Center for Teaching Old Models New Tricks (TOMNET)

A USDOT Tier 1 University Transportation Center

PROJECT PROPOSAL: 2017-2018

Title: Attitudes towards Emerging Mobility Options and Technologies – Phase 1: Survey Design

Principal Investigator: Sara Khoeini, Ph.D., School of Sustainable Engineering and the Built Environment, Assistant Research Professor

Co-Principal Investigator: Ram Pendyala, Ph.D., School of Sustainable Engineering and the Built Environment, Professor

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1. Introduction/Problem Statement

Emerging transportation technologies including electric and autonomous vehicles and emerging mobility services such as ride-hailing and vehicle sharing are bringing about transformative changes in the transportation landscape. How will these emerging technologies and mobility services impact user's travel choices, activity-travel patterns, residential location, quality of life, land use, and the energy and environmental footprint? It is very important to understand and predict the behavioral impacts of these changes and plan future transportation systems with a view to improving mobility, accessibility, and environmental sustainability for all, regardless of location and socioeconomic status.

Autonomous vehicles (AV) (also referred to as driverless cars or self-driving cars) are capable of navigating without human input using an array of technologies such as radar, lidar, GPS, Odometry, and computer vision. Most industry experts suggest that autonomous vehicles will be on the road within a few years (1). The Secretary of Transportation in the US stated at the 2015 Frankfurt Auto show that he expects driverless cars to be in use all over the world by 2025 (2). Google plans to have its driverless cars on the market no later than 2018 (3). The Institute of Electrical and Electronics Engineers (IEEE) is predicting that up to 75% of all vehicles will be autonomous by 2040 (4). Virtual ridehailing companies such as Uber and Lyft are beginning to change the transportation landscape in significant ways as they provide door-to-door mobility-on-demand through the use of mobile apps. In general, information technology is making rideshare and transit travel options more convenient using location-aware services and real-time data analytics.

With the emergence of new transportation technologies and services, it is critical that transportation forecasting models be enhanced to account for market dynamics that will result from the increasing penetration of disruptive forces in the transportation domain. To enhance transportation forecasting models, people's attitudes towards and perceptions of these technologies and services need to be measured and understood. Armed with such an understanding, it will be possible to specify and develop behavioral models that account for attitudes and perceptions, adoption cycles, and adaptation patterns. It is envisioned that such models will help decision-makers better plan transportation infrastructure systems and design marketing and policy strategies that maximize the benefits of these disruptive technologies. Attitudes and perceptions are likely to vary by socioeconomic characteristics, existing travel patterns and mobility experiences, and land use and built environment attributes.

This project will collect survey data from a sample of about 1000 residents in the Phoenix metro area to understand how the market may perceive, adopt, and adapt to transformative transportation

technologies. In parallel projects, supported by TOMNET UTC, our collaborators at Georgia Institute of Technology and University of Southern Florida (TOMNET partners) will collect the same data with similar sample sizes from residents of Atlanta and Tampa metro areas. Moreover, our close collaborators at the University of Texas Austin (supported by D-STOP UTC) will also collect similar data from the Austin metro area. It is envisioned that the four studies yield a dataset of more than 4000 responses across four southern metro areas (Phoenix, AZ; Atlanta, GA; Austin, TX; and Tampa, Fl) to understand the perceptions, attitudes and potential behavior toward new transportation transformative changes including autonomous vehicles and ridehailing services.

The entire survey effort, TOMNET Transformative Transportation Technologies Survey (T4 Survey), is planning to do the whole project in three phases of literature review and survey design, survey administration, and data analysis. The pilot phase of the survey will take place during the second phase of the project only in the Phoenix metro area. The goal of the pilot phase with a sample size around 200 is to finalize the survey instrument method and the survey questionnaire. The multi-jurisdiction nature of the survey will deliver a harmonized set of data sets from multiple locations that would afford the ability to perform comparisons and test spatial transferability of behavioral models.

During the initial one-year duration of the project, the research team will review relevant behavioral studies, design the survey instrument, and produce the required reports and documentation. Thus, the focus of this phase-I effort is to understand the contents of related previous surveys and trying to define the main research questions that this study is going to answer. Based on the defined goals and objectives, a team consisting of a dozen travel behavior scientists, across the agencies in charge of conducting the survey, will design a unique survey to collect a rich dataset of users' attributes and mobility choices, together with attitudes, perceptions and stated preferences towards new mobility options and technologies. Covering all these aspects in a professionally designed survey instrument warrant significant efforts during the first year of this project from all the team members.

2. Project Objectives

The overall goal of this project is to collect a rich set of data that includes information about people's attitudes towards and perceptions of advanced transportation technologies and mobility options with a view to inform the development of robust behavioral models of technology adoption capable of reflecting impacts of these disruptive forces on traveler behavior and values.

The objectives of this phase of the project include the development of a harmonized survey instrument, survey design and administration protocol, and sampling plan that other jurisdictions can adopt to conduct similar surveys in their areas. There is significant interest in understanding how people may adapt and respond to the introduction of transformative transportation technologies, but there is considerable uncertainty in how best to design a survey and set of questions that elicit the information needed to develop well-specified behavioral models. This project will provide a data collection protocol and methodology that can be widely adopted.

3. Proposed Methodology and Data

This project will commence with a review of previous studies on attitudes towards and behavioral impacts of autonomous transportation technologies and mobility services. A comprehensive review of previous studies will help identify data needs and behavioral dimensions of interest. The review will help identify data gaps that need to be addressed; gaps may take the form of data content and/or sample groups. The survey instrument may take the form of an online or paper-based mail-out/mail-back survey. A random address-based sample of people living in the Phoenix metro area will be purchased from a marketing company representing the people who the survey will be mailed or emailed to. The survey design decisions will be made as part of the project tasks.

Overview of Survey Content

1. General Information
    - Socioeconomic and demographic attributes
    - Usual travel patterns and vehicle ownership
    - Residential preferences
    - General and transportation-related attitudes
2. Attitudes towards and perceptions of transformative technologies
    - Automated vehicles
    - Ridehailing services
    - Micro-mobility Services
3. Behavioral impacts of transformative technologies on mobility patterns and choices (short- and long-run impacts)
    - Stated preference questions/scenarios
    - Likert-scale statements
    - Multiple-choice questions

The exact content and set of questions will be designed as part of the project tasks.

4. Work Plan (Project Tasks)

The following tasks will be undertaken in this project.

Task 1 - ***Review of behavioral studies about the adoption of and adaptation to transformative transportation technologies***: The project will commence with a comprehensive review of the literature on studies that aimed to provide insights on the behavioral impacts of new transportation services and technologies. The design of the survey within this project will be informed by this literature review, and the project team will seek to ensure that the proposed survey addresses gaps found in the literature.

Task 2 – ***Define survey research questions and objectives:*** Based on the literature review, the research questions that are not covered in previous studies or need further explorations will be defined in this step which will lead to the exact list of survey goals and objectives.

Task 3 - ***Design of the survey questionnaire***: In this task, the project team will first identify behavioral and attitudinal variables that are needed to address the research questions and inform behavioral model specifications. The survey instrument will be designed so that the data needs are met. Findings from the literature review will be used to help guide the survey design and sampling plan. It is envisioned that a respondent sample size of 1,000 will be targeted. The survey design and sampling plan will be harmonized across projects being undertaken in multiple jurisdictions to ensure that the data and findings can be compared across metropolitan regions. Moreover, having a team of a dozen researchers for survey design further enhance the survey questionnaire contents.

Task 4 – Coding and pretesting the survey: After the initial survey draft becomes ready, it will be coded in an online platform and designed on a paper questionnaire. Then the online and paper questionnaire will be distributed across colleagues and students to conduct an internal pretest and finalize the survey questionnaire in terms of content, wordings, and design.

Task 5 – Submission of final deliverables: The final deliverables of the project will include a comprehensive report documenting the literature review, survey design and sampling plan, and data documentation. The project will also result in the delivery of a complete survey questionnaire that can be used to study attitudes towards and behavioral impacts of autonomous vehicles and emerging mobility services.

5. Project Schedule

The project schedule is shown in figure 1.

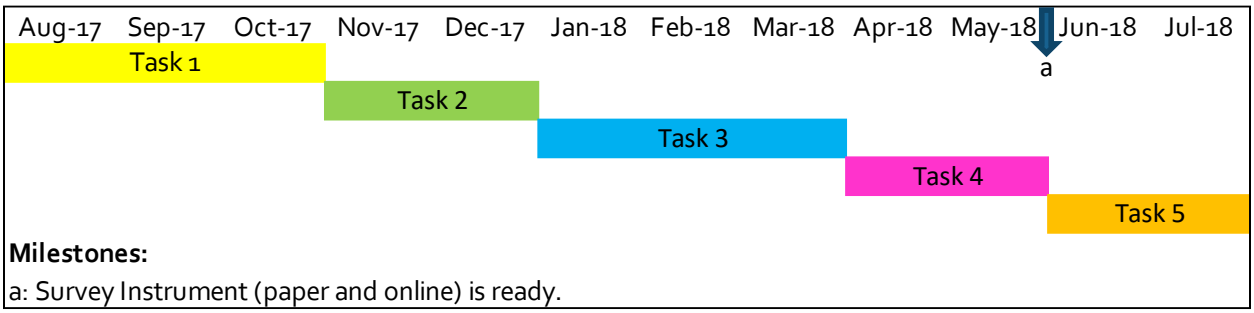

Figure 1 Project planner

As per the schedule, the literature review will be undertaken in August, September, and October of 2017, the first three months of the project. The design of the survey will commence in May 2018. It is anticipated that this task will take five months after defining the survey research questions. During the last two months, the survey questionnaire becomes finalized in the survey recruitment platforms (online and paper) and all the procedures and outputs will be documented in the project report. The next phases of the project consist of defining the sampling plan, survey administration, data collection in the pilot and full phases, followed by data analysis.

6. Relevance to the Center Theme/Mission

This research project involves the collection of attitudinal data to better understand how people perceive and value autonomous vehicles, mobility-as-a-service options, and other disruptive and transformative transportation technologies. Transportation planning agencies are increasingly seeking to forecast travel demand and mobility patterns/choices under alternative future states; however, they are limited in their ability to do so due to a severe paucity of data and behavioral insights on how individuals may adopt and adapt to various disruptive transportation services and technologies. Many studies to date have not gathered data about attitudinal variables, which are likely to play a very important role in shaping the behavioral response to alternative technologies and services. This project directly addresses the theme of the center by collecting attitudinal data together with behavioral and socio-economic information. The resulting data set can be used to develop new behavioral forecasting models that explicitly account for attitudes, perceptions, and values. Therefore, the attitudinal data collection effort contemplated in this project directly addresses the mission of TOMNET, namely, to advance data and methods to explicitly reflect the role of attitudes, perceptions, values, and preferences in activity-travel behavior and mobility choice models.

7. Anticipated Outcomes and Deliverables

The proposed project will result in the development of a rich dataset incorporating information about people's socioeconomic attributes, current travel behavior, attitudes toward and perception of new mobility choices and advanced technologies in transportation, and expected impact of advanced mobility options on traveler behavior and values. It is envisioned that parallel harmonized data collection efforts will take place in three other metropolitan areas, namely, Atlanta, Austin, and Tampa. The project will result in the delivery of harmonized data sets that can be pooled or analyzed separately in subsequent phases (years) of the overall research enterprise. The project will also result in the publication of a final report and the preparation of presentations that document the entire study including the literature review, and survey design plan. It is anticipated that the survey design developed in this research effort can be used by any jurisdiction in the country interested in collecting similar data within its metropolitan region or context.

8. Research Team and Management Plan

The research team is led by Dr. Sara Khoeini, who will serve as the Principal Investigator for the project at ASU. Professor Ram Pendyala will serve as the co-principal investigator for the project and will assist in each and every project task. The project will support one highly qualified Ph.D. student, and a few undergraduate research assistants (who will assist with survey administration and data entry).

Sara Khoeini is an Assistant Research Professor of Transportation Systems in the School of Sustainable Engineering and the Built Environment at Arizona State University. She is the Assistant Director of TOMNET. Sara has extensive experience in the study of traveler behavior and attitudes, particularly in the context of managed lane operations. She has deep expertise in statistical analysis of transportation data and travel behavior modeling. She has conducted special-purpose surveys to collect information about changes in travel behavior in response to changes in transportation system conditions. She has published her work in a variety of journals and has been active in several professional organizations. Sara has her Ph.D. from the Georgia Institute of Technology, MS from Clemson University, and her undergraduate degree from K.N.T. The University of Technology in Iran.

Ram M. Pendyala is a Professor of Transportation Systems in the School of Sustainable Engineering and the Built Environment at Arizona State University. He serves as the Director of TOMNET. Pendyala is an expert in activity-travel behavior modeling and has led the development of a number of large scale behaviorally robust microsimulation model systems. He has published extensively in the literature and serves as the Chair of the Transportation Research Board's Planning and Environment Group (2015-2018). He previously served as Chair of the Travel Analysis Methods Section (2009-2015) as well as the Traveler Behavior and Values Committee (2003-2009). He has also served as the Chair of the International Association for Travel Behaviour Research (IATBR). He is currently an Associate Editor for Transportation Research Part D. He has his Ph.D. and MS degrees in Civil and Environmental Engineering with a specialization in transportation from the University of California at Davis, and his Bachelor's degree in Civil Engineering from the Indian Institute of Technology-Madras in India.

Sara Khoeini will be the primary point of contact for all aspects related to this research and will manage all aspects of the project. She will work closely with graduate students and a few undergraduate students to accomplish the project tasks. She will also coordinate efforts with other research groups conducting the same survey in other US metropolitan areas to ensure consistency in the survey data and products. Ram Pendyala will assist with various project tasks and provide significant input on the design of the survey and sampling plan.

9. Technology Transfer Plan

The project team believes in executing an effective technology transfer plan by disseminating project information and results widely to the professional community. During the one-year duration of this particular project, each milestone will be disseminated using one of the TOMNET communication mechanisms (e.g., website, webinar, seminar, teleconference). Project team members will prepare articles about the survey and data set for publication in refereed journals and conference proceedings. Project team members will participate in conferences and deliver presentations about this work and the outcomes of the effort. The project will also result in the preparation of data and survey products that can be shared with the broader professional community so that other jurisdictions can mimic the study without any difficulty. The project team will conduct webinars and seminars and post all interim reports and technical memoranda online at the TOMNET website.

10. Workforce Development and Outreach Plan

The project incorporates a strong workforce development and outreach plan. The project will employ a full-time Ph.D. graduate student as a graduate research associate. The doctoral student will be involved in all aspects of the project including survey design, sampling plan, data collection, and data analysis. Undergraduate students will also be recruited to participate in the research endeavor; they will be expected to help with data entry, data checks, and data documentation. At ASU, project team members will engage with the National Summer Transportation Institute, a three-week residential summer program for high school students that aims to expose them to transportation-related careers. Finally, the project will also welcome high school students who may be interested in serving as volunteer researchers under the TOMNET Scholar Initiative. Findings from the project will be integrated into graduate-level courses taught at various institutions in the consortium so that the research and workforce development activities of the center are seamlessly blended together.

11. References

John D. Stoll, The Wall Street Journal (2016, May 10). Retrieved on 2017, June 6 from: https://www.wsj.com/articles/gm-executive-credits-silicon-valley-for-accelerating-development-of-self-driving-cars-1462910491

Jan Hauser, Wirtschaft (2015, Oct 19). Retrieved on 2017, June 6 from: http://www.faz.net/aktuell/wirtschaft/unternehmen/verkehrsminister-foxx-selbstfahrende-autos-in-10-jahren-standard-13811022.html

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Tam Hunt (2015, April 01). Retrieved on 2017, June 6 from: https://www.greentechmedia.com/articles/read/the-future-of-the-electric-car

2016 MAG Household Travel Survey. Retrieved on 2017, June 6 from: http://www.azmag.gov/Projects/Project.asp?CMSID=1058&CMSID2=7215

12. Qualifications of Investigators

SARA KHOEINI

Assistant Research Professor, Sustainable Engineering and the Built Environment
Arizona State University (ASU), Tempe, AZ 85287-3005 Email: Sara. Khoeini@asu.edu

Education

Ph.D., Civil Engineering (Transportation), Georgia Institute of Technology, May 2014.
M.Sc., Civil Engineering (Transportation), Clemson University, Dec 2009.
B. Sc., Civil Engineering, K.N. Toosi University of Technology, Aug 2007.

Employment and Professional Experience (last 25 years)

Assistant Research Professor, Sustainable Engineering and the Built Environment, ASU, March 2017 – present
Research Affiliate, School of Civil and Environmental Engineering, Georgia Institute of Technology, April 2015 – Feb 2017
Research Scientist I, School of Civil and Environmental Engineering, Georgia Institute of Technology, March 2014 – March 2015

Fields of Interest and Expertise

(1) Urban transportation systems planning; (2) Travel behavior analysis; (3) Transportation demand modeling and forecasting; (4) Geographic Information Systems; (5) Statistical analysis of transportation data; (6) Travel survey methods and data collection; (7) Sustainability and energy

5 Recent Relevant Publications

1. **S. Khoeini**, and R. Guensler. "Socioeconomic Assessment: Conversion of I-85 High-Occupancy Vehicle to High-Occupancy Toll in Atlanta, Georgia"; Transportation Research Record: Journal of the Transportation Research Board, National Academy of Sciences; No. 2450.1, pp. 52-61, 2014.
2. **S. Khoeini**, R. Guensler. "Using Vehicle Value In place of income For Pricing Economic Analysis: A case study on Atlanta I-85 HOT lane"; Research in Transportation Economics, Special issue on "road pricing in US", Vol. 44, pp. 33-42, 2014.
3. F. Castrillon, M. Roell, **S. Khoeini**, R. Guensler. "The I-85 HOT Lane's Impact on Atlanta's Commuter Bus and Vanpool Occupancy"; Transportation Research Record Journal of the Transportation Research Board, National Academy of Sciences; No. 2470, pp. 169-177, 2014.
4. V. Elango, **S. Khoeini**, Y. Xu, R. Guensler. "Longitudinal GPS Travel Data and Breach of Privacy via Enhanced Spatial and Demographic Analysis"; Transportation Research Record: Journal of the Transportation Research Board, National Academy of Sciences; No. 2345, pp. 86-98, 2013.
5. **S. Khoeini**, R. Guensler, M. Rodgers, V. Elango. "Sensitivity of commuters' demographic characteristics to license plate data collection specifications: A case study for HOV-to-HOT project in I-85 corridor, Atlanta, GA"; Transportation Research Record: Journal of the Transportation Research Board, National Academy of Sciences; No. 2308, pp. 37-46, 2012.

Honors and Awards

Student of The Year, Georgia Tech National Center for Sustainable Transportation, 2013
WTS Helene M. Overly Memorial Scholarship, 2013
Best Student Paper Award, Freeway & Managed Lane Operations Meeting and Conference, Atlanta, GA, 2013
Ranked 2nd, Nationwide Graduate School Entrance Examination, Civil Engineering-Surveying, Iran, 2007

RAM M. PENDYALA
Professor, Sustainable Engineering and the Built Environment
Senior Sustainability Scientist - Global Institute of Sustainability
Arizona State University (ASU), Tempe, AZ 85287-3005 Email: pendyala@asu.edu

Education

Ph.D., Civil Engineering (Transportation), University of California-Davis, December 1992.
M.S., Civil Engineering (Transportation), University of California-Davis, June 1990.
B.Tech., Civil Engineering, Indian Institute of Technology-Madras, June 1988

Employment and Professional Experience (last 25 years)

Professor, Sustainable Engineering and the Built Environment, ASU, 2006-2014 & 2016-present.
Frederick R. Dickerson Chair Professor, School of Civil and Environmental Engineering, Georgia Institute of Technology, 2014-2016
Senior Sustainability Scientist - Global Institute of Sustainability, ASU, 2011-Present.
Asst/Assoc/Professor, Civil & Environmental Engineering, Univ of South Florida, 1994-2006.
Assistant Professor, Civil Engineering, University of Louisiana at Lafayette, 1992-1994.

Fields of Interest and Expertise

(1) Multimodal transportation systems planning; (2) Activity-travel behavior analysis; (3) Transportation demand modeling and forecasting; (4) Mobility analytics and visualization; (5) Statistical and econometric analysis of transportation data; (6) Dynamic mobility management; (7) Travel survey methods and data collection; (8) Built environment – transportation – energy

5 Recent Relevant Publications (from over 200)

1. Garikapati, V. M., Pendyala, R. M., Morris, E. A., Mokhtarian, P. L., and McDonald, N. (2016). Activity Patterns, Time Use, And Travel of Millennials: A Generation in Transition? *Transport Reviews*, 36(5), pp. 558-584.
2. Pinjari, A. R., Augustin, B., Sivaraman, V., Imani, A. F., Eluru, N., and Pendyala, R. M. (2016). Stochastic Frontier Estimation of Budgets for Kuhn–Tucker Demand Systems: Application to Activity Time-Use Analysis. *Transportation Research Part A*, 88, pp. 117-133.
3. Shin, J., Bhat, C. R., You, D., Garikapati, V. M., and Pendyala, R. M. (2015). Consumer Preferences and Willingness to Pay for Advanced Vehicle Technology Options and Fuel Types. *Transportation Research Part C*, 60, pp. 511-524.
4. Garikapati, V. M., You, D., Pendyala, R. M., Jeon, K., Livshits, V., and Vovsha, P. S. (2015). Tour Characterization Framework Incorporating Activity Stop–Sequencing Model System. *Transportation Research Record: Journal of the Transportation Research Board*, 2494, pp. 77-86.
5. Archer, M., Paleti, R., Konduri, K., Pendyala, R., & Bhat, C. (2013). Modeling the connection between activity-travel patterns and subjective well-being. *Transportation Research Record: Journal of the Transportation Research Board*, 2382, pp. 102-111.

Graduate Student Supervision/Advising

Graduated: 10 PhDs (includes 2 women), 50 Masters; **Current Supervision**: 4 PhDs

Recent Honors and Awards

Pyke Johnson Award for Best Paper in Planning and Environment, Transportation Research Board of the National Academies, 2011 and 2013
Invited Speaker, Distinguished Lecture Series, Department of Civil and Environmental Engineering, Florida International University, 2015
Invited Keynote Speaker at 5 International/National Conferences, 2014-2016

13. Budget Including Non-Federal Matching Funds

Institution: Arizona State University

Project Title: Attitudes towards Emerging Mobility Options and Technologies – Phase 1: Data Collection

Principal Investigator: Dr. Sara Khoeini, Assistant Research Professor

Budget Period: 8/1/2017 to 7/31/2018

CATEGORY	Budgeted Amount from Federal Share	Budgeted Amount from Matching Funds	Explanatory Notes; Identify Source of Matching Funds
Faculty Salaries		$20,000	ASU: Dr. Khoeini = $15,000 Dr. Pendyala = $5,000
Other Staff Salaries			
Student Salaries (includes data entry costs)	$20,000		
Fringe Benefits	$2,946	$5,954	Faculty: 29.77% of salaries Grad RA: 14.73% of salaries
Total Salaries & Benefits	$22,946	$25,954	
Student Tuition Remission	$17,228		Full calendar year tuition
Operating Services and Supplies (data storage)		$500	ASU: Pendyala Startup Funds
Domestic Travel		$1,000	ASU: Pendyala Startup Funds
Other Direct Costs (specify): Survey Related Costs (address database, URL, printing and mailing)	$20,000		
Other Direct Costs (specify)			
Total Direct Costs	$60,174	$27,454	
F&A (Indirect) Costs: 54.5% of MTDC (excludes tuition)	$23,406	$14,962	
TOTAL COSTS	$83,580	$42,416	Total Project Cost: $125,996

Grant Deliverables and Reporting Requirements for UTC Grants (November 2016)
Exhibit F

UTC Project Information	
Project Title	Attitudes towards Emerging Mobility Options and Technologies – Phase 1: Data Collection
University	Arizona State University
Principal Investigator	Sara Khoeini
PI Contact Information	Address: 660 S College Ave, CAVC Room 549 PO Box 873005, Tempe, AZ, 85287-3005 Email: Sara.Khoeini@asu.edu
Funding Source(s) and Amounts Provided (by each agency or organization)	US Department of Transportation (Federal UTC): $83,580 Arizona State University (Cost Share): $42,416
Total Project Cost	$125,996
Agency ID or Contract Number	
Start and End Dates	8/1/2017 - 07/31/2018
Brief Description of Research Project	Emerging transportation technologies including electric and autonomous vehicles and emerging mobility services such as ride-hailing and vehicle sharing are bringing about transformative changes in the transportation landscape. With the emergence of new transportation technologies and services, it is critical that transportation forecasting models be enhanced to account for behavioral dynamics that will result from the increasing penetration of disruptive forces in the transportation marketplace. To enhance transportation forecasting models, people's attitudes towards and perceptions of emerging technologies and services need to be measured and understood. Armed with such an understanding, it will be possible to specify and develop behavioral models that account for attitudes and perceptions, adoption cycles, and adaptation patterns. It is envisioned that such models will help decision-makers better plan transportation infrastructure systems and design marketing and policy strategies that maximize the benefits of these disruptive technologies. This project aims to collect survey data from a sample of 1000 residents in the Phoenix metro area to understand how the market perceives, adopts, and adapts to transformative transportation technologies. During the one-year duration of the project, the research team will review relevant behavioral studies, design the survey instrument and sampling plan, conduct a survey pre-test, perform full-fledged data collection through the administration of a comprehensive attitudinal and behavioral survey, compile and clean data, and produce reports and documentation. Thus, the focus of this phase-I effort is to

	collect a rich dataset of users' attributes and current mobility choices, together with attitudes, perceptions and stated preferences towards new mobility options and technologies. It is envisioned that this project will result in the development of a data collection protocol and methodology that can be widely adopted in any jurisdiction interested in replicating the study. (285 words)
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	This research at phase 1 ended up with a survey questionnaire that will be deployed in the next phases. The data that will be collected through this survey will be used in policy and decision making around new transportation technologies today and in the future.
Impacts/Benefits of Implementation (actual, not anticipated)	Producing the right policies that can promote positive aspects and limit the negative consequences of new transportation technologies is the main benefit of this survey.
Web Links • Reports • Project Website	https://www.tomnet-utc.org/asu-av-survey-project.html