# Intra-household Vehicle Allocation and Transportation System Efficiency

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The reduction of personal vehicle fuel consumption may be achieved in three ways. They include changes to travel behavior, vehicle technology and fuel efficiency. In this study, the effect of intra-household vehicle allocation, one type of travel behavior, on fuel consumption is analyzed. Recent advances in vehicle technology have improved fuel efficiency but there may be possible reductions in fuel consumption from changes in travel behavior. One such behavior may be the result of maximizing the fuel efficiency of existing household fleets. Intra-household vehicle allocation is the decision process in which households assign their vehicles to their drivers. The reduction in fuel consumption occurs when the household driver with the highest annual VMT is reassigned to the vehicle with the highest miles per gallon (MPG) rating, and so forth.

Data for this study comes from the 2009 National Household Travel Survey Vermont Add-on. Our analysis includes only households with a vehicle fleet of two or greater and who reside in the state of Vermont (households, n=1190). Due to the predominately rural environment of Vermont and the limited number of alternatives to personal vehicle travel, changes to the intra-household vehicle allocation process may have a large impact per household than their more urban counterparts. Within this sample 29.8% of households exercised efficient intra-household vehicle allocation behaviors.

In our preliminary analysis, we found a 3% to 11% reduction in fuel consumption if households allocated their vehicles efficiently. The next step in our analysis is to develop models that can help explain inefficient intra-household vehicle allocation.