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Final Report

Project Title:

Travel Behavior of the Aging Boomers: Evidence from Naturally Occurring Retirement Communities (Phase IV)

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MITR22-9	30 April 2013	31 March 2013

Objectives

This project represented ongoing research into the relationship of the built environment and travel behavior of older baby boomers (for the purposes of the research, we focus on baby boomers aged 55 to 64, so-called "leading edge" baby boomers). Our previous project phases focused on suburban areas of Boston, with a particular focus on identifying variation across 'traditional' suburban neighborhoods and nearby age-restricted neighborhoods. This particular research phase turned to the more urban settings of Boston, specifically the cities of: Boston, Cambridge, Somerville, and Brookline. We had two basic objectives:

- Understand the relationships between the built environment and baby boomers' "active travel" (walking and biking) in urban areas, including understanding the relationships with traffic risk.
- Understand the differences in travel behavior betweem urban and suburban boomers.

Data Collection

To collect socio-economic and behavioral information on 55-to-65-year-old urban baby boomers, we administered a mail-back survey in October 2010. The sampling frame was mailing addresses (purchased from USAData, a commercial data vendor) for residents 55 and older of urban neighborhoods in the Boston metropolitan area. We randomly sampled 7,000 households from the sampling frame and sent those households a mail-back household survey, including two booklets per household. The information collected through the survey included: (1) socioeconomic and demographic characteristics, (2) weekly behavioral characteristics (trip frequency by travel modes, purposes and social activities), (3) travel and residential choice-related attitudinal and preferences, and (4) levels of residential satisfaction. The survey instrument was specifically designed to include psychological factors, to enable the inclusion of latent characteristics in our behavioral models. In total, 1,005 households, including 1,401 individuals, returned completed survey booklets, yielding a 14.4% response rate.

We expected that urban settings, with greater potential for traffic collisions, might present particular risks between walking/biking and safety, which could influence behaviors among our cohort of interest. To represent relative traffic safety, we obtained motor vehicle crash data for three years (2006-2008) from the MassDOT Highway Division. We geocoded, using XY coordinates or addresses, approximately 82% of available crashes. The remaining records had inadequate location information. Additional spatial data, including building footprints and heights, roads, parcels, land use, and transportation systems, come from MassGIS.

Analysis

We first carried out spatial analysis of traffic collision patterns in urban Boston neighborhoods, detecting hotspots around activity centers. We then conducted structural equation modeling, to examine the influence of neighborhood characteristics, traffic collision levels, and latent psychological factors on baby boomers' walking behavior. The approach attempts to reveal the causal, interacting relationships. The analysis identifies significant effects of walkable urban forms (e.g., mixed use, well-connected streets, and good access to potential destinations) on older adults' walking. Yet, we also find that accessibility to retail, as well as traffic speed and volume, are positively associated with traffic collision frequency which, in turn, is negatively associated with older residents' walking activity levels. The results suggest more cautious

approaches may be necessary for designing urban spaces for walkability and also call into question prescriptions based on the "safety in numbers" hypothesis.

Then, drawing from the suburban baby boomers survey carried out in 2008 and our more recent urban boomers survey, we conducted a comparative analysis of urban versus suburban baby boomers' travel behavior, including driving, public transportation use, walking, and social and utilitarian trips. We examine two questions:

- Relative to residence in suburban locations, does residence in urban locations exert a discernible causal influence on baby boomers' travel patterns?
- What role do self-selection effects, in terms of residential preferences, play in influencing baby boomers' travel behavior?

To compare urban and suburban baby boomers' travel behavior, and control for socio-demographic and attitudinal characteristics that could otherwise confound our inferences, we use propensity score matching (PSM) to estimate true and self-selection effects. After controlling for self-selection effects via PSM, we find that urban baby boomers tend to be less automobile-dependent and use public transit more frequently than their suburban counterparts. Urban baby boomers also make more recreational non-motorized, social, and utilitarian trips. The analysis reveals very small self-selection effects for this cohort, 1-7 percent of the observed influence, on automobile commuting, recreational NMT, and utilitarian trips. We find evidence of negative self-selection for social trips, suggesting that baby boomers' preference for social activities tends to be mismatched to their environments. We find a relatively large self-selection effect on public transit commuting: 0.43 percent of observed influence; indicating, quite plausibly, a certain public transit market segment within the broader baby boomers cohort who seek to live in transit-oriented settings. Collectively, the self-selection effects uncovered in our study are noticeably smaller than previous findings, although the behavioral measures used are not necessarily directly comparable across studies and previous studies have not taken a specific older adult focus. The relatively small overall self-selection effects of this study may relate specifically to the baby boomers, suggesting that older people's travel behavior may be more sensitive to environmental factors than younger generations.

Products (all products available by contacting: Chris Zegras (czegras@mit.edu)
Results from this research has been:

1. Included in a PhD dissertation: Jae Seung Lee. The Impact of Urban Form on Older Adults: Focusing on Neighborhood Design and Baby Boomers' Local Behavior. Submitted to the Department of Urban Studies and Planning, MIT, June 2012.
2. Accepted for publication in a peer-reviewed journal: Lee, J.S., Zegras, C., Ben-Joseph, E. Safely Active Mobility for Urban Baby Boomers: The Role of Neighborhood Design. *Accident Analysis and Prevention* (forthcoming).
3. Prepared in a manuscript for submission to a peer-reviewed journal: Lee, J.S., Zegras, C., Ben-Joseph, E. Differences in Urban and Suburban Baby Boomers' Travel Behavior: Evidence from Metropolitan Boston.
4. Presented at: TRB International Conference on Emerging Issues in Safe and Sustainable Mobility for Older Persons, Washington D.C. (August 2011); an invited seminar, University of Los Andes, Santiago de Chile (October, 2011); XIII Walk21 Step Into the Future, Mexico City (October, 2012).