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The gender gap in non-work travel: The relative roles of income earning potential and land use

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ABSTRACT

We empirically test two hypotheses: (1) that gender differences in income earning potential play a role in the within-household division of non-work travel and (2) that compact land use development can reduce the within-household gender gap in non-work travel. Using the 2001 Southern California Household Travel Survey, we find that non-work travel patterns for men and women do not vary much by gender unless children are in the household. Households with children display a striking difference in chauffeuring trips and women bear most of the chauffeuring burden. Adjusting for sociodemographics, women in households with children take over 300% more chauffeuring trips than do men living alone. The difference in chauffeuring trips among females and males within the household, the "within-household, female–male chauffeuring gap", is larger for households with employed males and smaller in households with employed females. The chauffeuring gap is smaller when the woman's earning power is larger compared to the man in the same household. The chauffeuring gap is larger for households that have higher amounts of single family residential land use in the quarter-mile area around their residence, and the chauffeuring gap is larger for households that live farther than a half mile from the nearest bus stop. The magnitude of the effect of those two land use variables on the chauffeuring gap is similar to the magnitude of variables that measure within-household differences in income-earning potential or female and male employment status, suggesting that more dense land use and better transit service can help reduce disproportionate chauffeuring burdens of women.

1. Introduction

Urban theorists have long hypothesized that low density urban sprawl reinforces gender differences (Hayden, 2002), including gender differences in travel (Handy, 2006). Yet this question has received little attention in policy circles, possibly in part because the role of the built environment in gendered travel has been only weakly documented. We argue that the existing evidence lacks three necessary elements for policy relevance: (1) Studies should examine non-work travel, to complement the more well-known literature on gender differences in commute travel. Over 80 percent of all U.S. trips are non-work trips (Santos et al., 2011), limiting the insights that would be available from the literature on gender and commute travel. (2) Studies should control for the wage- and income-earning potential of individuals, because the within-household division of labor is determined, in part, by income-earning potential. (3) Studies should document whether any effect of land use on gendered travel persists after controlling for within-household differences in income-earning potential, and whether any such land use effects have magnitudes that are important. To our knowledge, this is the first study that does all three of those things.

Our results show that the largest gender differences in non-work travel behavior are associated with chauffeuring (i.e. transporting other people by motor vehicle). In households with children, women bear a much larger share of the chauffeuring responsibilities. We find evidence that women take on more chauffeuring duties due to differences in income-earning potential and that more compact, transit-oriented land uses can alleviate the within-household gender gap in chauffeuring. Using econometric models to predict within-household gender differences in chauffeuring, the magnitude of land use characteristics is comparable to the magnitude of income-earning potential, suggesting a possibly important and, in the urban economics literature, largely overlooked role for land use to alleviate gender differences in household responsibilities tied to travel behavior.

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In this paper, we use detailed travel survey data from metropolitan Los Angeles for 2001. We examine non-work travel (chauffeuring,[1] shopping, errands, social, entertainment, and exercise trips), and we divide our analysis across three types of households using the 2001 Post Census Regional Household Travel Survey from the Southern California Association of Governments (SCAG). Type 1 households are adult (18 years of age or older) men or women living alone, Type 2 households are adult men and women living together (married or unmarried) with no children in the household, and Type 3 households are adult men and women living together with children (under 16 years of age) in the household. Our data allow an analysis of gender differences in travel behavior as a function of household income, employment status, wage- and income-earning potential, education levels, and other sociodemographic characteristics. Additionally, we have access to geocoded household locations, allowing us to construct several measures of land use and transportation (particularly transit) access, to examine how land use variables are associated with gender differences in travel.

After developing descriptive statistics, we econometrically analyze the within-household gender difference in chauffeuring, using measures of wage- and income-earning potential that are predicted values from wage regressions (see Section 6 for details.) Our econometric models for the within-household gender differences in chauffeuring, while accounting for the endogeneity of wage and income, are otherwise a reduced form due to data limitations. The reduced-form analysis leaves two additional questions of endogeneity: (1) whether male–female pairings into Type 3 households reflect, in part, unmeasured attitudes toward divisions of household labor, chauffeuring included, that would be correlated with our wage- and income-gap measures, and (2) whether households choose their residential location in part based on attitudes about chauffeuring children versus an alternative of more independent child travel. We address these two endogeneity concerns by (1) running additional regressions with subsamples of similarly educated and similarly aged couples who, we argue, are less likely to sort into households based on attitudes about the division of household labor, and (2) by implementing a propensity score matching technique to examine the question of endogenous selection of residential neighborhood. More details about and justification for those tests are in Section 6, the regression analysis.

2. Literature review

2.1. Gender, land use, and non-work travel

Commuting differences are observed for men and women with comparable age, education levels, employment status, and household structure (e.g. Ericksen, 1977; Hanson and Johnston, 1985; Johnston-Anumonwo, 1997). As women's labor market participation rates have increased, these differences have persisted with only small convergence (Crane, 2007; Crane and Takahashi, 2009). The question of gender differences in non-work travel has also received some attention. Women make more food and grocery shopping, child serving, and household errand trips but less social and recreational trips than comparable men (e.g. Hanson and Hanson, 1981; Mauch and Taylor, 1997; Handy, 1998; Steiner, 1998). Women are more likely to link non-work trips to their work trips and have a complex commute trip chain (Sarmiento, 1998; McGuckin and Murakami, 1999; Hjorthol, 2000).

Can land use patterns influence or ameliorate gender differences in non-work travel? The idea is intuitive. More concentrated, transit-oriented land uses might allow children to more easily travel on their own, or may facilitate easier trip-making that could encourage men to more evenly divide non-work household serving trip-making duties. Yet evidence on this question is still mixed. While Goddard et al. (2006) indicated that both neighborhood and household types have significant effects on women's travel behavior, McDonald (2005) reported that mothers' travel burdens are not reduced as residential density increases. Women were found to have more walking trips in traditional than in suburban neighborhoods. But men are even more responsive to these built environment changes, possibly due to women's greater safety concerns and household responsibilities (Clifton and Dill, 2005; Clifton and Livi, 2005).

Recently, chauffeuring and the more specific category of escorting children to school have become research foci. Studies consistently find that being a mother is the most significant factor influencing chauffeuring or escorting behavior because of the gendered division of household labor (Vovsha and Petersen, 2005; Schwanen, 2007; Yarlagadda and Srinivasan, 2008; Liu et al., 2012). Employment status and commute patterns also play important roles. Parents who do not work, who work part-time, who work closer to home, and who have flexible work schedules are more likely to perform chauffeuring or escorting duties (Vovsha and Petersen, 2005; Schwanen, 2007; Yarlagadda and Srinivasan, 2008; Liu et al., 2012). Built environment attributes such as population density, residential location, and road network accessibility were found to have significant but limited effects (Schwanen, 2007; Waygood, 2011; Yoon et al., 2011). Moreover, parental concerns about convenience, safety, and cultural expectations also influence their chauffeuring or escorting behavior (McDonald and Aalborg, 2009; Waygood, 2011; Carver et al., 2013). However, most studies focus on whether children are chauffeured to school or walk or bike to school, and on which adult (the mother or father) performs the chauffeuring duty rather than comparing the mother's and father's share of total chauffeuring trips. We go beyond the literature's current focus on school travel by examining the difference in chauffeuring trips between men and women within the same household. Such within-household comparisons have rarely been studied for all non-work or chauffeuring trips. We also extend the literature by exploring how land use and transportation access characteristics can reduce the within-household gender-based chauffeuring gap.

2.2. Gender, income, and household labor

The effects of the gender wage gap on the division of household labor (but not on travel) have been evaluated by a number of empirical studies. Results show that, in general, both women's total hours of household work and their share of household work go down when their relative earnings compared to their husbands' goes up (Brines, 1994; Bianchi et al., 2000; Greensteim, 2000; Kroska, 2004; Parkman, 2004). However, Gupta (2007) found that women's absolute rather than relative earnings are a better predictor of their total household work hours. Moreover, Bittman et al. (2003) and Schneider (2011) found that while women's share of household work decreases as their share of household earnings increases, when women's share of household earnings exceeds that of their husbands', their share of household work starts to increase, suggesting that gender ideology comes into play and results in a more traditional division of household labor.

Although the importance of the gender wage gap in travel behavior has been recognized by some researchers (e.g. Rosenbloom, 2006; Giuliano and Schweitzer, 2010; Scheiner and Holz-Rau, 2012), it is hard to quantify the effect due to lack of information. Typically, travel surveys collect household income rather than income earned by individual household members.

[1] A trip in the SCAG travel diary was selected as a chauffeuring trip if the trip purpose was to "pick up/drop off someone or get picked up/dropped off" and the travel mode was "drove". Note that this combination selects trips where the survey respondent drove others for the purpose of picking them up or dropping them off.