

## **ABSTRACT**

This study tests the effects of the built environment on vehicle miles traveled (VMTs) and automobile ownership, with specific reference to aspects of neighborhood walkability studies and research design at nested spatial scales of metropolitan regions and neighborhoods. This adds to existing smart growth studies as they tend to focus on Census data and non-walkability land use variables such as rail transit infrastructure. This study looks at 75 census block group samples within 5 metropolitan statistical areas (MSAs). The variables measured for the study include, bus stops per square mile, jobs within 45 minute transit ride, gross activity density, temperature, distance to retail, distance to transit, and slope among others. This study also looks at including regionally measured variables such as people per transit station, MSA density, and transit expenditure in conjunction with neighborhood scaled variables in order to test if there are any interactions between neighborhood and regional variables. The variables are entered into a multivariate regression model to find the best-fit model in order to explain the relationships between the dependent and independent variables. The study finds that the new walkability variables added to the research add significantly to the explanatory value of regression models beyond studies that use just smart growth land use variables. The implications for this study are that there is ground work laid for a new type of smart growth and walkability joint study at a multiple region level.