The debate over the impacts of urban land use density on travel, residential vehicle use and fuel consumption is often hampered by a lack of reliable quantitative data. Arguments about these relationships have been especially clouded by issues related to the simultaneity of residential location choice and the other variables. This seminar will describe a new modeling system that attempts to account for these effects. The model is estimated with data from the 2001 U.S. National Household Transportation Survey (NHTS) and applied to a sample of over 2,500 households in the State of California. Results show that the residential density effects are substantial. Comparing two households that are similar in all respects except residential density, a lower density of 1,000 housing units per square mile implies a positive difference of almost 1,200 vehicle miles per year and about 65 more gallons of fuel per household. The total effect of residential density is decomposed into two paths of influence. Increased mileage leads to a difference of 45 gallons, but there is an additional direct effect of density through lower fleet fuel economy of 20 gallons per year, a result of vehicle type choice.

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