

## **ABSTRACT**

In an effort to explore smart growth principles, this study offers an empirical test of the influence of the built environment at the neighborhood scale on vehicle transit behavior. Using U.S. Census data combined with spatial analysis techniques, the study conducts a cross-sectional analysis of the effect of the built environment on household automobile ownership and vehicles miles traveled (VMTs) in 75 block groups across five metropolitan statistical areas. Variables are measured for density, job and retail access, transit accessibility, and street connectivity. The study also considers confounding variables including household income, regional density, extent of regional transit network, age of neighborhood population, and individual transit expenditure. From these data, best-fit regression models are developed for VMTs and automobile ownership. Although there is significant unexplained variation, the regression models confirm a statistically significant association of VMTs and automobile ownership with the built environment. Among the implications of these findings are that (1) neighborhood density should be encouraged in areas well-served by transit, (2) transit and smart-growth projects will have a greater impact on VMTs in regions that have robust, existing transit systems, and (3) new transit projects will likely be most effective in reducing vehicle ownership if planners focus on better serving moderate and low-income neighborhoods. Future research should examine statistical associations longitudinally, based on updated data from the 2010 U.S. Census, and should attempt to gather primary data on VMTs at the household and neighborhood scales.