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Transportation Research Part D 10 (2005) 127–151
TRANSPORTATION RESEARCH PART D
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What if you live in the wrong neighborhood? The impact of residential neighborhood type dissonance on distance traveled

Tim Schwanen [a,*], Patricia L. Mokhtarian [b]

[a] *Faculty of Geosciences, Urban and Regional Research Center Utrecht (URU), Utrecht University, P.O. Box 80.115, 3508 TC Utrecht, Netherlands*
[b] *Department of Civil and Environmental Engineering, Institute of Transportation Studies (ITS), University of California, Davis, CA 95616, USA*

Abstract

While urban form in general and density in particular are believed by many to significantly influence travel behavior, various recent studies have argued that the true determinants of travel patterns are attitudes rather than land use characteristics. This research builds on this notion and investigates to what extent a lack of congruence between physical neighborhood structure and preferences regarding land use near one's home location (termed 'residential neighborhood type dissonance' or mismatch) affect distance traveled overall and by mode. A conceptual model is described in which the relationship between neighborhood type dissonance and distance traveled is embedded in a wider set of individual and household choices, and tobit models of the influence of neighborhood type mismatch are presented. The results suggest that neighborhood type mismatch should be taken into account in future research as well as in policies attempting to modify travel behavior through land use regulations.

Keywords: Distance traveled; Land use; Attitudes; Tobit analysis; San Francisco Bay Area; Residential self-selection

* Corresponding author. Tel.: +31 30 253 44 37; fax: +31 30 253 20 37.
E-mail addresses: t.schwanen@geog.uu.nl (T. Schwanen), plmokhtarian@ucdavis.edu (P.L. Mokhtarian).

1361-9209/$ - see front matter
doi:10.1016/j.trd.2004.11.002

1. Introduction

Of all dimensions of urban form that have been hypothesized to affect individual travel behavior, population density is probably the one for which the least ambiguous results have been found. Higher densities tend to be associated with shorter distances traveled, particularly by car, and hence with lower per capita consumption of non-renewable energy and emissions of pollutants (Pushkarev and Zupan, 1977; Cervero, 1996; Stead, 2001). When explaining these findings, the usual argument is that in higher-density settings (potential) origins and destinations are typically closer to one another, which limits the need to travel and makes walking/bicycling more attractive. The concentration of travel demand in high-density environments also makes it easier to provide frequent transit services, which stimulates transit patronage. At the same time, this concentration of travel demand results in road congestion and parking problems that reduce the attractiveness of the automobile.

These findings have been qualified by pointing out that the associations observed between density and travel distance may not reflect true causality. Kitamura et al. (1997) suggest that attitudes toward travel and land use may be the real determinants of travel distance and residential location. This implies that residential self-selection processes are underlying the association between travel and land use: households with an affinity for walking and/or traveling by transit may ceteris paribus choose to reside in a high-density neighborhood exactly because such a location facilitates walking or using transit. Using structural equations modeling, Bagley and Mokhtarian (2002) provide further evidence for this line of reasoning. Other studies have supported the notion that residential location choice is endogenous to the relations between travel and land use (e.g., Boarnet and Crane, 2001; Sermons and Seredich, 2001; Krizek, 2003).

If attitudes toward land use and travel rather than land use characteristics are more important determinants of travel behavior, this has implications for policymaking. At its most extreme, it suggests that land use policies can only contribute to a reduction of auto driving and its attendant environmental impacts, if high-density neighborhoods attract households without a strong affinity for auto travel. Policies that only seek to provide land use conditions favorable to non-auto modes may thus not be sufficient; they may need to be supplemented with other measures to disproportionately attract the appropriate type of households to a high-density location.

To gain further insight into the relative importance of attitudes toward travel and land use vis-à-vis physical land use conditions, the concept of residential neighborhood type dissonance is introduced. This is defined as a lack of congruence between the land use characteristics of the neighborhood where the individual currently resides and preference structures toward such characteristics (Schwanen and Mokhtarian, 2004). The aim of the paper is twofold: First, it will assess the impact of residential neighborhood type dissonance on distance traveled overall as well as by transport mode. Second, it will examine to what extent the relationships between dissonance and distance traveled are altered once other factors known to influence distance traveled are taken into account, in particular sociodemographics, personality, lifestyle, mobility limitations, and travel-related attitudes. Data stem from commuters in three neighborhoods in the San Francisco Bay Area: the urban neighborhood of North San Francisco and the suburbs of Concord and Pleasant Hill.