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# Commuting in dual-earner households: international gender differences with time use surveys

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## Abstract

Prior studies show men commute longer than women, often due to household responsibilities. However, research on commuting differences within couples is limited. This study examines gender gaps in commuting times and mode choices among dual-earner couples in Spain, Italy, South Korea, and the UK. Using Ordinary Least Squares regressions, we find that the presence of children significantly increases gender gaps in commuting times in Italy and the UK, supporting the household responsibility hypothesis. Conversely, no significant link between children and gender gaps is observed in Spain and Korea. Additionally, children's presence affects commuting mode choices in Italy across all modes, and in Korea for public transit only, with Italian women showing the most changes in commuting mode when children are present.

**Keywords** Commuting · Gender differences · Dual-earner couples · Household responsibilities · Multinational Time Use Study

**JEL Classification** R40 · J22 · O57 · D19

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## 1 Introduction

Commuting is an important part of the daily lives of workers worldwide, as millions of workers commute to their work. Workers in the European Union spend an average of 25 min per day commuting (Eurostat, 2020), while workers in the United States spend around 47 min per day commuting (BLS, 2019). Given that these are significant portions of the 24 h available in the day, and that there is a negative association between commuting and health-related outcomes of workers (Hansson et al., 2011; Künn-Nelen, 2016), the analysis of commuting behavior has received increasing attention in economics.<sup>1</sup> Within these analyses, a significant strand of the literature has centered on gender disparities. In general, men commute longer average distances and times compared to women. This is also observed in dual-earner households – a family arrangement that has received special attention over the years (Hanson & Hanson, 1980; Madden, 1981; Johnston-Anumonwo, 1992; Sultana, 2005).

Several factors have been proposed to explain gender differences in commuting. Some studies have centered on the links between women's commuting and labor force participation (Madden, 1981; MacDonald, 1999), or on the geographical distribution of occupations (Hanson & Johnston, 1985; Hanson & Pratt, 1995; Benson, 2014). Other arguments state that gender differences in commuting behavior are closely related to the gendered division of housework and childcare. This latter explanation is known as the “*household responsibility hypothesis*” (Johnston-Anumonwo, 1992; Turner & Neimeier, 1997; Gimenez-Nadal & Molina, 2016), and posits that women have more space-time constraints, since they must adapt their out-of-home activities to their chores at home, which ultimately leads to shorter commuting times and distances (Turner & Neimeier, 1997; Lee & McDonald, 2003; McQuaid & Chen, 2012; Sandow & Westin, 2010; Gimenez-Nadal & Molina, 2016). Thus, household responsibilities may limit the commuting length of female workers.

Household responsibilities may also affect the choice of the mode of transport used to commute. Women may be more likely than men to use public transit or active transport to go to work, even in situations when they have easy car access in the household (Matthies et al., 2002). However, greater household responsibilities may shift (i.e., increase) their priority to use the car to engage in household-support trips, given that women are more likely to engage in complex trip chains than men (Scheiner, 2014), and do most of the escorting of children (Motte-Baumvol et al., 2017). Scheiner and Holz-Rau (2012) study the intra-household allocation of cars, finding that having household responsibilities increases the chances of needing access to the car.

But most of the prior literature analyzing how household responsibilities are related to the commuting behavior of workers has focused on workers as single units, without taking into account the influence that other members of the household – mostly spouses – may exert on commuting behavior. Very few studies have

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<sup>1</sup> The negative health-related outcomes include lower subjective/psychological well-being (Dickerson et al., 2014; Roberts et al., 2011) and increased stress (Frey & Stutzer, 2008; Gottholmseder et al., 2009; Novaco & Gonzalez, 2009; Wener et al., 2003). These outcomes are important not only at the worker level, but also in terms of public health in general.

explicitly incorporated this view in their methodological approach, since very few studies have analyzed the interdependence that exists between the decisions and outcomes of partners. When the relationship between the commuting behavior of spouses is taken into account, the evidence of the relationship to commuting between members of the same couple is not conclusive (Davis, 1993, Plaut, 2006; Picard et al., 2013; Roberts & Taylor, 2017; Chidambaram & Scheiner, 2020; Kwon & Akar, 2021; Oreffice & Sansone, 2023).

Within this framework, we analyze how gender gaps in commuting patterns within dual earner couples are related to household responsibilities, proxied by the number of children in the household. To that end, we use time-use data from four developed countries—Spain, Italy, South Korea, and the United Kingdom—and explore the time devoted to commuting in dual-earner households.<sup>2</sup> In doing so, we also analyze the relationship of the commuting time of the members of the couple, given that prior evidence is inconclusive. Second, we explore how the mode of transport chosen for commuting by each member of the couple is related to household responsibilities, which is novel, since prior studies have not analyzed transport-mode decisions in the context of household responsibilities. A priori, women may be more likely than men to use public transit due to their household responsibilities, or they have a lower priority to use the family car. Women with greater household responsibilities could be more dependent on a car due to their tight time budget and complex trip-chaining.

Because commuting decisions in couples are made jointly at the family level, we estimate Ordinary Least Squares (OLS) equations to model the gender gap within couples regarding commuting time and mode of travel (private, public, and active transport). We find that having children is significantly related to larger gender gaps in commuting times within couples in Italy and the UK. These results are evidence for the household responsibility hypothesis. However, no association between the presence of children and intra-spousal gender gaps is found for Spain and Korea. In addition, we find that, after conditioning for individual and household characteristics, the presence of children is related to intra-spousal gender gaps in mode choice in Italy (for all modes of transportation) and for Korea (only for public transit). Italian women seem to change their commuting mode of transport the most in the presence of children, followed by Korean women. In contrast, Spanish and English women do not significantly alter the fraction of time commuting by each mode of transport in the presence of children.

Our contribution to the literature is twofold. First, we add to the existing (but scarce) evidence on intra-spousal decision-making about commuting by examining the household responsibility hypothesis. We follow the standard approach of incorporating the number of children as an approximation of the levels of household responsibilities (Hanson & Johnston, 1985; Johnston-Anumonwo, 1992; Lee & McDonald, 2003; McQuaid & Chen, 2012; Roberts & Taylor, 2017; Fan, 2017). This analysis is necessary, given that prior evidence of the relationship between commuting and household responsibilities is inconclusive. Second, we extend the literature by exploring the links between the mode of transport used (private, public,

<sup>2</sup> Because we focus on the daily commuting behavior of double-earner couples, we select those countries from the MTUS with available information on travel to/from work for both spouses.

and active) and household responsibilities. To our knowledge, no prior work has studied this.

The remainder of the paper is as follows. Section 2 presents a review of the literature. Section 3 presents the data and variables, Section 4 describes the empirical strategy, and Section 5 describes the results. Section 6 sets out our main conclusions.

## 2 Background

One significant strand of the literature has centered on the differences in the commuting behavior of men and women. The study of gender disparities in travel patterns has become important because it shows that men commute longer distances/times compared to women, and different hypotheses have been proposed to explain this. Several authors have focused on the links between women's commuting and labor force participation (Madden, 1981; MacDonald, 1999). Some argue that because women tend to be the secondary wage earner within households, they work, on average, shorter hours and earn lower wages than men, increasing their costs of commuting (Waldfogel, 2007). Others argue for the importance of the geographical distribution of occupations, in the sense that differences in the configuration of home-work locations for women and men could explain why women engage in shorter commutes. Women are more likely to work in lower-status occupations and, if these jobs are less geographically concentrated than male jobs, then women probably work closer to their homes to reduce their commuting duration (Hanson & Johnston, 1985; Hanson & Pratt, 1995; Benson, 2014). However, gender differences in commuting decrease (but do not disappear) after controlling for income and occupation (Singell & Lillydahl, 1986; Hanson & Johnston, 1985; Sandow & Westin, 2010).<sup>3</sup>

A different but central hypothesis involves gender roles and household responsibilities (Johnston-Anumonwo, 1992; Turner & Neimeier, 1997). The Household Responsibilities Hypothesis (HRH) states that gender differences in commuting behavior are closely related to the gendered division of household tasks. Evidence indicates that the burden of household work and childcare disproportionately lies on women (Aguiar & Hurst, 2007; Gimenez-Nadal & Sevilla, 2012). As a consequence, women have more space-time constraints, which affect their value of time (Rouwendal, 1999; Sermons & Koppelman, 2001; Brownstone & Small, 2005). They must adapt their out-of-home activities to their chores at home, which lead them to work in jobs closer to home and, ultimately, shorter commuting times and distances (Turner & Neimeier, 1997; Lee & McDonald, 2003; Sandow & Westin, 2010; McQuaid & Chen, 2012; Giménez-Nadal & Molina, 2016). Studies typically rely on household characteristics, such as marital status and the presence and number of children in the family, to approximate the levels of household responsibilities, and to test the hypothesis (Hanson & Johnston, 1985; Johnston-Anumonwo, 1992; Lee & McDonald, 2003; McQuaid & Chen, 2012; Fan, 2017). However, the evidence

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<sup>3</sup> Other relevant arguments have linked gender gaps in commuting with culture, showing that a culture with more gender equality may exhibit reduced commuting gender gaps of parents (Marcen & Morales, 2021).

evaluating the extent of the gender differential in commuting patterns is mixed (Turner & Neimeier, 1997; Giménez-Nadal & Molina, 2016).

Part of the literature examining disparities in commuting patterns of men and women has placed special attention on the behavior of dual-earner households, because partners share a dwelling, but have separate working places. Commuting is central to work-home arrangements because it is the nexus between the worker and the housing market (Roberts & Taylor, 2017). Evidence of work trips in dual-earner families also indicates that women commute shorter distances and shorter times (Hanson & Hanson, 1980; Madden, 1981; Johnston-Anumonwo, 1992; Sultana, 2005), but men and women are affected differentially by household characteristics, household type, and housing tenure (Kim, 1994, 1995). Additionally, the literature has focused on comparing commuting decisions of dual-earners to those of single-earners (Green, 1997; McQuaid & Chen, 2012; Hirte & Illmann, 2019). Findings suggest that dual-earner households are more likely to live farther from their work locations than single-earners (Madden, 1981). However, workers of dual-earner households commute, on average, the same, or even less, than individuals in single-earner households (Rouwendal & Rietvald, 1994; Sultana, 2005; Surprenant-Legault et al., 2013), probably because the home location could be chosen to minimize joint commuting distances (Kim, 1995), despite facing more constraints in balancing home and work locations.

These studies have analyzed different aspects of the gender disparities in commuting behavior by comparing different family types at the household-level (single- and double-earners), or by focusing separately on male and female individual decision-making in the context of dual-earner households. However, little work has been done on examining gender commuting differences within couples, and how these gaps relate to the household responsibility hypothesis. Couples reach joint decisions in a variety of ways, as a result of interactions and bargaining processes. Partners make a joint decision regarding the location of their home, but make separate but dependent choices on employment location, which ultimately determines each spouse's commuting time (Roberts & Taylor, 2017).

Few studies explicitly account for the dependent nature of commuting decisions in dual-earner families. Plaut (2006) focuses on the role of housing in the inter-relationship between male and female commuting decisions of spouses in dual-income households in the US, estimating a Seemingly Unrelated Regression (SUR) model to account for the interdependence of commuting decisions between partners, and finding that men commute further than women, and owners commute further than renters. Following the same methodological approach, Roberts and Taylor (2017) introduce the conditions of local labor markets to analyze spouses' commuting behavior in the UK, finding that men's commuting times are more sensitive to local unemployment rates. In turn, Kwon and Akar (2021) analyze the determinants of the household total commuting distance and share of women's commuting distance in the US, and find that commuting mode, the presence of children, and occupation-related characteristics affect the gender gaps within couples. Using a different methodological approach, Chidambaram and Scheiner (2020) examine the gender gap in commuting distance within dual-earner couples in Germany. They find that gender disparities in economic prospects increase the gender gap in commuting distances. In addition, their evidence indicates that a relative dominance of car access

by the female spouse reduces the gap, while an increase in time spent on unpaid work by the male partner decreases the gender gap.<sup>4</sup>

### 3 Data and variables

Our analysis relies on the Multinational Time Use Study (MTUS) data set, coordinated by the Center for Time Use Research (CTUR) at University College, London, and incorporated in the Integrated Public Use Microdata Series (IPUMS) of the Institute for Social Research and Data Innovation of the University of Minnesota (Fisher et al., 2019). The MTUS is a dataset aimed at harmonizing time-use surveys worldwide and includes information on 69 activities performed by individuals during the day, for randomly selected samples, from 25 countries over 5 decades, including travel activities. In addition, the MTUS collects information on individual and family-level socio-demographics. Data is gathered via completion of personal diaries as well as individual and household questionnaires.

There is a growing literature using time-use surveys to analyze transportation behavior (Gimenez-Nadal & Molina, 2014; 2016; Jara-Díaz & Rosales-Salas, 2015; Gimenez-Nadal et al., 2018a, 2018b, 2022a; Echeverría et al., 2022). Such surveys have become the “gold standard” to study other uses of time, including paid work, housework, and childcare (Aguiar & Hurst, 2007; Gimenez-Nadal & Sevilla, 2012), since the analysis derived from time use data yields more reliable and accurate estimates in comparison to time use information obtained from stylized questions (Robinson & Godbey 1985; Juster & Stafford 1985).

We select those countries from the MTUS with available information for both members of the couple. The MTUS currently includes four developed countries whose surveys include that information, for the 2000s and 2010s: Spain (2002–2003 and 2009–2010), Italy (2002–2003 and 2008–2009), South Korea (2009), and the United Kingdom (2000–2001 and 2014–2015).<sup>5</sup> We restrict the analysis to heterosexual working couples aged between 21 and 65 years old (Aguiar & Hurst, 2007, Gimenez-Nadal & Sevilla, 2012).<sup>6</sup> The final sample is 6734 couples (see Table 7 for sample composition by country).

Our analysis focuses on two sets of dependent variables. First, we are interested in the gap of the commuting times at the couple-level, defined as the difference between the commuting time of the male and the female (in minutes per day)<sup>7</sup>. Second, we are interested in the gap of the proportion of commuting time by private transport (car,

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<sup>4</sup> Note that these models ignore the bargaining process within the family, as studied by family economics (Picard et al., 2013). One exception to this argument is Orefice and Sansone (2023), who develop a model to show how to non-cooperatively allocate spouse’s time between work in the labor market and household production, as in Bertrand et al. (2021), augmented with commuting time decisions.

<sup>5</sup> We do not consider time use surveys in previous decades (e.g., 1980s, 1990s) because we want to give an up-to-date view of commuting behavior within couples.

<sup>6</sup> We include couples with members who do not commute, even though teleworkers represented only a small fraction of workers before the pandemic.

<sup>7</sup> Because information on travel distance is not available in the MTUS, we rely on information regarding individual commuting times.

**Table 1** Commuting Time and Mode of Transport by Gender and Country

	Spain		Italy		Korea		UK	
	Mean	Std. Dev.						
gap in commuting times (in minutes)	7.2	46.8	8.8	49.7	5.7	41.7	16.6	64.4
gap in the proportion by private transp.	0.18	0.56	0.10	0.46	0.30	0.51	0.06	0.51
gap in the proportion by public transp.	-0.05	0.35	-0.03	0.24	-0.09	0.32	-0.01	0.27
gap in the proportion by active transp.	-0.12	0.49	-0.07	0.39	-0.20	0.47	-0.06	0.43
number of couples	1453		2488		1751		1042	

Gaps are computed as the raw difference between male and female. Sample consists of double-earner couples from the Multinational Time Use Study (MTUS) from 2000 to 2015. Composition of the sample by country is detailed in Table 7 of the Appendix

truck, or motorbike), public transit, and active transport (walking or cycling). To construct these variables, for each member of the couple, we sum the commuting time (in minutes) by each mode of transport and divide it by the total time spent in commuting during the day by the individual.

Table 1 shows the descriptive statistics for these variables by country. Because the gender gaps in commuting times are positive, on average, men commute for longer times than do women, in all countries of the sample. The largest gap is found in the UK (16.6 min), followed by Italy (8.8 min), Spain (7.2 min) and Korea (5.7 min). Regarding the mode of transport used for commuting, we observe important and cross-country-consistent differences by gender. For all countries of our sample, men spend on average a larger proportion of their commuting time using private transport (positive gender gap), while women travel a larger fraction by public transit and active transport (negative gender gap). Further, gender gaps are larger in the proportion of commuting by private car, followed by differences in active transport, while gender differences in the use of public transit are much smaller. In turn, these differences are consistently larger for Korea, followed by Spain, Italy, and the UK (in which differences are relatively close to zero), irrespective of the mode of transport.

To account for the observed heterogeneity across individuals and couples, we include individual and household characteristics, including the number of children in the family. For personal characteristics, we consider age and the highest level of formal education achieved (primary education/uncompleted secondary, completed secondary, and higher education). Roberts and Taylor (2017) find that younger, more educated men and women in the UK commute longer, but the gradient is steeper for men (women) in the case of education (age). We also incorporate the hours of paid work per week and occupational category (Schwanen & Dijst, 2002; Gutierrez-i-Puigarnau & van Ommeren, 2010; Gimenez-Nadal and Molina, 2014), which has been found to be significantly related to the commuting distance gap in German couples (Chidambaram and Scheiner, 2020).

We include the number of children under age 18 in the household, to proxy for household responsibilities, following Hanson and Johnston (1985), Johnston-Anumonwo (1992), Lee and McDonald (2003), McQuaid and Chen (2012) and Roberts and Taylor (2017). Children and childcare activities may impose differential constraints on the commuting of partners, and are affected by the opportunity cost of time. Evidence of the relationship between the presence of children and commuting is mixed. Some studies find that having a child is not a significant factor in commuting distance for men or women (Kim, 1994, 1995). In addition, having children is not related to the gender gap in commuting distance in the US (Chidambaram and Scheiner, 2020). In contrast, one study for the US suggests that increases in the number of children are likely to lead to longer commuting (total) distances for two-earner couples, while likely to decrease the share of women's commuting distance in total household commuting (Kwon & Akar, 2021). In the case of the UK, having children bears no relationship to men's commuting times but is associated with shorter commuting time for women (Roberts & Taylor, 2017).

We include a set of household characteristics: if the couple is cohabitating (or married), the residential location (urban/suburban or rural/semi-rural), ownership of a home (own outright, mortgage, or rent) and ownership of at least one motorized vehicle (either car or motorcycle)<sup>8</sup>. Abraham et al. (2010) find a differential willingness between the male and female to change the residential location in response to work-related incentives, and that a bargaining process operates within couples to minimize potential conflict resulting from migration. In this line, Mok (2007) argues that when there are children in the family, it is necessary to account for family-decision making in location decisions. In addition, evidence for the US (Plaut, 2006) and the UK (Roberts & Taylor, 2017) shows that owners commute further than renters, reflecting rigidities in the housing market. Car ownership is associated with shorter commuting times for women in the case of renters, and to longer trips for men homeowners in the US (Plaut, 2006), while the number of cars in the household is associated with shorter commuting times for women in the UK (Roberts and Taylor, 2017). However, in terms of the gender gap in commuting between partners in Germany, car availability is not related to commuting distance. In addition, there is no indication of greater gender equality in commuting in urban areas (Chidambaram & Scheiner, 2020).

In addition, we include information on the means of transportation because this choice is also related to commuting times (Oreffice & Sansone, 2023). To explore this in the context of our data we include variables with the information on the proportion of commuting done by private car, public transit, and active transport of both members of the couple.

Table 2 reports descriptive statistics by country. Panels (A) and (B) present information at the individual level, with Panels (C) and (D) at the couple level. Panel (A) shows that men are, on average, 42.7 to 45.9 years old, depending on the country, and are slightly older than women (40.6 to 42.8 years old). There is a larger proportion of men (women) with primary (or uncompleted secondary) education in

<sup>8</sup> Information on cohabitation is not available for Korea, ownership of a home and motorized vehicles is not available for Spain (2009–2010); ownership of motorized vehicles is not available for Korea, while urban location is not available for the UK (2014–2015).

Spain, Italy and the UK (Korea). In Spain (Italy and Korea), the proportion of men (women) with secondary education is larger, while in the UK it is of the same order. In Spain, Italy, and the UK (Korea), there is a larger proportion of women (men) with higher education. In all countries, the proportion of men and women who only achieved a primary educational level is the lowest. In Spain (Italy) there is a larger fraction of individuals with higher (secondary) education, while the distribution of individuals across secondary and higher levels of education is quite similar in the UK. Men work more hours per week than do women. Gender differences in paid work are the greatest in the UK (11.7 more hours per week), followed by Korea (7.2 h), and Spain (5.9 h).<sup>9</sup>

Panel (B) reports the proportion of commuting time done by private, public and active transport. On average, men commute by private transport 83% of the time in Italy, 78% in the UK, 74% in Korea and 73% in Spain. Women commute by private transport 73% of the time in Italy and the UK, while only 55% in Spain and 44% in Korea. Further, on average, men (women) commute by public transport 9% (14%) of the time in Spain, 6% (7%) in the UK, 5% (14%) in Korea and 3% (6%) in Italy. On average, men (women) commute by active transport 21% (42%) of the time in Korea, 18% (30%) in Spain, 14% (20%) in the UK and 13% (20%) in Italy. In addition, when traveling by private transport, spouses pool their commute 12% of the time in the UK and 8% of the time in Spain and Korea.

Panel (C) of Table 2 reports the proportion of couples without children and with one, two, or more than two children. In Spain, Italy, and Korea, approximately 40% of couples do not have children, while that figure is 50% in the case of the UK. Spain and Italy have a larger proportion of couples with one child (31 and 35%, respectively) than with two children (26 and 23%, respectively). Korea and the UK have a larger proportion of couples with two children (35 and 24%, respectively) than with one child (21 and 20%, respectively). In all countries, the percentage of couples with more than two children is comparatively low (between 4 and 6%).

Panel (D) of Table 2 shows that being married is more likely among dual-earner couples, given that 19% of dual-earner couples in the UK are cohabitating, with 10% in Spain and only 6% in Italy. Further, Italy has a lower proportion of couples living in urban/suburban areas (62%), followed by Spain (72%) and Korea (93%). At the same time, 68% of couples in the Korean sample are home-owners, while this number is 78% in Italy and 84% in the UK. In addition, almost all Italian couples in the sample own at least one motorized vehicle (99%), while only 60% of couples in the UK are owners of a car or a motorcycle.

## 4 Empirical strategy

We analyze the decisions of spouses regarding commuting times and mode of transport in dual-earner couples, focusing on gender and cross-country differences. We estimate Ordinary Least Squares (OLS) regressions in which dependent variables are the gender gaps of our variables of interest (that is, of the commuting time and of the proportions traveled by private, public and active transport).

<sup>9</sup> Information on working hours is not available for Italy (2002–2003).

**Table 2** Descriptive statistics by gender and country

	Spain			Italy			Korea			UK						
	Male		Female	Male		Female	Male		Female	Male		Female				
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.				
<b>Panel (A): individual characteristics</b>																
age	43.3	8.8	41.2	8.3	44.3	8.4	41.2	8.2	45.9	8.3	42.8	7.9	42.7	10.1	40.6	9.8
elementary education	0.13	0.33	0.11	0.31	0.20	0.40	0.15	0.36	0.15	0.36	0.20	0.40	0.20	0.40	0.18	0.38
secondary education	0.33	0.47	0.29	0.46	0.66	0.48	0.69	0.46	0.58	0.49	0.64	0.48	0.39	0.49	0.39	0.49
higher education	0.55	0.50	0.60	0.49	0.14	0.35	0.15	0.36	0.27	0.44	0.17	0.37	0.40	0.49	0.44	0.50
hrs. of work per week	41.7	8.7	35.8	9.7	-	-	-	-	53.8	15.7	46.6	17.0	44.7	13.7	33.0	14.1
<b>Panel (B): mode</b>																
proportion by private	0.73	0.42	0.55	0.48	0.83	0.35	0.73	0.41	0.74	0.41	0.44	0.46	0.78	0.39	0.73	0.42
proportion by public	0.09	0.26	0.14	0.32	0.03	0.16	0.06	0.22	0.05	0.18	0.14	0.29	0.06	0.22	0.07	0.22
proportion by active	0.18	0.35	0.30	0.43	0.13	0.31	0.20	0.36	0.21	0.37	0.42	0.44	0.14	0.31	0.20	0.36
prop. of carpooling	0.08	0.23	0.08	0.23	-	-	-	-	0.08	0.24	0.08	0.24	0.12	0.25	0.12	0.25
<b>Panel (C): children</b>																
0	0.40	0.49	0.40	0.49	0.38	0.49	0.38	0.49	0.39	0.49	0.39	0.49	0.50	0.50	0.50	0.50
1	0.31	0.46	0.31	0.46	0.35	0.48	0.35	0.48	0.21	0.41	0.21	0.41	0.20	0.40	0.20	0.40
2	0.26	0.44	0.26	0.44	0.23	0.42	0.23	0.42	0.35	0.48	0.35	0.48	0.24	0.43	0.24	0.43
3 or more	0.04	0.19	0.04	0.19	0.04	0.19	0.04	0.19	0.05	0.22	0.05	0.22	0.06	0.24	0.06	0.24
<b>Panel (D): household characteristics</b>																
cohabitation	0.10	0.30	0.10	0.30	0.06	0.24	0.06	0.24	-	-	-	-	0.19	0.40	0.19	0.40
urban location	0.72	0.45	0.72	0.45	0.62	0.48	0.62	0.48	0.93	0.25	0.93	0.25	-	-	-	-
owner of a house	-	-	-	-	0.78	0.42	0.78	0.42	0.68	0.47	0.68	0.47	0.84	0.37	0.84	0.37
owner of a vehicle	-	-	-	-	0.99	0.10	0.99	0.10	-	-	-	-	0.60	0.49	0.60	0.49
number of couples	1453				2488				1751				1042			

Sample consists of double-earner couples from the Multinational Time Use Study (MTUS) from 2000 to 2015. Composition of the sample by country is detailed in Table 7 of the Appendix. Information on working hours is not available for Italy (2002–2003); ownership of a home and motorized vehicles is not available for Spain (2009–2010); ownership of motorized vehicles and cohabitation are not available for Korea, and urban location is not available for the UK (2014–2015). Carpooling cannot be constructed for Italy because information is not available

First, we estimate an OLS model in which the dependent variable is the gender gap in commuting time ( $GCT$ ), defined as the difference between male and female commuting time. Equation (1) is estimated at the couple-level and separately for each country:

$$GCT = \alpha + \beta X + \mu P + \eta CH + \delta H + \lambda FE + \varepsilon \quad (1)$$

where  $X$  is a vector containing the socio-demographic variables for the male and female, including age (and its square), the highest level of formal education achieved (elementary, secondary or higher education), and the number of hours of paid work per week.  $P$  is a vector of variables that account for the proportion of time done by private, public and active transport for each member of the couple.  $CH$  is a vector of indicator variables at the couple-level of the number of children under age 18. Specifically, we include an indicator for couples with one child, two children, and three or more children (couples with no child are the reference category).  $H$  includes a set of household characteristics, such as if the couple is cohabitating, the residential location (urban/suburban or rural/semi-rural), ownership of a home (own outright, mortgage, or rent) and ownership of at least one motorized vehicle (either car or motorcycle). The vector  $FE$  includes control variables to account for the occupational category of the men and women, and the region and year of the survey, when available. Standard errors are robust.

We are interested in the vector of parameters  $\eta$ , as they show how the gender gap in commuting time is related to household responsibilities across countries, proxied by the number of children in the household. A positive (negative) correlation would provide evidence that having more children is related to wider (smaller) gender gaps in commuting times within dual-earner couples.

Second, we estimate Eq. (2) to analyze how the gap in the commuting time done by each mode of transport is related to household responsibilities. We consider three alternative dependent variables: (a) the gap in the proportion of commuting time done by private transport, (b) the gap in the proportion of commuting time done by public transit, and (c) the gap in the proportion of commuting time done by an active mode of transport. We estimate the following specification at the couple-level and for each country, including the same control variables as in Eq. (1):

$$GP = \alpha + \beta X + \mu P + \eta CH + \delta H + \lambda FE + \varepsilon \quad (2)$$

where  $GP$  is the gap in the proportion of travel time by private or public or active transport. In the estimation that models the gap in the proportion of travel time by private transport, we also add a variable to account for the proportion of time that spouses pool their car to commute.

## 5 Results

We present the results of estimating Eqs. (1) and (2) for dual-earner couples who travel to/from work in Spain, Italy, Korea and the UK. Table 3 reports the results of estimating Eq. (1) for the gender gap in commuting time. Tables 4, 5, and 6 report the results of estimating Eq. (2) for the gender gap in the proportion of commuting time done by private transport, public transit, and active transport, respectively. Regressions modeling

commuting choices are estimated at the couple-level and by each country in our sample. Estimated coefficients are interpreted as changes in the gender gaps.

Table 3 reports the estimates of Eq. (1). We find that having children is significantly related to larger gender gaps in commuting times in Italy and the UK. For instance, in Italy the gender gap of couples with 2 children (3 or more children) is 10.9 (17.1) minutes larger than that of couples without children. In the UK, associations are larger for couples with 1 child and three or more children. In contrast, no association between the presence of children and gender gaps is found for Spain (except for having two children at the 10% level) and Korea. Thus, in Italy and the UK the gender gap in commuting time within couples widens as the number of children increases. These results are evidence for the household responsibility hypothesis across countries.<sup>10</sup>

In addition, we find few significant associations between gender gaps in commuting time and individual and family-level characteristics. Our results show that in Korean couples, in which the man works more hours per week, the gender gap in commuting time is smaller. In couples in which the woman is more educated in Italy and works more hours in Spain, the gender gap is also smaller.

Mode choice is strongly and significantly related to gender gaps in commuting. More specifically, the proportion of commuting time done by private and public transit by the man is positively associated with larger gender gaps (with the exception of private transport in Korea). The relationship between the proportion of time done by private and public transit by the woman are negatively related to gender gaps (with the exception of public transit in Italy).

In Table 4, we observe that in couples with one or two children, the gender gap in the proportion of time done by private transport is smaller in comparison to the gap of childless couples in Italy, which could indicate that working mothers in these families commute relatively more time by private transport. No evidence is found for Spain, Korea and the UK. Further, the proportion of time that couples commute by pooling private transport is related to a smaller gender gap only in Korea.

In Table 5, we observe that having two children in Italy and two or three or more children in Korea is positively related to the gender gap in the proportion of time commuting by public transit. This means that gender gaps are smaller for these couples, probably because these women commute a lower portion of time by public transit (considering that this gender gap is negative). A similar result is found in Table 6 for Italian couples with one child and two children.

In sum, we find that, after conditioning for individual and household characteristics, the presence of children is related to gender gaps in mode choice in Italy (for all modes of transportation) and Korea (only for public transit). Italian women seem to change their commuting mode of transport the most in the presence of children, followed by Korean women. In contrast, Spanish and English women do not significantly alter the fraction of time commuting by each mode of transport in the presence of children.

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<sup>10</sup> Because commuting decisions may be differently affected by toddlers, in Table 8 we report the results of estimating Eq. (1) restricting the sample to couples with no child and couples with at least one child below 5 years old. In this case, we find evidence for the household responsibility hypothesis for Spain (for couples with two children) and for Italy (for families with two or three or more children).

**Table 3** OLS regressions of the gap in commuting times, by country

	Spain	Italy	Korea	UK
M age	0.835 (1.810)	0.215 (1.569)	1.938 (1.984)	1.321 (2.160)
M age squared	-0.008 (0.020)	-0.002 (0.017)	-0.021 (0.021)	-0.012 (0.024)
M secondary education	-8.444 (5.616)	1.274 (2.986)	-2.418 (3.325)	-3.073 (5.367)
M higher education	-8.459 (5.702)	7.172 (4.618)	3.341 (4.295)	5.445 (5.870)
M hours of paid work per week	0.191 (0.140)	-	-0.140** (0.070)	0.097 (0.159)
F age	1.788 (1.964)	-0.831 (1.495)	-1.249 (1.988)	0.126 (2.392)
F age squared	-0.019 (0.023)	0.013 (0.018)	0.011 (0.022)	0.007 (0.028)
F secondary education	9.569* (5.502)	-1.059 (3.044)	3.648 (3.192)	-0.576 (5.731)
F higher education	3.748 (5.785)	-13.765*** (4.296)	-2.530 (4.714)	-0.609 (6.554)
F hours of paid work per week	-0.401*** (0.127)	-	0.002 (0.062)	-0.143 (0.143)
M proportion by private transport	17.105*** (3.064)	22.687*** (2.990)	0.617 (3.176)	16.140*** (4.550)
F proportion by private transport	-5.246* (2.730)	-15.226*** (2.699)	-5.297** (2.544)	9.455** (4.503)
M proportion by public transport	47.740*** (6.710)	101.116*** (8.572)	38.749*** (7.561)	90.173*** (14.533)
F proportion by public transport	-41.986*** (5.158)	-81.435*** (7.205)	-25.248*** (4.106)	-40.644*** (12.547)
couples with 1 child (ref.: none)	3.673 (3.119)	5.793** (2.460)	0.916 (2.963)	12.362** (5.231)
couples with 2 children (ref.: none)	6.884* (3.674)	10.947*** (2.652)	0.269 (2.896)	9.909* (5.393)
couples with 3+ children (ref.: none)	5.255 (6.494)	17.112*** (5.291)	0.009 (4.247)	14.932* (8.856)
cohabitation	2.281 (4.657)	2.460 (4.031)	-	5.177 (5.874)
urban location	1.453 (2.783)	-0.454 (1.903)	-4.749 (7.399)	-
owner of a house	-	-1.162 (2.340)	1.954 (2.256)	-3.740 (5.494)
owner of a motorized vehicle	-	-1.514 (9.712)	-	1.297 (8.755)
constant	41.445 (33.109)	16.057 (27.430)	-3.320 (25.541)	-63.808* (37.180)
Occupation controls	Yes	Yes	Yes	No
Region controls	Yes	No	No	No
Year controls	Yes	Yes	Yes	Yes
R-squared	0.133	0.168	0.087	0.113
Number of couples	1453	2488	1751	1042

Dependent variable is the gap in commuting times (gaps are computed as the raw difference between male and female). Sample consists of double-earner couples from the Multinational Time Use Study (MTUS) from 2000 to 2015 (see Table 7 of the Appendix). OLS regressions. Robust standard errors in parentheses M- Male; F- Female

\* Significant at the 10% level; \*\* significant at the 5% level; \*\*\* significant at the 1% level

Several individual and household characteristics relate to the gendered use of modes of transport but differ by country. In Table 4, we observe that in Spanish couples in which the man works more hours per week, the gender gap in the proportion of time commuting by private transport widens, but the opposite occurs if the woman works more hours. In Korea, if the man is older and works fewer hours per week, the gender gap widens, but if the woman has tertiary education, the gender gap is smaller. The association between the educational level of the woman and the gender gap is also found for the UK.

In Table 5, our results indicate that the education level of the man and ownership of the house are positively related to the gender gap in the proportion of time commuting by public transit in the UK, whereas living in urban areas is negatively related to the gender gap in Spain. Table 6 shows that in Spain the number of hours worked (age) of the woman is positively (negatively) related to the gender gap in the proportion of commuting done by active means. This is also observed for couples in the UK. In turn, in Korea, the age of the man is negatively associated with this gender gap, while the age and the level of education of the woman is positively related. In addition, we find that cohabitation is positively related to gender gaps in the fraction of time commuted by active transport only in Italy.

## 6 Conclusions

Prior literature analyzing gender differences in commuting reports that men commute longer distance/time than do women, and one explanation for this gender gap is that the bulk of household responsibilities falls to women. In this paper, we analyze how male and female commuting duration is related to household responsibilities, in couples from four developed countries.

We find that having children is significantly related to larger gender gaps in commuting times within couples in Italy and the UK. These results are evidence for the household responsibility hypothesis. However, no association between the presence of children and intra-spousal gender gaps is found for Spain and Korea. In addition, we find that, after conditioning for individual and household characteristics, the presence of children is related to intra-spousal gender gaps in mode choice in Italy (for all modes of transportation) and for Korea (only for public transit). Italian women seem to change their commuting mode of transport the most in the presence of children, followed by Korean women. In contrast, Spanish and English women do not significantly alter the fraction of time commuting by each mode of transport in the presence of children.

Our results may serve to stimulate further research on the topic of commuting behavior and its connection to household responsibilities. Theoretical, as well as further empirical, research is needed to shed light on the question of how gender affects individual commuting behavior. Furthermore, employment policies should consider the relationship between commuting and household responsibilities, since more family-friendly policies may increase the desire of women to work farther from home, ultimately increasing their labor force participation – at least in the countries where we find evidence of limitations due to household responsibilities.

Identifying which workers are more likely to use public and/or active transport for commuting is important for firms and policy makers. For instance, the fact that the

**Table 4** OLS regressions of the gap in the proportions of commuting time by private transport, by country

	Spain	Italy	Korea	UK
M age	-0.015 (0.023)	0.004 (0.014)	0.053** (0.023)	-0.008 (0.022)
M age squared	0.000 (0.000)	-0.000 (0.000)	-0.001** (0.000)	0.000 (0.000)
M secondary education	0.000 (0.060)	-0.029 (0.030)	0.037 (0.045)	-0.005 (0.046)
M higher education	0.032 (0.061)	-0.046 (0.043)	0.015 (0.055)	-0.046 (0.050)
M hours of paid work per week	0.003* (0.002)	-	-0.001* (0.001)	0.001 (0.001)
F age	0.031 (0.025)	-0.006 (0.014)	-0.030 (0.021)	0.010 (0.021)
F age squared	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
F secondary education	0.062 (0.067)	0.042 (0.030)	-0.054 (0.045)	-0.004 (0.050)
F higher education	0.009 (0.071)	0.041 (0.041)	-0.219*** (0.059)	-0.092* (0.056)
F hours of paid work per week	-0.004*** (0.002)	-	-0.001 (0.001)	-0.001 (0.001)
proportion of car pooling	0.004 (0.054)	-	-0.199*** (0.036)	0.011 (0.064)
couples with 1 child (ref.: none)	0.004 (0.038)	-0.047** (0.024)	0.010 (0.035)	-0.053 (0.045)
couples with 2 children (ref.: none)	-0.001 (0.043)	-0.067** (0.027)	-0.027 (0.034)	-0.016 (0.049)
couples with 3+ children (ref.: none)	-0.028 (0.081)	0.038 (0.050)	-0.065 (0.059)	-0.023 (0.072)
cohabitation	-0.019 (0.053)	-0.037 (0.042)	-	-0.007 (0.046)
urban location	0.057 (0.035)	-0.006 (0.019)	0.130 (0.102)	-
owner of a house	-	-0.016 (0.024)	-0.000 (0.027)	-0.028 (0.050)
owner of a motorized vehicle	-	0.052 (0.078)	-	0.050 (0.096)
constant	-1.379*** (0.380)	0.146 (0.262)	0.208 (0.321)	0.121 (0.317)
Occupation controls	Yes	Yes	Yes	No
Region controls	Yes	No	No	No
Year controls	Yes	Yes	Yes	Yes
R-squared	0.055	0.022	0.084	0.018
Number of couples	1453	2488	1751	1042

Dependent variable is the gap in the proportions of commuting time by private transport (gaps are computed as the raw difference between male and female). Sample consists of double-earner couples from the Multinational Time Use Study (MTUS) from 2000 to 2015 (see Table 7 of the Appendix). OLS regressions. Robust standard errors in parentheses. M- Male; F- Female

\* Significant at the 10% level; \*\* significant at the 5% level; \*\*\* significant at the 1% level

mode of transport is affected by household responsibilities may indicate that children interact with patterns of use of sustainable commuting (e.g., the use of green modes of transport, such as public or active transport), and thus incentives to those who are less likely to use these services may help to increase the use of such modes. This may include, for instance, offering discounts to working parents when using Mobility As a Service (Maas) applications, offering discounts to those working parents who use

**Table 5** OLS regressions of the gap in the proportions of commuting time by public transport, by country

	Spain	Italy	Korea	UK
M age	0.008 (0.016)	0.010 (0.007)	0.008 (0.019)	0.015 (0.010)
M age squared	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
M secondary education	0.040 (0.037)	-0.004 (0.016)	-0.020 (0.030)	0.030 (0.020)
M higher education	-0.007 (0.036)	-0.001 (0.023)	0.004 (0.036)	0.045* (0.024)
M hours of paid work per week	-0.001 (0.001)	-	0.000 (0.001)	-0.000 (0.001)
F age	0.007 (0.017)	-0.007 (0.006)	-0.017 (0.017)	-0.009 (0.010)
F age squared	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
F secondary education	-0.062 (0.041)	-0.006 (0.017)	0.020 (0.031)	0.012 (0.020)
F higher education	0.051 (0.040)	-0.013 (0.023)	0.058 (0.039)	0.037 (0.025)
F hours of paid work per week	0.000 (0.001)	-	0.001 (0.000)	-0.001 (0.001)
couples with 1 child (ref.: none)	-0.009 (0.025)	0.019 (0.013)	0.012 (0.024)	0.027 (0.025)
couples with 2 children (ref.: none)	-0.014 (0.026)	0.031** (0.014)	0.042* (0.022)	0.013 (0.026)
couples with 3+ children (ref.: none)	-0.008 (0.054)	0.021 (0.027)	0.072** (0.033)	0.027 (0.028)
cohabitation	-0.005 (0.034)	-0.028 (0.021)	-	-0.010 (0.025)
urban location	-0.051*** (0.018)	-0.010 (0.009)	0.032 (0.042)	-
owner of a house	-	-0.012 (0.013)	-0.007 (0.018)	0.048* (0.027)
owner of a motorized vehicle	-	-0.064 (0.051)	-	-0.098 (0.061)
constant	0.654*** (0.242)	-0.089 (0.122)	0.163 (0.216)	-0.080 (0.182)
Occupation controls	Yes	Yes	Yes	No
Region controls	Yes	No	No	No
Year controls	Yes	Yes	Yes	Yes
R-squared	0.060	0.023	0.020	0.029
Number of couples	1453	2488	1751	1042

Dependent variable is the gap in the proportions of commuting time by public transport (gaps are computed as the raw difference between male and female). Sample consists of double-earner couples from the Multinational Time Use Study (MTUS) from 2000 to 2015 (see Table 7 of the Appendix). OLS regressions. Robust standard errors in parentheses. M- Male; F- Female

\* Significant at the 10% level; \*\* significant at the 5% level; \*\*\* significant at the 1% level

public transit, or offering free public transit services to children under a certain age. Far from being exhaustive, this paper does not offer a complete review of the existing incentives, and further research could focus on whether such measures are effective in increasing the use of public transport or bike-sharing services for working parents.

Our analysis and results present several limitations. First, given the cross-sectional nature of the data, the results cannot be interpreted as causal, since time-variant and time-

**Table 6** OLS regressions of the gap in the proportions of commuting time by active transport, by country

	Spain	Italy	Korea	UK
M age	0.005 (0.018)	-0.013 (0.013)	-0.061*** (0.023)	-0.007 (0.019)
M age squared	-0.000 (0.000)	0.000 (0.000)	0.001*** (0.000)	0.000 (0.000)
M secondary education	-0.046 (0.056)	0.030 (0.025)	-0.011 (0.042)	-0.018 (0.038)
M higher education	-0.031 (0.057)	0.059 (0.036)	-0.006 (0.052)	0.007 (0.040)
M hours of paid work per week	-0.002 (0.002)	-	0.002** (0.001)	-0.001 (0.001)
F age	-0.035* (0.020)	0.013 (0.012)	0.045** (0.022)	-0.011 (0.019)
F age squared	0.000 (0.000)	-0.000 (0.000)	-0.001** (0.000)	0.000 (0.000)
F secondary education	-0.002 (0.062)	-0.035 (0.026)	0.038 (0.041)	-0.021 (0.045)
F higher education	-0.064 (0.066)	-0.038 (0.035)	0.170*** (0.053)	0.041 (0.048)
F hours of paid work per week	0.004*** (0.001)	-	0.000 (0.001)	0.002*** (0.001)
couples with 1 child (ref.: none)	0.000 (0.032)	0.034* (0.020)	-0.020 (0.032)	0.043 (0.037)
couples with 2 children (ref.: none)	0.012 (0.037)	0.039* (0.023)	-0.022 (0.030)	0.026 (0.040)
couples with 3+ children (ref.: none)	0.031 (0.067)	-0.053 (0.043)	-0.012 (0.053)	0.009 (0.059)
cohabitation	0.014 (0.047)	0.068* (0.036)	-	0.024 (0.039)
urban location	-0.005 (0.033)	0.016 (0.016)	-0.160 (0.097)	-
owner of a house	-	0.023 (0.020)	-0.003 (0.024)	-0.027 (0.043)
owner of a motorized vehicle	-	0.018 (0.092)	-	0.047 (0.095)
constant	0.741** (0.343)	-0.075 (0.240)	-0.382 (0.279)	0.171 (0.305)
Occupation controls	Yes	Yes	Yes	No
Region controls	Yes	No	No	No
Year controls	Yes	Yes	Yes	Yes
R-squared	0.051	0.032	0.067	0.025
Number of couples	1453	2488	1751	1042

Dependent variable is the gap in the proportions of commuting time by active transport (gaps are computed as the raw difference between male and female). Sample consists of double-earner couples from the Multinational Time Use Study (MTUS) from 2000 to 2015 (see Table 7 of the Appendix). OLS regressions. Robust standard errors in parentheses. M- Male; F- Female

\* Significant at the 10% level; \*\* significant at the 5% level; \*\*\* significant at the 1% level

invariant factors at both the individual and household level may be biasing the observed results. Furthermore, our definition of commuting time is restricted to commuting episodes only, and no chained trips (e.g., non-commuting trips while commuting to or from work) are included in the commuting journeys. This represents a limitation, as conclusions can change if a wider definition of commuting is used, especially when it comes to

gender differences in commuting time (Gimenez-Nadal et al. 2022b). More research on this topic is needed.

Furthermore, we refrain from incorporating a theoretical model, as our primary emphasis is not on theoretical frameworks. Despite the importance of dwelling location, devising an optimal theory—be it through joint utility functions or a bargaining approach—to identify ideal dwelling, female workplace, and male workplace locations necessitates a thorough examination of commuting costs, including time. Although this theoretical model aims to minimize overall commuting time for couples, allocating the commuting time share for each partner, and pinpointing optimal commuting modes, we intentionally exclude it in this work, recognizing this omission as an acknowledged limitation.

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#### Compliance with ethical standards

**Conflict of interest** The authors declare no competing interests.

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## 7 Appendix

Tables 7, 8

**Table 7** Sample Composition

Country	Survey Years	Number of Couples
Spain	2002–2003 and 2009–2010	1453
Italy	2002–2003 and 2008–2009	2488
Korea	2009	1751
UK	2000–2001 and 2014–2015	1042
All countries	2000 to 2015	6734

Sample consists of double-earner couples from the Multinational Time Use Study (MTUS) from 2000 to 2015

**Table 8** OLS regressions of the gap in commuting times for families with at least one child under 5 years old, by country

	Spain	Italy	Korea	UK
M age	-0.378 (2.057)	0.091 (1.761)	2.990 (2.349)	0.041 (2.528)
M age squared	0.006 (0.023)	-0.002 (0.019)	-0.033 (0.024)	0.007 (0.027)
M secondary education	-10.471 (7.588)	4.115 (3.830)	0.165 (4.035)	-2.661 (6.630)
M higher education	-12.692* (7.706)	4.855 (6.032)	8.879 (5.998)	4.137 (6.972)
M hours of paid work per week	0.145 (0.192)	-	-0.237** (0.092)	0.167 (0.189)
F age	3.315 (2.070)	-1.571 (1.660)	-1.124 (2.353)	1.801 (2.699)
F age squared	-0.036 (0.024)	0.023 (0.020)	0.010 (0.025)	-0.017 (0.030)
F secondary education	14.761** (7.338)	-1.804 (3.673)	0.968 (3.804)	8.972 (6.519)
F higher education	7.032 (7.688)	-14.656*** (5.222)	-8.114 (7.261)	6.067 (7.176)
F hours of paid work per week	-0.366** (0.181)	-	0.040 (0.084)	-0.098 (0.183)
M proportion by private transport	19.120*** (4.088)	22.011*** (3.972)	-0.097 (4.127)	16.787*** (5.909)
F proportion by private transport	-8.074** (3.725)	-16.635*** (3.727)	-3.444 (3.591)	6.582 (5.629)
M proportion by public transport	50.184*** (8.479)	105.536*** (11.596)	39.524*** (10.915)	76.826*** (17.832)
F proportion by public transport	-53.631*** (6.155)	-85.934*** (9.337)	-24.729*** (6.143)	-29.869** (14.847)
couples with 1 child (ref.: none)	6.806 (4.676)	1.026 (4.290)	9.338 (6.069)	11.310 (9.008)
couples with 2 children (ref.: none)	12.932** (5.188)	13.370*** (3.709)	3.743 (5.047)	7.627 (8.015)
couples with 3+ children (ref.: none)	11.990 (9.943)	21.076*** (7.398)	2.676 (6.634)	6.087 (14.182)
cohabitation	-0.138 (5.237)	4.070 (4.699)	-	2.528 (6.761)
urban location	1.003 (3.568)	-2.073 (2.564)	-2.776 (9.521)	-
owner of a house	-	-0.593 (3.029)	2.155 (3.552)	-4.198 (7.102)
owner of a motorized vehicle	-	0.709 (11.457)	-	-1.366 (10.303)
constant	42.395 (38.115)	32.955 (32.083)	-34.222 (35.194)	-75.407* (44.068)
Occupation controls	Yes	Yes	Yes	No
Region controls	Yes	No	No	No
Year controls	Yes	Yes	Yes	Yes
R-squared	0.184	0.187	0.115	0.090
Number of couples	928	1435	883	690

Dependent variable is the gap in commuting times (gaps are computed as the raw difference between male and female). Sample consists of double-earner couples from the Multinational Time Use Study (MTUS) from 2000 to 2015 (see Table 7 of the Appendix). OLS regressions. Robust standard errors in parentheses. M- Male; F- Female

\* Significant at the 10% level; \*\* significant at the 5% level; \*\*\* significant at the 1% level

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