

Exhibit D

Research Project Requirement Template

Michigan Mobility Metrics (M3): An outcome-focused, multi-year survey deployment and data collection effort

Recipient/Grant (Contract) Number: The University of Texas at Austin/Grant # 69A3552344815 and 69A3552348320

Center Name: Center for Understanding Future Travel Behavior and Demand (TBD)

Research Priority: Improving Mobility of People and Goods

Principal Investigator(s): Atiyya Shaw

Project Partners: N/A

Research Project Funding: \$300,000 (Federal + non-Federal funding)

Project Start and End Date: 6/1/2024 - 5/31/2027

Project Description: Transportation modes, technologies, and the broader context within which people travel have evolved rapidly over the last decade. Examples of such changes include the introduction of new/emerging modes like ridesharing and micromobility, electric and automated vehicle technologies, information and communication devices; and the increase in remote and hybrid work due to COVID-19. It is critical to understand how these changes will impact residents' travel behaviors and choices into the future, particularly taking into account the diversity in land use and demographics across Michigan. The ongoing statewide household travel survey effort is critical in providing a current snapshot of travel patterns over 2024-2026. To provide an additional layer of context to this survey, we propose a detailed research-oriented survey that can augment this data by providing an in-depth view of residents' attitudes, preferences, behaviors, and intended adoption rates for new transport modes and technologies.

Detailed survey data on residents' attitudes, needs, and intended adoption of emerging/future mobility modes and services can drastically improve demand modeling, planning, and policy development processes across the state. Potential similarity in time frame with the ongoing household travel survey would also facilitate spatially and temporally aligned data integration across the datasets and providing a richer survey dataset than Michigan has ever had before for transportation planning purposes. This rich data can enable the estimation of demand forecasting parameters that make use of the most recent research in these fields, and is particularly opportune given the recent development and implementation of a new activity-based model for the Detroit metropolitan region (for which the Metropolitan Planning Organization is the Southeast Michigan Council of Governments: SEMCOG). Taken together, these developments may improve demand forecasts, evaluation, and policy development for the SEMCOG region, as well as for the state. The proposed data collection effort will be broken down into the following steps:

1. Contextual plan of the geographic area intended for data collection: What are the hard-to-reach populations, what are strategies that have been tried in the past, and what sorts of data collection efforts might be used together to reach these populations?
2. Area and population-specific sampling plan: The information gathered in the prior task will be used to inform the data-collection, recruitment, and instrument design approaches for diverse populations and regions (e.g., urban and rural hard-to-reach populations).
3. Instrument design phase: The instrument design phase will entail the development of survey modules that are directly linked to aims and outcomes in: (1) the activity-based model; and (2) identified user-centered outcomes of importance to the planning and modeling process.

4. Adaptive sampling and data collection effort: Once the instrument is deployed, the team will maintain a descriptive data dashboard that allows for a dynamic sampling strategy.
5. Post-data collection weighting adjustments that take into account populations within subgroups/cells. Efforts will be made to innovate upon existing approaches.
6. Recommendations/caveats for analyzing the data given unique representation biases identified.
7. Linkages between survey data with passive user-centered datasets: The survey data collection effort will be designed from its inception with the intention of linkages with specific passive data (location-based data, consumer data, etc.). This will facilitate the cross validation of various data sources at an aggregate level, and may link this effort with parallel efforts/projects within the research lab.

US DOT Priorities: Equity (page 33), “*Equity and Accessibility Assessment: Develop data, tools, and research to evaluate and advance the equity and accessibility of transportation systems, projects, jobs, and policies.*”): A foundational goal of the proposed project is a sampling plan that specifically considers representation of hard-to-reach populations across the state of Michigan.

Climate and sustainability (page 42), “*U.S. DOT aims to reduce air pollution and greenhouse gas emissions from transportation and to advance a more sustainable transportation system.*”: Data biases underrepresent individuals who are more likely to use active transportation and transit, modes of transport that are key in the effort to reduce carbon emissions from transportation.

Transformation research (page 52), “*Placing humans at the center of the transportation system with all outcomes oriented to supporting human needs, and public leadership ensuring the deployment of emerging technologies meets the needs of all people while supporting equitable and inclusive growth and governance.*”: The methodological and applied aims of this research align well with this research priority. The primary aim of this project is to develop people-centered data and outcomes for transportation policy development and decision-making.

Outputs: The proposed effort will produce a detailed contextual report and sampling plan for hard-to-reach populations/regions, accompanied by a unique survey instrument and rich dataset on mobility-related preferences and behaviors in the state of Michigan. It is expected that these efforts will yield several research publications over the duration of the project and beyond.

Outcomes/Impacts: The sampling methods and unique modules/questions developed can be a significant methodological contribution to future mobility surveys and data collection efforts. In addition, the generated user-centered data and outcomes can be used to improve travel forecasts and policy development in Michigan and beyond. More generally, the dataset will be used to generate new insights and analyses about relationships between the built environment, psychological characteristics, and revealed behaviors and preferences. From a methodological perspective, it is intended that: 1) the context-specific and methodology-driven approach to the deployment and development of this instrument; as well as, 2) the instrument design and topic selection that considers the state activity-based model and user-centered outcomes of interest to the DOT, will influence the state of practice in the field as regards user-centered transportation survey data collection.

Final Research Report: A URL link to the final report will be provided upon completion of the project.