Exhibit D – Research Project Requirement Template

Do Millennials and Zoomers Participate in Teleactivities More and Travel Less Than Older Generations?

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): Ming Zhang

Project Partners: N/A

Research Project Funding: $208,000 ($100,000 Federal + $108,000 matching funds)

Project Start and End Date: 6/1/2025 - 8/31/2026

Project Description: This project seeks to bridge two lines of inquiry, both concerning the future trajectory of travel behavior. The first one explores shifts in travel patterns amid the rise of home-based teleactivities – defined here as activities traditionally conducted outside the home but increasingly performed at home through digital technological applications, such as working from home, telehealth, e-learning, livestream sales. As the world transitions into a post-pandemic "new normal," individuals and business operations are adopting various forms of tele-modality, prompting strong interest in their travel implications. Research into the travel implications of teleactivity participation dates back to at least the 1970s, with early studies focusing primarily on telecommuting. These studies identified both substitution and complementary effects: while telecommuting reduced work-related travel, time saved could also be added to non-work trips. In the post-COVID era, the prevalence of working from home and other non-work teleactivities has surged, sparking a new wave of research on their broader impacts on travel behavior.

The second line of inquiry examines lifestyle preferences and travel characteristics across generation cohorts, with a particular focus on Generations Y (Millennials, born 1981-1996) and Z (Zoomers, born 1997-2012). These younger cohorts have grown up during a period of rapid advancements in information communications and digital technologies and are highly engaged with smartphone-based virtual activity participation platforms. Media and scholarly reports have highlighted that, compared to older generations, Millennials and Zoomers are more inclined to live in urban areas, exhibit lower levels of automobility (e.g., lower rates of driver licensing, car ownership, and driving), and delay major life decisions such as employment, home ownership, marriage, and parenting. Millennials and Zoomers are the two largest living adult cohorts in the United States. Together, the two cohorts account for more than 42% of the U.S. population (approximately 172 million individuals) and play a critical role in shaping the future mobility landscape. Understanding their lifestyle preferences, activity patterns, and travel behavior has profound implications for both private industries and public services, especially in transportation planning.

While the literature on travel behavior impacts of teleactivity has expanded rapidly, and generational differences in lifestyle and mobility preferences have been widely studied, few has examined how teleactivity participation and travel behavior intersect across generational cohorts. This project aims to fill the gap, with a particular focus on Millennials and Zoomers.

Analyzing generational characteristics in activity participation and travel behavior requires disentangling the effects of age, period, and cohort. Age effects refer to the changes in preferences, needs, and values that occur as people grow older. Period effects, which affects all individuals regardless of age, stem from specific historical events or societal changes such as the COVID-19 pandemic. Cohort effects are associated with

groups of individuals who share a defining characteristic, such as being born in the same era and sharing similar values. The interplay of these three effects presents a methodological challenge for studying generational patterns in activity participation and travel. To address this complexity, the study will apply an Age-Period-Cohort (APC) modeling framework to examine teleactivity participation and travel characteristics before, during, and after the COVID-19 pandemic, comparing trends across generation cohorts. Ideally, such analysis would use longitudinal data to fully account for the interrelated effects and control for the effects of confounding variables. However, the kind of ideal longitudinal data is not readily available. This research will utilize multi-year cross-sectional data from the annual American Time Use Survey (ATUS), spanning from 2018 to 2024. ATUS provides detailed information on individuals' time use for both in-home and out-of-home activities - including time spent traveling, alongside socioeconomic and demographic data. Behavior characteristics to be studied include: 1) time spent on at-home verse out-of-home activities; 2) total travel time and travel time specifically linked to out-of-home activities, and 3) modal split. The study will also explore interactions, indicated by individuals' time allocation, between at-home and out-of-home, and across different activity purposes. Through integrated research on teleactivity participation and travel across generational cohorts, the proposed project is expected to gain new insights informative to travel demand analysis and transportation planning, business operations, and urban land use policy.

US DOT Priorities: This project supports USDOT's transformation priority by examining how teleactivities and generational shifts are redefining the nature of travel in the United States. By applying an Age-Period-Cohort modeling framework to multi-year American Time Use Survey data, the study investigates the interplay between at-home digital engagements, out-of-home travel, and modal choices across Millennials and Zoomers—the two largest adult generational cohorts. These insights will advance demand forecasting and planning practices to better account for rapidly evolving activity patterns, lifestyle preferences, and technology-enabled behaviors. The results will provide valuable guidance for designing adaptive transportation policies and investments that respond to the profound societal changes shaping future mobility.

Outputs: The research is expected to yield 1–2 high-impact journal publications in reputable academic outlets. Findings will also be disseminated through presentations at major academic and professional conferences. In addition, we will produce a policy brief tailored for relevant transportation agencies, facilitating the translation of research insights into practice. A comprehensive teleactivity-travel-time-use database will be compiled and made publicly available to support future research and planning initiatives.

Outcomes/Impacts: The insights generated from this project will assist Metropolitan Planning Organizations (MPOs), municipal governments, and transit agencies in understanding post-pandemic shifts in teleactivity and travel behaviors across different generations. These insights will enable more effective mobility planning and policy development. Furthermore, private mobility service providers can leverage this information to refine their service offerings and business strategies in response to evolving user needs.

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