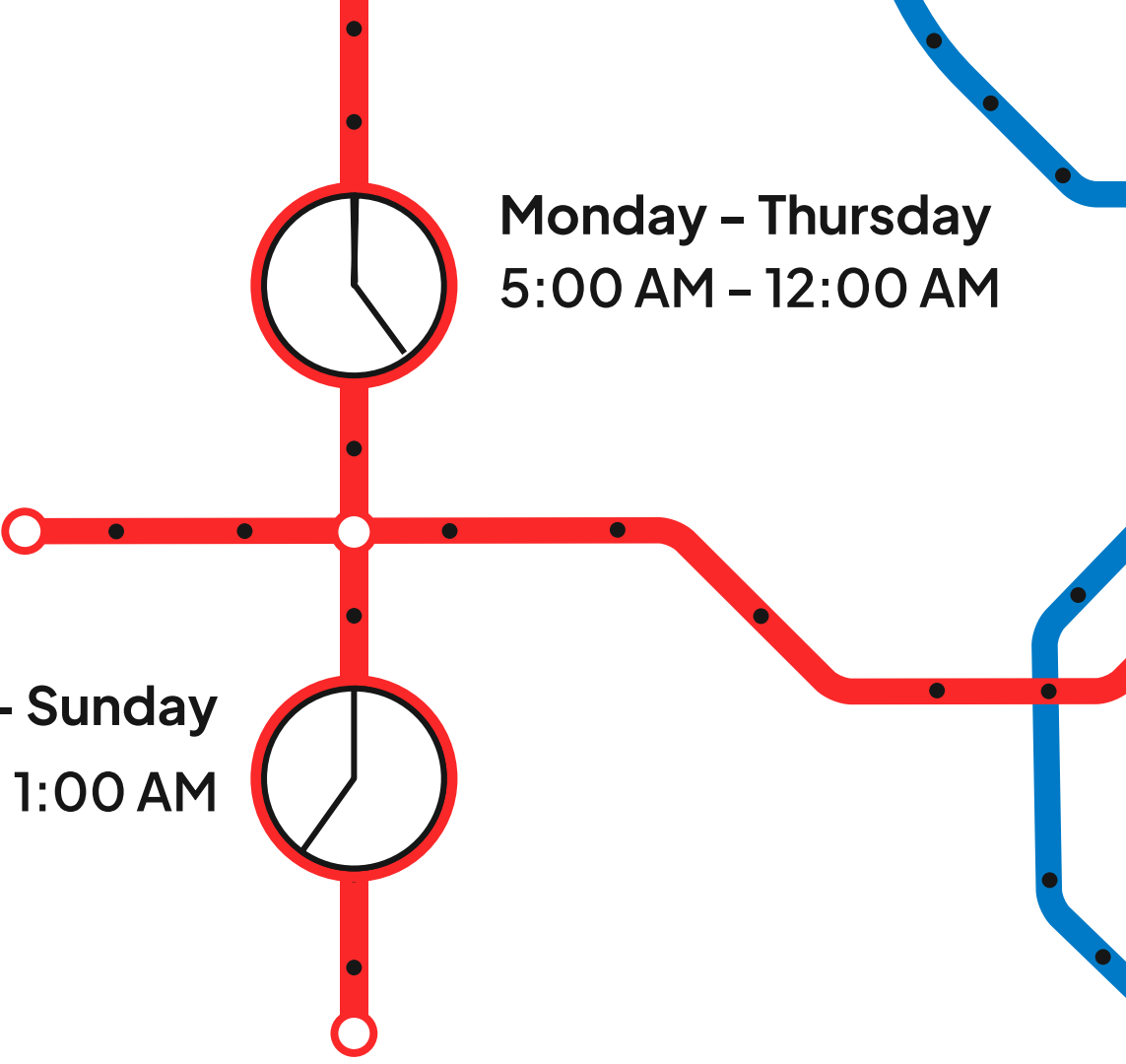
# Operating Hours

Peak vs. Off-Peak Hours:

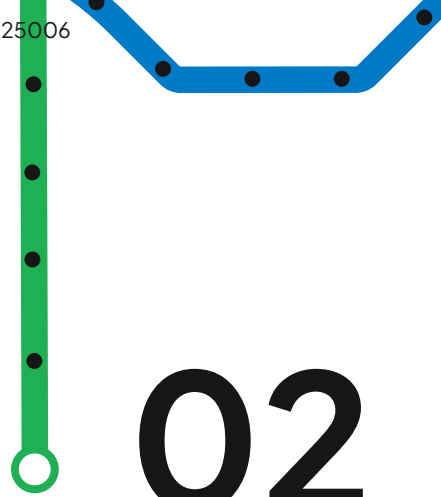
- Rush Hour (6:00–9:30 AM, 3:00–7:00 PM)
- Midday & Late Night

Monday – Thursday  
5:00 AM – 12:00 AM

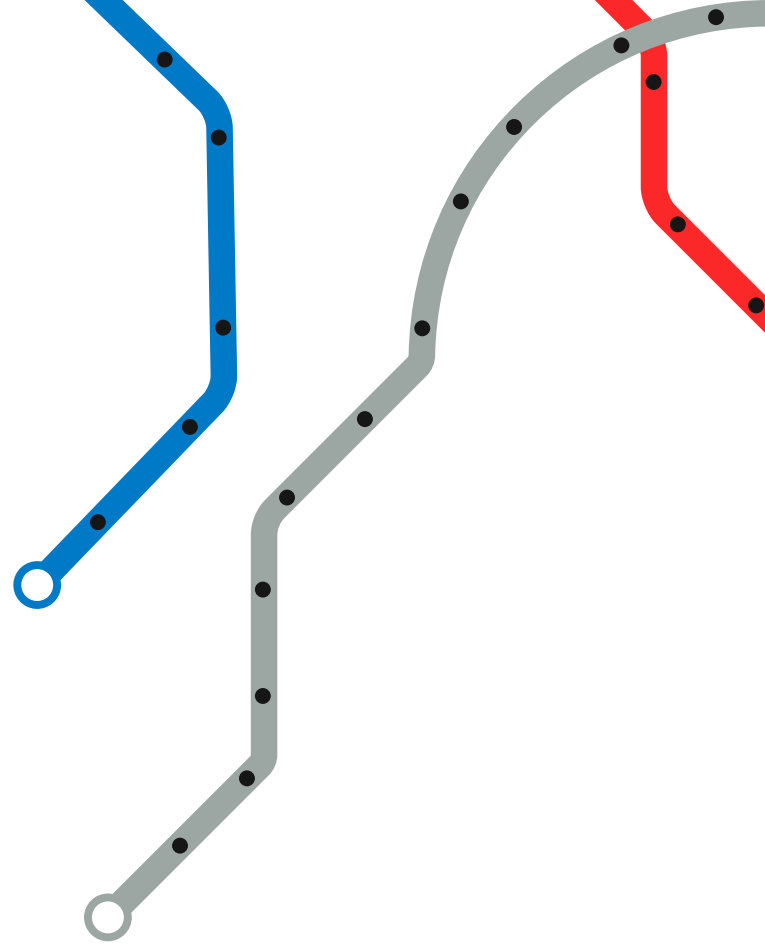
Friday – Sunday  
7:00 AM – 1:00 AM



IC25006



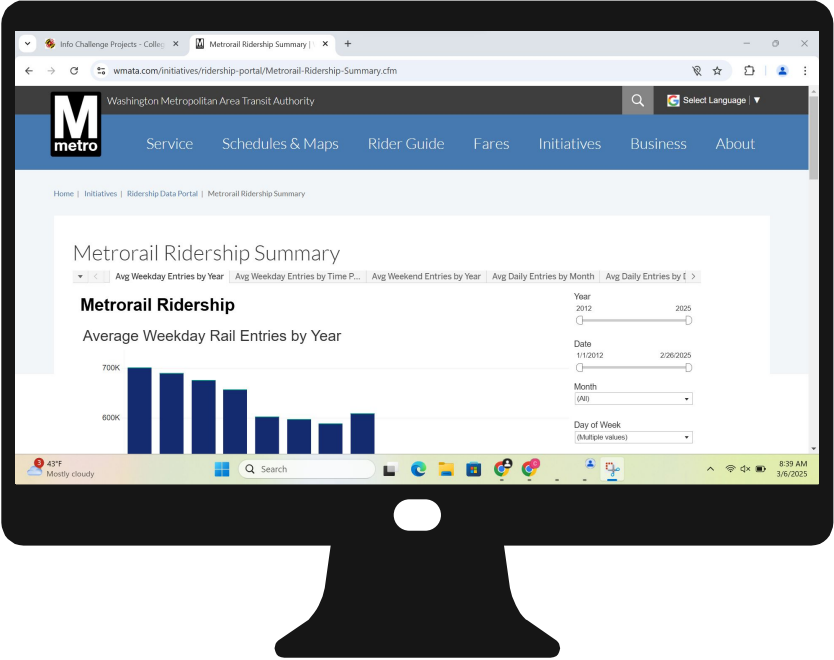
# 02 About the Data



# WMATA

Washington Metropolitan  
Area Transit Authority

The provided dataset was  
pulled from the Average Daily  
Entries by Station and Time  
Period tab in the dashboard.





# WMATA\_Ridership\_Summary.xlsx

Station Name	Contains the name of the station in the DC Metro	Metro Center Farragut North Foggy Bottom-GWU Farragut West
Time Period	Contains a group of time frame during the day	AM Peak (Open-9:30am) PM Peak (3pm-7pm) Evening (7pm-12am) Midday (9:30am-3pm)
Average Daily Entries	Number of people who scan in to their system	10.1k 3.0k 0.3k 0.0k

# WMATA\_Ridership\_Summary.xlsxs

The provided data includes a weekday (Wednesday) and weekend (Saturday) in all four seasons of 2024 (summer, winter, spring, autumn). Each day had its own spreadsheet with in the excel.

## March 6th

Time	Entries
PM Peak	1.0k
PM Peak	0.4k
AM Peak	0.0k
Midday	0.2k

## June 15th

Time	Entries
AM Peak	1.4k
Evening	0.7k
Late Night	0.1k
PM Peak	0.3k

## December 21

Time	Entries
Midday	0.9k
Evening	1.2k
AM Peak	0.7k
Midday	0.3k

# Cleaning/Merging

## Cleaning:

Since all values were in a condensed form (1.1k), convert to full number (1100)

## Merging:

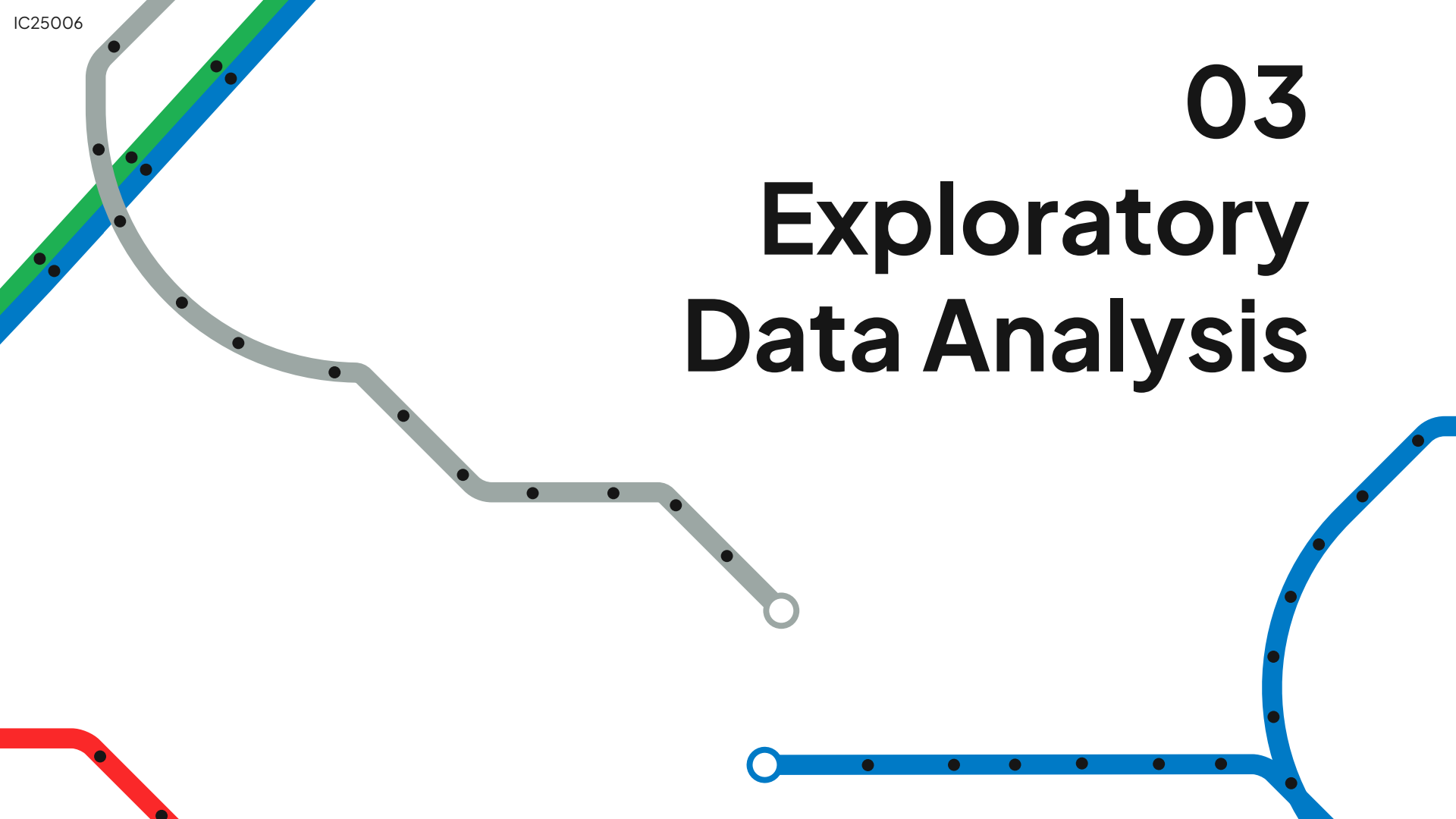
Combined all the sheets into one csv (pandas) on the station name and the time period

## WMATA\_Ridership

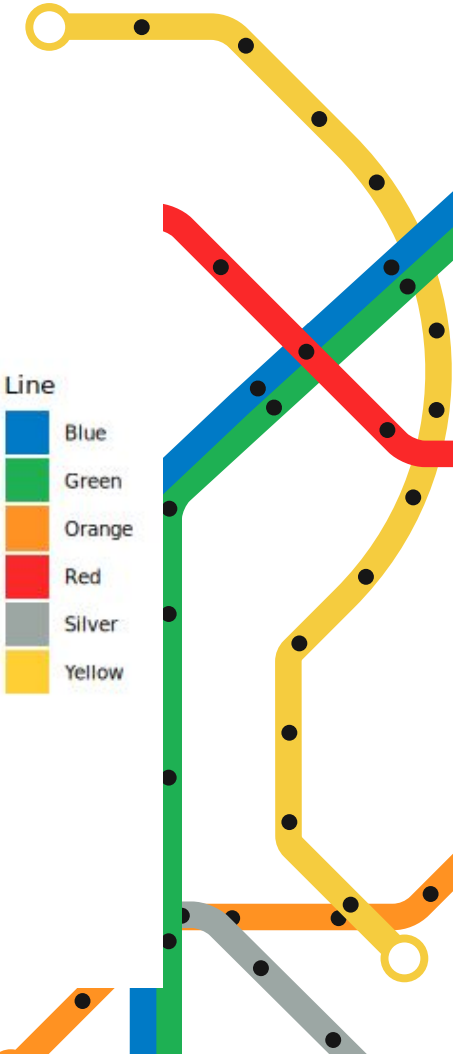
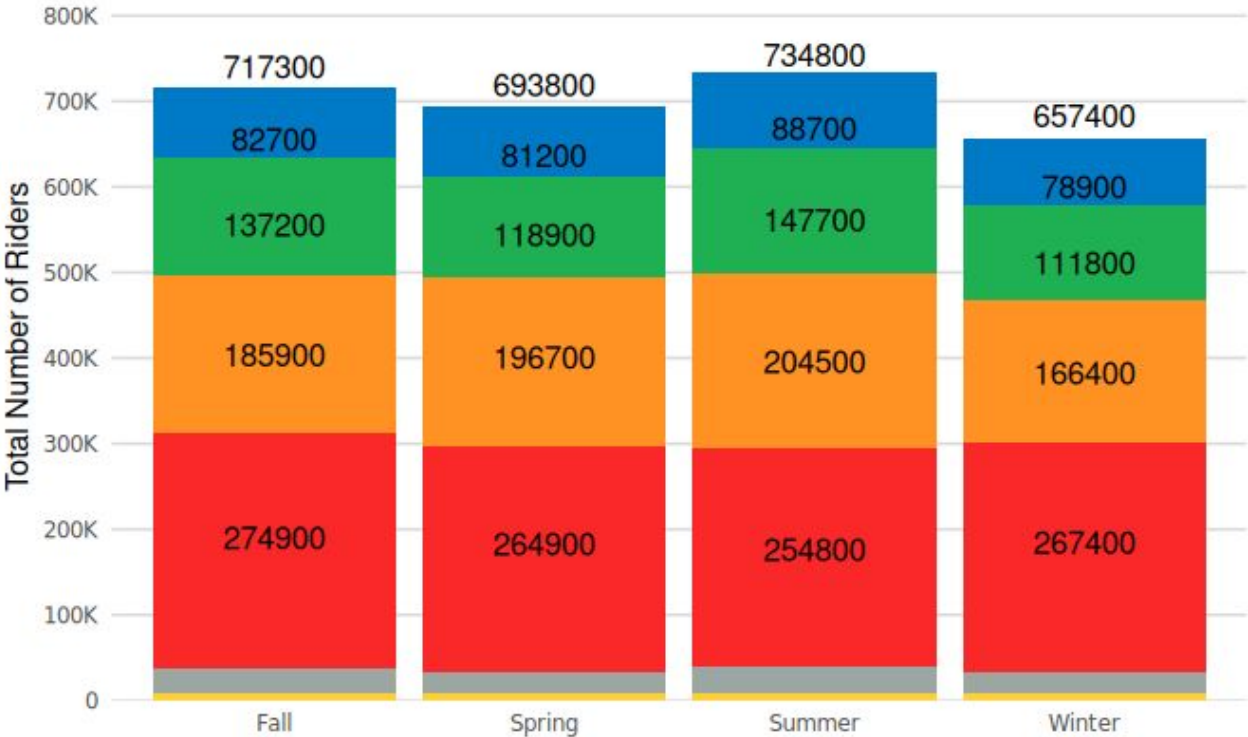
Time	Entries (Mar 6)	Entries (Mar 23)	Entries (Jun 5)	Entries (Jun 15)	Entries (Sep 4)	Entries (Sep 21)	Entries (Dec 4)
AM Peak	1000	100	1100	200	1100	100	1000
Evening	100	100	100	100	300	300	100
Midday	2100	2300	2300	2700	2200	3100	2300
PM Peak	1900	1000	2100	1100	2000	1000	2100

03

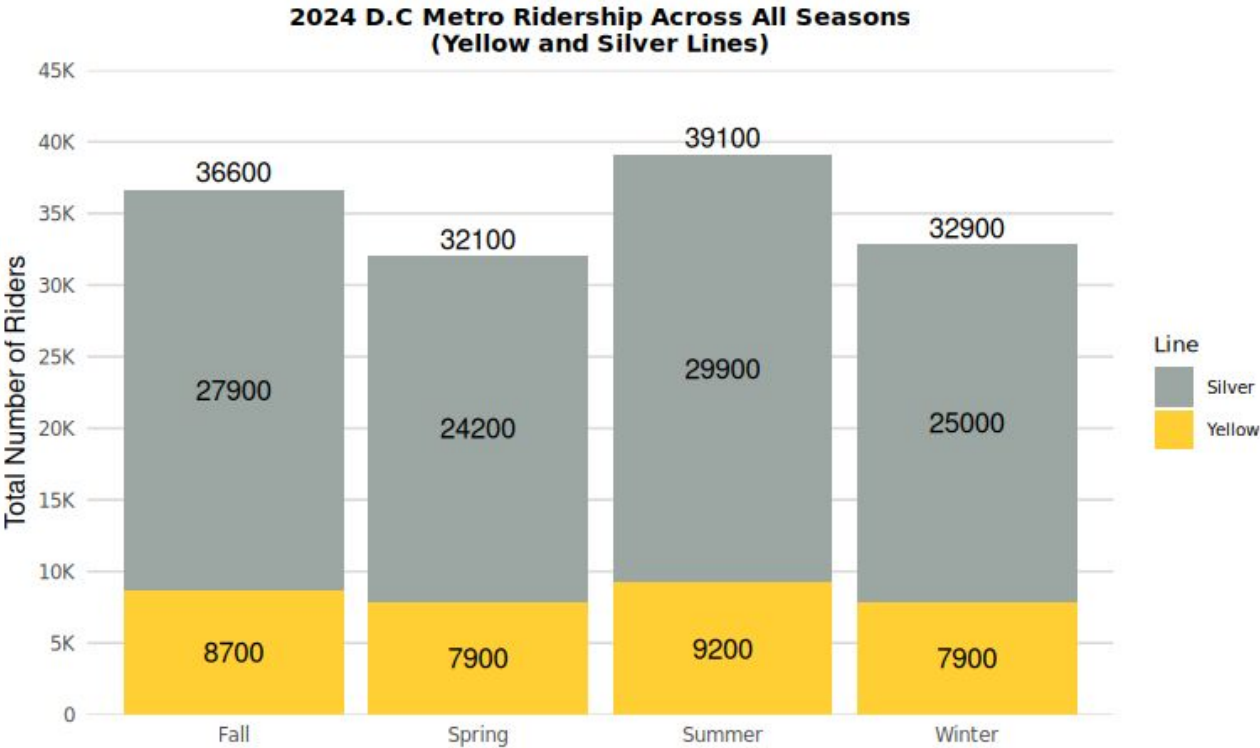
# Exploratory Data Analysis



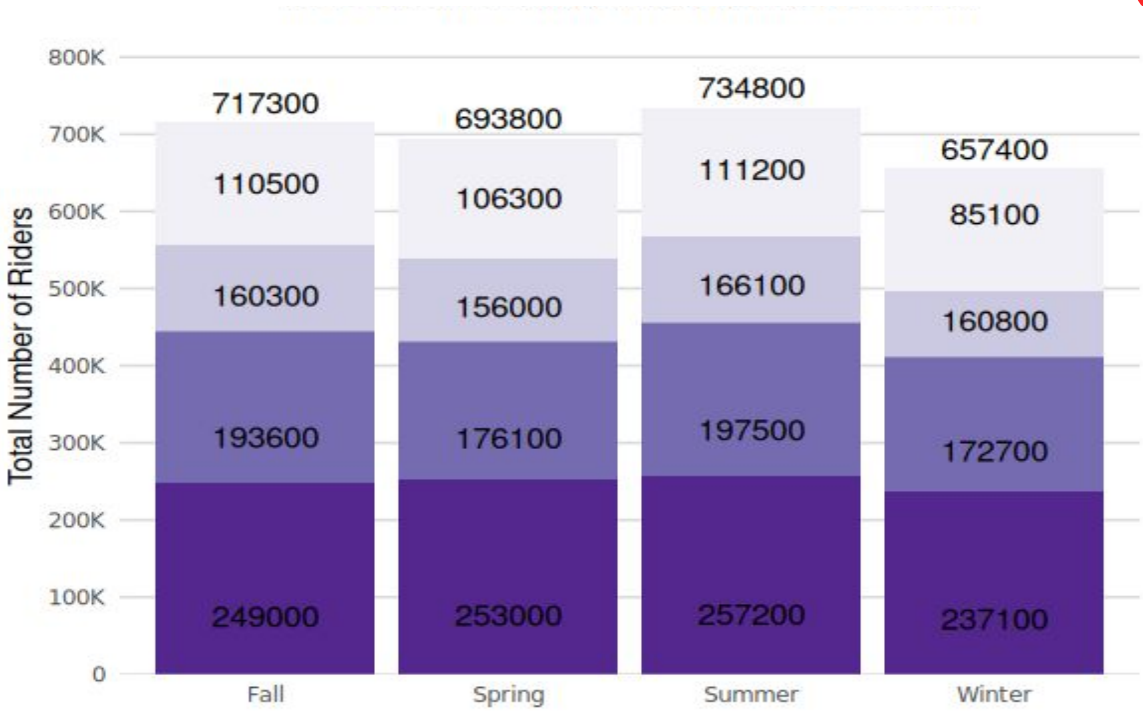
# 2024 D.C. Metro Ridership Across All Seasons (Red, Orange, Green, Blue)



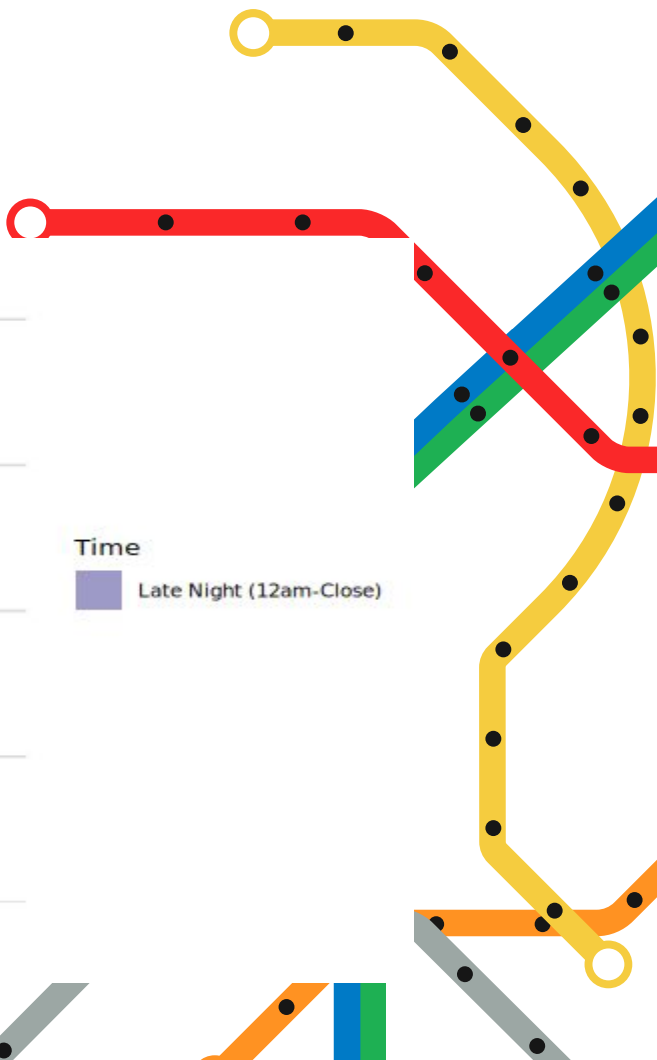
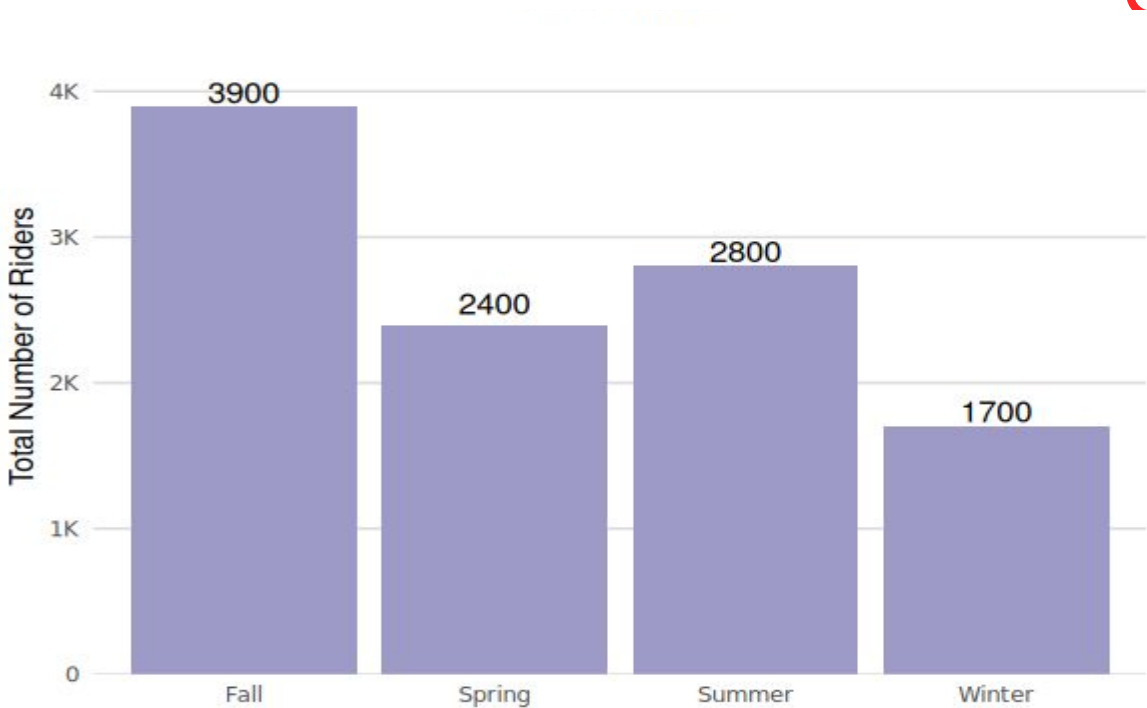
# 2024 D.C. Metro Ridership Across All Seasons (Yellow, Silver)



# 2024 D.C. Metro Ridership Times Across All Seasons

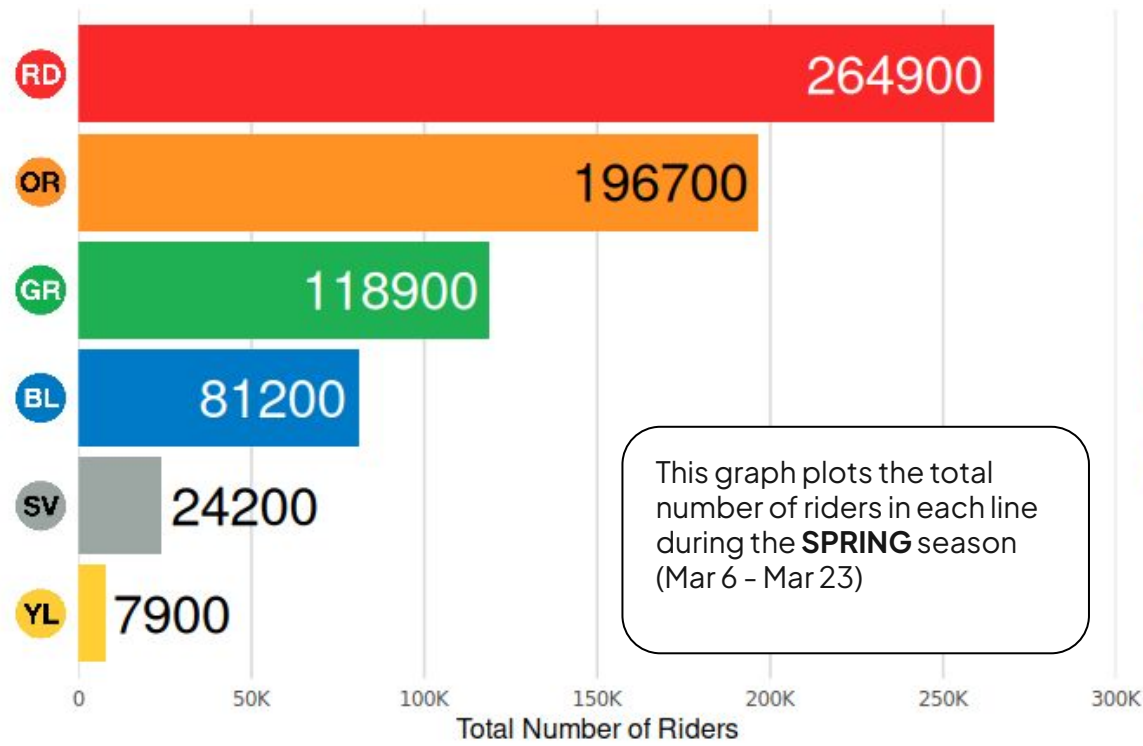


# 2024 D.C. Metro Ridership Times Across All Seasons (Late Night)

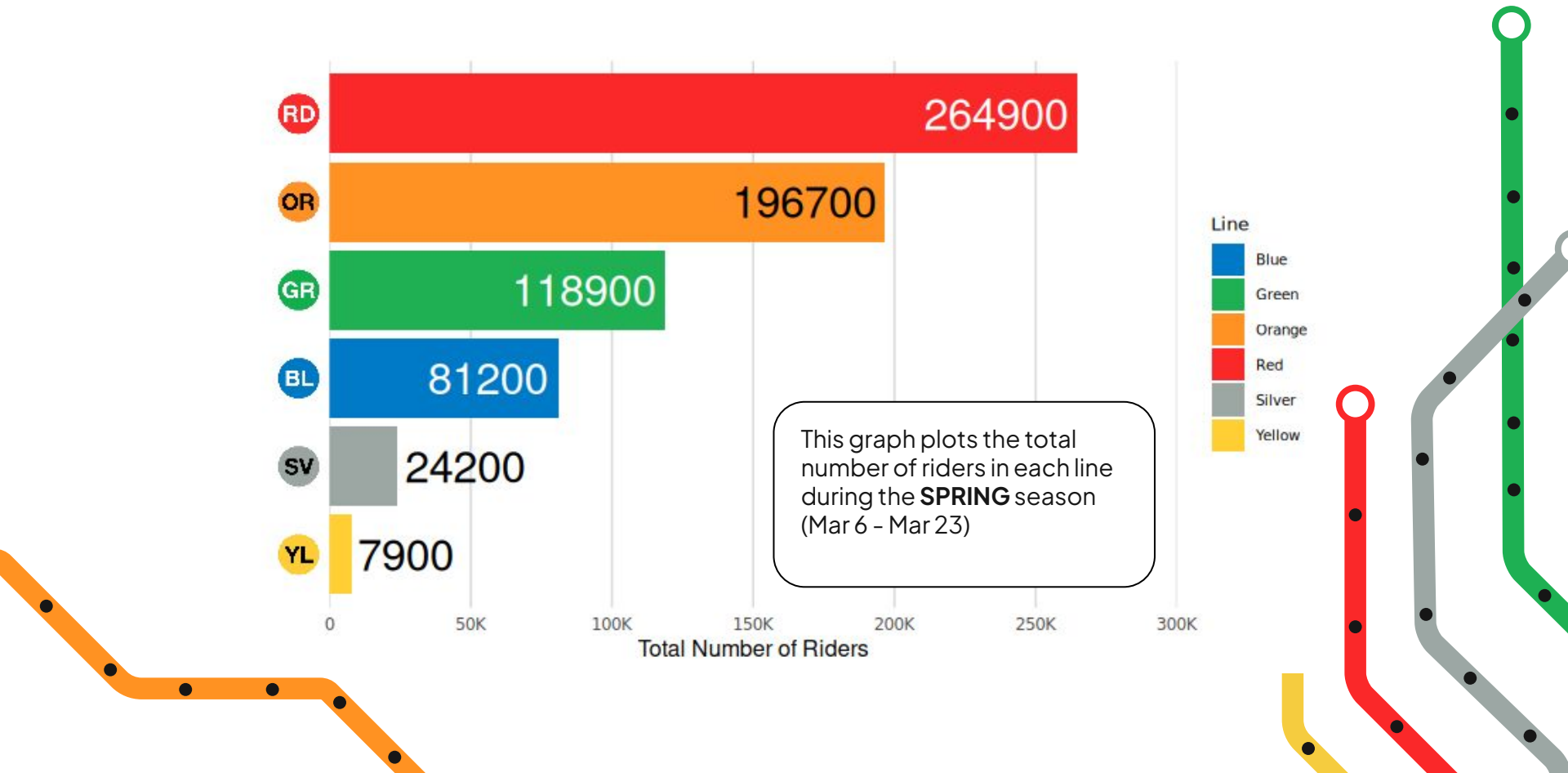




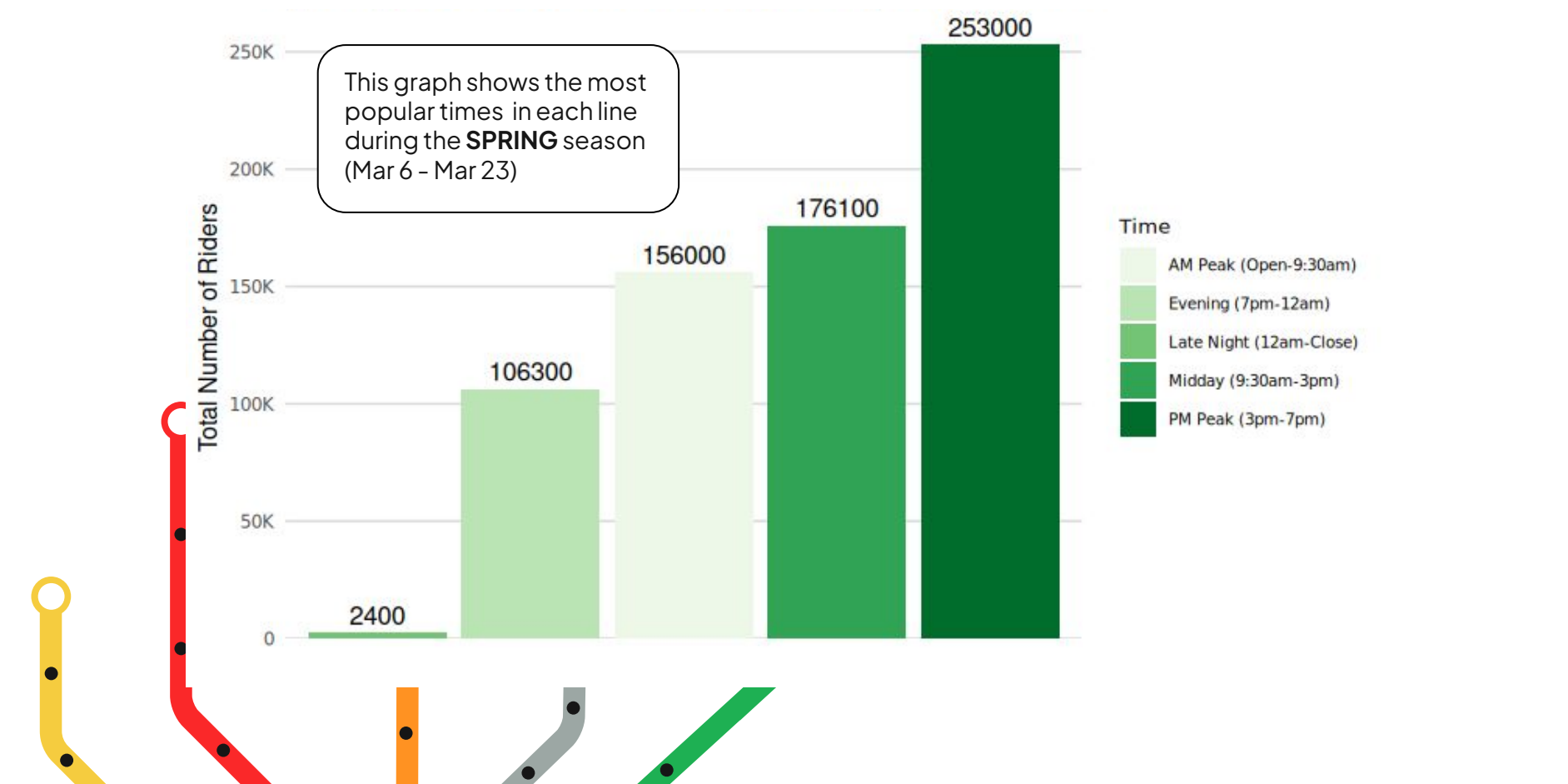
# Spring 2024 D.C. Metro Ridership



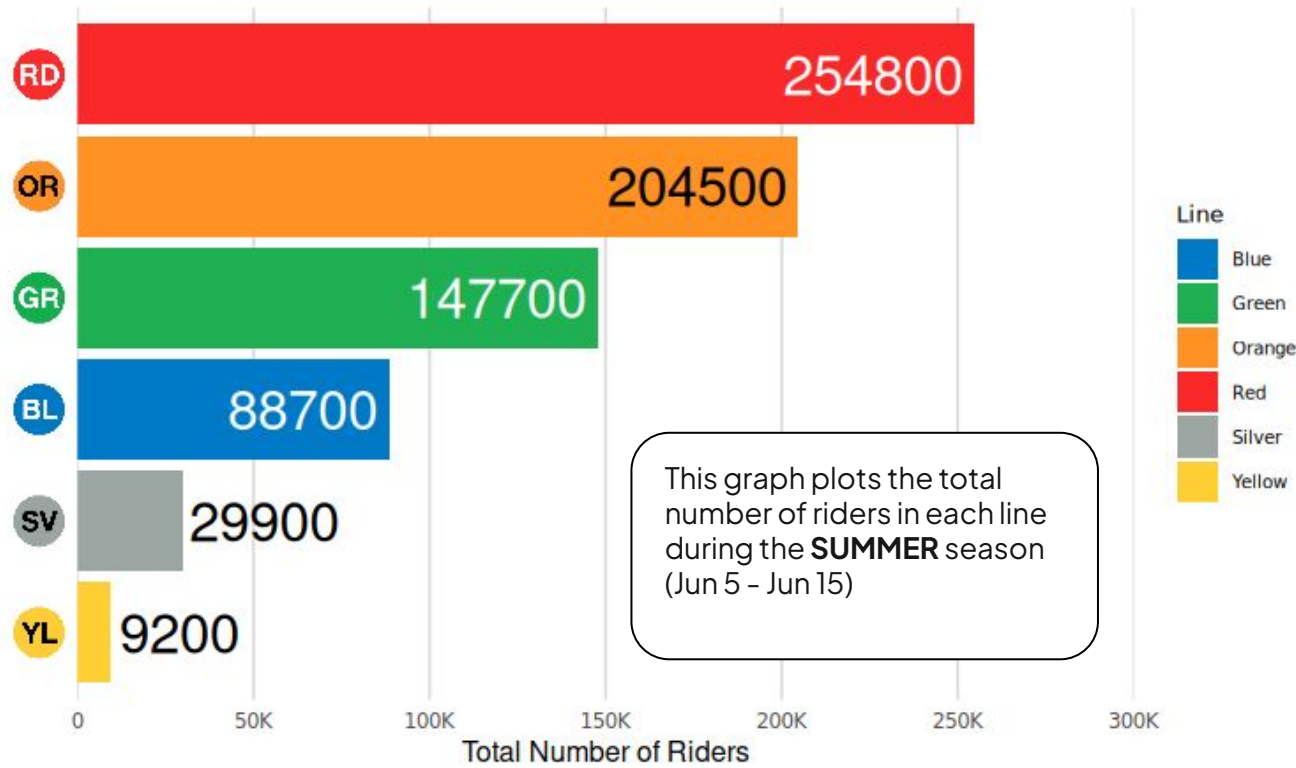
- Line
- Blue
  - Green
  - Orange
  - Red
  - Silver
  - Yellow



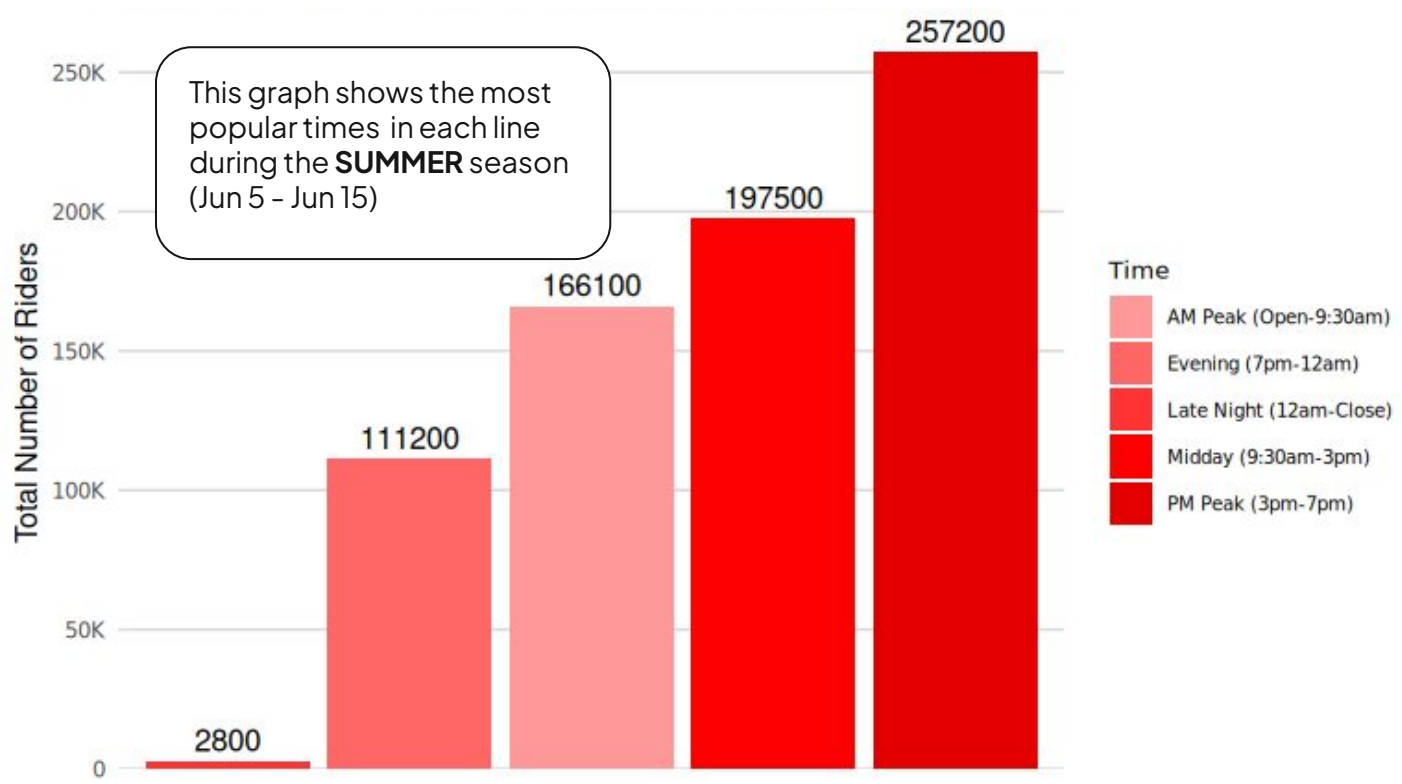
# Spring 2024 D.C. Metro Most Popular Times



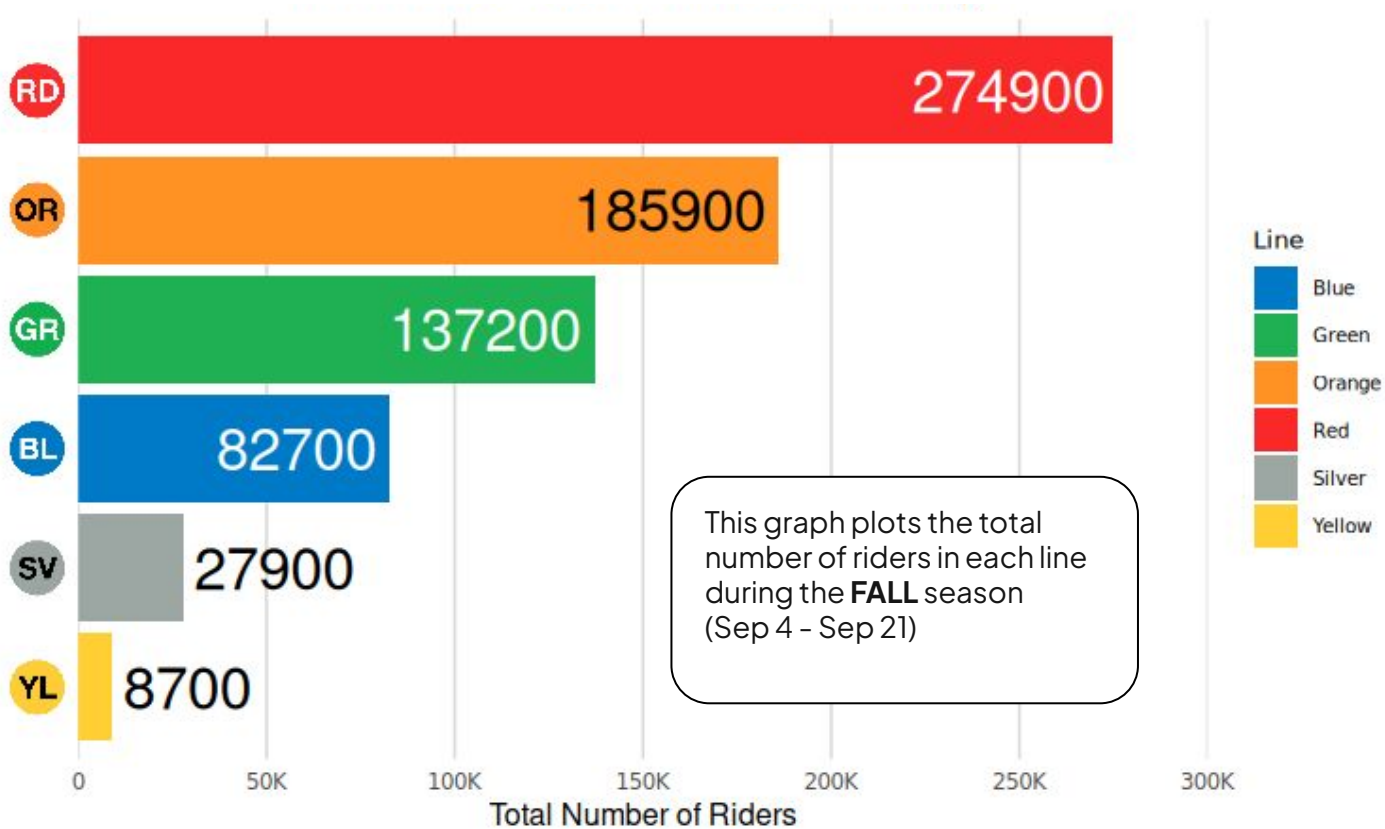
# Summer 2024 D.C. Metro Ridership



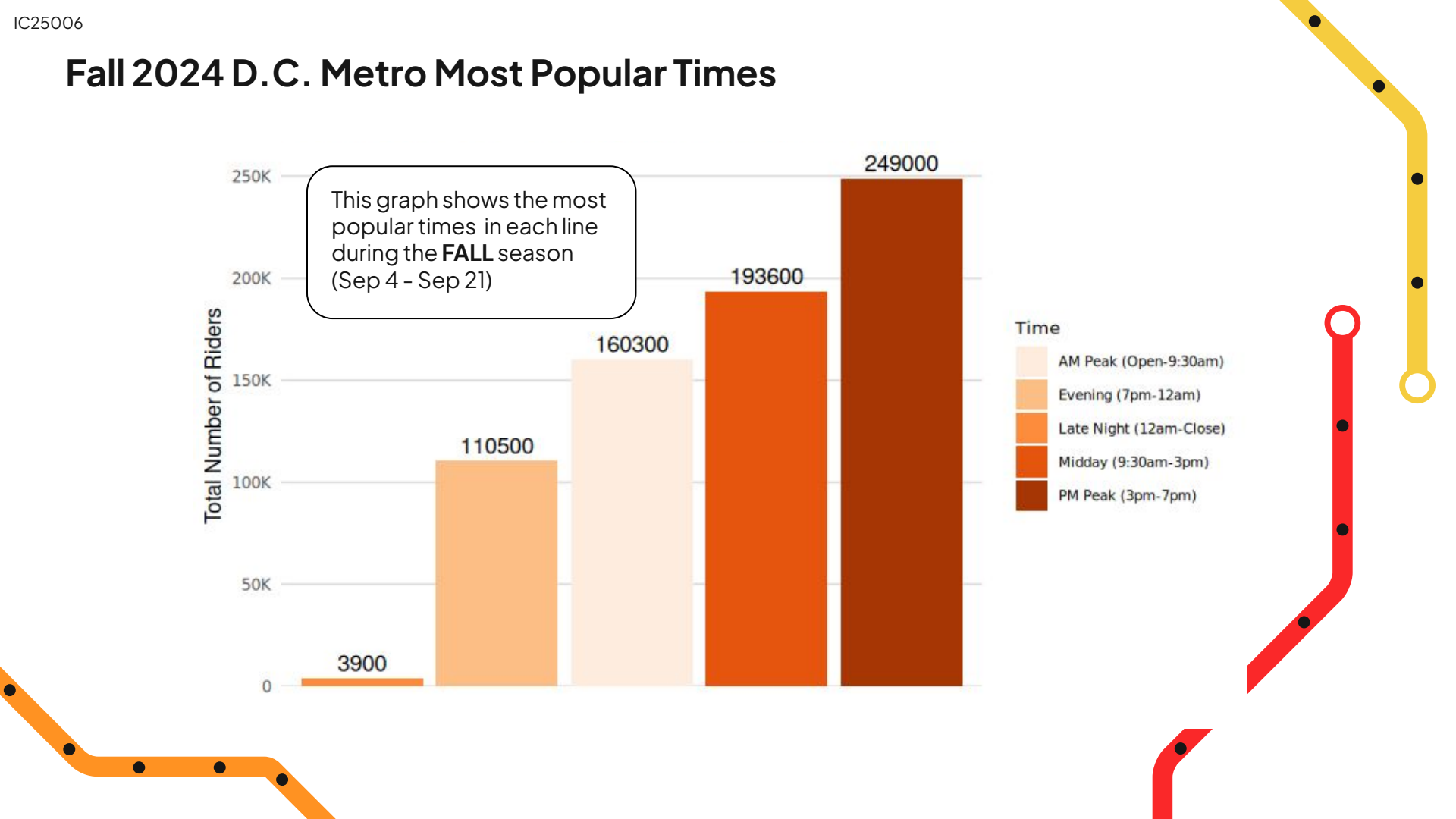
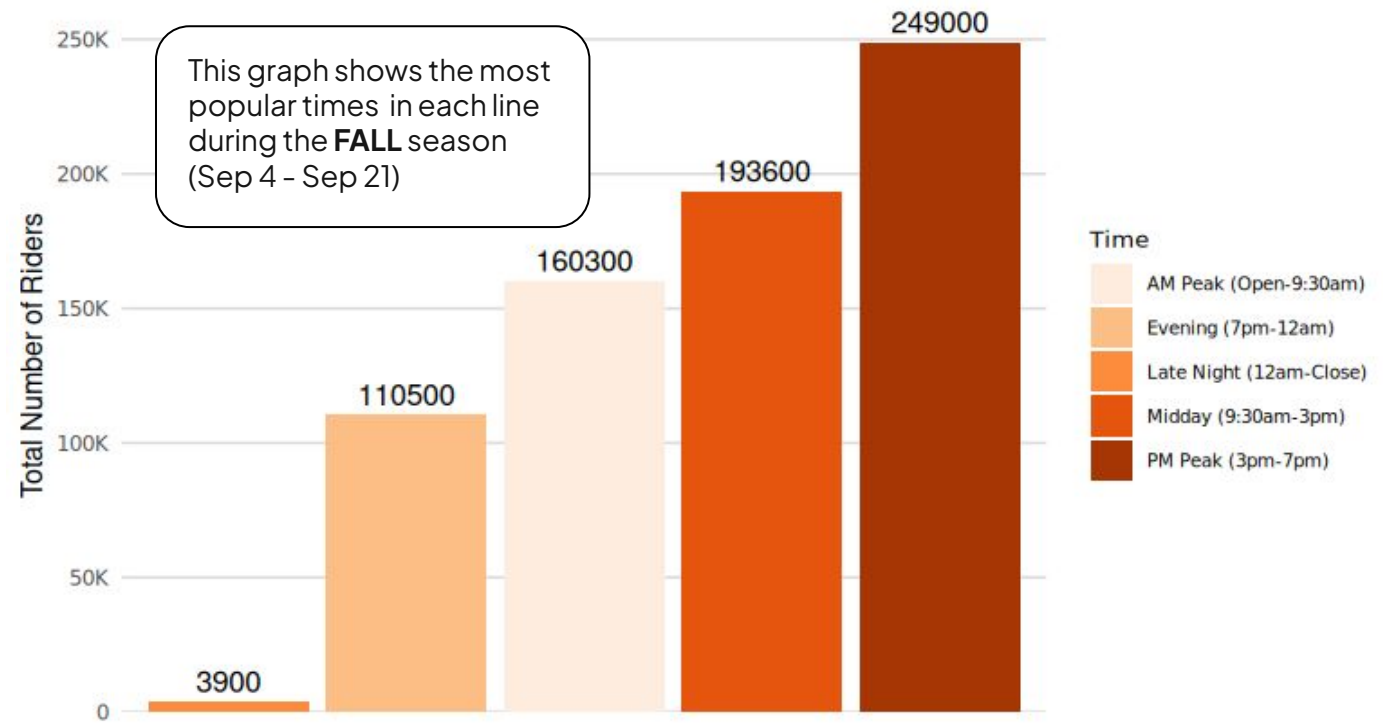
# Summer 2024 D.C. Metro Most Popular Times



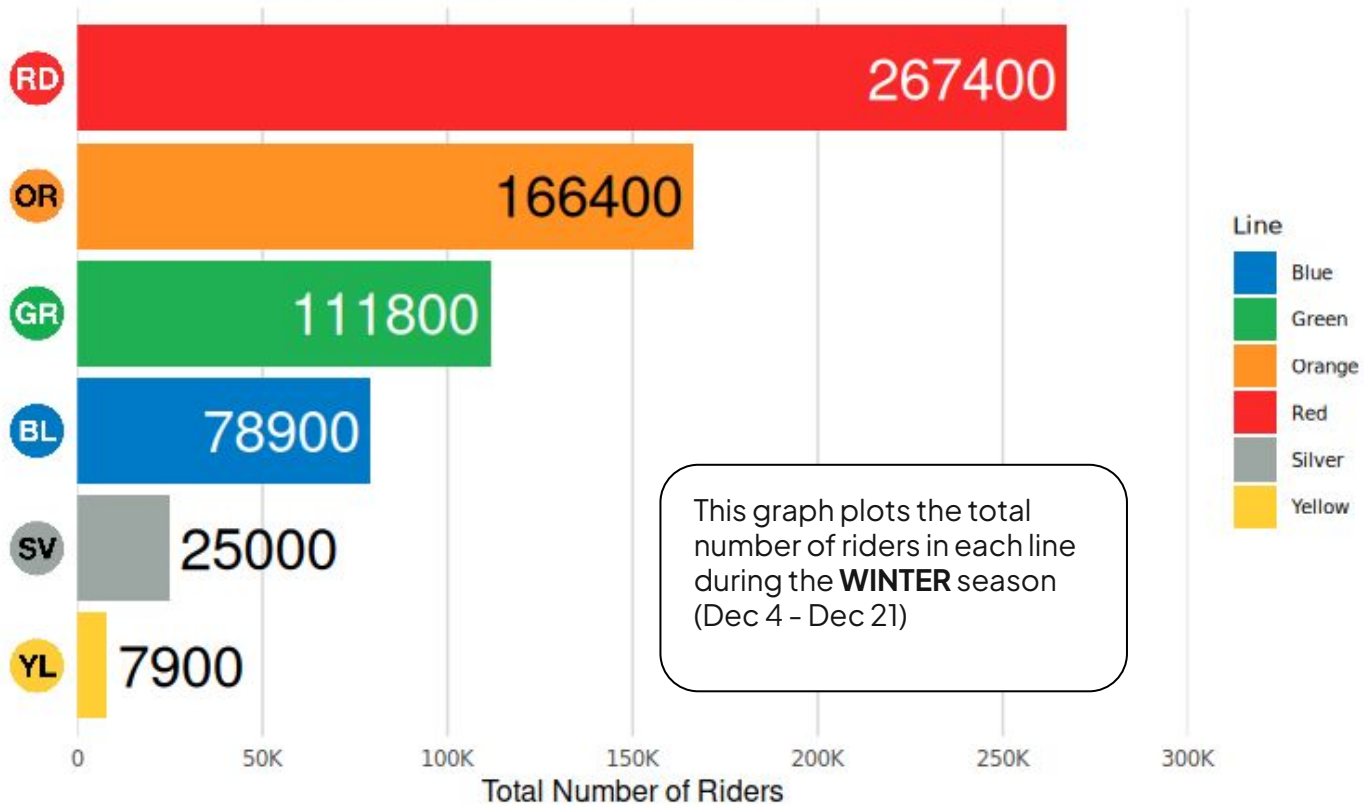
## Fall 2024 D.C. Metro Ridership



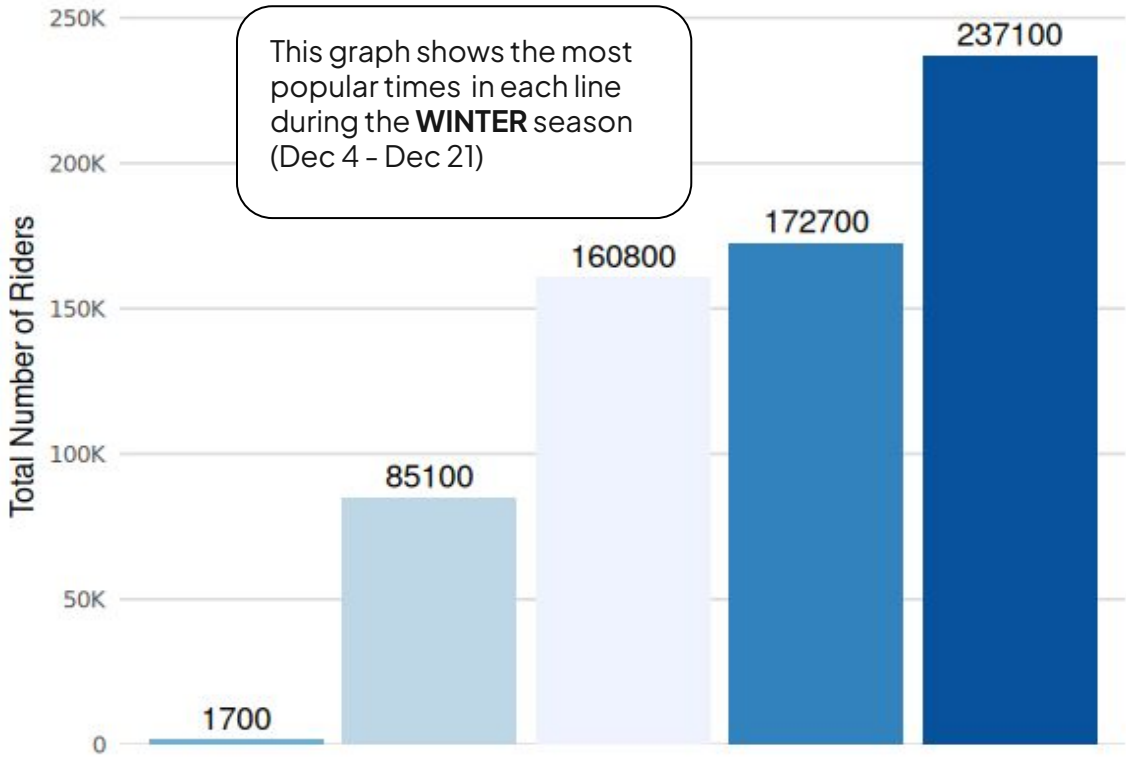
# Fall 2024 D.C. Metro Most Popular Times



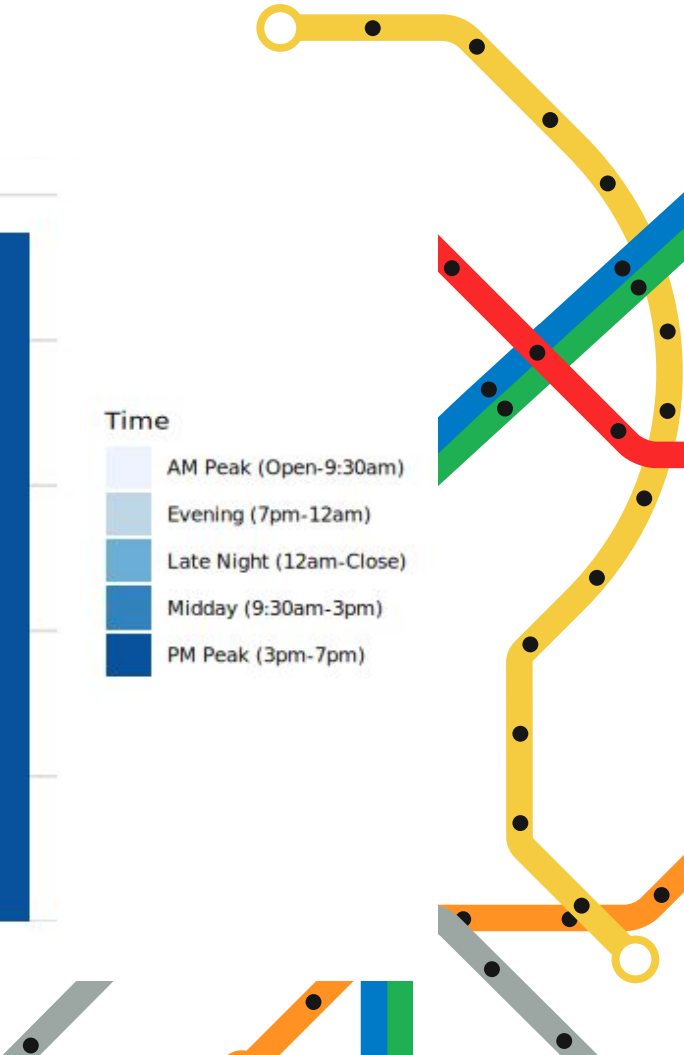
# Winter 2024 D.C. Metro Ridership



# Winter 2024 D.C. Metro Most Popular Times



- Time
- AM Peak (Open-9:30am)
  - Evening (7pm-12am)
  - Late Night (12am-Close)
  - Midday (9:30am-3pm)
  - PM Peak (3pm-7pm)





# Ridership and DC Sports

## Each Season's Most Popular Day to Ride

### Spring

March 6

Why?

Wizards vs. Magic  
Attendance : 16,018



### Fall

September 21

Why?

Orioles vs. Tigers  
Attendance : 39,647



### Summer

June 5

Why?

Nationals vs. Mets  
Attendance : 18,775



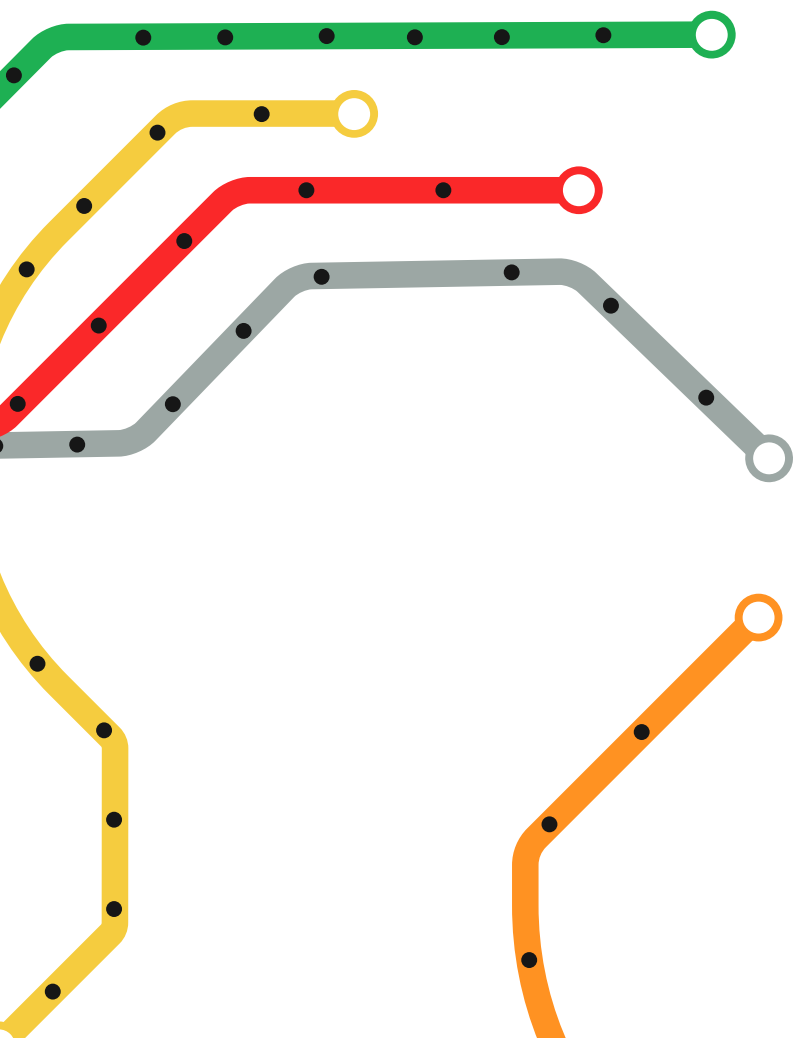
### Winter

December 21

Why?

Ravens vs. Steelers  
Attendance : 71,313



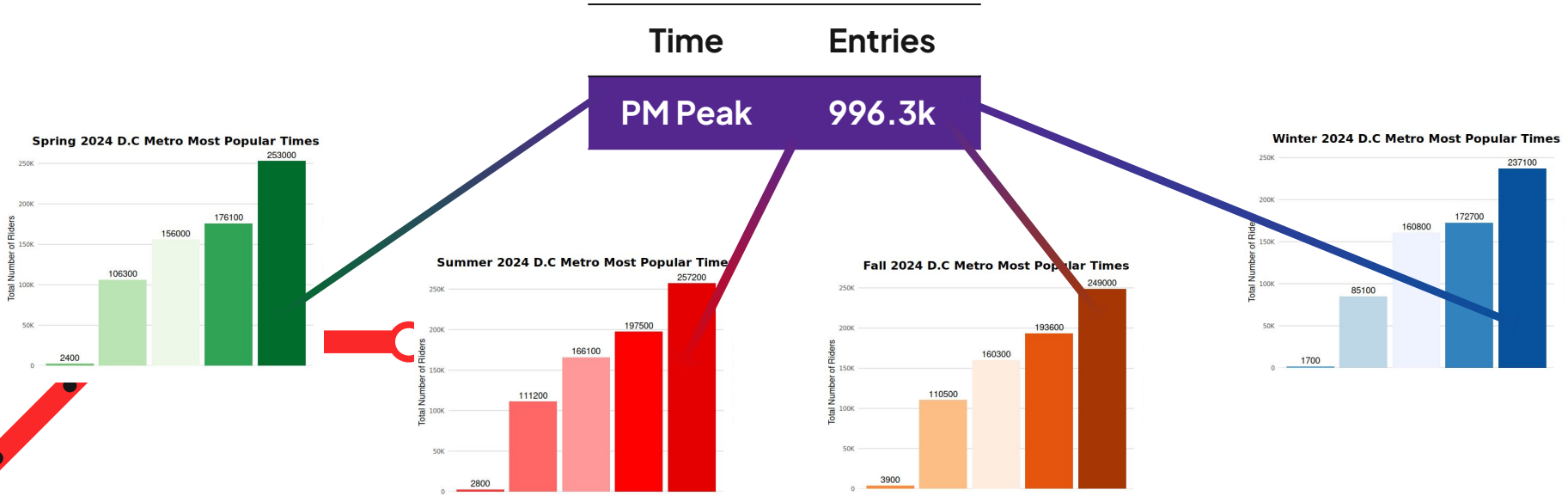


# Q4 Conclusion s



# Conclusions

Ridership increases during colder seasons, but the most popular time to ride is consistently 3–7pm. The day of the week (weekend or weekday) is not a factor.



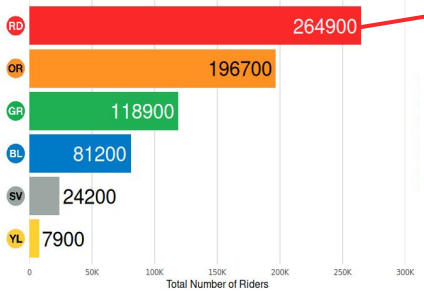
# Conclusion

S

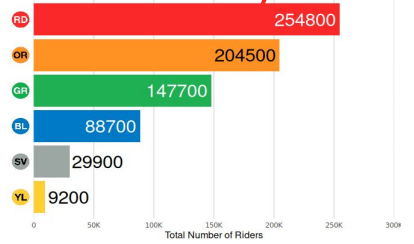
The Red, Orange, and Green Lines remained the most popular to ride throughout seasons, weekdays, and weekends. They accounted for over 80% of ridership each season.



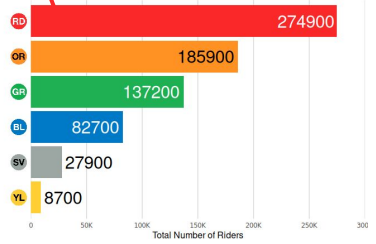
Spring 2024 D.C. Metro Ridership



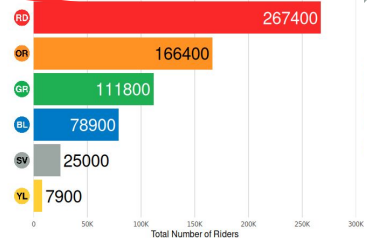
Summer 2024 D.C. Metro Ridership



Fall 2024 D.C. Metro Ridership



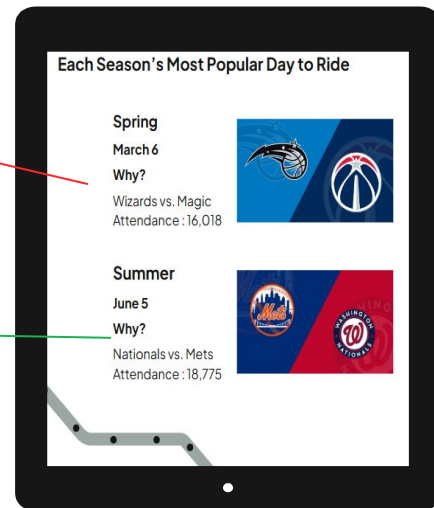
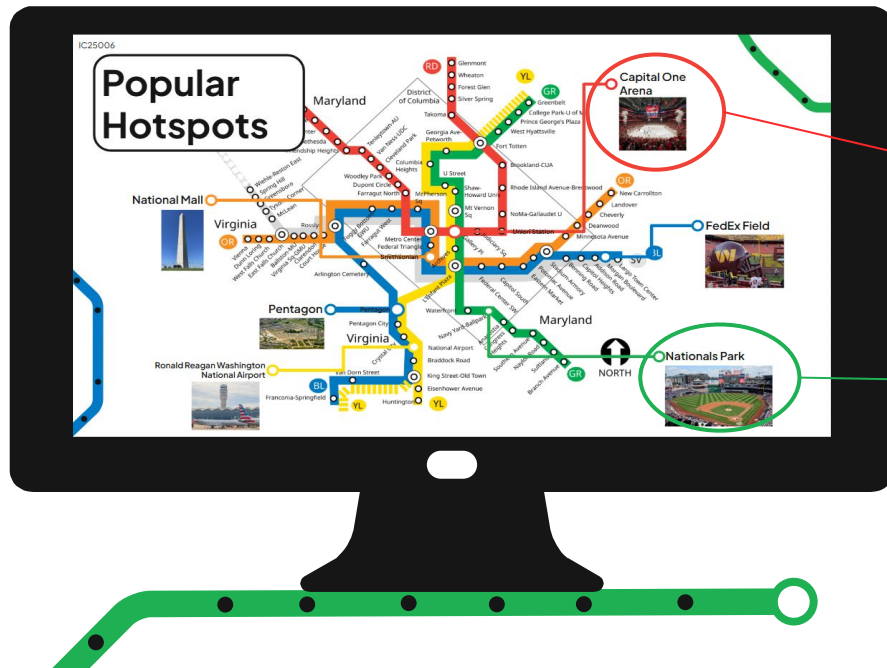
Winter 2024 D.C. Metro Ridership



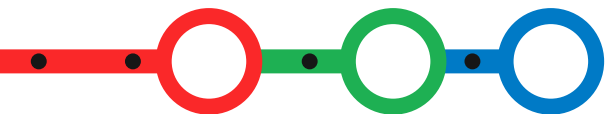
# Conclusion

S

Outside of seasons and weather, home sports games are the greatest predictor of a crowded day of riding.



# Thanks!



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