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Community design and how much we drive

Wesley E Marshall, Norman W Garrick

Abstract

The preponderance of evidence suggests that denser and more connected communities with a higher degree of mixed land uses results in fewer vehicle kilometers traveled (VKT). However, there is less agreement as the size of the effect. Also, there is no clear understanding as to the aspects of community design that are most important in contributing to lower VKT. One reason why there is some confusion on this point is that past studies have not always made a clear distinction between different community and street network design characteristics such as density, connectivity, and configuration. In this research, care was taken to fully characterize the different features of the street network including a street pattern classification system that works at the neighborhood level but also focuses on the citywide street network as a separate entity.

We employ a spatial kriging analysis of NHTS data in combination with a generalized linear regression model in order to examine the extent to which community design and land use influence VKT in 24 California cities of populations from 30,000 to just over 100,000. Our results suggest that people living in denser street network designs tended to drive less. Connectivity, however, played an adverse role in performance.

Keywords

Transport, Land Use, Networks, Vehicle kilometers traveled, VKT, Vehicle miles traveled, VMT, street networks, connectivity, density, driving, mode choice, walking, bicycling, sustainability, New Urbanism

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