WMATA METRO RAIL RIDERSHIP ANALYSIS

TEAM NUMBER - IC25052

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INFRASTRUCTURE FOR THE FUTURE

Introduction & Research Approach

- Our team analyzed WMATA and MindPetal datasets to uncover trends in metro ridership.

- Key focus areas: Events, weather, crime, COVID impact, and cost analysis.

- Methodology: Scraped data from various sources to derive insights.

- Objective: Identify actionable strategies to enhance ridership and system efficiency.

Cost Analysis & Revenue Loss

- Analysis revealed that entries exceed exits, leading to an estimated $3.6 million loss per year.
- This discrepancy suggests potential fare evasion or system inefficiencies.
- Proposed Action: Implement stricter tap-in/tap-out validations using real-time monitoring.
- Enhancing automated fare collection can minimize revenue leakage.

DAY	TAP - IN	TAP - OUT
MONDAY	23,53,59,874.00	23,42,48,575.00
TUESDAY	27,31,25,324.00	27,18,89,292.00
WEDNESDAY	27,45,86,543.00	27,33,13,437.00
THURUSDAY	27,13,39,705.00	27,00,87,422.00
FRIDAY	25,26,98,358.00	25,11,85,883.00
SATURDAY	12,94,02,190.00	12,85,32,415.00
SUNDAY	9,03,13,904.00	8,97,61,418.00
TOTAL WEEKDAY	1,30,71,09,804.00	1,30,07,24,609.00
TOTAL WEEKEND	21,97,16,094.00	21,82,93,833.00

DIFFERENCE		FARE RATE	AMOUNT
WEEKDAY	63,85,195.00	5.25	$ 3,35,22,273.75
WEEKEND	14,22,261.00	1.75	$ 24,88,956.75
TOTAL AMOUNT			$ 3,60,11,230.50

Pre-COVID vs. Post-COVID Trends

- 2017 Women's March saw 1M riders, demonstrating Metro's peak efficiency.
- Current post-COVID peak is ~350K daily riders, leading to recurring bottlenecks.
- Ridership is recovering but at a slower rate due to lifestyle shifts (remote work, safety concerns).
- Strategic Move: Increase rail frequency during peak hours to mitigate congestion.
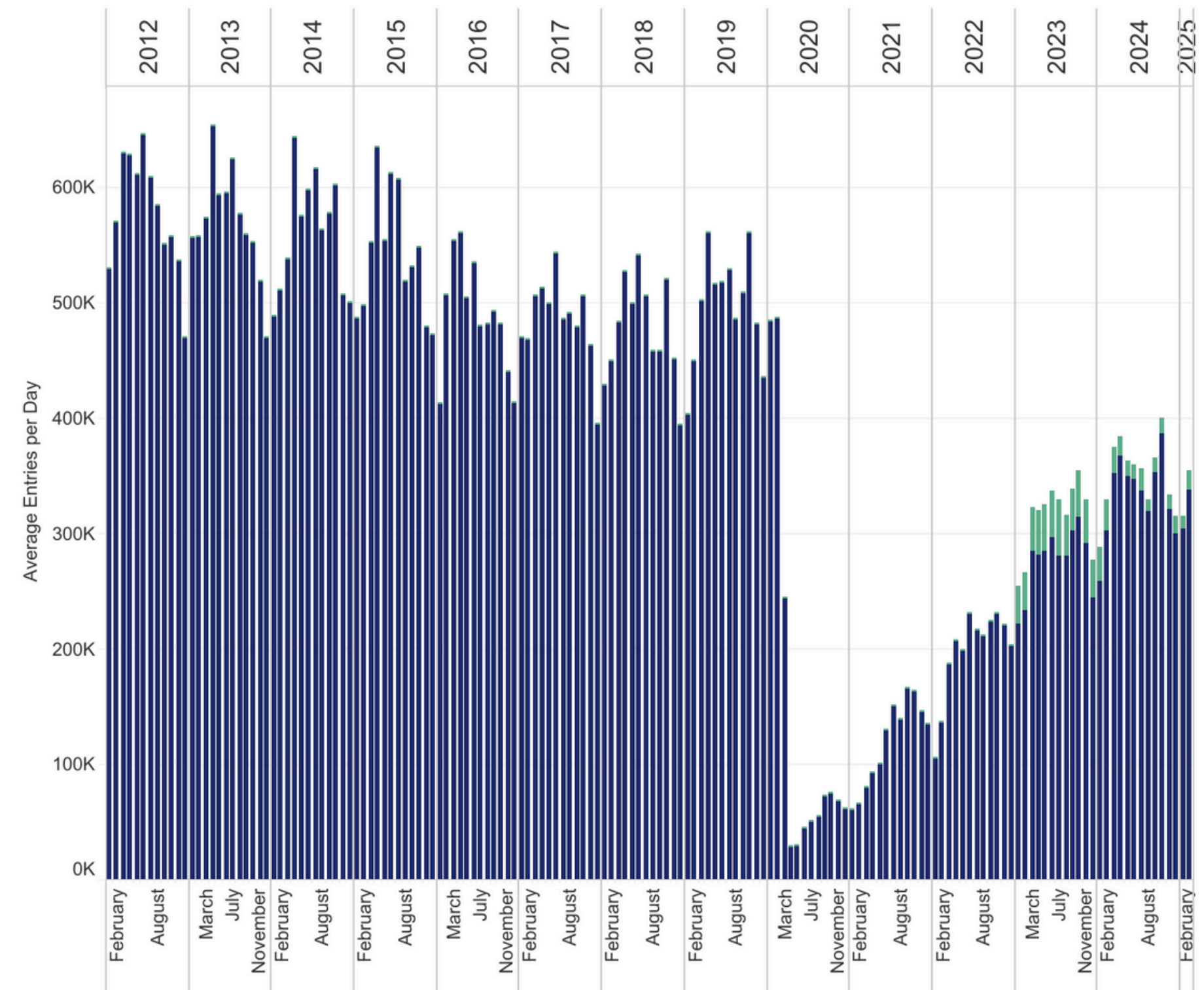
# Impact of Construction & Fare Changes

- Holiday season repairs caused a decline in ridership due to service disruptions.

- Fare hikes did not significantly impact ridership, but sentiment indicates slower recovery.

- Recommended Action: Implement staggered construction schedules to minimize passenger inconvenience.

- Optimize fare pricing with incentives to boost loyalty and off-peak travel.

References

- https://www.axios.com/local/washington-dc/2024/12/20/metro-closures-orange-silver-blue-dc-december-2024?utm_source=chatgpt.com
- https://www.axios.com/local/washington-dc/2024/11/12/metro-bus-overhaul-new-routes-names?utm_source=chatgpt.com
- https://www.axios.com/newsletters/axios-dc-39556160-eae2-11ef-ba27-d9246ea22a71?utm_source=chatgpt.com
- https://www.wmata.com/initiatives/ridership-portal/Metrorail-Ridership-Summary.cfm

Weather & Seasonal Ridership Patterns

- Ridership peaks from April to June, aligned with Cherry Blossom Festival and tourist activity.

- Winter months witness a decline due to adverse weather conditions and reduced commuting.

- Proposed Strategy: Increase Metro frequency and promotional campaigns during high-ridership months.

- Enhance weather-resilient infrastructure to maintain reliable service year-round.
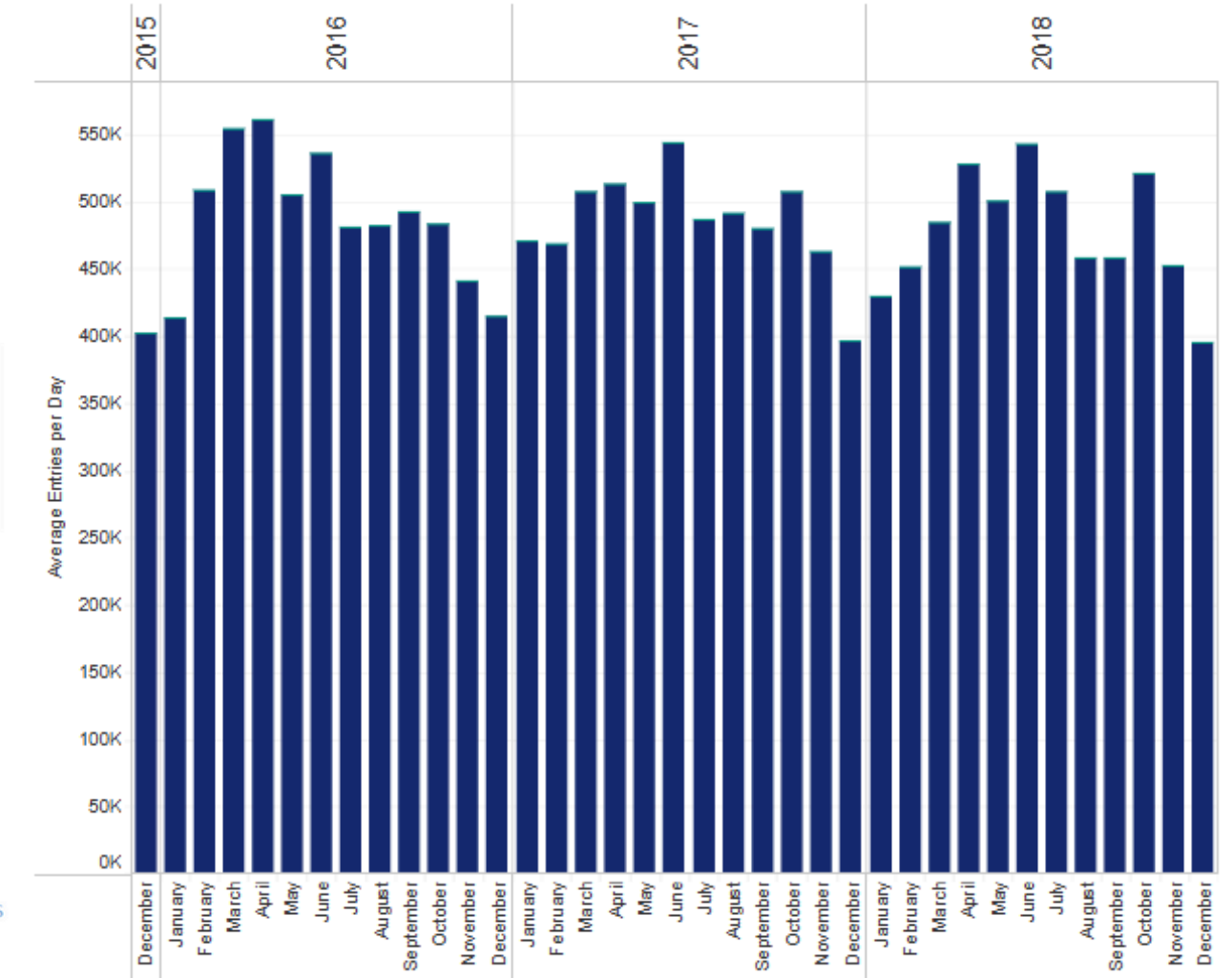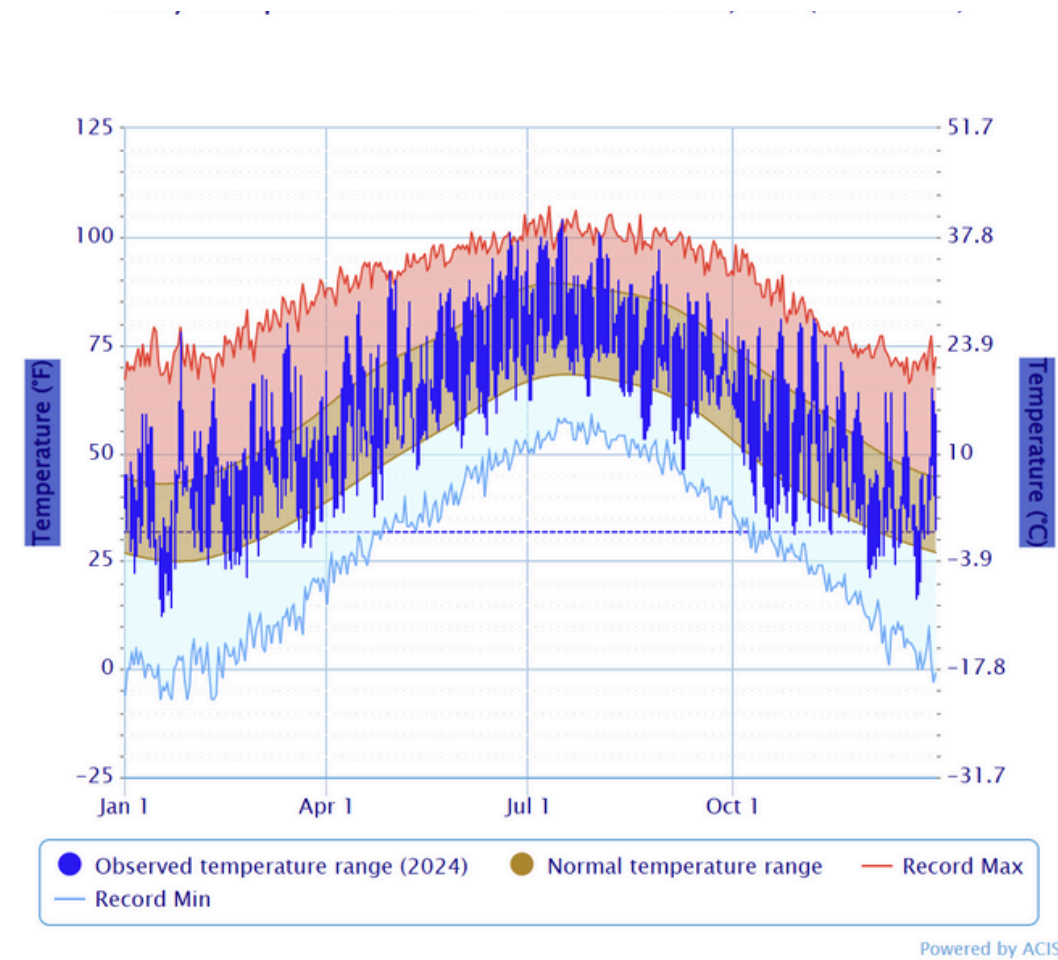
Crime & Safety Challenges at Key Stations

- High-crime areas: Anacostia, Congress Heights, Southern Ave, Naylor Road.

- Incidents include robberies, assaults, and fare evasion, discouraging ridership.

- Security Recommendations: Increase visible policing, improve lighting, and deploy surveillance.

- Engagement with community safety programs can foster public trust and boost ridership.

Link to our Analysis

Crime Statistics
Metro news and service information for the Washington, DC, Maryland, and Virginia region.
Ⓜ WMATA

Washington DC Neighborhood Safety
Explore the safety of Washington DC's neighborhood
veryapt.com