Little attention has been previously paid to the question of correspondence between the locality of travel and road ownership. This study complements previous work which tried to establish the optimal mix between state and county funding based on minimizing economic costs (Levinson and Yerra, 2002). Instead of considering cost distribution, this study examines utilization: the usage of road networks both within and outside of home jurisdictions (city or town) and county of residence) by analyzing GPS data. City and county roads are typically funded by those jurisdictions from land-based sources such as property taxes, through trips with neither end in the city through which they are traveling are in a very real sense “free riders”, and pose a problem.

Figure 1: United States average and Minnesota transportation funding for state and local governments. While local general funds (which are often property tax based) as well as specific dedications from property taxes.

Figure 2: Ideal Model of Hierarchy, city roads serve trips within a city, while county roads serve inter-city trips within the county boundary.

Figure 3: Study is based on travel trajectories (only home and work locations are shown here) of 140 subjects in the Twin Cities Metropolitan area during 6-13 weeks in Fall, 2008, captured by in-vehicle GPS devices. The TLG network, a detailed network conflated to the real road geometry, is used in this study. The functional classes investigated in this study consist of A10 Interstate Freeways, A15 Interstate HOV lanes (I-394 HOV), A20 US Highways, A25 State Highways, A30 County Road, A40 City Street.

Figure 4: Vehicle travel on different roads during weekday and weekend.

Figure 5: Vehicle kilometers of travel on different road classes by home jurisdiction. The average share of VKT in the home county is more than 70% for both county and city streets, implying the free rider problem on city and county streets at the county level is minimal. More than half of VKT on county roads and city roads takes places out of one’s home city.

Figure 6: Histogram of subjects according to the percentage of travel in one’s home city. Wide variance in the percentage of travel on county and city roads show diversity travel behaviors across individuals, as well as differences in the nature of city and county road networks.

Figure 7: Pure through traffic on different road classes by city and county (measured in VKT). About 22% and 13% traffic on county roads and city streets, respectively, is through traffic with both trip origin and destination outside of city boundary. The share of through traffic is relatively low for county.