

# SMART RIDESHARE MATCHING – FEASIBILITY OF UTILIZING PERSONALIZED PREFERENCES

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SMARTER Center  
A USDOT University Transportation Center

## Project Overview

This study investigated the feasibility of utilizing vehicular telematics data for ride-share matching at the University of Virginia campus. Researchers focused on optimizing ride-share matches by analyzing personal trip data such as home/workplace locations and departure/arrival times to identify potential ride-sharing opportunities that could reduce traffic congestion and parking demand.

## Methodology

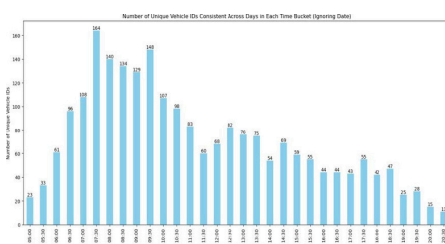
Researchers analyzed Wejo vehicular telematics data from April 2022, avoiding academic schedule anomalies. Using a UVA campus boundary, the team identified arrivals and departures by tracking ignition events on campus. Algorithms extracted daily commuting patterns, determining first arrivals and last departures for each vehicle. The study employed clustering to group commuters based on proximity (2-mile radius) and timing (15-30 minute windows), creating a framework for matching ride-share partners with compatible schedules and nearby homes.

## Key Findings

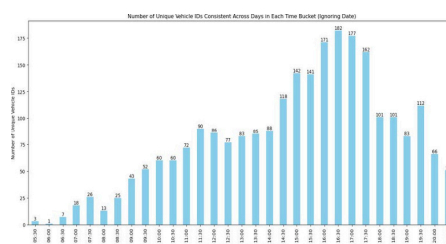
- Morning Peak:** 164 vehicles arrived in a single 30-minute window (7:30 AM), concentrated between 7-9 AM.
- Afternoon Rush:** 182 vehicles departed during the 4:30 PM peak, with most departures between 3-5 PM.
- Geographic Clusters:** Analysis identified 5 distinct zones of commuter residences with a silhouette score of 0.5630.
- Sampling Rate:** 300 vehicles tracked daily represent only a fraction of UVA's 23,000 employees.
- Consistent Commuters:** 7.78% of tracked vehicles traveled to campus all 10 days of the study period.
- Single Visits:** 38.38% of vehicles only visited UVA once during the 10-day period.

## Key Figures

Hourly distribution graphs show vehicle arrival peaks (7-9AM) and departure peaks (3-5PM), illustrating optimal ride-sharing windows.



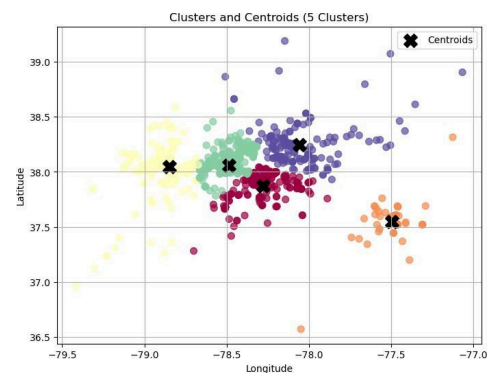
Arrivals



Departures



UVA study area boundary



Start location clusters with centroids



*This research was led by faculty from the University of Virginia*

## Notes for Policymakers

Vehicular telematics reveal a geographic and time-based framework for effective rideshare deployment at the University of Virginia campus.

- 30-minute peak windows** in the morning and afternoon
- Neighborhood-based ride-sharing groups** for geographic clusters
- Consistent commuters** can serve as early adopters for ride-sharing programs