2019 UDOT RESEARCH PROBLEM STATEMENT

Title: Affordable Housing as a Travel Demand Management Strategy   **No. (Office Use):** 19.05.09

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Select ONE Subject Area ☐ Materials/Pavements ☐ Maintenance   ☐ Traffic Mgmt/Safety ☐ Structures/Geotech
☒ Planning   ☐ Perf Mgmt/Data Analytics ☐ Public Transportation ☐ Other

1. Describe the problem to be addressed:

Transportation planners have for years been advocating the "Transportation-Land Use" connection. A body of research has been developed to quantitatively establish this connection, including ITE's trip generation estimates for mixed-use developments, and related research in transit-oriented development. This proposed research project will seek to establish a quantitative relationship between transportation and land use within the Utah context.

For more than 60 years, travel demand modelers have shown that areas of high employment accessibility tend to generate shorter work trips. Likewise, researchers have more recently shown that areas with a balance of jobs and housing generate shorter work trips. (Job–Worker Balance and Income Match in the United States Stoker, Ewing, 2014). A question that hasn't been fully answered is whether providing affordable housing for different income groups near employment centers impacts travel behavior differently. The UDOT Planning Division has posed the specific research question – how will a specific land use type, namely, affordable housing, strategically placed, affect travel demand?

The problem will be tackled on three fronts: (a) by reviewing literature on affordable housing strategies and interviewing planners and economic development staff members in ten Utah cities; (b) by using the Wasatch Front Travel Model to estimate the change in trip making and VMT given different affordable housing strategies; (c) by employing data-driven approach to understand the difference in trip patterns between neighborhoods with different income levels.

2. Write the project objective (25 words or less):

The objective of this project is to research the impact of affordable housing on travel demand in Utah and investigate the state of practice of affordable housing strategies in Utah.

3. Explain why this research is important:
(In response, consider addressing specific UDOT goals, applicability in Utah or other states, etc.)

1. The research would provide Utah context for analyzing the "Transportation-Land Use" connection. Research will be conducted in Utah, and the impacts of affordable housing on travel demand will be quantified using the Wasatch Front Travel Demand Model. Findings from the research will be useful to the UDOT Planning Division as providing information on the influence of affordable housing placement on travel demand.

2. Findings from the state of practice and lessons from best practices would provide useful information for cities to work with UDOT to strategically place affordable housing in our region and determine how existing tools to incentivize development may or may not be working.

3. The results would also further municipalities' understanding of future transportation needs and travel demand management options such as providing reduced parking requirements or subsidizing transit passes so they can create and preserve housing for those with the fewest options. In turn, they may be able to lower development costs for additional housing.

4. List the major tasks:

1. Stakeholder meetings: assemble a group of stakeholders from UDOT Planning, UTA, and large municipalities in Utah. A total of three meetings is envisioned: 1) kick off; 2) findings from the literature search and proposed modeling and data-driven analysis; and 3) presentation of findings.

2. Literature review and survey: Review the most recent research regarding the impact of affordable housing on travel demand. The research will also consider the importance of multimodal access (to transit, nonmotorized modes) on travel demand. The literature review will inform the scenario development in Task 3. Review affordable housing strategies and tools employed by 10 of Utah's largest cities. Interview each of the 10 cities' planners or economic development staff members to confirm findings. The 10 cities are: 1) Salt Lake City; 2) South Salt Lake; 3) Provo; 4) West Valley City; 5) Orem; 6) Park City; 7) Ogden; 8) Sandy; 9) West Jordan; an 10) Lehi.

3. Model-Driven Analysis

    a. Scenario Development – the project team will propose up to six model runs, representing varying levels of affordable house and multimodal accessibility. The scenarios will identify specific geographic locations to test, based on an understanding of growth patterns and economic activity in the Wasatch Front region. The project team will establish the final scenarios, and modeling issues such as forecast horizon, with the Steering Committee.

    b. Analysis - the Wasatch Front Travel Model will be used to test up to four scenarios that model different levels and locations of affordable housing. Model reports will estimate the change in usage of alternative modes, change in trip making and VMT across all scenarios when compared to a Base Case. The forecast horizon will be established in consultation with the Steering Committee.

4. Data-Driven Analysis

    a. Data processing: Fuse trajectory data, trip count data, household travel survey data;

    b. Data analysis: Conduct data analysis to analyze transportation impacts of affordable housing;

    c. Data-driven model to estimate the multimodal trip generation characteristics of affordable housing areas;

    d. Data-driven model to estimate trip length characteristics of affordable housing areas; and

    e. Estimate vehicle miles traveled (VMT) in affordable housing areas.

5. Development and presentation of results of the quantitative research and the qualitative state-of-the-practice findings.

5. List the expected deliverables (reports, manual, specification, design method, training, etc.):

1. Technical memorandum summarizing recent relevant literature, results of state-of-the-practice research, and proposed affordable housing modeling scenarios.

2. Technical memorandum summarizing findings on the impact of affordable housing on travel demand in Utah.

3. Technical memorandum summarizing data collection efforts, affordable housing transportation impact analysis, multimodal trip generation model of affordable housing, trip length estimation model of affordable housing, VMT estimation results;

4. Final report combining the three technical memorandums into a coherent document.

6. Describe how the research results will be implemented:
   (In response, consider addressing UDOT leader support, process or standard improvement, etc.)

The research will yield information, specific to Utah, estimating the impact of affordable housing on multimodal travel demand. The research will potentially add a new tool to the travel demand management toolbox. Instead of pointing to the "Transportation-Land Use" connection in a general way, the research will specifically assess how affordable housing might be useful for managing travel demand. Coupled with the research on existing strategies to incentivize affordable housing in cities, both UDOT and municipalities can work together to be strategic in their promotion of affordable housing placement across the state.

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7. Requested from UDOT: $80,000   **Other/Matching Funds:** $40,000   **Total Cost:** $120,000
   (or UTA for Public Transportation)

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8. Outline the proposed schedule, including start and major event dates:

The schedule assumes a July 2019 start date and a 11- month research plan, with final report delivery in March-May 2020.

Task 1: Stakeholder Meeting #1;
Task 2: Literature Review (July-September 2019)
Task 3: Model-Driven Analysis
    a. Scenario Development (September-November 2019)
    b. Analysis (November-February 2020)
    c. Findings and Recommendations (March-May 2020)
Task 4: Data-Driven Analysis
    a. Data gathering and processing (August 2019 – October 2019)
    b. Data analysis (November 2019 – December 2019)
    c. Data driven models (January 2020 – April 2020)
    d. Data driven models (July 2020 – April 2019)
    e. VMT estimation (May 2020)
Task 5: Findings and Recommendations (May 2020)