STRIDE | Southeastern Transportation Research, Innovation, Development and Education Center

Technology Transfer Final Report

STRIDE Project Q2

Enabling the Shared Transportation Revolution

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THE STRIDE CENTER

The STRIDE Center is the 2016 USDOT Region 4 (Southeast) University Transportation Center (UTC) housed at the University of Florida Transportation Institute (UFTI). Our mission is to develop novel strategies for Reducing Congestion. The Center has nine partners, representing seven states in the Southeastern U.S. The UFTI and its partners in the STRIDE Center are recognized leaders at state, regional, national, and international levels. The STRIDE Center is focused on assembling and integrating research projects throughout the region in a way that maximizes contributions to solving current and future transportation problems as well as strengthening expertise and developing new technologies. For more information see https://stride.ce.ufl.edu/.

DISCLAIMER

ACKNOWLEDGEMENT OF SPONSORSHIP AND STAKEHOLDERS

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1. Project Overview

Although TNCs offer shared ride services, including LyftLine and UberPool, the number of carpool trips is far less than their typical non-shared services. Shared ownership of vehicles is not enough to mitigate most issues in the transportation system (congestion, inefficiencies, emissions, etc). Pushing toward shared usage is critical in urban areas, however shared usage is dependent on the ability to link travelers to one another and their willingness to share the ride. The COVID-19 disruption dramatically impacted the willingness to share the ride in modes such as ride-hailing, shared ride-hailing, and public transit. This presented a unique opportunity to study attitudes, reactionary behavior, and recovery as a disruption with the magnitude of the COVID-19 pandemic had the potential to bring about many short-term and long-term behavioral changes.

To predict if the "social distancing" nature and resulting shifts in behavior from the pandemic continued to persist after the pandemic ends, this work examined preferences and behaviors towards shared mobility during different stages of the pandemic. Although levels of comfort using shared modes improved since the summer of 2021, participants still reported that their comfort using transit, ride-hailing, and shared ride-hailing would not fully return to pre-pandemic levels by October 2022. Understanding the impact and response from this disruption was important to aid policymakers in building a more resilient and sustainable transportation system. Creating a flexible curb design is essential for such a space to be both permeable and efficient in dealing with evolving demand. Curb data collected in Atlanta, GA showed that pick-up/drop-off (PUDO) activity differs significantly from traditional parking behaviors both in terms of dwell time and event location, and also allowed for a calibration of double-parking behavior. Application of micro simulations models identified that a progressive shift away from traditional long-term parking towards PUDO led to an observed higher curb productivity, lower occupancy, and significant reductions in delay.

2. Research Goals

- Observed and collected pick-up and drop-off (PUDO) activities and mobility surveys in Atlanta, GA.
- Examined the perception of comfort in shared mobility services before, during, and after the COVID-19 pandemic.
- Demonstrated the potential for dedicated PUDO zones to reduce double parking, increase curb utilization, and positively affect through traffic.

3. Findings

- During the pandemic, traditional factors (demographics) were not as significant as other COVID-related factors in explaining the sample's general lack of comfort using shared rides; presence of masks in shared environments improved comfort levels, especially in transit and a small, enclosed space.
- Although levels of comfort using shared modes improved since the summer of 2021, participants reported that their comfort using transit, ride-hailing, and shared ride-hailing would still not fully return to pre-pandemic levels by October 2022.
- Survey respondents were overly optimistic when predicting their post-vaccine future level of comfort using shared mobility services; This trend was especially significant for higher income individuals when predicting their transit comfort, indicating that these "choice riders" were the least accurate and were overly optimistic about using transit in a post-COVID world.

- Strategies which involve the separation of curb uses appear to be effective in reducing delay for vehicles and optimizing curb utilization with an increase in the share of PUDO activity at the curb.

4. Performance Metrics

Metric	# Completed
OUTPUTS	
Product(s): Number of new or improved tools, technologies, products, methods, practices, and processes created or improved	3 completed 1) COVID-19 and Shared Mobility Survey 2) Curbside Management Scenario Modeling 3) Curbside Management Education Product
Technical Report: Number of client-based technical reports published	1 (STRIDE Final Report)
OUTCOMES	
Body of Knowledge: Number of trainings for transportation professionals	1 (STRIDE Webinar)
Professionals Trained: Number of professionals participating in trainings	Estimated 137
IMPACTS	
Stakeholders: Number of stakeholders you met with to encourage adoption or implementation of product(s)	4 (Coke, Lime, Midtown Alliance, UC DAVIS)
Adoption/Implementation: Number of incidences outputs of research have been implemented or adopted	Underway

5. Products

1) COVID-19 and Shared Mobility Survey and Methodology

This product is a questionnaire survey that was implemented to measure the comfort and usage of users on three types of shared mobility: (1) private ride-hailing, (2) shared ride-hailing, and (3) public transit, during three time periods: (1) recent past, (2) current, and (3) future. It can be used by researchers and analysts in quickly documenting users' attitudes towards shared mobility during the pandemic. The survey can inform public transit agencies, transportation planners, and TNC provides about the determinants that drive people towards the use of shared ride-hailing services.

2) Curbside Management Scenario Modeling

This product fills the literature gap of traffic and curb impacts from the shift of long-term parking to ride-hailing vehicles while allowing for double parking and on-street parking using a microsimulation (VISSIM). The use of microscopic simulation software proved to be a good tool to explore and examine the impacts of different curb configurations on traffic flow and curb performance. Analysis of the simulation results indicated potential congestion reduction from introducing curb management

strategies. The collected curbside data from Atlanta, GA can be used by transportation policy makers to analyze PUDO behavior and researchers can use it as a base to calibrate future models.

3) Curbside Management Literature Review and Educational Product

This product reviews earlier studies on attitudes towards shared mobility and the emerging literature analyzing the impact of COVID-19. Based on the literature, a lecture was developed to introduce the potential users and uses for the curb zone, examine a few curb treatments and technology solutions, and work through a general process that engineers and planners use to make informed curb decisions. A corresponding activity was developed for students to identify the current uses of a local curb, calculate curb productivity, examine the surrounding context, evaluate the potential solutions, and support their preferred alternative. This product can be used by teachers for transportation engineering outreach.

6. Who benefits/will benefit from your product(s)?

- Transportation agencies
- MPOs
- TNC providers
- Urban planners
- Transportation researchers
- Engineering Educators

8. Body of Knowledge & Professionals Trained

1) Technical Presentation (Poster)- January 2023. Saracco, M., Kiriazes, R., Hunter, M., & Watkins, K. “Caving Up the Curb: Evaluating Curb management Strategies for Ride-Hailing and Ride-Sharing Activity through Simulation” at the 2023 Transportation Research Board Annual Meeting. (estimated 30 attendees)
2) STRIDE Webinar Presentation - October 19, 2022. Kiriazes, R. “Impact and analysis of rider comfort in shared modes during the COVID-19 pandemic” (8 live participants, 23 YouTube views). https://www.youtube.com/watch?v=syGuoJvIZ9c
3) Technical Paper - Transportation Research Part A: Policy and Practice. Kiriazes, R., Watkins, K. “Impact and Analysis of Rider Comfort in Shared Modes during the COVID-19 pandemic” 10.1016/j.tra.2022.08.019. (cited by 1)
4) Technical Presentation – March 2022. Kiriazes, R. “Perception of Shared Mobility Throughout the COVID-19 Pandemic”, 7th Annual Regional UTC Conference for the Southeastern Region in Boca Raton, FL. (25 attendees).
5) Technical Presentation (Poster) – December 2020. Kiriazes, R., Watkins, K. “Shared Mobility in a Post-COVID-19 World” at the Regional UTC Student Spotlight Virtual Conference for the Southeastern Region. (2nd Place in the 2021 STRIDE Poster Competition) (estimated 50 attendees)

9. Stakeholder Engagement

MEETING DETAILS		NARRATIVE DESCRIPTION
STRIDE rep.	Kari Watkins	Met with Coke to discuss project. Unfortunately, we were not able to make the case well enough to Coke for them to be willing to share their data to try a simulation of the ridesharing. However, we were able to convince them to do an employee survey through which some questions about ridesharing were to be asked.
Date of Activity	February 15, 2019	
Type of Activity	in-person meeting	
Location	Coke Headquarters	
Stakeholder(s)	John Sadlo, Director, Site Services, Coke	
STRIDE rep.	Kari Watkins	Discussed the opportunity to collaborate with Lime Scooters on a survey effort to understand the perceptions among the public and micromobility users of COVID-19 risks on different modes of transportation (including micromobility, public transit, and ridehailing). Although a data sharing agreement for this survey was not reached, there is a potential opportunity for future collaboration.
Date of Activity	May 20, 2020	
Type of Activity	in-person meeting	
Location	Email	
Stakeholder(s)	Calvin Thigpen, Director of Policy Research Government Relations, Lime	
STRIDE rep.	Becca Kiriazes	Attended weekly meeting for a semester with UC Davis team about collaboration of future survey data collection efforts regarding COVID-19 transportation decisions and ridehailing. The team has shared data from past surveys, but previous survey efforts involves ride hailing and not specifically shared ride hailing. Future survey efforts are planned to include similar shared ride hailing questions.
Date of Activity	February 2021 - Present	
Type of Activity	phone meeting	
Location	Online	
Stakeholder(s)	UC DAVIS COVID-19 Mobility Study	
STRIDE rep.	Becca Kiriazes and Matteo Saracco	Met with Midtown Alliance to discuss locations with curbside management issues in the Atlanta area. They were willing to share 30+ hours of traffic video footage at four locations. These videos will be processed and used to collect curb activity for VISSIM scenario calibration.
Date of Activity	March 3, 2022	
Type of Activity	in-person meeting	
Location	Atlanta, GA	
Stakeholder(s)	Midtown Alliance	

10. Adoption/Implementation

The curbside literature review was adopted to form a lecture and student homework assignment for Multimodal Transportation course at the Georgia Institute of Technology in 2021. This has been shared with STRIDE and will be used in future outreach activities. Lessons learned from online-survey are documented in an upcoming publication that can be used as guide for quick and effective deployment of online surveys. Curb data collected from the video feeds will be summarized and shared with Midtown Alliance for local policy/project implications. Efforts planned to encourage adoption/implementation of the product(s) include publication of two additional technical papers.

11. Broader Impacts

The impact of the products developed in this study and the results summarized in the final report will inform transportation planners, transit agencies, and TNC providers of potential transportation behavior regarding the future comfort using shared mobility services. Local engineers and planners can use this product to prioritize PUDO curb strategies in and effort to mitigate congestion.