

2016 UDOT RESEARCH PROBLEM STATEMENT

*** Problem statement deadline is March 14, 2016. Submit statements to Tom Hales at tahales@utah.gov. ***

Title: Does Compact Development Increase or Reduce Traffic Congestion?

No. (office use): 16.05.03

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UDOT Champion (suggested):

Select One Subject Area

Materials/Pavements

Maintenance

Traffic Mgmt/Safety

Preconstruction

Planning

Public Transportation

1. Describe the problem to be addressed.

Certain planners have argued that urban sprawl eases congestion by dispersing origins and destinations. Others have argued the opposite, that urban sprawl increases congestion by increasing auto dependence and vehicle miles traveled. Using compactness/sprawl metrics developed in an earlier project at the University of Utah, and congestion/travel time data from the Texas Transportation Institute's Urban Mobility Scorecard Annual Report, this study will determine which point of view is consistent with available data.

2. Explain why this research is important.

It is now widely held, even among many state transportation departments, that you cannot "pave your way out of congestion" (at least in the long run) due to highway induced traffic and highway induced development (sprawl). Therefore, any solution to highway congestion must be multi-faceted and must, in particular, reduce the need for so much vehicular traffic. From years of other research, we know that compact development that is dense, diverse, well-designed, etc. reduces VMT. But compact development also concentrates origins and destinations. No one has yet determined, using credible compactness/sprawl metrics and congestion/travel time data, the net effect of these countervailing forces. These results will tell MPOS and DOTs whether their efforts to promote compact development will likely result in increased or reduced congestion/travel times.

3. List the research objective(s):

1. Measure compactness, congestion, and other control variables using the best national data available for U.S. urbanized areas.
2. Relate these variables to one another using multivariate methods to determine whether compactness is positively or negatively related to congestion and travel times.

4. List the major tasks:

1. Compile the best available data for U.S. urbanized areas.
2. Conduct a multivariate analysis of the data.
3. Draw conclusions from the analysis and write up methodology and results in a report and peer-reviewed articles.

5. List the expected results:

1. Based on the literature to date, it is impossible to say whether compactness is positively or negatively related to congestion and travel times, or perhaps that the two countervailing forces cancel each other out.
2. What we can be sure of is that using the best available data and the proper statistical methods, we will be able to answer the research question with a degree of confidence. We can also be sure that this research will be of general interest nationally. Congestion is the outcome variable that continues to drive the transportation planning and programming process in the United States.

6. Describe how this research will be implemented.

The University of Utah has developed the most widely used compactness/sprawl metrics in the United States. These data will be

combined with data from TTI's Annual Mobility Scorecard to create a database which is complete and ready to be analyzed.

This project will be very cost-effective. The compactness/sprawl metrics have already been developed and published by the PI of this project for urbanized areas, metropolitan areas, metropolitan counties, and census tracts. They have already been used by our team to study other costs of sprawl in five peer reviewed articles. The sample of urbanized areas for which metrics are available currently includes all urbanized areas with more than 200,000 population, numbering 162 areas. The sample will be expanded to include all urbanized areas with more than 100,000 population. Control variables will be estimated using publicly available data sets, principally the American Community Survey and National Transit Database. Congestion/travel time data are now available, for the first time, for 471 FHWA urbanized areas from INRIX, in association with TTI.

7. Requested from UDOT: \$20,000	Other/Matching Funds: \$30,000	Total
Cost: \$50,000		
(or UTA for Public Transportation)		

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

- Project Start Date: June 1, 2016
- Data Collection: June-August, 2016
- Data Analysis: September, 2016
- Report Writing: October-December, 2016
- Project End Date: December 31, 2016