

Exhibit D – Research Project Requirement Template

Transportation Satisfaction and Life Satisfaction: Examining the Roles of Attitudes and Personality

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): Chandra R. Bhat

Project Partners: N/A

Research Project Funding: \$75,000

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

Project Description: Life satisfaction has emerged as an important indicator of how individuals evaluate their overall life circumstances, with increasing relevance for understanding how public infrastructure systems contribute to quality of life. Transportation systems play a central role in enabling access to employment, services, and social interaction, yet their contribution to overall life evaluation remains insufficiently understood within transportation planning and policy analysis. This gap limits the ability of agencies to fully account for how infrastructure and service decisions affect user experience, system utilization, and broader societal outcomes.

Life satisfaction, as used here, refers to a self-evaluation of one's life as a whole, according to metrics that individuals themselves value rather than externally imposed circumstantial measures. Two broad psychological frameworks explain variation in life satisfaction. The top-down framework holds that personality plays a dominant role, with more sociable, less neurotic, and more positively oriented individuals predisposed to higher satisfaction regardless of circumstances. The bottom-up framework, by contrast, argues that actual life circumstances across key domains (most commonly job satisfaction and relational satisfaction) are the primary drivers. These frameworks are not mutually exclusive, and this research accommodates both by simultaneously examining domain-specific transportation circumstances alongside personality and attitudinal factors as determinants of both transportation satisfaction and overall life satisfaction.

Transportation infrastructure is a particularly promising domain through which to examine life satisfaction, as it intersects with several fundamental human needs. But, given the importance of attitudes and personality in determining life satisfaction, we focus on the ways that transportation-related attitudes and perceptions influence satisfaction as well as on the ways that transportation circumstances interact with personality characteristics to influence satisfaction. Specifically, this research focuses on four attitudinal/personality-related latent constructs. The first construct is desire for autonomy and control. A sense of freedom and control is strongly associated with life satisfaction and has also been closely connected to transportation options/abilities, potentially revealing an important avenue that transportation provision influences overall life satisfaction. The second construct is desire for socialization, which has also been closely associated with overall life satisfaction in the existing literature. However, here our focus is also on the interaction between transportation context and socialization preferences. These interaction effects allow us to determine if more socially-inclined individuals exhibit elevated levels of life satisfaction when using select modes of transport (such as walking and public transit that may facilitate incidental social interactions). The third latent construct focuses more specifically on transportation, encompassing perceptions of travel time and the productivity/enjoyment of travel itself. Intuitively, this type of domain-specific personality alignment is closely related with transportation-specific satisfaction as well as with

broader life satisfaction. Finally, the last latent construct is somewhat broader, focusing on values alignment. In this case, rather than focusing on any specific values (such as sustainability and safety), we examine the extent to which individuals consider secondary (value-oriented) effects (such as, status associated with a particular mode) when considering their transportation options. This value alignment is an important aspect of how individuals consider their own transportation decisions as well as how they make decisions in general, and is closely connected to their own self-image and their own evaluation of their life circumstances. From a transportation planning and policy perspective, this last latent construct has important policy implications, for instance by helping agencies better frame and communicate infrastructure investments and service offerings in ways that resonate with the values of different user segments.

The study will use data from the Transportation Heartbeat of America survey, a national survey that captures respondents' demographic characteristics, transportation habits, and transportation-related attitudes. As noted above, we focus on two main outcomes: self-reported satisfaction with transportation options and self-reported life satisfaction, each measured on a five-point agreement scale. The modeling framework employs a generalized heterogeneous data model (GHDM) that jointly estimates the two satisfaction outcomes as a function of observed sociodemographic characteristics, transportation context attributes, and the four latent constructs described above. Overall, the project is designed to produce insights that are directly relevant to transportation agencies. The findings will support more effective prioritization of investments, better system performance, and improved evaluation of transportation projects in terms of their broader impacts on user experience and system effectiveness.

US DOT Priorities: This project directly supports US DOT's focus on understanding user needs by developing a behaviorally grounded understanding of how individuals evaluate transportation systems and how these evaluations translate into broader life outcomes. The project advances the state of practice by linking transportation system attributes to user experience through measurable and interpretable constructs. The resulting insights support improved decision-making by identifying which types of investments and service strategies are most effective in enhancing system performance and user satisfaction. In addition, the project provides a framework that agencies can use to better interpret user feedback and integrate satisfaction measures into transportation planning and evaluation processes.

Outputs: The project will produce a set of actionable outputs designed for direct use in transportation planning and policy analysis. These include a peer-reviewed journal article, conference presentations, and a documented modeling framework linking transportation system attributes to user satisfaction outcomes. A key output will be a set of quantified relationships that identify how specific elements of transportation infrastructure and service design influence transportation satisfaction and its connection to broader life evaluation. The project will also generate guidance for incorporating satisfaction-based measures into project evaluation frameworks that can be used by metropolitan planning organizations, state DOTs, and other public agencies.

Outcomes/Impacts: The project will enable transportation agencies to better understand how system performance translates into user experience and satisfaction. It will support the integration of satisfaction-based metrics into planning and evaluation processes, leading to more informed infrastructure investment decisions and improved service design. The project will also have a direct impact on transportation planning and policy by strengthening the connection between infrastructure investment decisions and user experience outcomes. By providing a rigorous framework linking transportation system characteristics to satisfaction, the research will enable agencies to evaluate projects more effectively in terms of how they improve system usability, reliability, and overall performance. The findings will support more efficient allocation of public resources by identifying investments that deliver the greatest improvements in user experience relative to cost. Overall, the research contributes to a more effective, user-responsive, and performance-driven transportation system.

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