

# 2019 UDOT RESEARCH PROBLEM STATEMENT

\*\*\* Problem statement deadline is Feb. 6, 2019. Submit statements to [UTRAC@utah.gov](mailto:UTRAC@utah.gov). \*\*\*

**Title:** Effect of Light-Rail Transit on Traffic in a Travel Corridor: An update

**No. (Office Use):** 19.07.02

**Written By:** Reid Ewing and Torrey Lyons **Organization:** University of Utah **Email:** [torrey.lyons@gmail.com](mailto:torrey.lyons@gmail.com) **Phone:** 920-535-0369

**Submitted By UDOT Employee:** Hal Johnson

**Email:** [hjohnson@rideuta.com](mailto:hjohnson@rideuta.com)

**Phone:**

**UDOT Champion (if different):**

**Email:**

**Phone:**

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:

The effects of transit on traffic volumes and associated travel time, air pollution, and parking costs have been evaluated and support the justification for subsidized transit. However, the development that occurs as a result of improved accessibility has the potential to negate the benefits of transit as additional trips are generated, new parking is required, and so on. An earlier study showed that extension of light-rail transit to the University of Utah took about 10,000 vehicles per day off 400/500 South and parallel roadways (Ewing et al. 2014). This study was back in 2012/13, before zoning changes resulted in a building boom along 400 South and parallel streets. It was also before major building projects at the University of Utah. Recent work by Ewing et al. (2017) shows that exemplary transit-oriented development (TOD) produces half the number of vehicle trips and half the parking demand of typical suburban-style development. This tells us the effects of transit access and mixed-use development on the micro (single development) scale. However, often cities create transit corridors and overlay zones in an attempt to direct density toward areas with high transit accessibility. Does this development contribute to congestion in the corridors at the same rates as would be predicted in a more auto-oriented corridor? This question has yet to be answered, and this study should shed light on the situation.

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

Our study will determine whether the development along a transit corridor, 400/500 S corridor from downtown to the University, has negated the initial reduction in traffic associated with the implementation of the light-rail line.

## 3. Explain why this research is important:

(In response, consider addressing specific UDOT goals, applicability in Utah or other states, etc.)

Our extensive research has established that cities and states cannot pave their way out of congestion by building more freeways and arterials. This is due to highway-induced traffic and highway induced development. Cities and states also cannot *plan* their way out of congestion by either concentrating development in centers (though there are many other benefits of polycentric development) or by dispersing development in sprawl patterns (which bring with them many other costs of sprawl). It appears that the best strategy got dealing with congestion and the various costs of automobile dependence is to develop a hierarchy of centers (polycentric development) connected by high quality transit services. This is the approach taken in the Wasatch Choice for 2040 and 2050 visions and in the regional transportation plans of a great number of other leading MPOs such as Portland Metro in Portland, OR and SANDAG in San Diego, CA (Ewing, R. Planning for Polycentric Regional Development, Planning, May 2017, 52-53.). A budding example in our region is the 400/500 South transportation corridor from downtown to the University of Utah. At last count, 37 percent of the trips of the university were by transit (mostly by TRAX). An earlier study showed that the extension of TRAX to the university took about 10,000 vehicles off 400/500 South and parallel roadways. What is the number now in light of dense, apartment development in the corridor and building projects at the U? How much more congested would the corridor be without TRAX?

## 4. List the major tasks:

1. Conduct a focused literature review on the effects of transit to inform the development of a detailed analysis methodology.
2. Data acquisition: Data on transit ridership and roadway performance measures will be gathered from UTA and UDOT. Parking volume data will be gathered from U of U commuter services department. Socio-economic data and land use data will be acquired from the American Community Survey and Salt Lake County Tax Assessors parcel-level database.
3. Data Analysis: First we will need to assess land use change in the corridor by estimating changes in total building floor area. Then we will estimate how this change should be expected to reflect in trip generation and congestion. Analogous corridors will also be analyzed for growth and estimated trip generation. We will then compare changes in congestion along these corridors to determine whether the transit accessibility in the 400/500 S corridor is, indeed, limiting the effects of development on congestion in the corridor.
4. Report and article writing. Final report will contain findings of comparative traffic impacts of development in transit corridor and matched case as well as estimates of foregone emissions, parking requirements, and land use changes associated with transit corridor.

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

We will produce a final report, peer reviewed papers, and policy recommendations for improved facilitation of transit access and transit-friendly development patterns.

**6. Describe how the research results will be implemented:**

**(In response, consider addressing UDOT leader support, process or standard improvement, etc.)**

There is demand in the planning and policy formulation communities for accurate tools that predict the effects of light-rail transit. Other state, regional and local organizations such as State Departments of Transportation and Metropolitan Planning Organizations, public health organizations, transit agencies and city and county planning commissions are also eager to have reliable evidence of transit's effects on congestion and related impacts. Universities and private sector planners and engineers also demand to have research-tested decision support tools and a guidepost to further research and understanding of the principles relating transit and congestion.

The proposed research and results would address many of these needs and provide a wide range of opportunities for published peer-reviewed research articles, popular articles and conference presentations. The proposed PIs have demonstrated success in publishing and conference presentations on similar research projects and subject matter for the National Association of Environmental Professionals, the American Society of Civil Engineers, American Planning Association, Urban Land Institute, US EPA Smart Growth Partnership and other organizations. Our work will provide the Utah Transit Authority and other transit operators with information on possible benefits of light-rail transit--reduced traffic volumes and associated congestion, air pollution, and parking demands.

**7. Requested from UDOT: \$30,000  
(or UTA for Public Transportation)**

**Other/Matching Funds: \$**

**Total Cost: \$30,000**

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

- Project Start Date: May 1, 2019
- Literature Review: May 2019-August 2019
- Data Collection: August 2019-October 2019
- Data Analysis: October 2019 – January 2020
- Draft Report Complete: January 31 2020

- Peer Review: February 2020
- Report Revision: March-April 2020
- Project End Date: April 31, 2020