Proceedings of the Human Factors and Ergonomics Society Annual Meeting
2023, Vol. 67(1) 1289–1294

DOI: 10.1177/21695067231192636
journals.sagepub.com/home/pro
Sage

# Factors Influencing Adoption of Pooled Rideshare An Explorative Study on User-Centered Design and Services

**Rakesh Gangadharaiah, MS[1], Haotian Su, MS[1], Elenah B. Rosopa[1], Kristin Kolodge MS[2], Lisa Boor[2], Patrick J. Rosopa, PhD[1], Yunyi Jia, PhD[1], and Johnell O. Brooks, PhD[1]**

**Abstract**

The rise of real-time information communication through smartphones and wireless networks enabled the growth of ridesharing services. While personal rideshare services (individuals ride alone or with people they know) initially dominated the market, the popularity of pooled ridesharing (individuals share rides with strangers) has grown globally. However, pooled rideshare remains less common in the U.S., where personal vehicle usage is still the norm. Vehicle design and rideshare services may need to be tailored to user preferences to increase pooled rideshare adoption. A national U.S. survey ($N$ = 5,385) used exploratory and confirmatory factor analyses to identify four key factors influencing riders' willingness to consider pooled rideshare: *comfort/ease of use, convenience, vehicle technology/accessibility*, and *passenger safety*. Understanding and implementing these user-centered design principles and service-related factors may be critical for increasing the future use of pooled rideshare services in the U.S.

**Keywords**

ride-hailing, pooled rideshare, user experience, factor analysis, transportation network companies, user acceptance

## Introduction

Ridesharing is the formal or informal sharing of rides between drivers and passengers having the same origin-destination pairings, as defined by the Society of Automotive Engineers ((*SAE - Shared Mobility*, 2017). Transportation network companies (TNCs) such as Uber and Lyft offer personal or pooled rideshare services, which can be requested in real-time through their mobile applications. The advent of information and communication technology (ICT) has enabled internet-based ridesharing services, including real-time, dynamic ridesharing systems that depend on effective communication between the driver and riders (*Lyft Navigation*, 2019; *Uber Navigation*, 2019). Real-time ridesharing has become possible due to advancements in smartphones, GPS, and ride-matching algorithms.

Rideshare services are gaining popularity globally, with Uber's service being available in over 10,000 cities across 72 countries. The rise in smartphone usage has resulted in an increase in on-demand ridesharing services. Real-time ridesharing systems use information and communication technology to provide dynamic communication to provide their services. Real-time ride-matching is only possible due to accurate and reliable location information. Information communication technology (ICT), smartphones, and GPS led to real-time ride-matching, enabling pooled rideshare (Siddiqi & Buliung, 2013). Real-time, dynamic ridesharing systems need to have efficient operations, including target customers and a service area, service times and routes, ride-matching algorithms, mileage calculation, criteria of fare calculation, payment method, the ability to know customer preferences, and transparent communication.

Using the technological advancements in its services, rideshare service companies can offer a convenient and flexible mode of transportation and the ability to multi-task during the ride (Malokin et al., 2019). Safety is a critical factor for ridesharing services. Riders' willingness to share rides with strangers increases if they can broadcast their location

[1]Clemson University, Greenville, SC, USA
[2]J.D. Power, Troy, MI, USA

**Corresponding Author:**
Rakesh Gangadharaiah, Clemson University, 4 Research Drive, Greenville, SC 29607, USA.
Email: rakeshg@clemson.edu

information to family or friends for safety purposes (Gurumurthy & Kockelman, 2020). Trust is also an important topic when considering ridesharing (Amirkiaee & Evangelopoulos, 2018). Riders feel safe traveling with co-workers or riders from the same neighborhood. Trust can also be established through rider reviews and rating systems, which reward good behavior (Pratt et al., 2019).

Pooled rideshare acceptance may be increased by exploring the travelers' preferences and identifying their concerns. There may be an opportunity to use technological advancements in several domains, e.g., information and communication technology (ICT), vehicle automation (Gangadharaiah et al., 2023), to enhance rideshare vehicle designs, service, and experiences to address the barriers to using rideshare but at the same time there may be user-centered design or service-related factors that may increase rideshare acceptance. After completing an in-depth literature review, our team designed and conducted a national, US online survey. This paper focuses on potential ways to optimize the pooled rideshare experience using an exploratory factor analysis to identify the key groupings of topical areas. Then, a confirmatory factor analysis was conducted to verify the results.

## Method

### Participants

This study was approved by the Institutional Review Board at Clemson University and was conducted between July and August 2021. Participants were required to answer two screener questions regarding their age and rideshare experience within the last five years, and those who worked as drivers for rideshare companies but had no experience as passengers were excluded from the study. The study included a total of 5,385 participants, with 2,000 recruited across the United States and 3,385 from targeted locations such as Atlanta, Austin, Chicago, Detroit, New York City, San Francisco, and the Upstate of South Carolina. Participants were required to be at least 18 years old, and their ages ranged from 18 to 95 years, with a mean of 46.5 years (SD = 17.5). Of the total participants, 2,803 self-identified as female and 2,545 as male.

### Online Survey

After the two screener questions and providing consent, each participant completed five sections:

- Section 1: Your transportation needs. This section asked questions to understand the participant's typical modes of transportation and reasons for using personal and pooled rideshare services.
- Section 2: Willingness to consider pooled rideshare (PR). This section evaluated the participant's readiness to utilize PR.
- Section 3.a and 3.b: Would/Would not consider PR. This section investigated topics that may attribute to the participant's willingness or unwillingness to consider using pooled rideshare.
- Section 4: Optimizing rideshare experience. This section examined topics related to user-centered topics and service-related needs.
- Section 5: Demographics. This section gathered information about the participant and their household.

The present study focused exclusively on questions from Section 4 of the survey, "optimizing rideshare experience" with 23 items. Originally the authors grouped the items into three categories: mode, HMI, and route; where the mode category consisted of 7 items related to vehicle technology and rideshare services provided by the TNC companies. The HMI category consisted of 10 items related to user interaction with the vehicle and/or related rideshare services. The route category included 6 items related to trip services for a ride such as cost, time, and the trip's details (see Table 1). Each item was rated based on the level at which participants agreed with each of the given statements: 'Strongly disagree', 'Disagree', 'Agree', and 'Strongly agree', where 'Strongly disagree' means that the condition given in the statement would not increase their likelihood to choose pooled rideshare at all, and 'Strongly agree' demonstrates that the condition given in the statement would significantly increase their likelihood to choose pooled rideshare.

### Data Analysis

Participants were asked to respond to 23 survey items in the section titled "Optimizing rideshare experience." The data collected from these responses were analyzed using exploratory and confirmatory factor analyses.

First, an exploratory factor analysis (EFA) on the 23 survey items was conducted to identify the underlying latent dimensions or factors. Based on the results of the EFA, a factor model was generated to group the survey items into categories with the best overall fit within the group (Hayton et al., 2004).

Next, to validate the factor model, a confirmatory factor analysis (CFA) was conducted using a holdout validation approach with an 80/20 split (Brown & Moore, 2012). This means that 80% of the total sample ($N$ = 4,296) was selected for the EFA model fitting, and 20% of the total sample ($N$ = 1,099) was selected for the CFA model fitting. The total sample set was grouped according to the regions of participants (national sample and 7 different cities) and their willingness to consider using pooled rideshare ('Yes', 'No', and 'Don't know' responses). In each sample group, 80% of the samples were randomly selected for the EFA sample set, and 20% of the samples were randomly selected for the CFA sample set. This process helped to ensure that the factor model was robust across different groups of participants. The EFA and

**Table 1.** Original category and survey items from section 4.

| Original category | Survey item | Item name |
|---|---|---|
| Mode | The vehicle is automated and does not have a human driver | Mode_VehAutomated |
| Mode | The vehicle is a battery-electric vehicle (only runs on electricity) | Mode_VehElectric |
| Mode | The vehicle is cleaned/disinfected in between rides | Mode_VehCleaned |
| Mode | The vehicle is accessible for passengers with disabilities | Mode_DisabilityAccess |
| Mode | I can ride with a person who is like me | Mode_Co-riderLikeMe |
| Mode | The other passenger is pre-screened by the rideshare service | Mode_Prescreen |
| Mode | A subscription service is available (i.e., fixed monthly cost for unlimited rides) | Mode_Subscription |
| HMI | The rideshare service app is easy to use | HMI_AppEaseOfUse |
| HMI | I can adjust the temperature in the vehicle to my liking | HMI_Temperature |
| HMI | I can see a profile of the other passenger | HMI_SeeProfile |
| HMI | I can adjust the seats in the vehicle for comfort | HMI_AdjustSeat |
| HMI | The vehicle design creates private spaces | HMI_PrivateSpace |
| HMI | I can call to request a ride instead of using the app | HMI_CallToRequest |
| HMI | There is sufficient storage in the vehicle for all my belongings | HMI_StorageSpace |
| HMI | I can sit where I want in the vehicle | HMI_SitWhereIWant |
| HMI | The vehicle offers me information and entertainment throughout the experience | HMI_Infotainment |
| HMI | I had someone to help me with the service during my first time requesting a ride | HMI_SomeoneToHelp |
| Route | The cost to share a ride is more affordable than other transportation | Route_Affordable |
| Route | A ride is available 24/7 | Route_Available24/7 |
| Route | The other passenger is coming from or going to the same event/location as me | Route_NearbyRiders |
| Route | I can provide information about my trip and location to my family and/or friends | Route_LocationShare |
| Route | There is clear information about the ride (e.g., cost, route, time) before I book it | Route_RideInformation |
| Route | I won't be delayed by long detours | Route_NoDelay |

CFA allowed the researchers to identify latent dimensions underlying the surveyed items and gain an understanding of the user-centered design factors influencing participants' attitudes toward using pooled rideshare.

## Results

### *Descriptive Statistics*

Out of the total sample, 21 out of 23 survey items were reported as 'Agree' or 'Strongly agree' by over 50% of the participants. The two items that fell below the 50% threshold were '*The vehicle is automated and does not have a human driver*,' with 35.1% and '*The vehicle is a battery-electric vehicle (only runs on electricity)*' with 44.9%. Both items were in the mode category. On the other end of the spectrum in the mode category, '*The vehicle is cleaned/disinfected in between rides*', was the statement with the greatest percentage of participants (82.1%) responding either 'Agree' or 'Strongly agree'. Using a threshold of 75% of participants responding with either 'Agree' or 'Strongly agree', one additional item in the mode category met this criterion, '*The other passenger is pre-screened by the rideshare service*' (76%). Only two items in the HMI category met the 75% criteria, *'Rideshare service app is easy to use'* (78.9%) and *'There is sufficient storage in the vehicle for all my belongings*' (79.1%). All of the six items in the route category met the 75% criteria. In descending order they are: '*There is clear information about the ride (e.g., cost, route, time) before I book it*' (84%), followed by '*I won't be delayed by long detours*' (81.5%), '*The cost to share a ride is more affordable than other transportation'* (79.2%), *'A ride is available 24/7'* (77.8%), *'I can provide information about my trip and location to my family and/or friends'* (77.4%), and *'The other passenger is coming from or going to the same event/location as me'* (76%). A descriptive summary of the responses is shown in Figure 1.

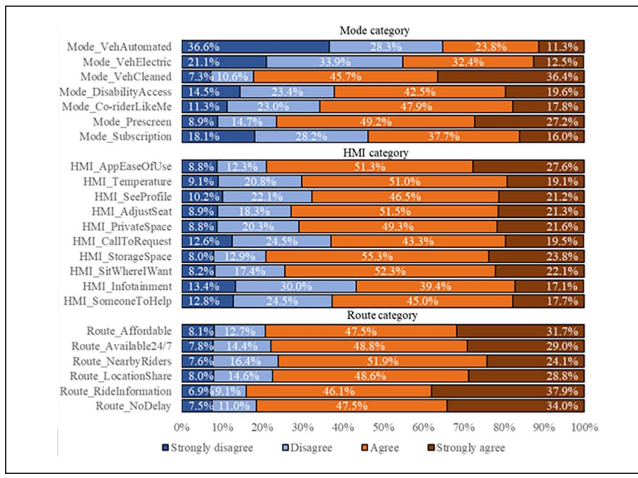


**Figure 1.** Summary of the responses to the survey items from the total sample ($N = 5,385$).

**Table 2.** Standardized loadings (pattern matrix) of the 23 survey items on the four factors.

| | Comfort/ ease of use | Convenience | Vehicle technology/ accessibility | Passenger safety |
|---|---|---|---|---|
| HMI_AdjustSeat | **.92** | .00 | -.07 | -.02 |
| HMI_SitWhereIWant | **.86** | .01 | -.12 | .06 |
| HMI_Temperature | **.84** | .01 | .01 | -.03 |
| HMI_StorageSpace | **.75** | .22 | -.15 | -.01 |
| HMI_PrivateSpace | **.72** | -.03 | -.01 | .14 |
| HMI_Infotainment | **.72** | -.05 | .34 | -.17 |
| HMI_CallToRequest | **.71** | .00 | .1 | -.07 |
| HMI_SomeoneToHelp | **.62** | .08 | .18 | -.07 |
| HMI_SeeProfile | **.51** | -.01 | .08 | .24 |
| HMI_AppEaseOfUse | **.50** | .39 | -.06 | .00 |
| Route_Affordable | -.08 | **.89** | .09 | -.06 |
| Route_RideInformation | .00 | **.88** | -.12 | .09 |
| Route_NoDelay | .01 | **.83** | -.1 | .05 |
| Route_Available24/7 | .13 | **.71** | .09 | -.07 |
| Route_NearbyRiders | .07 | **.65** | .14 | .00 |
| Route_LocationShare | .03 | **.57** | .09 | .17 |
| Mode_VehAutomated | -.03 | -.04 | **.91** | -.15 |
| Mode_VehElectric | -.10 | .05 | **.87** | .00 |
| Mode_Subscription | .12 | .05 | **.57** | .10 |
| Mode_DisabilityAccess | .14 | -.01 | **.39** | .30 |
| Mode_Prescreen | -.05 | .12 | .00 | **.77** |
| Mode_VehCleaned | .05 | .18 | -.13 | **.72** |
| Mode_Co-riderLikeMe | .18 | -.01 | .32 | **.35** |

*Note*. The variance explained for the four constructs were 26.02%, 18.83%, 11.32%, and 8.10%, respectively. Cronbach's alpha for each construct were .93, .90, .79, and .77, respectively.

## Exploratory Factor Analysis

In order to investigate latent variables that were not directly measured in the survey, an exploratory factor analysis (EFA) was conducted. Latent variables refer to undefined groupings of survey items, and the EFA was used to mathematically group the items and reduce their number. Specifically, the aim of the EFA was to identify high-level influential factors that might impact the decision to consider pooled rideshare.

*Appropriateness of the data.* To determine if the data were appropriate for an exploratory factor analysis (EFA), the Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) test were performed. The result of the Bartlett's test was statistically significant ($\chi^2(253) = 59443.32$, $p < .001$), which suggests that the correlation matrix amongst the survey items was not an identity matrix. Rather, the survey items were correlated with one another, therefore the data were appropriate for an exploratory factor analysis. The Kaiser-Meyer-Olkin test was used to examine the measure of sampling adequacy of each of the survey items as well as the entire survey sample. According to the calculation results, all individual survey items had a measure of sampling adequacy values of .90 or higher. The overall measure of sampling adequacy value for the entire data set was .97, suggesting the sampling adequacy was large enough for an exploratory factor analysis.

*Exploratory factor analysis model.* The study conducted on the willingness of participants to consider pooled rideshare services utilized an exploratory factor analysis to identify the concepts that influence their decision-making. One- and two-factor solutions were rejected for their failure to adequately address the underlying concepts. The factors extracted did not adequately represent the concepts that affect participants' willingness to consider pooled rideshare services. The five- and six-factor solutions were also rejected due to the presence of factors with too few survey items, which might be statistically insignificant. At least three measured indicators under a factor are preferable for the statistical identification of a factor. Therefore, factors with less than three survey items may not be reliable for statistical analysis. The three- and four-factor solutions showed significant differences, with the latter identifying a new construct named *passenger safety*. This construct was formed by isolating survey items '*The vehicle is cleaned/disinfected in between rides*', '*I can ride with a person who is like me*', and '*The other passenger is pre-screened by the rideshare service*'. The high correlations between these survey items justified their combination into a separate *passenger safety* factor, which was clearly distinct from the *convenience* factor. Overall, the four-factor solution provided a more accurate representation of the underlying concepts that influence participants' willingness to consider pooled rideshare services, see Table 2.

The four factors can be described as:

a) The first factor is *Comfort/ease of use*. Ten items were clustered under this construct which explained 26.02% of the total variance. The three items with the highest factor loadings included, '*I can adjust the seats in the vehicle for comfort*' (.92), '*I can sit where I want in the vehicle*' (.86), and '*I can adjust the temperature in the vehicle to my liking*' (.84).
b) The second factor is *Convenience*. Six items were included in the convenience factor and explained 18.83% of the total variance. The items with the highest factor loadings included, '*The cost to share a ride is more affordable than other transportation*', '*There is clear information about the ride (e.g., cost, route, time) before I book it*', and '*I won't be delayed by long detours*' with factors loadings of .89, .88, and .83 respectively.
c) The third factor is *Vehicle technology/accessibility* which included four items and explained 11.32% of the total variance. The items with the highest factor loadings were '*The vehicle is automated and does not have a human driver*' and '*The vehicle is a battery-electric vehicle (only runs on electricity)*' with factor loadings of .91, and .87 respectively.
d) The fourth factor is *Passenger safety*. As described above, three items were included in this factor which explained 8.10% of the total variance. The item with the highest factor loading was '*The other passenger is pre-screened by the rideshare service*' (.77).

### Confirmatory Factor Analysis

A confirmatory factor analysis (CFA) was conducted with the remaining 20% of the data to validate the factors suggested by the exploratory factor analysis. The CFA was accomplished using *lavaan* in R to conduct the analysis with maximum likelihood method. The CFA results suggested a measurement model based on the pattern matrix. A series of goodness-of-fit metrics were calculated to evaluate the measurement model. The model fit yielded $\chi^2(224) = 4{,}179.27$, $p < .0001$. The Root Mean Square Error of Approximation (RMSEA) of the model fit was .064, which fell between .05 and .08 and indicated a reasonable approximate fit. Both the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) of the model fit were above the recommended cut-off value of .90, with .933 and .925, respectively. The Goodness-of-fit Index (GFI) was measured at .905, which was also above the generally accepted .90 cut-off value. With suggestions from multiple metrics, we concluded that the CFA results proved the validity of the factors extracted by the EFA.

## Conclusions

This study explored opinions about the user experience design and preferences to address human factors barriers to user acceptance of pooled rideshare. The nationwide questionnaire was completed by 5,385 participants. We carried out the EFA to explore factors that focused on user-centered vehicle design and ridesharing services that influenced the willingness to consider PR. Then, using the holdout validation approach, the CFA was performed to establish the measurement model describing the relationships between factors and survey items. Four factors were extracted after the factor analyses, and all 23 survey items were retained. The factors were *comfort/ease of use*, explaining 26.02% of the total variance; *convenience*, explaining 18.83% of the total variance; *vehicle technology/accessibility*, explaining 11.32% of the total variance; *passenger safety*, explaining 8.10% of the total variance.

The significance of *comfort/ease of use* found in the study corroborates with existing literature and brings additional context to the relevance and applicability of these factors on PR adoption. The comfort-related items, such as adjusting seats, seat choice, temperature control, and sufficient storage, received the highest factor loadings, indicating users' strong desire for a personalized and comfortable ride experience. This conclusion affirms previous studies, like those by Malokin et al., (2019), asserting the significance of comfort in transportation mode selection. Gluck et al., (2020), also acknowledged the potential discomfort arising from sharing rides, such as unwanted seat allocation and limited privacy. Similarly, ease of use, particularly regarding the rideshare service app, has significant implications for user adoption, supporting findings from Lo et al., (2020).

The *Convenience* factor, represented by six items, is critical for considering PR services. Affordability, transparency about ride details, and minimal detours - emerged as strong preferences among users, resonating with existing research on user needs in commuting. The affordability of rideshare, indicated by the highest factor loadings, aligns with Wang et al., (2019)'s finding that trip costs should be relatively lower for the consideration of PR. Furthermore, clear information about the ride details and limited detours, agreed upon by 84% and 81.5% of participants respectively, reflects users' demand for predictability and efficiency, aspects highlighted in previous studies by Malokin et al., (2019).

The *vehicle technology/accessibility* factor had four significant survey items, with the highest loadings related to automated and electric vehicles. Despite their importance, they received lower ratings, suggesting that technological aspects are less crucial to riders. This aligns with literature suggesting that reliability, accessibility for passengers with disabilities, and economic benefits such as subscription services hold more value for PR users (Gluck et al., 2020). The focus, therefore, shifts towards operational efficiency and inclusivity rather than solely on advanced vehicle technologies.

The *passenger safety* factor, consisting of three survey items, is a significant influence on individuals' acceptance of PR. Pre-screening of other passengers and vehicle cleanliness between rides received high importance among participants, emphasizing the role of hygiene and safety assurance in people's ridesharing acceptance. This aligns with existing studies underlining the rising demand for strict safety measures amid incidents of safety hazards and the COVID-19 pandemic's impact on shared transport systems (Mims et al., 2023). With passenger expectations around safety, hygiene, and the matching of similar profiles, TNCs need to ensure that to meet these preferences. Furthermore, the need to balance rider safety concerns while maintaining an accessible service stresses the importance of user-centered vehicle and service design, a key area for improvement in improving user acceptance of PR.

These four factors grouped with loadings give an insight into the relevance of correlation between the items and the importance of conducting a factor analysis, which helps to predict willingness to consider PR more accurately. These results, along with the socio-demographic data, will be used to develop a comprehensive model to predict user acceptance of PR. A complex relationship between multiple factors, as well as barriers, likely exists. Understanding users' concerns about accepting pooled rideshare will help policymakers and rideshare service companies.

## Highlights

- A nationwide online survey was conducted with 5,385 U.S. participants where 2,000 were recruited as national U.S. samples and the remaining 3,385 were collected from target locations including Atlanta, Austin, Chicago, Detroit, New York City, San Francisco and Upstate SC.
- EFA and CFA analyses suggested four factors *comfort/*
- *ease of use, convenience, vehicle technology/accessibility*, and *passenger safety* for the 23 survey items related to user-centered design and rideshare services.
- *Comfort/ease of use* was the most influential factor on willingness to utilize pooled rideshare when exploring how to optimize the rideshare experience.
- All the items in the *convenience* factor received the participants' highest response.

### Acknowledgments

This material is based upon work supported by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) under the award DE-EE0009205. The views expressed herein do not necessarily represent the views of the U.S. Department of Energy or the U.S. Government.

### ORCID iD

Haotian Su https://orcid.org/0000-0003-3124-6073

### References

Amirkiaee, S. Y., & Evangelopoulos, N. (2018). Why do people rideshare? An experimental study. *Transportation Research Part F: Traffic Psychology and Behaviour*, *55*, 9–24. https://doi.org/10.1016/j.trf.2018.02.025

Brown, T. A., & Moore, M. T. (2012). Confirmatory factor analysis. In *Handbook of structural equation modeling*. (pp. 361–379). The Guilford Press.

Gangadharaiah, R., Mims, L., Jia, Y., & Brooks, J. (2023, April 11). Opinions from Users Across the Lifespan about Fully Autonomous and Rideshare Vehicles with Associated Features. *SAE Technical Paper*. https://doi.org/10.4271/2023-01-0673

Gluck, A., Boateng, K., Huff, E. W., & Brinkley, J. (2020). Putting Older Adults in the Driver Seat: Using User Enactment to Explore the Design of a Shared Autonomous Vehicle. *Proceedings - 12th International ACM Conference on Automotive User Interfaces and Interactive Vehicular Applications, AutomotiveUI 2020*, 291–300. https://doi.org/10.1145/3409120.3410645

Gurumurthy, K. M., & Kockelman, K. M. (2020). Modeling Americans' autonomous vehicle preferences: A focus on dynamic ride-sharing, privacy & long-distance mode choices. *Technological Forecasting and Social Change*, *150*, 119792. https://doi.org/10.1016/J.TECHFORE.2019.119792

Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor Retention Decisions in Exploratory Factor Analysis: a Tutorial on Parallel Analysis. *Organizational Research Methods*, *7*(2), 191–205. https://doi.org/10.1177/1094428104263675

Lo, F. Y., Yu, T. H. K., & Chen, H. H. (2020). Purchasing intention and behavior in the sharing economy: Mediating effects of APP assessments. *Journal of Business Research*, *121*, 93–102. https://doi.org/10.1016/J.JBUSRES.2020.08.017

*Lyft navigation*. (2019). https://help.lyft.com/hc/ko/articles/115012926407-How-to-change-navigation-settings

Malokin, A., Circella, G., & Mokhtarian, P. L. (2019). How do activities conducted while commuting influence mode choice? Using revealed preference models to inform public transportation advantage and autonomous vehicle scenarios. *Transportation Research Part A: Policy and Practice*, *124*, 82–114. https://doi.org/10.1016/J.TRA.2018.12.015

Mims, L. K., Gangadharaiah, R., Brooks, J., Su, H., Jia, Y., Jacobs, J., & Mensch, S. (2023, April 11). What Makes Passengers Uncomfortable In Vehicles Today? An Exploratory Study of Current Factors that May Influence Acceptance of Future Autonomous Vehicles. *SAE Technical Paper*. https://doi.org/10.4271/2023-01-0675

Pratt, A. N., Morris, E. A., Zhou, Y., Khan, S., & Chowdhury, M. (2019). What do riders tweet about the people that they meet? Analyzing online commentary about UberPool and Lyft Shared/Lyft Line. *Transportation Research Part F: Traffic Psychology and Behaviour*, *62*, 459–472. https://doi.org/10.1016/J.TRF.2019.01.015

*SAE - Shared Mobility*. (2017). https://www.sae.org/shared-mobility/

Siddiqi, Z., & Buliung, R. (2013). Dynamic ridesharing and information and communications technology: past, present and future prospects. *Transportation Planning and Technology*, *36*(6), 479–498. https://doi.org/10.1080/03081060.2013.830895

*Uber navigation*. (2019). https://www.cnbc.com/2019/04/11/uber-paid-google-58-million-over-three-years-for-map-services.html

Wang, Z., Chen, X., & Chen, X. (Michael). (2019). Ridesplitting is shaping young people's travel behavior: Evidence from comparative survey via ride-sourcing platform. *Transportation Research Part D: Transport and Environment*, *75*, 57–71. https://doi.org/10.1016/J.TRD.2019.08.017