



Neighborhood Crime and Travel Behavior: An Investigation of the Influence of Neighborhood Crime Rates on Mode Choice - Phase II

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There are considerable environmental and public health benefits if people choose to walk, bicycle, or ride transit, instead of drive. As a result, planners and policy-makers are increasingly looking for ways to encourage alternatives to driving. Most mode choice research and practical interventions undertaken to-date have focused on improvements to non-auto infrastructure (e.g., transit services, bike lanes, sidewalks) or making the physical environment more transit-, pedestrian-, and bicycle-friendly (e.g., transit- and pedestrian-oriented design). However, little work has been done on the effects of neighborhood crimes on mode choice. Instinctively, we understand that the threats posed by possible criminal activity in our neighborhoods can play a major role in our mode choice decisions, but so far we have little empirical evidence to support this notion.

Study Methods

Starting in January 2006, the police departments of thirty-six cities in the San Francisco Bay Area were contacted requesting crime data for the year 2000—the year in which our travel survey data was collected by the Metropolitan Transportation Commission for the Bay Area. Of the thirty-six cities contacted, seven cities (Berkeley, Concord, Oakland, Santa Clara, Walnut Creek, San Francisco, and Sunnyvale) ultimately shared their data. While Phase I calculated and tested crime variables by counting the number of crimes within Transportation Analysis Zones (TAZs), Phase 2 of this research project developed a series of binary logit models using new, disaggregate crime variables measurement techniques (as a basis for comparison to Phase I), a series of multinomial logit (MNL) models to identify the impact of crimes on four mode choices—auto, transit, walking and biking—and a set of MNL model runs focused on transit access trip mode choice to identify which portions of transit trips are most responsive to neighborhood crime levels.

Findings

This report—describing Phase 2 of a research study conducted for the Mineta Transportation Institute on crime and travel behavior—finds that high crime neighborhoods tend to discourage residents from walking or riding a bicycle. When comparing a high crime to a lower crime neighborhood the odds of walking over choosing auto decrease by 17.25 percent for work trips and 61 percent for non-work trips. For transit access to work trips, the odds of choosing walk/bike to a transit station over auto decrease by 48.1 percent. Transit trips, on the other hand, appear to respond to neighborhood crime levels in a similar way to auto trips, wherein high crime neighborhoods appear to encourage transit mode choice. The odds of taking transit over choosing auto increase by 17.25 percent for work trips and 164 percent for non-work trips—a

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counter-intuitive result. Surprised by this last finding, the research team tested two possible explanations for why high levels of neighborhood crime would increase transit use: 1) the MNL models do not adequately account for the effects and interplay between urban form and crime levels and mode choice; and 2) people who ride in cars or take transit may feel more protected when riding in a vehicle (termed here, the “neighborhood exposure hypothesis”). To investigate the first explanation, the researchers tested a number of alternative urban form and crime interaction variables to no effect. Digging deeper into the second hypothesis, the researchers tested whether the access portion of transit trips (walking, bicycling, or driving to a transit stop) is sensitive to neighborhood crimes as well, wherein high crime neighborhoods discourage walking and bicycling and encourage driving to transit stations. The report provides evidence that high crime neighborhoods encourage driving to transit stops and discourage walking or bicycling, supporting the neighborhood exposure hypothesis.



Policy Recommendations

This study provides evidence that high levels of neighborhood violent crimes increase automobile use. When aiming to reduce auto emissions, suburban sprawl, obesity rates, and other societal ills that come with auto dependency, planners and policy-makers need to look at a range of interventions. While the arguments in favor of reducing auto dependency through land use and urban design interventions have attracted serious attention in recent years, these changes take place over the course of decades, as will their anticipated benefits. Improved crime intervention strategies that can reduce the safety concerns of residents living in high-crime neighborhoods hold promise for more immediate benefits and should be considered as part of a larger package of both short-term and long-term measures to reduce auto dependency.

Second—and much to our surprise—high-crime neighborhoods also favor transit use. A simplistic assessment of these findings may lead to the conclusion that we may be able to increase transit use by adding additional transit services to high-crime neighborhoods. However, the Neighborhood Exposure Hypothesis and our findings that high-crime neighborhoods also encourage residents to drive instead of walk or ride a bike to transit, suggest that transit oriented development plans that do not address the safety concerns of residents will fall short in reducing auto trips.

About the Authors

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To Learn More

For more details about the study, download the full report at transweb.sjsu.edu/project/2802.html

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