

Exhibit D

Research Project Requirement Template

Analysis of Changes in the Activity Prisms of Individuals to Predict a Shared Life Experience Metric Over Different Regions and Sociodemographic Groups

Recipient/Grant (Contract) Number: The University of Texas at Austin; City College of New York / 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): Mahdiah Allahviranloo

Project Partners: New York City Department of Transportation

Research Project Funding: \$132,675 (Federal + non-Federal funding)

Project Start and End Date: 3/1/2024 - 5/31/2025

Project Description: Technology has changed individuals' travel behavior and time-use in so many ways. As much as it offers variety of benefits to societies, it may add to social exclusion phenomena, since the need for travel is being replaced by a click of a button in cell-phone. People don't feel the need to leave their home to carry out their tasks. They work from home, they order their items online, and even if they want to attend a meeting, they no longer are obliged to travel. Technology, in fact, creates an invisible bubble around individuals, which the size and the thickness of the bubble may vary across different individuals and households. Wouldn't this make us feel lonelier and more excluded? Research shows that equity in transportation and mobility is closely tied to happiness and well-being. Ensuring that transportation systems are accessible, affordable, and inclusive can lead to reduced stress level, improved quality of life, better health, and greater opportunities, all of which contribute to greater happiness in communities and societies. Public policies, urban planning, and social factors all play a role in shaping this complex relationship.

In our earlier works, we have discussed about Shared-life Experience (SLE) metric, where we defined it as the likelihood that individuals would interact with others due to their travel patterns; and we also highlighted the importance of travel and access to transportation in having a higher SLE. In this project, we aim to expand the concept in three ways: (a) we define a new SLE metric which is based on the activity prisms of individuals; (b) we analyze the changes in the SLE metric in the individual level over multiple years, using City Wide mobility data that is collected annually; (c) We run a probabilistic analysis to predict changes in the SLE metrics to identify how different regions and different sociodemographic groups will be impacted by. The results of the analysis will identify the most vulnerable areas and groups of people.

US DOT Priorities: The proposed project is fully aligned with 'equity and accessibility assessment' theme described as research priority. We will introduce new metrics to evaluate the impacts of different policies on accessibility and creation of more inclusive societies through transportation and mobility.

This project addresses the following USDOT technology transfer priorities (p. 64, last paragraph):

"To further encourage the adoption of innovations, U.S. DOT agencies publish technical papers and guides; present webinars and deliver presentations to stakeholders; create websites; develop and deliver training courses and workshops; engage in standards development activities, and distribute newsletters and other outreach materials highlighting research results. U.S."

Outputs: The results of the project will be disseminated in different formats:

- Academic outlets: Publications; Conference presentations
- Database: Project specific Github for code repository; Interactive dashboard.
- Education Component: The project results and analysis tools will be incorporated in courses thought by PI in undergraduate courses (transportation planning course, data analytics course).

Outcomes/Impacts: Defining a new equity metric, SLE, can be a transformative tool for planners and policymakers. This metric, along with other existing metrics, can serve as a compass, guiding decision-makers in their pursuit of more equitable and inclusive communities. By quantifying and assessing various dimensions of equity, it can enable a deeper understanding of disparities within population.

The metric can be used by planners and policymakers to design targeted interventions and policies to address inequities. For instance, it can inform the allocation of resources to underserved areas, the expansion of public transportation networks, or the development of affordable housing initiatives

This project will generate a multi-dimensional shared life experience metric that can be used to set equity-aware policies. This metric can be used to quantify the impacts of different policies on enhancing the quality of life for all residents, improving access to education, healthcare, and economic opportunities.

It can also be used to address disparities and inequalities in a more systematic way to create an inclusive social fabric for the cities.

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