The impact of residential density on vehicle usage and fuel consumption: Evidence from national samples

This paper investigates the impact of residential density on household vehicle usage and fuel consumption. We estimate a simultaneous equations system to account for the potential residential self-selection problem. While most previous studies focus on a specific region, this paper uses national samples from the 2001 National Household Travel Survey. The estimation results indicate that residential density has a statistically significant but economically modest influence on vehicle usage, which is similar to that in previous studies. However, the joint effect of the contextual density measure (density in the context of its surrounding area) and residential density on vehicle usage is quantitatively larger than the sole effect of residential density. Moving a household from a suburban to an urban area reduces household annual mileage by 18%. We also find that a lower neighborhood residential density induces consumer choices toward less fuel-efficient vehicles, which confirms the finding in Brownstone and Golob (2009). •Density has a significant but small impact on household vehicle use. •Changing land type has a larger impact on household vehicle use. •Including household characteristics eliminates self-selection bias. © 2013 Elsevier B.V.
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