

# Info Challenge 2025 Abstract

Team Number: IC25006

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Project: DC WMATA Metro Ridership Analysis – Mindpetal Software Solutions

Our goal for this project is to analyze the average ridership patterns of the DC WMATA Metro system and discover different trends in response to seasonal variations and local events to help provide better transportation planning for commuters and the administration. The data includes the train station and its average daily entries from different weekdays and weekends across all four seasons of 2024. Through exploratory data analysis, we will identify different trends, patterns, and outliers in the metro usage.

Our approach involves cleaning and merging the dataset for a thorough analysis, using pandas and tidyverse in Python and R respectively. We plan to include machine learning techniques such as Recommendation Systems to help provide information to riders and the metro station popularity in train stations. For a more in depth analysis, we will pull outside datasets to help explain certain trends within the context of events occurring in the DC area. To help aid our presentation, we will create visualizations including line charts, bar graphs, and scatter plot to illustrate our findings. We will present our findings in a google slides presentation that will be engaging and easy to understand for our audience.

By analyzing how ridership shifts in response to seasonal variations and local events, this study aims to provide valuable insights for transportation planning. Our results will be presented in a storytelling way with the aid of data-driven graphics and eye-pleasing slides in our presentation to offer a comprehensive view of Metro patterns. The results will help inform the DC metro station on how to best optimize transit operations and help guide riders to the best metro stations in the Washington, D.C. area.