Exhibit D

Research Project Requirement Template

A Multidimensional Analysis for Understanding Walking Habits in Older Adults Post-Pandemic

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): Chandra Bhat

Project Partners: N/A

Research Project Funding: $150,000 (Federal + non-Federal funding)

Project Start and End Date: 6/1/2024 - 5/31/2025

Project Description: This study addresses a critical gap in the literature by offering a novel analytical lens to understanding walking behaviors among older adults in the post-pandemic era. The walking survey of older adults in the US population to be used in the proposed research was undertaken through the Foresight 50+ Consumer Omnibus panel survey, which constitutes a probability-based panel designed to be representative of the US household population age 50 or older. The specific walking survey instrument used in the current paper was funded by the American Association of Retired Persons (AARP) and undertaken in July 2022. Using the sample of about 1700 individuals, we undertake an analysis that has several salient aspects.

First, by utilizing data collected in July 2022, the study uniquely focuses on walking habits after the peak of the pandemic. While existing research, such as the study by Hwang et al. (2023), has explored changes in walking frequency post-pandemic, these studies often relied on respondents' expectations of walking rather than their observed behavior. Our study overcomes this limitation by using data grounded in real-world experiences of individual walking patterns (admittedly though, as self-reported by individuals).

Second, the focus on the demographic aged 50 and above addresses a group frequently overlooked in walking research, particularly concerning the long-term effects of the pandemic. Pre-pandemic data highlights a decline in adherence to recommended physical activity levels with age. For instance, in 2018, only 45.1% of those aged over 64 met the recommended activity standards, compared to 59.4% among adults aged 18 to 64 (National Center for Health Statistics, 2019). The pandemic has exacerbated this decline in walking frequency, potentially due to diminished activity and muscle atrophy resulting from extended periods of contact restrictions. As a result, our findings can inform equitable and effective policy interventions focused on the 50+ age group, where walking can significantly improve quality of life and where the pandemic may have caused irreversible changes.

Third, the multivariate perspective integrates frequency, duration, and companionship into a unified analytical framework. The walking frequency dimension reflects the usage of walking as a mode of transportation. The duration measures the total volume and intensity of physical activity, capturing the direct effects of walking on physical health. Additionally, the companionship dimension captures the role of social factors, such as the presence of walking companions, as vital motivators for sustaining an active lifestyle, especially pertinent for the older demographic. This framework includes an ordered response probit model to evaluate weekly walking frequency (categorized as 1-2 days, 3-4 days, 5-6 days, and 7 days), an ordered response model for assessing average weekly duration (segmented into intervals of 10

minutes, 11-29 minutes, 30-59 minutes, and ≥60 minutes), and another ordered response model for the frequency of walking with someone else (ranging from Never, Rarely, Sometimes, Often, to Always). This approach allows for a comprehensive understanding of the interplay between sociodemographic, built-environment, and perceptual factors on various aspects of walking behavior among those aged 50 and above. Also, it permits controlling for unobserved factors that may lead to associations among the three outcome variables. For example, an individual's underlying physical fitness level or motivation for an active lifestyle could simultaneously impact their walking frequency, typical walking duration, and preferred companionship. By jointly modeling these outcomes, we can account for such unobserved confounders and obtain more accurate estimates of the determinants specific to each walking dimension.

US DOT Priorities: "Data-Driven Insight" (DOT RD&T Plan, pp.58-59) describes the basic approach and contribution of this study. The study aims to use new data to provide policy insights to assess and plan for changes to the transportation system in the post-pandemic era. From an Equity (DOT RD&T Plan, pp.33-34) perspective, the study focuses on the 50+ age group which often faces challenges accessing reliable transportation. The results can inform interventions in underserved communities. From an "Environmental Analysis and Mitigation" (DOT RD&T Plan, p.48) perspective, by encouraging older adults to walk more frequently, the research contributes to a more sustainable transportation system.

Technology transfer efforts will encompass publishing findings in relevant transportation, e-commerce, and consumer behavior journals, presenting at conferences to reach industry professionals and policymakers, utilizing online professional networks (e.g., LinkedIn) to disseminate summaries to a wide audience, and establishing an open-access GitHub repository for data and models for community use and contribution. These efforts align with USDOT's priorities to make "R&D results [are made] widely available to other scientists, to the public to facilitate understanding and decisions, and to innovators and entrepreneurs who can translate them into the businesses and products that will improve all of our lives" (Page 64).

Outputs: The proposed research study shall result in a paper that will be submitted to a relevant journal. Also, the paper will be submitted to and presented at relevant conferences and meetings. The dataset compiled for this project as well as detailed formulations of the analytic models used will also be appropriately documented and made available for public use.

Outcomes/Impacts: This project contributes to the body of knowledge by investigating how sociodemographic and built-environment factors influence walking behaviors among older adults. The multivariate modeling system uncovers relationships in this regard after controlling for a host of variables simultaneously. Ultimately, the research provides evidence for targeted interventions to promote walking as a viable transportation mode and a means to enhance health. Additionally, expected outcomes include heightened awareness of the need for walkable environments, leading to policy reforms. Over time, such changes can enhance public health, reduce transportation-related emissions, and contribute to a more accessible and sustainable transportation ecosystem.

The findings from this study hold significant tangible policy implications, particularly in the post-pandemic era. By identifying determinants of increased walking frequency, desired durations, and preferred companions, policymakers can design targeted interventions. Such interventions could include developing public awareness campaigns and educational programs emphasizing the health benefits of regular walking, particularly targeting groups identified as less likely to walk frequently. Also, policymakers could support initiatives that facilitate social walking opportunities, such as walking groups or clubs, catering to the preferences of individuals who enjoy walking with companions. Lastly, the findings can inform effective investments related to creating and maintaining safe and accessible walking paths, sidewalks, and green spaces that encourage walking in diverse environments and durations.

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