Title: Causes and impacts of personal safety concerns and public transport ridership

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1. Describe the problem to be addressed:

UTA’s survey of 2012 shows the modeshare of transit in Salt Lake City is at 3.5%. All transit trips require some walking at the beginning and end of the trip, and current studies of walk trips to and from transit stations in Salt Lake City has addressed safety concerns of transit users to a limited extent. Researchers have found positive relationships between concerns of safety and transit ridership in various US cities*. People walking to and waiting at transit stops have been surveyed, but the people living near transit stations – which forms an unbiased sample, have not been surveyed before. We propose to conduct a survey of 400 households through systemic random sampling, with a 5% margin of error, in a quarter mile network around TRAX stations; and use structural equation modelling to understand the effect of safety concern on transit ridership. We shall also conduct test to see whether the perceived concerns are based on real statistics or not. Data about safety concerns from crime, traffic and built environment will assist in quantifying barriers to transit ridership, and provide directed solutions.

*References

2. Explain why this research is important:

Taking public transit reduces vehicle miles travelled (VMT) and greenhouse gas emissions (GHG), and contributes to sustainability goals. Keeping up with UTA’s goal of increasing transit ridership, understanding barriers to ridership is important. Part of the problem could be lack of convenience and comfort, and part of it could be safety concerns while walking to and from transit stations. These risks may be real or perceived. Safety concerns could be from private-realm factors (unkempt yards, high fencing, and other urban design qualities on private property), public-realm factors (absence of sidewalks, narrow/unguarded sidewalks, lack of vegetation or street trees, lack of street and road lighting, intersection design, high speed traffic, traffic volume, street urban design qualities) or social-realm parameters (petty and violent crimes, presence of homeless population). This research, in the context of Salt Lake City is timely and important, because so far walk trips which are a major component of transit travel haven’t been studied intensively in the light of safety concern.

3. List the research objective(s):
1. Evaluate the effect of personal safety concerns during walk to transit on transit ridership in Salt Lake City.

2. Quantify the effect of public-realm, private-realm, and social factors (built environment, crime, and traffic issues) separately on personal safety concerns.

3. Test to see if safety concerns correspond to actual statistics, and provide recommendations for traffic and built environment related problems.

4. Provide data to encourage inter-institution policy development aimed at increased transit ridership.

4. List the major tasks:

1. Work with UTA to select neighborhoods for survey. Broad criteria for choosing neighborhoods would be as follows.
   - The neighborhoods should mostly consist of single family households.
   - The neighborhoods should be within the quarter mile network from a TRAX station.
   - Residents from both middle and low income neighborhoods should be surveyed.
   - Residents from both ‘safe’ and ‘unsafe’ neighborhoods should be surveyed.

2. Develop a questionnaire, which would include three groups of questions. Likert-scale questions on concern (E.g. Do you think you can walk safely back from transit? Responses: Yes, Maybe Yes, Maybe No, No); visual questions where a range of street-scenarios will be provided, and the respondents will be asked to rate them on a scale of ‘safe’ to ‘unsafe’; and open ended questions such as ‘Has there been any incident in the neighborhood that has made you feel unsafe?’.

3. IRB approval is required for the project & researchers involved. Additionally, surveyors need to be trained for conducting survey and using iPads & Qualtrics (software) during survey.

4. Conduct a systemic random sample (where every nth household is chosen) of 400 households and conduct survey.

5. Analyze results of survey using structural equation modelling to understand relationships between safety concerns and transit ridership.

6. Use various datasets to check validity of the concerns, or in other words whether the concerns correspond to actual data. The datasets that will be used for this purpose are as follows.
   - Concern about petty & violent crimes – To be cross checked with list of offences within jurisdiction of Salt Lake City Police Department (2016)
   - Unsafe environment due to urban design qualities – To be cross checked with Wasatch Front Regional Council’s (WFRC) database on urban design qualities in Salt Lake City, compiled by Fregonese Associates for WFRC.
   - Unsafe environment due to excess traffic – To be cross checked with traffic volume data from UDOT.
   - Concern about disturbance from homeless population – Measured by distance from nearest homeless shelter.
   - Other local concerns (such as presence of a particular institution of land use) shall be recorded on a neighborhood basis.

7. Provide recommendations from results – especially those of traffic and built environment variables.

8. Write report and publish results in a peer reviewed journal.
5. List the expected results:

1. Previous studies suggest that personal safety concerns can predict the probability of transit ridership of the individual – more safe a person feels while walking to and from transit stations, more likely are they to take transit. The same can be expected in case of Salt Lake City.

2. The study will add to the generalizability of the subject, where increased feeling of safety can lead to increased transit ridership.

3. This study can lead to inter-institutional program development for heightening feelings of personal safety.

4. The survey might help identify other barriers that decrease transit ridership.

6. Describe how the research results will be implemented:

UTA is committed to provide efficient service to its customers. To achieve their goal of increased ridership most efficiently, it is important that UTA understands the barriers of transit ridership. If investments are made to understand reasons for safety concerns of transit users which in turn affects ridership, UTA would have the data to provide attention to where it is needed. For example, if the analysis shows that presence of homeless population and nearness to a homeless shelter discourages people from walking to transit stations, then the streetscape of the neighborhood could be redesigned to discourage loitering. Furthermore, we propose to engage UofU students in the surveying process – which would be immensely cost-saving and time efficient.

7. Requested from UDOT: $27,000 Other/Matching Funds: $6,900 Total Cost: $33,900

(or UTA for Public Transportation)

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

   Project Start Date: August 1, 2017
   Data Collection: August - November, 2017
   Data Analysis: December, 2017 – March, 2018
   Report Writing: April - July, 2018
   Project End Date: July 31st, 2018