Exhibit D – Research Project Requirement

Who Stays and Who Leaves? Examining Sample-Source Effect on Attrition in a Longitudinal Panel Survey

Recipient/Grant (Contract) Number: The University of Texas at Austin; Arizona State University/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): Ram M. Pendyala, Irfan Batur

Project Partners: N/A

Research Project Funding: $200,000 (Federal + non-Federal funding)

Project Start and End Date: 6/1/2026 - 5/31/2027

Project Description: Longitudinal panel surveys are a cornerstone of travel behavior research, enabling measurement of behavioral change over time and facilitating before-and-after studies of policy interventions. Despite their scientific value, panel surveys suffer from a well-documented challenge: attrition. When respondents exit the panel non-randomly between different waves of longitudinal surveys, the resulting stayer sample becomes biased, thereby undermining both sample size and representativeness. While prior literature has examined how individual socio-demographic characteristics influence panel retention, little attention has been paid to whether the initial recruitment channel through which respondents enter a panel survey shapes their propensity to remain across multiple waves. This gap limits the ability of transportation researchers and survey practitioners to design longitudinal studies that yield reliable, representative data.

This project aims to examine whether recruitment strategy significantly influences panel survey retention, even after controlling for socio-economic, demographic, and attitudinal factors, and to identify which recruitment approach yields the highest retention rates. The study will use data from the COVID Future Survey, a three-wave nationwide longitudinal panel survey conducted between April 2020 and November 2021. Wave 1 recruited 8,385 valid respondents through three distinct channels: convenience sampling, mass email outreach, and a commercial online survey panel. Of the original sample, 22.5% responded to all three waves, 11.1% responded to Waves 1 and 2 only, and 66.4% responded only to Wave 1.

The project will formulate and estimate a Generalized Heterogeneous Data Model (GHDM) that jointly treats recruitment strategy membership and panel survey retention as endogenous outcomes, accounting for correlated latent attitudinal constructs and socio-demographic characteristics. Latent constructs to be incorporated include Risk Perception, Work-from-Home Propensity, and Virtual Activity Perception, specified through exploratory and confirmatory factor analyses to capture shared unobserved heterogeneity that simultaneously influences recruitment channel membership and panel retention propensity.

The insights derived from this project are expected to provide actionable guidance for transportation survey practitioners on recruitment strategy selection, improve the reliability and representativeness of longitudinal travel behavior data, and strengthen the data foundations underlying travel demand models and transportation planning decisions.

US DOT Priorities: This project aligns with two of the U.S. Department of Transportation's strategic goals and objectives outlined in the DOT Strategic Plan FY 2026-2030. Its primary contribution lies in the area

of Innovation, Strategic Objective 3.3: Invest in Transformative Technologies. By examining how recruitment strategy shapes longitudinal panel survey retention and data quality, the project supports strategies to "leverage new and emerging data sources" and to apply computational methods that can "process immense and diverse datasets, recognize complex patterns invisible to human analysts, and generate predictive judgments at a scale and speed that is otherwise unattainable" (page 13). The project's secondary contribution is in the area of Infrastructure, Strategic Objective 2.3: Improve System Condition and Reliability. More representative and less attritional longitudinal travel data directly underpin travel demand forecasting models that inform infrastructure investment and system performance decisions, supporting the Department's commitment to "improving the movement of people and goods across the Nation" (page 11).

Outputs: The project will generate a set of research products that contribute to improved understanding of longitudinal survey methodology and support more reliable travel behavior data collection. The study will develop and document a Generalized Heterogeneous Data Model (GHDM) framework for jointly modeling recruitment strategy membership and panel retention, providing a methodological reference for similar analyses of survey attrition. Estimation results and policy implications will be synthesized in a final research report, along with a peer-reviewed journal article and a conference paper and presentation at the Transportation Research Board Annual Meeting.

In addition, the project will produce tangible practitioner-oriented deliverables, including a data brief providing actionable guidance on recruitment strategy selection to minimize longitudinal panel attrition, and policy briefs targeted at metropolitan planning organizations and state DOTs. All analysis code will be deposited in a publicly accessible GitHub repository with appropriate documentation to facilitate reproducibility and enable other researchers to apply the methodology to additional panel datasets.

Outcomes/Impacts: The expected outcomes of this project are an improved, evidence-based understanding of how recruitment strategy shapes longitudinal panel survey quality and retention patterns across population segments. By identifying which recruitment channels are associated with higher multi-wave participation, the study will enable transportation researchers, survey practitioners, and agencies to make more informed decisions in the design of future longitudinal travel surveys.

The project is also expected to contribute to advancements in travel behavior research methodology by providing an open-source code repository and detailed documentation that enable other research teams to replicate and extend the analysis to other panel datasets. These contributions will increase the body of knowledge on survey attrition across diverse contexts and support the development of more robust data collection practices.

In addition, the project will generate insights that can inform transportation planning and policy by improving the representativeness and reliability of longitudinal travel behavior data used in demand forecasting and investment analysis. More accurate behavioral models and better-targeted survey designs can support more effective transportation planning, more efficient allocation of research funding, and graduate student training in advanced econometric methods and survey methodology.

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