

New England University Transportation Center



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Final Report

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Encouraging Alternative Transportation Behavior among Baby Boomers via Simulations

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Due to disruptions prompted by changing demographic patterns, aging infrastructure, and a growing 'green' culture New England states have been at the forefront of searching for options to encourage sustainable transportation alternatives. However, this quest has not translated in substantive behavior change. Mitigation of the environmental impact of automobile traffic can be facilitated through a number of technological, economic, and regulatory factors. But in order to achieve widespread adoption of alternatives, changes in individual knowledge, attitude, and behavior are essential. This proposal addresses the NEUTC theme: *The strategic management of disruptive change in transportation systems*. It is designed to apply the Transtheoretical Model of Change (TTM) to baby boomer populations to improve transportation choices and help the environment. Given the tremendous success of TTM in other areas of behavior change this team is in a unique position to develop an innovative project, which can serve as a model for sustainable transportation for campuses and communities nationwide.

The work presented here reflects the findings of a multi-year, multi-site interdisciplinary project designed to promote alternative/sustainable transportation (AT or ST) and to encourage mode shift from single occupancy vehicle commuting to transit, carpooling, walking or biking. This project is led by a team of experts in Civil Engineering, Communications and Psychology and supported by NEUTC, the University of Rhode Island (URI) Transportation Center, and the Sustainability Office at the University of New Hampshire (UNH). The project goal is to lay the groundwork towards developing effective interventions to promote transportation behavior change, especially for those who are currently *not* ready for such a change. This study of students, faculty and staff at two public universities in the Northeast was designed to develop and test the methodology of applying the Transtheoretical Model of Change (TTM), to transportation behavior. This behavior change model has been highly successful in the area of health promotion. In the current project it is combined with geospatial modeling to maximize impact on students and older university commuters.

The main study for this project assessed travel behavior, demographics, behavioral dispositions and campus cultures across two colleges (n=1696). Using the TTM measures developed at URI, data were collected for UNH and URI in order to assess the impact of campus culture and policies along with geographical location on stages of change. A total of n = 1696 students, faculty and staff participated. To facilitate comparison with data collected in earlier years, online data collection was supplemented with telephone surveys for faculty and staff at UNH. Transportation surveys measured commute patterns, behaviors, attitudes towards ST and geographical information (e.g., residence locations) among commuters at the two universities. The survey sample was segmented into one of five *Stages of Change*, a key TTM measure. Two additional constructs, *Decisional Balance* and *Self-Efficacy*, were also assessed. Participants' location of residence, commute distance, travel behavior and demographics were collected and analyzed in light of TTM measures.

Students, staff and faculty showed different commute patterns and attitudes. Students had the shortest commute distances and practiced sustainable transportation more frequently than staff or faculty. Overall, commute distance negatively influenced both the use of and readiness to adopt ST. Other geographic location factors also affected ST usage and commuters' behavior and attitudes toward ST. Using geospatial models, the authors identified more ST users and greater

readiness to use ST in towns with better public transit connectivity to the campuses. Commuters who lived near transit stops were more likely to use ST as their primary transportation mode. There were more ST commuters in the university with a better-developed transit system and a more established culture of sustainability. The impact of the transit system was greater among students than among faculty and staff.

The residence information of UNH staff and faculty was also obtained in this project. Based on the survey results and UNH staff/faculty locations, it was projected that the impact of adopting ST usage is greater in UNH staff/faculty than in students.

Baby boomers behave differently related to commuting when compared to other age groups in our study. The groups of 45-55 years-old live the farthest from campus; the commute distances decrease steadily toward both younger and older age groups. The older age groups (age 55-65) show the least readiness to adopt ST. Additionally, compared to other age groups, the older age groups are less likely to be in the process of contemplating, preparing and adopting the use of ST (*i.e.*, the middle stages of the *Stages of Change* model).

The assessment of ST behaviors provides a foundation for developing transportation interventions to promote ST usage, not only within, but also beyond the campus setting. This work will permit targeting not only of current ST users, but also of those who are not yet ready to use ST. It will help move them towards greater readiness to change their commuting behavior. An important finding in this pilot study is that the survey data for ST fit the TTM based model, which has been successfully applied to numerous other behaviors. Once implemented, this model and interventions based on it have great promise of being scaled to a modal shift among commuters outside a campus environment.

Products: 3 conference papers accepted and 2 journal manuscripts to be submitted

- Fu, T., Mundorf, N., Redding, C., Paiva, A., and Prochaska, J., 2012. "Promoting Behavior Change among Campus Commuters." *Proceedings of the 53rd Annual Transportation Research Forum*, Tampa, FL, March, 2012.
- Mundorf, N., Redding, C.R., Paiva, A., Horiuchi, S., Prochaska, J.O., Fu, T., Brick, L., 2012. "Promoting Alternative Transportation Behaviors: Development and Validation of Stage of Change, Decisional Balance, and Self-Efficacy," *Proceedings of the Eastern Communication Association Annual Convention*, Cambridge, MA, April, 2012.
- Mundorf, N., Redding, C. Paiva, A., Brick, L., Prochaska, J.O., Fu, T., 2013. "Promoting Sustainable Transportation across Campus Communities using the Transtheoretical Model of Change." Paper to be presented at Conference for Communication and the Environment, Uppsala, Sweden, June 2013.
- Fu, T., Mundorf, N., Redding, C., and Prochaska, J., (in preparation). "Alternative Transportation Behaviors in New England Universities," (Manuscript to be submitted May 2013).
- Redding, C.R., Mundorf, N., Horiuchi, S., Paiva, A., Prochaska, J.O., Brick, L., Fu, T., Kobayashi, H. Greene, G. (in preparation). "Alternative and Sustainable Transportation: Development and Validation of stage of change, decisional balance, climate change doubt, and self-efficacy scales." (Manuscript to be submitted May 2013).