

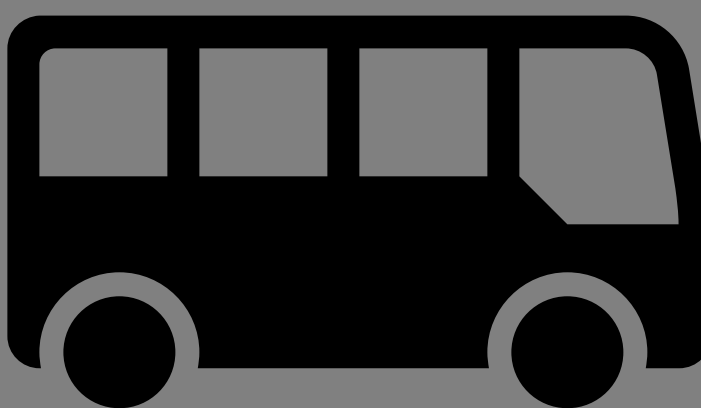
A Method for Placing Shared E-Scooters Corrals Near Transit Stops

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TRBAM-22-01981|Wed 1/12/2022| 8:00 AM- 2930 PM ET



Motivation

- Shared electric scooters have become a popular mode of travel in recent years across the United States
- The rapid adoption of shared electric scooters has created different challenges for cities
- One important challenge is related to shared e-scooter parking:
 - Block sidewalks
 - Impede access to bus stops
 - Obstruct access to fire hydrants
 - Create safety hazards
- Shared e-scooters have also created opportunities for cities; they could service as First-mile/last-mile to public transit
- Can we help to solve shared e-scooters parking challenges and promote them as first-mile/last-mile solution?



Background

Research Objective

- Propose e-scooter corrals near bus stops to encourage the use of these two modes

Study Location

- Nashville, Tennessee



Why Nashville?

- Popularity of shared e-scooters
- Nashville was ranked third among cities that have the greatest potential for micromobility options to succeed in the United States
- Nashville has a very accurate disaggregated shared e-scooters trip dataset
- Prior understanding of shared e-scooters usage patterns and impacts on transit in Nashville (1,2)

Method

Step 1: Identification of shared e-scooter trips complementing transit

Supervised machine learning models were used to classify shared e-scooters trips based on a prior study (1)

Social trips were chosen as they have positive impact on bus ridership, as suggested by a prior study (2)

Step 2: Assignment of shared e-scooters to bus stops

Bus stops in Nashville CBD were explored

A catchment area of 0.1 mile around each stop was used

Step 3: Ranking bus stops based on multi criteria scoring system

The average weekday **social trips started**

The average weekday **social trips ended**

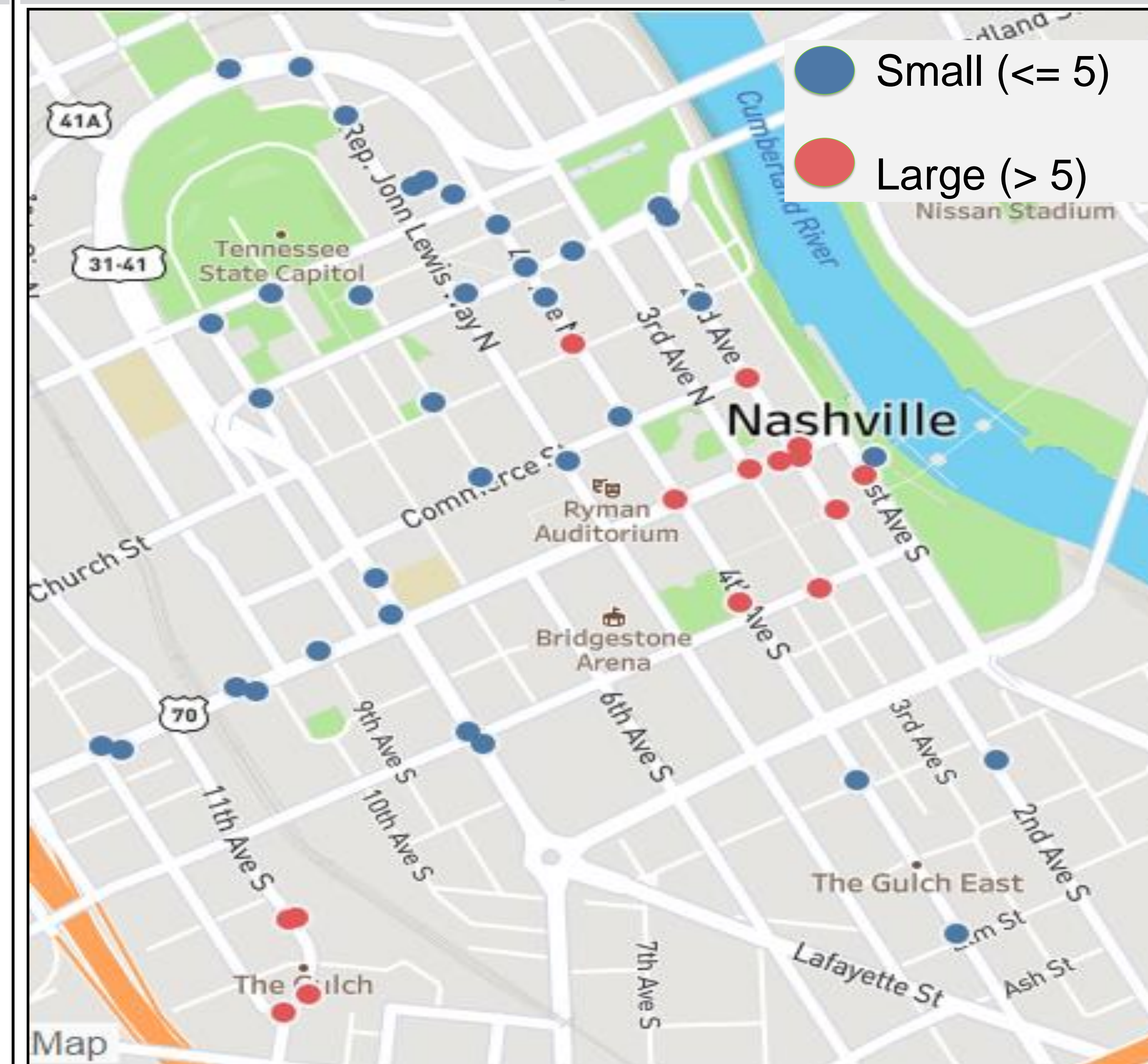
The number of **bus routes**

The number of **bus trips**

Step 4: Propose capacity for corrals

The 85th percentile of number of hourly trip origins was used to classify bus stops into two groups

Results: Proposed Locations



Considerations for Implementation

- Space availability and curb use
- Converting on-street parking
- Bike lanes and other bike infrastructures

Conclusions

- This study proposed 50 potential locations for shared e-scooter corrals near bus stops in the central business district of Nashville
- The proposed locations could capture about 44% of shared e-scooter demand

References

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- Ziedan, A., Shah, N. R., Wen, Y., Brakewood, C., Cherry, C. R., & Cole, J. (2021). Complement or compete? The effects of shared electric scooters on bus ridership. Transportation Research Part D: Transport and Environment, 101, 103098.

ACKNOWLEDGMENT

The authors would like to acknowledge the Transit-Serving Communities Optimally, Responsively, and Efficiently (T-SCORE) University Transportation Center (T-SCOTRE) and Tennessee Department of Transportation for funding this study. The authors would also like to thank the Public Records department of Nashville MPO for providing the shared e-scooters data. The authors also would like to thank Derek Hagerty from Nashville DOT and Justin Cole from WeGo.