Updating and Expanding the Nation's Most Comprehensive Database of Household Travel Survey Data and Related Built Environmental Data

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Center Name: Center for Transit Oriented Communities (CETOC)

Research Priority: Preserving the Environment

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Project Partners: Various MPOs TBD

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Project Start and End Date: 10/01/2024 - 5/31/2026

Project Description: For many years, the PIs of this study have been gathering household travel survey data from metropolitan planning organizations across the US. In addition to household sociodemographic data and trip purpose, length, mode and other variables, this unique database includes the precise XY coordinates of all households and trip ends. The current database consists of 36 regions, 107,949 households, and 1,059,678 trips, making it nearly as large as the National Household Travel Survey (NHTS) of 2022 but more geographically detailed. The unique feature of this database is the precise geocodes it offers, unlike the NHTS, which only provides geocodes at the level of the census tract. These data have been provided by MPOs to the PIs in many cases through non-disclosure agreements. Thus, it has been possible to relate travel characteristics directly to the built environment at various geographic scales, including census block groups, traffic analysis zones, mixed-use developments, and buffers of different widths around households or trip ends. Another unique feature of this database is that travel data have been linked to built environmental data representing all the so-called 'D' variables: development density, land use diversity, street network design, destination accessibility, and distance to transit. These data have been used to study relationships between the built environment and travel in many peer-reviewed, published studies. Spanning nearly two decades of data collection, we have frequently had to update travel data, replacing older surveys with newer ones. Portland, for example, conducted a household travel survey in 1994, and another in 2011. The latter replaced the former in our master cross sectional database, and the two together were employed in one longitudinal study. The current database includes travel data as old as 2005. Travel patterns have doubtless changed since then, with new modes (ride hailing, for example), new travel behavior (extensive telecommuting), and new structural relationships to the built environment. In this project, we will first contact the MPOs of the 36 regions in our current database to determine if they have conducted household travel surveys more recently than the ones we already have. If so, we will acquire the more recent data (provided they are once again

made available) and replace older datasets for these regions. We will link the newer datasets to shapefiles for built environmental variables as before. We will conduct both cross sectional and longitudinal studies to see how travel patterns and relationships between travel and the built environment have changed, updating earlier published studies. Time permitting, we will also contact additional MPOs, to see if they are now willing to release XY geocoded data when they weren't previously.

USDOT Priorities: *System Performance, Data-Driven Insight, Economic Strength, New and Novel Technologies*- research into structural changes to travel behavior such as ride-hailing, telecommuting, online shopping, or shared mobility programs can determine how these changes are affecting the overall economic strength and efficiency of the transportation network. This research and tech transfer will also help planning and transportation practitioners design for the future by understanding how travel behaviors are influenced by the built environment.

Outputs: 1. Updated and expanded travel survey database with linked built environment shapefiles 2. Updates to previous studies based on the dataset 3. Contributions to future cross-sectional and longitudinal studies 4. Various travel demand models 5. Final research report.

Outcomes/Impacts: This project will directly impact the regulatory, legislative, and policy framework of cities and transportation planners by providing comprehensive and methodologically rigorous studies of travel behavior that can account for the built environment. The models that will be built based on this updated dataset can be used directly or integrated into existing platforms by practitioners for travel analysis and forecast. As an example, the members of this team were involved in the creation of a widely used traffic impact analysis methodology variously referred to as the MXD model or the EPA model. The model, based on the original household travel dataset, predicts internal capture of trips within mixed use developments (MXDs) and also, unlike ITE methodology, also predicts external active transportation and transit use. It has been shown to be a better predictor of internal capture than the ITE Trip Generation Handbook methodology. The MXD model has been incorporated into two widely used scenario planning packages, Envision Tomorrow and Urban FootPrint. It (sometimes with modifications) has been used to analyze the traffic impacts of MXDs in dozens of studies, by transportation consulting firms such as Fehr & Peers and Hales Engineering. Once the new data are collected and used in modeling, a concerted effort will be made to replace the older methodology with newer methodology by working with the scenario planning and transportation consulting communities.

Final Research Report: (Link to be provided after project completion).