Exhibit D – Research Project Requirement Template

Investigating the Stability and Evolution of Transportation-related Attitudes: Evidence from Two Longitudinal Survey Samples

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

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

Research Priority: Improving Mobility of People and Goods

Principal Investigator(s): Patricia Mokhtarian

Project Partners: N/A

Research Project Funding: $250,001 (Federal and non-Federal funding amounts.)

Project Start and End Date: 06/01/2026 – 05/31/2027

Project Description: Despite extensive evidence linking attitudes to behavior in the academic literature, challenges in measuring and forecasting attitudes remain key barriers to incorporating travelers' attitudes into practice-oriented regional travel demand models. Recent studies have focused primarily on addressing *measurement* challenges, exploring and validating several approaches including the marker variable approach, which involves including an *abbreviated* set of attitudinal items (rather than a *full* set) in household travel surveys. Complementing these prior studies, this project addresses *forecasting* challenges, by examining temporal changes in transportation-related attitudes. Two panel samples are employed: overlapping respondents from (a) two surveys administered in Georgia in 2017 and 2022 (N = 142) and (b) the 2024 and 2025 waves of The Transportation Heartbeat of America Survey (N = 701). After identifying attitudinal factors using exploratory factor analysis, this project will compare attitudinal changes in subsamples with varying socio-economic and demographic (SED) characteristics, focusing on whether raw attitudinal variables or attitudinal factor scores are more stable, which attitude types (e.g., travel, residential preferences, technology) exhibit greater stability, and for whom. Additionally, disaggregate-level statistical models of attitudinal changes are developed to provide a more comprehensive understanding of the observed changes. Overall, this project will provide foundational insights that can help analyze travel demand under scenarios involving changes in key input variables—including attitudes—with plausible and empirically-grounded assumptions about how attitudes may evolve and how they relate to other factors, which ultimately will advance the incorporation of attitudes into demand modeling and planning practice.

US DOT Priorities: The proposed research directly advances the ***Data-driven Insight*** priority in the US DOT Research, Development and Technology (RD&T) Strategic Plan (fiscal years 2022 – 2026), through providing foundational insights into how transportation-related attitudes change over time and what factors are associated with these changes, which can help incorporate attitudinal information into regional travel demand modeling and planning practice in impactful ways. In particular, it responds to the call for "new sources and types of transportation data" and for tools and models that "support investment decisions, improve system operations, and track the long-term performance of the transportation system" (p. 58).

Regarding the objectives corresponding to the ***Data-driven Insight*** priority, this project contributes to the ***Strategic Foresight*** objective. Specifically, the long-term goal of this line of research is to enhance the capabilities of regional travel demand models to support "scenario planning and robust decision-making around policy decisions and investments to address future opportunities and disruptions," with particular attention to changes in travelers' attitudes (p. 59). In addition, this project "[c]onduct[s] exploratory research on transformational mobility data analytics" in keeping with the ***Data Science*** objective on p. 59.

This project also clearly supports "U.S. DOT['s] encourage[ment of] UTCs to engage in research, education, and workforce development" (p. 68) through the involvement and close mentoring of a PhD student.

Regarding the research focus and thrusts of the TBD Center, this project aligns with the ***Data Modeling and Analytic Tools*** thrust, as it aims to "provide actionable insights for policymakers" and contribute to the "methods for forecasting future needs and behavioral responses to investments and policies".

Outputs:

Using data from the 2024 and 2025 THA surveys, administered by the TBD Center, as well as from two GDOT-funded surveys with a five-year measurement interval, the proposed project addresses the challenges in *forecasting* transportation-related attitudes. The findings will help answer several foundational questions, including how stable attitudes are in the short and long term, which attitudes are more stable and for whom, and what factors are associated with attitudinal changes. These findings will inform and stimulate future research on forecasting attitudes and effectively incorporating them into demand modeling and planning practice.

The methods and results will be appropriately documented for replicability in future studies. However, it is probably premature to consider "codifying" this project's processes as definitive, given that this line of inquiry is in the exploratory stage.

The project is expected to generate one or more conference presentations, and ultimately at least one peer-reviewed journal article (probably more). In addition, we expect to make presentations to at least two Metropolitan Planning Organizations that have been supportive of this line of research: the Atlanta Regional Commission (ARC) and the Puget Sound Regional Council (PSRC). We also plan to produce a research brief that summarizes key findings and translates them into practical insights and actionable recommendations for regional agencies. The presentations and research brief will be designed to convey the practicality of the approaches being demonstrated by this and prior TBD projects in this domain, and we expect them to catalyze experimentation with, and ultimate acceptance of, this transformational approach to regional travel demand modeling.

Outcomes/Impacts:

The longer-term goal of this research thread is to influence regional planning agencies to incorporate attitudes into their (a) household travel survey instruments, and (b) travel demand models. If successful in doing so, the outcomes will include increased understanding of travel behavior, and improved ability to predict behavioral responses to societal trends, new technologies, infrastructure changes, and proposed or implemented policies. A nearer-term goal is to train young transportation professionals through caring professional mentorship; rigorous and meaningful research; technical written and verbal communication opportunities and coaching; and assisted development of a broad and deep professional network.

With respect to long-term impacts, this line of research has the potential to substantially influence travel demand modeling and transportation planning practice by addressing one of the main barriers to including attitudes in regional models: attitude forecasting. The resulting model improvements are expected to support the analysis of travel and activity patterns under scenarios that assume plausible and empirically-grounded changes in key input variables, including attitudes as well as more conventional variables such as socio-economic, demographic, and built environment characteristics. This will help practitioners make more informed decisions about planning and policy interventions. In addition, this line of research will expand our knowledge of attitudinal change in a transportation context, providing a more nuanced and multifaceted understanding of emerging travel behavior and transportation issues.

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