New England UTC Year 25 – Final Research Project Description

UTC Project Number: UCNR25-33

Project Title: Social Network Effects on Attitudes about Pedestrian Street Crossing Behavior

University: University of Connecticut

Principal Investigator: John N. Ivan [PI], Nalini Ravishanker [Co-PI], Rebecca Townsend [Co-PI]

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Funding Sources:
- Federal: New England University Transportation Center at MIT
- Cost Share: University of Connecticut

Total Project Cost:
- Federal: $264,025
- Cost Share: $267,517

Funding Agency: USDOT/RITA

Grant number: DTRT13-G-UTC31

Start date: 6/1/14

End date: 12/31/17

Brief description of project:
The effectiveness of interventions to improve pedestrian safety, whether involving engineering, education, or enforcement, is limited by the behavior of the public in response to the interventions. It is not difficult to imagine that the behavioral response of an individual to engineering and educational road safety interventions may be at least partially explained by demographic characteristics. It is also plausible that membership and interactions in a social group influences an individual’s behavior and attitudes about road safety and response to such interventions. This project employed a mixed survey framework of in-person gatherings and online respondent driven sampling surveys to explore how demographics, pedestrian safety education and social group membership and interaction explain an individual’s behavior and attitudes related to crossing a signalized intersection as a pedestrian in different physical and travel settings. The small size in-person samples was combined with “big data” respondent driven online samples to avoid bias in the sampling frame and most efficiently glean information from both samples. Multinomial logit modeling was applied to the mixed sample to predict stated pedestrian behavior observed in both samples. The results will shed light on pedestrian attitudes about traffic signal design and operation as well as identify how to most effectively improve pedestrian safety through education and social group interaction.
Describe implementation of final research outcome:

In-Person and Online Surveys. Surveys were conducted online and in-person among social groups of the students in a communication class at Manchester Community College and at a senior center in Connecticut.

Download and Reconcile Intelletics Data. We worked with the Intelletics team to download all the data pertaining to the different social groups (tribes). This consisted of numerical data reflecting crossing behavior before and after one of four interventions, numerical data on participant demographics, and text data on discussions between participants in two intervention groups. The data was saved in a format that will enable analysis using SAS and R.

Merge Data from Online and In-person Surveys. We checked for consistency, and correctly merged the data from in-person surveys with the data from the online [Intelletics] survey. Again, this consists of all numerical data and text data from discussions.

Statistical Analysis of Numerical Data. We used SAS and R to carry out an analysis to understand the nature of the crossing behavior of participants, as well as possible changes in behavior as a result of interventions.

Analysis of Text Data. We carried out qualitative analyses of the discussions from in-person surveys. We also did preliminary work that will lead to text mining using R software in the next phase of the project.

Access to Twitter data. We did some preliminary work to access data on pedestrian safety from Twitter. This preparation will enable us to do more detailed text mining of this data in the next phase of the project.

Text Mining of Discussions. We carried out text mining and sentiment analysis on the discussions on pedestrian safety that were collected from participants. These will augment the quantitative data analysis of the survey data. Preliminary descriptive analyses were carried out upon which final predictive analysis can be based.

Describe the impacts/benefits of actual implementation:

WNPR, the Hartford, CT-based National Public Radio station, learned about Project UCNR25-33, Social Network Effects on Attitudes about Pedestrian Street Crossing Behavior, through one of the cascading invitations from the MCC participants and contacted co-PI Townsend about the study. Townsend and Ravishanker participated in an interview and the reporter shared Ivan’s and Ravishanker’s previous research that led to the need for the current work. The report was originally published by WNPR on February 16, 2016 at http://wnpr.org/post/survey-how-do-you-cross-connecticut-street#stream/0 and later reblogged at Zoned: A blog about land use, transportation, and the built environment in Connecticut and elsewhere. http://zonedct.org/post/139439323383/survey-how-do-you-
An elected representative of the Town of Stamford, Connecticut, Steven Kolenberg, organized a Town Forum on pedestrian safety on March 14, 2018. The forum was precipitated by a sharp increase in the number of pedestrian crashes and fatalities in the town in the first two months of 2018 compared to previous years. A member of the research team, PI John N. Ivan, was invited to speak on a panel at the forum. Findings from this project were presented to the audience. In fact, two of the 20 most hazardous intersections in the State with regard to pedestrian safety are located in the Town. Dr. Ivan discussed roadway, roadside and personal attitude factors that are related to pedestrian safety.

Findings were documented in the following papers presented at conferences and submitted for publication in archival journals:


Results were also reported in this master’s thesis:


Web links:
- Reports
- Project website