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Culture and the cross-country differences in the gender commuting gap

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ABSTRACT

This paper explores the role of the gender equality culture in cross-country gender commuting gap differences. To avoid inter-relationships between culture, institutions, and economic conditions in a simple cross-country analysis, we adopt the epidemiological approach. We merge data from the American Time Use Survey for the years 2006–2019 on early-arrival first-generation immigrants and second-generation Americans (U.S.-born children of immigrants) living in the United States with their corresponding annual country of ancestry's Gender Gap Index (GGI). Because all these individuals (with different cultural backgrounds) have grown up under the same laws, institutions, and economic conditions in the US, the gender differences among them in the time devoted to commuting to/from work can be interpreted as evidence of the existence of a cultural impact. Our results show that a culture with more gender equality in the country of ancestry may reduce the gender commuting gap of parents. Specifically, an increase of one standard deviation in the GGI (cultural proxy) increases women's daily commuting time relative to that of men by almost 6 min, a sizeable effect representing 26% of the standard deviation in the gender commuting gap across countries of ancestry. A supplementary analysis provides possible mechanisms through which culture operates and is transmitted. Our results are robust to the use of different subsamples, geographical controls, and selection into employment and telework.

1. Introduction

The large differences across countries in the so-called gender commuting gap vary considerably from just 1–2 min in Estonia, Finland, and Sweden to around 30 min in Japan, Korea, and India (OECD Family Database).[1] This gender gap appears to be quite persistent over time, with, for example, little evidence of changes between the 1960s and the early 21st century in countries such as the US, France, the UK, or the Netherlands (Craig and van Tienoven, 2019; Dex et al., 1995; Giménez-Nadal and Molina, 2016; Grieco et al., 1989; Havet et al., 2021; Turner and Niemeier, 1997). Several non-exclusive frameworks have been proposed in the literature to explain the gender commuting gap: household responsibility, labor market, and gender commuting preferences (for an extensive review of the literature, see Reuschke and Houston, 2020).[2] These possible explanations are able, at least in part, to account for the gender commuting gap but not for the large differences across countries. Our work examines a somewhat overlooked yet related aspect: the gender equality culture across countries. We aim to explore the role of gender equality cultural differences across countries in the gender commuting gap using the epidemiological approach.

Culture was defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2001) as "the set of distinctive spiritual, material, intellectual, and emotional features of society or a social group. Not only does this encompass art and literature, but it also includes lifestyles, ways of living together, value systems, traditions, and beliefs." Almost all researchers have agreed on the importance of culture for human decisions, but they have also agreed that culture is not easily measured (Furtado et al., 2013). Because of the strong connections between culture, institutions, and economic conditions, disentangling the impact of culture in a cross-country comparison is quite tricky. The epidemiological approach put forward by Raquel Fernández (2007) offers a clean scenario in which we can isolate the causal effect of culture from that of institutions and economic conditions. Following that empirical strategy, we study the behavior of early-arrival first-

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[1] See Chart LMF2.6.A: Average time spent traveling to and from work, 1999–2014: http://www.oecd.org/els/family/database.htm

[2] The household responsibility hypothesis assumes that women commute less than men because of parenting and household tasks (Clark et al., 2003; Hjorthol, 2000), with the commuting gap being largest in couples with children (Fan, 2017). The role of the labor market is based on constrains that affect women such as part-time jobs, low wages, and local labor structure (Carlson and Persky, 1999; Petrongolo and Ronchi, 2020; Sandow, 2008). Dissimilarities in commuting preferences with women having greater commuting sensitivity can also partly explain the gender commuting gap (Gordon et al., 1989).

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generation immigrants and second-generation Americans (U.S.-born children of immigrants) whose ethnicity/ancestry or country of origin is known. The identification strategy of the epidemiological approach is based on all those early-arrival first- and second-generation individuals who have grown up and spent almost their entire lives in the same country but have different cultural backgrounds. In this setting, differences in the commuting time of those individuals by country of ancestry can be interpreted as evidence of the existence of a cultural impact.

We obtain the US data on early-arrival first-generation immigrants and second-generation Americans' commuting time and their corresponding country of ancestry from the Integrated Public Use Microdata Series Time Use (IPUMS Time Use) database for the period 2006–2019 (Hofferth et al., 2020).[3] To gauge culture, we employ the World Economic Forum's Gender Gap Index, as used in several recent papers that have considered this index as a suitable proxy for gender equality culture in the country of ancestry (Blau et al., 2020; González and Rodríguez-Planas, 2020; Marcén and Morales, 2021; Nollenberger et al., 2016). Merging these two datasets, we are able to study the effect of culture on commuting time, avoiding reverse causality concerns because the behavior of early-arrival first-generation immigrants and second-generation Americans is unlikely to influence the gender equality index of the country of ancestry (Nollenberger et al., 2016).

The results show that more gender-equal norms in the country of ancestry are associated with a longer commuting time of women relative to men. Therefore, what role are the cross-country cultural differences playing in the gender commuting gap differences? More gender-equal norms may be narrowing the gender commuting gap across countries of ancestry. Specifically, we find that a one standard deviation increase in the GGI is associated with an increase of almost 6 min in the commuting time per day of women relative to men, which represents 26% of the standard deviation in the gender commuting gap across countries of ancestry. Our results are robust to selection into employment and telework as well as to the inclusion of partners' characteristics and several socio-economic and geographical controls (including MSA fixed effects and country of ancestry fixed effects).

Once we have tried to answer the research question of this work, we provide supplemental empirical evidence to convince readers that we are really capturing the effect of culture. According to the prior literature on the effect of culture on several socio-demographic variables (Furtado et al., 2013; Nollenberger et al., 2016), we should be able to find evidence of the channels through which culture operates and is transmitted. We investigate how culture operates by using each of the four components of the GGI, allowing us to explore which of the gender equality aspects is driving our findings (Rodríguez-Planas and Nollenberger, 2018). With respect to the transmission of culture, we examine vertical (from parents), horizontal (within ethnic communities), and oblique transmission (language) (Giuliano, 2020).

All the empirical evidence provided in this work points to the importance of the gender equality cultural differences among countries in explaining, at least in part, the cross-country differences in the gender commuting gap. This cultural aspect adds to the existing literature examining the factors that determine the gender commuting gap (see, for a review, Reuschke and Houston, 2020). Our results may be strongly related to the household responsibility hypothesis, which has been tested more extensively in the commuting time literature, showing mixed results (Giménez-Nadal and Molina, 2016; McQuaid and Chen, 2012; Olivieri and Fageda, 2021; Reuschke and Houston, 2020). This hypothesis suggests that women commute less than men because of the additional time constraints that women face as a result of outperforming men in household labor and family care. Among household responsibilities, escorting children has been found to be related to a certain extent to the classic gender roles (Han et al., 2019). Thus, if we capture gender equality differences in our analysis, we should also observe a role of children as a possible mechanism through which culture is operating. We extend our analysis by exploring commuting time to/from work accompanied by a child and commuting time during childcare activities. This approach again can highlight the importance of gender equality culture in this setting.

Additionally, our work contributes to the existing literature analyzing gender gaps. Despite the major advancements in the converging roles of men and women, there are still some gender gaps in education, wages, and employment (Blau and Kahn, 2017; Goldin, 2014; Olivetti and Petrongolo, 2016) but especially in housework and family care, albeit with important cross-country differences (Fuwa and Cohen, 2007; Greenstein, 2009; Knudsen and Waerness, 2007; Marcén and Morales, 2021). With this work, we also add to the recent and growing literature focusing on the causal impact of culture on socioeconomic and demographic outcomes (Fernández, 2011; Giuliano, 2016) by exploring the impact of gender equality cultural differences on the commuting time to/from work. Several papers, using methodologies that are quite analogous to that proposed here, have provided empirical evidence on the importance of culture for living arrangements (Giuliano, 2007; Marcén and Morales, 2019), employment and fertility (Bellido et al., 2016; Contreras and Plaza, 2010; Eugster et al., 2017; Fernández, 2007; Fernández and Fogli, 2009, 2006; Marcén, 2014; Marcén et al., 2018), divorce (Furtado et al., 2013), homeownership (Marcén and Morales, 2020), the gender division of household labor (Blau et al., 2020; Marcén and Morales, 2021), and even the math, reading, and science gender gap (Nollenberger et al., 2016; Rodríguez-Planas and Nollenberger, 2018), among others.

The remainder of the paper is organized as follows. Section 2 describes the data, Section 3 presents the empirical strategy, Section 4 discusses the results, and Section 5 concludes.

2. Data

2.1. Main sample

We use the 2006–2019 American Time Use Survey (ATUS) to gauge the commuting time (Hofferth et al., 2020).[4] The ATUS is a nationally representative survey provided by the Bureau of Labor Statistics. This time use survey collects detailed information about individuals' activities throughout the 24 h of the previous day (from 4:00 a.m. to 4:00 a.m.) on weekdays and at the weekend. A single individual from each selected household is interviewed on a single day. Respondents are asked by a computer-assisted telephone interviewer to report their own activities as well as stating how long an activity lasted, who was there, and where the activity took place.

From the ATUS, we select early-arrival first-generation immigrants and second-generation American (U.S.-born children of immigrants) workers living in the US and coming from 42 countries of ancestry.[5] Our main sample contains 1764 observations of workers aged 16–65 who

[3] There is some evidence on the gender commuting gap considering differences by race/ethnicity (white, black, Hispanic, and Asian) but not using data on early-arrival first-generation immigrants and second-generation Americans (Hu, 2020).

[4] The ATUS provides data since 2003, but, because the cultural proxy has been available only since 2006, we restrict our sample to the years for which the cultural proxy is available. This is possible if we assume that both generations behave in the same way as their counterparts in their country of ancestry, which is a common strategy in the epidemiological approach (Furtado et al., 2013).

[5] The 42 countries of ancestry are all possible identifiable countries of ancestry in the ATUS with available information on the GGI after eliminating those countries of ancestry with fewer than five observations, following prior studies (Furtado et al., 2013; Nollenberger et al., 2016). Our conclusions are also maintained when eliminating those with fewer than 30 observations (Online Supplementary Material). The sample is limited to individuals living in an identifiable US state.

have children under the age of 18 living in the household.[6] In the main sample, we exclude those workers who reported no time spent commuting to work on the day of the survey. We will revisit this issue below. Both early-arrival first-generation immigrants and second-generation Americans are considered to amplify the size of our sample, following González and Rodríguez-Planas (2020) and Marcén and Morales (2021), due to the low number of both generations in the ATUS, which obtains information from a randomly selected subset of households from the Current Population Survey (CPS). This is a common weakness of the dataset, as reflected in the literature (Giuliano, 2007; Muchomba et al., 2020), but is mitigated by combining the two subsamples. Note that the literature has considered the two generations to be quite similar (Furtado et al., 2013; Rumbaut, 2004). Early-arrival immigrants, like second-generation Americans, have been exposed to the US's economic conditions and institutions for almost their entire lives and are not likely to face language barriers (Furtado et al., 2013). For the early-arrival first generation, we consider those immigrants living in the US who arrived in that country when they were aged 5 or younger and who report their country of origin.[7] For the second generation, we select US native individuals whose father or mother was born in a different country. We assign the mother's country of origin when the parents are immigrants from different countries of origin because the mother's culture has been suggested to be more important in the intergenerational transmission of gender roles (Blau et al., 2013).

2.2. Gender equality measures

To measure the gender equality culture in an immigrant's country of ancestry, we follow Marcén and Morales (2021), Nollenberger et al. (2016), and Rodríguez-Planas and Nollenberger (2018) by using the annual national-level Gender Gap Index (GGI), which is available from 2006 (source: World Economic Forum, 2021). The GGI is our cultural proxy that includes a variety of indicators that measure the relative position of women in a society. As Nollenberger et al. (2016) explained, the GGI is a good proxy for gender norms or culture in relation to gender equality because it reflects the economic and political opportunities, education, and well-being of women in the country of ancestry.[8] The GGI is an average of four sub-indexes: Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment. All the sub-indexes range from zero to one, and larger values indicate a better position of women in society (for a detailed description, see the Online Supplementary Material).[9]

2.3. Descriptive statistics

Table A1 in the Appendix shows the summary statistics for the main variables by country of ancestry, ordered from the smallest to the largest gender commuting gap for early-arrival first-generation immigrants and second-generation Americans.[10] On average, men outperform women by 9 min per day on commuting, as can be seen in the first column, in which the average gender commuting gap is measured as the average women's commuting time to/from work minus that of men by country of ancestry (in minutes per day).[11] The unconditional average gender gap reveals large cross-country of ancestry differences in the gender commuting gap, which, at least in part, may be caused by the gender equality cultural differences across countries. To check this with the raw data, we present the cultural proxy by country of ancestry in column (2). Higher values indicate greater gender equality in that society. Our main cultural proxy, the GGI, presents a minimum of 0.56 in Saudi Arabia and a maximum of 0.81 in Sweden, averaging 0.70, with a standard deviation of 0.05.[12] From a simple glance at these two columns, it is not possible to identify a clear relationship between the two variables; for this reason, we plot them in Fig. A1. This figure shows the relationship between the gender commuting gap of early-arrival first-generation immigrants and second-generation Americans living in the US (column (1) of Table A1) and the GGI by country of ancestry (column (2) of Table A1). Although, again, the figure is not quite clear, we observe a possible positive relationship between the two variables. It appears that the greater the culture of gender equality in the country of ancestry, the smaller the gender commuting gap. Of course, this is not a conclusive analysis, and we will perform an in-depth check in the next sections.

3. Empirical strategy

Our empirical strategy is based on the epidemiological approach using a sample early-arrival first-generation immigrants and second-generation Americans. These individuals have lived under the same US economic conditions and institutions but have different cultural backgrounds. In this setting, we would expect no effect of the country of ancestry's cultural proxy if only institutions and economic conditions are important in the time spent traveling to/from work. However, if the preferences and beliefs of the ancestors of both generations matter and have been transmitted to them by their parents and/or their ethnic community, we would expect to observe that the cross-country differences in the gender equality culture could explain, at least in part, the gender differences in the commuting time of the early-arrival first-generation immigrants and second-generation Americans living in the US (the host country). To check this, we estimate the following equation:

$$Y_{ijkt} = \beta_0 + \beta_1 Female_i + \beta_2 \left(Female_i * GGI_{jt}\right) + \boldsymbol{X}'_{ijkt}\beta_3 + \boldsymbol{\delta_k} + \boldsymbol{\eta_j} + \mu(\boldsymbol{\delta_k} * Female_i) + \boldsymbol{\theta_t} + \varepsilon_{ijkt} \quad (1)$$

where Y_{ijkt} is the time devoted to commuting to/from work (minutes per

[6] We initially extend the analysis to individuals without children, but this sample is not the main one in our analysis; see the results section below for more details.

[7] Although we follow the literature on culture using the epidemiological approach to define early-arrival first-generation immigrants and second-generation Americans (Fernández, 2007; Furtado et al., 2013), it is worth noting that some researchers have defined early-arrival first-generation immigrants as the 1.75 generation because their experience and adaptive outcomes are quite similar to those of the US-born second generation (Rumbaut, 2004).

[8] Although there are several researchers considering the GGI as an appropriate cultural proxy, it can be argued that this variable describes social outcomes. This is not a direct measure of cultural beliefs and preferences. Then, cross-country differences in those social outcomes that are not caused by the cultural beliefs and preferences can be biased our results. To mitigate this issue, we have incorporated country of origin fixed effects.

[9] We rerun the analysis using each of those sub-indexes separately; see below. We repeat the analysis using the Gender Inequality Index provided by the United Nations Development Programme (http://hdr.undp.org/en/content/gender-inequality-index-gii). We find that the higher the gender inequality in the country of ancestry, the lower the equality in commuting time among early-arrival first-generation immigrants and second-generation Americans in the US (see the Online Supplementary Material).

[10] This corresponds to the main sample, which includes men and women with children under the age of 18 living in the household.

[11] A negative gap means that men outperform women in commuting time, while a positive gap means the opposite.

[12] The GGI in Sweden is 45% higher than that in Saudi Arabia, so there are large differences across countries of ancestry. In any case, we repeat the analysis without those extreme countries of ancestry and the results are maintained. Although the standard deviation (0.05) appears to be small, it represents a 20% of the difference between the minimum and the maximum average GGI. Also note that this value is similar to that observed in the case of Nollenberger et al. (2016). We run skewness/kurtosis tests for normality and cannot reject the hypothesis that the GGI is normally distributed (p-value 0.5157).

day) reported by worker i of cultural origin j living in state k in year t.[13,14] The variable $Female_i$ is a dummy variable that takes the value of one if the individual is a female and zero otherwise. GGI_{jt} is the cultural proxy in country of ancestry j in year t.[15] A higher value of this index represents a more gender-equal culture. β_2 is the main coefficient of the interaction between the GGI_{jt} and the female indicator, which captures the role of the gender equality culture in explaining the gender differences in commuting time of early-arrival first-generation immigrants and second-generation American women and men.[16] We expect β_2 to be positive. This would indicate that more gender-equal attitudes in the country of ancestry are associated with a smaller gender commuting gap in the host country. This is linked with the household responsibility hypothesis since women originating from more traditional ancestries face additional time constraints due to household labor and family care, which may allow men to travel further to places of employment than women. The vector $\boldsymbol{X_{ijkt}}$ includes a set of individual characteristics of respondent i. These individual controls are age, educational level (more college or not), race (white, black, Asian, and others (omitted)), Hispanic (Hispanic or not), and geographic location (living in a metropolitan area or not), which may affect the time that workers devote to commuting (Giménez-Nadal and Molina, 2016; Giménez-Nadal et al., 2018) (see the Online Supplementary Material for a detailed description).[17] These individual characteristics are also interacted with the female indicator. Controls for unobserved characteristics of the place of residence are added by using state fixed effects, denoted by $\boldsymbol{\delta_k}$.[18] To capture the characteristics of the country of ancestry that may be related to gender roles, we introduce country of ancestry fixed effects, $\boldsymbol{\eta_j}$, while, to capture the time-variant unobserved characteristics, we add year fixed effects, $\boldsymbol{\theta_t}$. The state fixed effects ($\boldsymbol{\delta_k}$) are interacted with $Female_i$ to account for variations in the state's gender commuting gaps that may arise from differentials across states in cultural or institutional channels. Standard errors are clustered at the country of ancestry level to account for any within-ethnicity correlation in the error terms.[19]

The empirical strategy presented in this section allows us to examine the effect of the gender equality culture on the commuting time of women relative to men. To provide additional evidence that we are really capturing the effect of culture, we extend our analysis by studying the transmission of culture and the way in which culture operates. A supplementary analysis provides further evidence on the role of culture in explaining gender differences in the time devoted to commuting to/from work with children or commuting during childcare activities. This is a complementary analysis to that presented here that reinforces our finding that culture matters in this setting. We explain it in detail in Section 4.

4. Results

4.1. Do cultural differences in gender equality play a role?

Table 1 shows the estimated coefficients for our main specification after estimating Eq. (1). Column (1) reveals that women commute less than men by, on average, around 4.6 min per day. This significant commuting gap appears to be caused by the different behavior of parents. Mother workers spend around 4.4 fewer minutes commuting than father workers, whereas a non-statistically significant relationship is detected between non-mothers and non-fathers after splitting the sample; see columns (2)–(3). This simply reflects the additional time constraints and career costs that mothers face after the arrival of their children (Adda et al., 2017; Joyce and Keiller, 2018).

Is the observed gender commuting gap between mothers and fathers being driven by cross-country gender equality cultural differences? This is the research question that we answer in this work. To shed some light on this issue, we introduce the interaction between the female dummy and the GGI in column (4); this captures the role of culture in explaining the gender differences in the commuting time to/from work of early-arrival first-generation immigrants and second-generation American mothers relative to fathers. The estimated coefficient for the interaction term is positive and statistically significant, suggesting that the gender commuting gap decreases among those originating from more gender-equal countries. We find that a one standard deviation increase in the GGI is associated with an increase of almost 6 min in the commuting time per day of women relative to men, which represents 26% of the standard deviation in the cross-country ancestry gender commuting gap.[20] This can

Table 1
Main results.

Dependent variable: commuting time to/from work	(1) All	(2) Without children	(3) With children	(4) With children
Female	−4.537**	−3.182	−4.382**	−96.989***
	(1.933)	(3.025)	(1.840)	(31.725)
GGI × Female				120.181***
				(44.172)
Year FE	Yes	Yes	Yes	Yes
Country of ancestry FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
State FE × Female	No	No	No	Yes
Observations	3300	1536	1764	1764
R-squared	0.095	0.144	0.096	0.127
D.V. Mean	45.19	46.14	44.35	44.35
D.V. Std. Dev.	46.45	44.19	48.34	48.34
GGI Std. Dev.				0.05

Notes: We estimate Eq. (1). All regressions include a constant, as well as demographic and geographic controls for age, race, educational attainment, and a dummy variable controlling for whether respondents live in a metropolitan area. These individual characteristics are also interacted with the female indicator in column (4). The sample in column (1) includes workers between 16 and 65 years old who commute on the day of the survey. The sample in column (2) includes workers between 16 and 65 years old who commute on the day of the survey and have no children under the age of 18 living in the household. The sample in columns (3) and (4) includes workers between 16 and 65 years old who commute on the day of the survey and have children under the age of 18 living in the household. Estimates are weighted using ATUS weights. Robust standard errors are clustered at the state level and reported in parentheses. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

[13] Following Giménez-Nadal et al. (2018), we consider the activity "commuting to/from work" with the activity code "180,501." We compute the total time of commuting as the sum of all commuting episodes reported by the respondents throughout the day.

[14] Our results are maintained after redefining our dependent variable as the (log) time devoted to commuting by worker i, even when controlling for all the demographic variables included in Table 2 (see the Online Supplementary Material).

[15] It should be noted that, for the cultural proxy, we use a contemporaneous measure, which is common in the literature (Fernández and Fogli, 2009; Furtado et al., 2013).

[16] See a similar empirical strategy in the studies by Marcén and Morales (2021) and Rodríguez-Planas and Nollenberger (2018).

[17] We enlarge the set of socio-demographic characteristics, job traits, and geographic characteristics and our results are maintained. See the results below.

[18] We revisit this below by including other geographical controls. The results are maintained.

[19] All the estimates are repeated with/without weights and clusters. The results do not vary.

[20] The interpretation of the magnitude of the cultural impact should be taken with caution because of the possible existence of some degree of deviation with respect to the average behavior in the country of ancestry. In any case, this gives us an approximation of the meaningfulness of the cultural effect.

Table 2
Robustness checks.

Dependent variable: commuting time to/from work	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female	−98.665	−87.284	−77.047	−104.921***	−77.257**	−114.483***	−11.273***
	(64.293)	(59.080)	(61.250)	(33.562)	(32.016)	(35.818)	(0.642)
GGI × Female	149.414**	132.195**	149.616**	129.731***	93.799**	132.098***	17.391***
	(71.811)	(57.371)	(58.615)	(46.334)	(39.906)	(49.702)	(0.919)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country of ancestry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE × Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE × Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1606	1609	1609	1749	1396	6104	6104
R-squared	0.193	0.195	0.297	0.126	0.135		
D.V. Mean	44.64	44.62	44.62	44.44	47.26	13.65	13.65
D.V. Std. Dev.	49.53	49.49	49.49	48.51	50.75	33.55	33.55
GGI Std. Dev.	0.05	0.05	0.05	0.05	0.05	0.06	0.06

Notes: All regressions include a constant, as well as demographic and geographic controls for age, race, educational attainment, and a dummy variable controlling for whether respondents live in a metropolitan area. These individual characteristics are also interacted with the female indicator in all columns. The sample in columns (1)–(5) includes workers between 16 and 65 years old who commute on the day of the survey and have children under the age of 18 living in the household. Specification in columns (1)–(3) include controls for age, race, educational attainment, whether the respondent lives with a married or unmarried partner, respondent partner's labor status, the number of children in the household, the family size, the family income, whether the respondent is a full-time worker, whether the respondent is self-employed, the logarithm of the weekly work hours, the occupation and industry of workers, and the GDP per capita (in constant 2010 US $) of the country of ancestry. Geographic controls have been extended in column (2) by including two dummy variables capturing whether respondents live in the central city within a metropolitan area or on the fringe of a metropolitan area (ref: non-metropolitan area). Specification in column (3) also controls for the mode of transport by including the proportion of commuting that is carried out via the following modes of transport: active commuting (walking or cycling), public transport (bus, subway/train, boat/ferry, or taxi/limousine service), private vehicle (car, truck, or motorcycle (driver or passenger)), and other transport (airplane or other mode of transportation). Specification in column (4) excludes early-arrival first- and second-generation Americans whose parents are from Sweden and Saudi Arabia. Specification in column (5) only includes full-time workers. Using a sample of commuters and non-commuters, we estimate Heckman and Tobit models in columns (6) and (7), respectively. Estimates are weighted using ATUS weights. Robust standard errors are clustered at the state level and reported in parentheses. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

be related to the household responsibility hypothesis that assumes that women from traditional backgrounds search for jobs in closer local markets to be able to attend to their children's needs (McQuaid and Chen, 2012). We will return to this in the next subsection as a possible mechanism for how the gender equality culture operates, but before that we will check the robustness and consistency of our findings.

Our findings are maintained after the inclusion of additional controls in Table 3.[21] We enlarge the set of socio-demographic and job characteristics in columns (1)–(3).[22] With the inclusion of those individual traits, we can account, at least in part, for the household responsibility of the respondents, which appears to be a factor in the commuting time, by controlling for the marital status, number of children in the household, and family size. Another possible determinant of the commuting time is related to the labor outcomes, which are taken into account by including controls for the respondents' labor status, work classification as part- or full-time workers, self-employment status, weekly working hours, and occupation and industry category. We also add the GDP per capita (in constant 2010 US$) as a control for the country of ancestry characteristics to mitigate the possible concern that we could be capturing the effect of other country of ancestry differences than that of culture.[23] We

Table 3
Transmission of culture.

Dependent variable: commuting time to/from work	(1) Second-generation Americans	(2) Concentration same-ethnicity above the mean	(3) Concentration same-ethnicity below the mean	(4) Pronoun drop allowed
Female	−63.719	−142.382***	−68.797	−116.399***
	(49.817)	(21.789)	(41.421)	(37.476)
GGI × Female	100.764*	231.748***	101.102	183.280***
	(57.571)	(24.826)	(62.142)	(62.149)
Year FE	Yes	Yes	Yes	Yes
Country of ancestry FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
State FE × Female	Yes	Yes	Yes	Yes
Observations	1284	584	1180	1216
R-squared	0.149	0.172	0.172	0.165
D.V. Mean	44.01	40.58	46.22	44.55
D.V. Std. Dev.	49.97	35.59	53.46	49.87
GGI Std. Dev.	0.05	0.04	0.05	0.04

Notes: The sample in all columns includes workers between 16 and 65 years old who commute on the day of the survey and have children under the age of 18 living in the household. We estimate Eq. (1). All regressions include a constant, as well as demographic and geographic controls for age, race, educational attainment, and a dummy variable controlling for whether respondents live in a metropolitan area. The sample in column (1) only includes second-generation Americans. Columns (2) and (3) include early-arrival first-generation immigrants and second-generation Americans living in states where the concentration of individuals of their same country of ancestry is above and below the mean of the proportion of individuals of the same ancestry, respectively. Individuals from countries of ancestry that do not forbid dropping the first-person pronoun have been including in column (4). Estimates are weighted using ATUS weights. Robust standard errors are clustered at the state level and reported in parentheses. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

[21] The variation in the sample size is due to the limitation of our sample to those reporting their weekly working hours and occupation category. All the controls are also interacted with the female indicator.

[22] Specifically, we include controls for whether the respondent lives with a married or unmarried partner, the labor status of the respondent's partner, the number of children in the household, the family size, the family income, whether the respondent is a full-time worker, whether the respondent is self-employed, the logarithm of the weekly working hours, and the occupation and industry of workers, which are found to be related to the time spent commuting (Giménez-Nadal and Molina, 2016; Giménez-Nadal et al., 2018; McQuaid and Chen, 2012). Regarding the occupation and industry of workers, we consider the major classifications used in the ATUS dataset, which aggregates the occupation and industry codes into five and thirteen categories, respectively.

[23] We also interact the GDP per capita with the female indicator and nothing changes. The data come from the World Bank Database.

extend the geographical controls included in our estimates in column (2). Following Giménez-Nadal et al. (2018), we consider the location of individuals in their place of residence as a possible driver of commuting time since, depending on the location, individuals can have access to different modes of transport and/or intra-urban wage variation (Timothy and Wheaton, 2001).[24] We include in our estimates the proportion of commuting that is carried out via different modes of transport in column (3) to test further whether the cultural differences in the choice of the mode of transport (Hopkins and Stephenson, 2014) can be affected by the differences in gender commuting preferences.[25] We recognize that the inclusion of some of these controls could generate concerns because they can potentially be affected by the gender equality culture, though it is reassuring that our results do not change in all the robustness tests presented here.[26]

Our results are also robust to the use of different subsamples. There are no changes in our estimates after excluding the countries with the highest (Sweden) and lowest (Saudi Arabia) country of ancestry GGI in column (4).[27] Furthermore, our results remain broadly unchanged when we limit the sample to full-time workers, who are more likely to have the largest differences in commuting time by gender, in column (5) (McQuaid and Chen, 2012).[28]

Sample selection issues derived from using a sample of commuters are also taken into account. The use of a truncated sample could be problematic since the sample of excluded non-commuters has not been selected randomly. As Giménez-Nadal et al. (2018) pointed out, prior studies have suggested that the observed commuting time may overestimate the desired commute, being dependent on employment (Hamilton, 1982; Small and Song, 1992). Thus, we consider the selection into employment by estimating a Heckman selection model (Heckman, 1979). Following Giménez-Nadal et al. (2018), family characteristics (living in a couple, the labor status of the couple, and the size of the family) are used to control for participation in employment. Commuting time to/from work is observed for those who are employed. The results are presented in column (6). As can be seen, the effect of culture is still detected when considering employment. The higher the gender equality in the country of ancestry, the smaller the gender commuting gap. Additionally, the estimated effect of culture on commuting time may be confounding both the impact of the decision to commute, that is, working from home or not, and that of the length of time spent commuting to work. Thus, we also consider a Tobit model (Tobin, 1958) that allows us to control for participation in commuting on the day of the survey. Column (7) reports the results of the estimation with a sample including non-commuters on the day of the survey. The inclusion of non-commuters in our sample does not change our conclusions.

4.2. How can culture be transmitted?

Our identification strategy is based on the idea that culture needs to be transmitted vertically and/or horizontally. If we are really capturing the effect of culture, we should observe that there is a transmission of culture. This analysis provides additional evidence that reinforces our analysis of the cultural effect on the gender commuting gap. Horizontal transmission takes place through neighbors, friends, or the ethnic communities in which early-arrival first-generation immigrants and second-generation Americans live, and vertical transmission occurs through parents (grandparents or other ancestors), who probably instill values in their children. Unfortunately, we cannot extend our work to the study of the vertical transmission of culture through generations because we do not have information on the characteristics of the respondents' ancestors. However, since we identify the culture of the second-generation Americans with that of their mother's home country, the vertical transmission of culture, at least from parents to their children, would be necessary to find a cultural effect. This has also been suggested in the prior literature (Antecol, 2000; Fernández and Fogli, 2006; Giuliano, 2007; Marcén, 2014; Nollenberger et al., 2016; Rodríguez-Planas, 2018). Column (1) of Table 3 presents the results of including only a sample of second-generation Americans (U.S.-born children of immigrants). We find that the effect of culture is still detected. Thus, at least in part, these findings on the effect of culture on the commuting time may be the result of that vertical transmission from parents to their children.

We next explore how culture is transmitted horizontally within communities. If culture is transmitted horizontally, the cultural impact should be more important for individuals with greater exposure to their cultural norms in the host country (Furtado et al., 2013). Following Rodríguez-Planas and Nollenberger (2018), we calculate the proportion of individuals from the same country of ancestry in each state. Then, we rerun our main analysis by separating the sample into those who are above and those who are below the mean of concentration of individuals with the same ethnicity. The results are presented in columns (2)–(3) of Table 3. Whereas a statistically significant effect of culture is detected for early-arrival first-generation immigrants and second-generation Americans living in states with a high concentration of individuals from the same ethnicity (above the mean), no significant effect is detected for those who live in low-concentration states (below the mean). This can indicate the existence of horizontal transmission of culture.

Additionally, some scholars have pointed out the possible existence of oblique channels for the transmission of culture (Bankston and Zhou, 1995; Giuliano, 2020; Marcén and Morales, 2021). Because of the data limitations, the oblique transmission of role models through, for example, teachers cannot be tested, but we can consider language as an alternative channel of cultural transmission. The way in which culture operates may depend on whether a collectivistic culture (in which people tend to have an interdependent view of themselves) prevails in the country of ancestry. Since languages that forbid the dropping of the first-person pronoun give more emphasis to the individual relative to the social norm (Kashima and Kashima, 1998), this linguistic rule can be a signal of individualist or collectivist societies (Tabellini, 2008). Therefore, in our framework, we should observe a cultural effect for those

[24] To gauge this, we define three dummy variables to control for whether our sample individuals live in the central city within a metropolitan area, on the fringe of a metropolitan area (or just in a metropolitan area if no distinction is made), or in a non-metropolitan area (the reference group). Our results are also maintained when we include controls for the specific Metropolitan Statistical Area (MSA) where individuals are located by including MSA fixed effects (reference: not identified or non-metropolitan). This allows us to take into account the possibility that, for example, the employment structure of certain areas is more amenable to individual workers in our sample. Since individuals in larger cities are more likely to have longer commutes (Black et al., 2014; Gordon et al., 1989; Mieszkowski and Mills, 1993), we also account for this by considering the size of the MSA of residence (reference: not identified or non-metropolitan), and our conclusions do not change.

[25] This is calculated as the sum of the commuting time using each mode of transport divided by the total time devoted to commuting. We define four different modes of transport: active commuting (walking or cycling), public transport (bus, subway/train, boat/ferry, or taxi/limousine service), private vehicle (car, truck, or motorcycle (driver or passenger)), and other transport (airplane or other mode of transportation). Our conclusions do not change.

[26] The observed R^2 in all the specifications is low, which is consistent with the prior literature (Allard et al., 2007; Giménez-Nadal and Molina, 2016; Giménez-Nadal et al., 2018, 2020).

[27] This is a common strategy to check the consistency of the effect of culture (Furtado et al., 2013). Our results also remain broadly unchanged when we restrict our sample to those individuals who are likely to have completed school (aged 21 to 65) and to those living with a married or unmarried partner (see the Online Supplementary Material).

[28] Since our analysis exploits cross-country variation in the GGI, we should obtain no significant estimated coefficient if we are truly capturing the cultural effect when we run the same regression using a random GGI across countries instead of the actual GGI. We repeat this exercise several times, and in all cases the random GGI leads to no significant effect. Thus, the placebo estimates suggest that we are truly picking up the effect of culture. We present a few of those estimates in the Online Supplementary Material.

originating from collectivist societies. To test this, we consider a sample of individuals originating from countries in which the first-person pronoun is not forbidden. The results are reported in column (4) of Table 3. As expected, the impact of the GGI is observable, which again provides further evidence in favor of the effect of culture on the commuting time.

4.3. Channels shaping culture from the country of ancestry

Gender equality culture involves several aspects. In this subsection, we explore which pieces of the cross-country gender equality culture puzzle are shaping the gender cultural attitudes that ultimately affect the gender commuting gap in the host country. Accordingly, we utilize each of the four sub-indexes that defined the GGI separately; see the summary statistics in Table A1: Gender Gap Educational Attainment Sub-index, Gender Gap Economic Participation and Opportunity Sub-index, Global Gender Gap Health and Survival Sub-index, and Gender Gap Political Empowerment Sub-index. All these indicators reflect, in part, the beliefs about the role of women in society, capturing different aspects of the gender equality culture, so they can explain the gender commuting gap separately. Table 4 shows the estimated coefficients. As can be seen, there are two statistically significant coefficients. Beliefs transmitted to early-arrival first-generation immigrants and second-generation Americans regarding women's political empowerment in addition to the economic participation appear to be driving the gender commuting gap.[29] These results are consistent with those obtained by Rodríguez-Planas and Nollenberger (2018), suggesting that political empowerment and economic opportunity play an important role in shaping culture.

Table 4
Channels shaping culture from the country of ancestry.

Dependent variable: commuting time to/from work	(1)	(2)	(3)	(4)
Female	−21.027	−51.518**	65.823	163.351
	(17.262)	(21.282)	(60.078)	(193.757)
Gender Gap Political Empowerment	39.884***			
Subindex × Female	(14.613)			
Gender Gap Economic Participation and		59.686**		
Opportunity Subindex × Female		(25.054)		
Gender Gap Educational Attainment			−80.885	
Subindex × Female			(53.971)	
Global Gender Gap Health and Survival				−179.706
Subindex × Female				(191.109)
Year FE	Yes	Yes	Yes	Yes
Country of ancestry FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	No
State FE × Female	Yes	Yes	Yes	No
Observations	1764	1764	1764	1764
R-squared	0.123	0.122	0.121	0.121
D.V. Mean	44.35	44.35	44.35	44.35
D.V. Std. Dev.	48.34	48.34	48.34	48.34
GGI subindex Std. Dev.	0.12	0.10	0.03	0.01

Notes: The sample in all columns includes workers between 16 and 65 years old who commute on the day of the survey and have children under the age of 18 living in the household. We estimate Eq. (1). All regressions include a constant, as well as demographic and geographic controls for age, race, educational attainment, and a dummy variable controlling for whether respondents live in a metropolitan area. Estimates are weighted using ATUS weights. Robust standard errors are clustered at the state level and reported in parentheses. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

[29] It is worth noting that there is little variation across countries in the case of the non-statistically significant components of the GGI.

4.4. Commuting time with children

Until now, we have shown that more gender-equal norms may reduce the gender commuting gap. In this subsection, we explore whether this occurs because more traditional mothers are more likely to work closer to home than non-traditional mothers, enabling them to attend to their children's needs (McQuaid and Chen, 2012). Traditional-origin mothers are surely involved in picking up children from or dropping them off with a babysitter or at school, imposing additional time constraints on them. This aspect is somewhat related to the household responsibility hypothesis, which is one of the pieces of the gender equality culture puzzle. We focus our analysis here on the commuting time to work accompanied by children and/or the commuting during childcare activities, following Craig and van Tienoven (2019). This analysis is not a minor issue due to its associated psychological costs. More time spent on daily commuting is related to more sadness and fatigue during childcare activities (Giménez-Nadal and Molina, 2019).

We first use information on *with whom* respondents spend their commuting time to work, and we redefine our dependent variable as the time devoted to commuting (minutes per day) accompanied by a child. The use of the "who-with" information from time diaries is a common practice in the literature exploring how parental preferences and investments are reflected in the time spent with children present (Allard et al., 2007; Lundberg et al., 2007; Mammen, 2011). Using our main sample of commuters, we estimate a Tobit model that allows us to take into account the decision to commute accompanied by children and, if this occurs, the time devoted to commuting with them. Table 5 shows the regression results.[30] Our findings here point to women devoting more time than men to commuting to work accompanied by a child; see column (1). This is in line with the works that point to marked gender differences in escorting children. For example, mothers in dual-earner families do more than two-thirds of the escorting (Motte-Baumvol and Bonin, 2017). With respect to the cultural proxy, we find that more gender-equal norms in the country of ancestry are associated with a shorter commuting time to work with children for women relative to men; see column (2).

The ATUS provides information on other activities related to commuting during childcare activities, which we also examine here. We consider the time devoted to "picking up/dropping off household children" and "travel related to household children's education" in addition to the commuting time to work with children discussed above.[31] As before, those not reporting time spent on such activities are not excluded to amplify the size of our sample, and Tobit models are estimated.[32] Columns (3)–(4) show the estimated coefficients, with the dependent variable defined as the sum of the total time devoted to the three activities detailed above. The rest of the variables are as defined earlier. Again, our findings suggest that women outperform men in the time devoted to commuting or traveling with children, and this gender gap decreases among those originating from countries of ancestry with more

[30] All the individuals in our sample are workers between 16 and 65 years old with a child below the age of 18 living in the household.

[31] The activity codes are "30,112" and "180,303," respectively. Picking up or dropping off household children includes dropping off household children at a babysitter's, at a friend's house, or at soccer practice, picking up household children from church, day care, or school, and putting household children on a bus. The ATUS does not provide examples for the category activity "Travel related to household children's education."

[32] Limiting the sample to those reporting time spent on such activities is not possible due to the small number of observations. Our sample is not restricted to commuters here.

Table 5
Commuting time with children using Tobit model.

Dependent variable:	(1)	(2)	(3)	(4)
	Commuting time to/from work accompanied by children		Commuting time to/from work accompanied by children and commuting time during childcare activities	
Female	22.148***	−212.686***	12.488***	32.729***
	(4.099)	(0.637)	(1.031)	(0.211)
GGI × Female		−171.231***		−63.675***
		(0.895)		(0.301)
Year FE	Yes	Yes	Yes	Yes
Country of ancestry FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
State FE × Female	No	Yes	No	Yes
Observations	1764	1764	3935	3935
D.V. Mean	1.59	1.59	3.73	3.73
D.V. Std. Dev.	11.79	11.79	11.49	11.49
GGI Std. Dev.	0.05	0.05	0.06	0.06

Notes: We estimate a Tobit model in all columns. Sample in columns (1) and (2) is the same as in Table 2, that is, workers between 16 and 65 years old who commute on the day of the survey and have children under the age of 18 living in the household. The dependent variable is redefined as the time devoted to commuting (minutes per day) accompanied by a child reported by worker i of cultural origin j living in state k in year t. Those reporting no time in commuting to work with a child have not been excluded from the sample. The sample in columns (3) and (4) includes workers between 16 and 65 years old who have children under the age of 18 living in the household. The dependent variable measures the time devoted to commute to/from work accompanied by a child, to pick up or drop off household children, and to travel related to household children's education. Those reporting no time in such activities have not been excluded from the sample. All regressions include a constant, as well as demographic and geographic controls for age, race, educational attainment and, a dummy variable controlling for whether respondents live in a metropolitan area. Estimates are weighted using ATUS weights. Robust standard errors are clustered at the state level and reported in parentheses. *** Significant at the 1% level, ** Significant at the 5% level, * Significant at the 10% level.

egalitarian attitudes.[33] Women originating from backgrounds with more traditional gender norms spend more time commuting with their children. This points to the important role of children (childcare responsibilities) in explaining how the gender equality culture operates. Women with traditional backgrounds appear to choose to work close to their home to be able to take care of their children. This mechanism provides additional evidence to reinforce our findings on the effect of gender equality culture on the gender commuting gap.

5. Conclusions

Our initial analysis of the differences between men and women in commuting time are in line with the existing literature. We observe non-statistically significant differences in the commuting time between men and women without children. These can be explained, at least in part, by the slight decrease in the gender differentials in commuting time, especially among young individuals and those without children, in a similar way to other gender gaps, which even appear to be reversing (Le Barbanchon et al., 2021; Tilley and Houston, 2016). However, a clear gender commuting gap is observed for individuals with children. Mothers commute less than fathers. This finding is in line with the literature pointing to the substantial costs of children for women's careers and lifetime earnings (Adda et al., 2017). In a very recent survey, the UK Institute for Fiscal Studies (IFS) showed that the gender commuting gap starts to widen after the birth of the first child in the family and continues to grow for around a decade after that (Joyce and Keiller, 2018). The aforementioned raw data of the OECD (OECD Family Database) also point to the gender commuting gap for individuals with children, but this is not so clear for those without children.

Although existing research has confirmed a motherhood penalty in commuting time because of the presence of household and childcare responsibilities, this explanation has little to do with the huge cross-country differences in the gender commuting gap. Whereas, in India, Japan, and Mexico, men spend more than twice as much time as women traveling to and from work, in Estonia, Sweden, and Finland, men and women spend almost the same amount of time (OECD Family Database). In all those countries, women/men have children but behave in different ways. We explore in this work whether cross-country gender equality cultural differences can explain in part the gender commuting gap.

We disentangle the effects of markets and institutions from the effects of culture in determining gender differences in commuting time to work using the epidemiological approach. We select data from the IPUMS American Time Use Survey on early-arrival first-generation immigrants and second-generation American workers with children at home because the gender commuting gap has only been significantly observed for parents, and we merge these with the annual data on the GGI (our cultural proxy) in the country of ancestry (which avoids reverse causality). We observe that the commuting time to work of early-arrival first-generation immigrants and second-generation American women (relative to men) who originate from more gender-equal countries is greater than that of those from less gender-equal countries. Specifically, we find that a one standard deviation increase in the GGI is associated with an increase of almost 6 min in the commuting time per day of women relative to men, which represents 26% of the standard deviation in the cross-country of ancestry gender commuting gap.

Our results are robust to the use of different subsamples and geographic controls and to the selection into employment and telework. We further explore which of the pieces of the gender gap puzzle appear to be driving this gap. We observe that cross-country differences in the gender norms shaped by beliefs about women's political empowerment and economic participation are significantly affecting the gender differences in commuting time to work. A supplementary analysis of the transmission of culture, which is a key element of the epidemiological approach (if cultural backgrounds are not transmitted, there cannot be a cultural effect among our sample of early-arrival first-generation immigrants and second-generation Americans), shows empirical evidence of the vertical, horizontal, and oblique transmission of culture, which reinforces our results on the possible importance of culture in the gender commuting gap.

Children matter in this setting. Women originating from countries with more traditional gender norms spend less time commuting than more egalitarian women relative to men. However, traditional-origin women devote more time to commuting with their children than women originating from more gender-equal countries relative to men. This is observed after extending our analysis to the commuting time to work accompanied by children and the commuting during childcare activities (i.e., picking children up from or dropping them off at a babysitter's or school). We observe that, when commuting takes place with children, women outperform men in commuting time and that culture plays an important role in reducing this gender gap.

Our analysis of culture as an alternative determinant of the gender commuting gap is of interest to policy makers and society in general because of its inter-relationships with the gender wage and employment gap and the gender differences in job searches (Black et al., 2014; Le Barbanchon et al., 2021). In the case of France, female job seekers are paid 4% less per hour after unemployment and have a 12% shorter commute than men (Le Barbanchon et al., 2021). Overall, our results suggest that policies attempting to change cultural beliefs and preferences about the role of women in society may prove to be decisive in reducing the gender commuting gap and therefore achieving gender

[33] The same is observed when we repeat the analysis using a sample of workers with children under the age of 13 years, the age at which independent mobility starts increasing (Mammen et al., 2012; Schoeppe et al., 2014) (see the Online Supplementary Material).

equality in the labor market.

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Appendix A

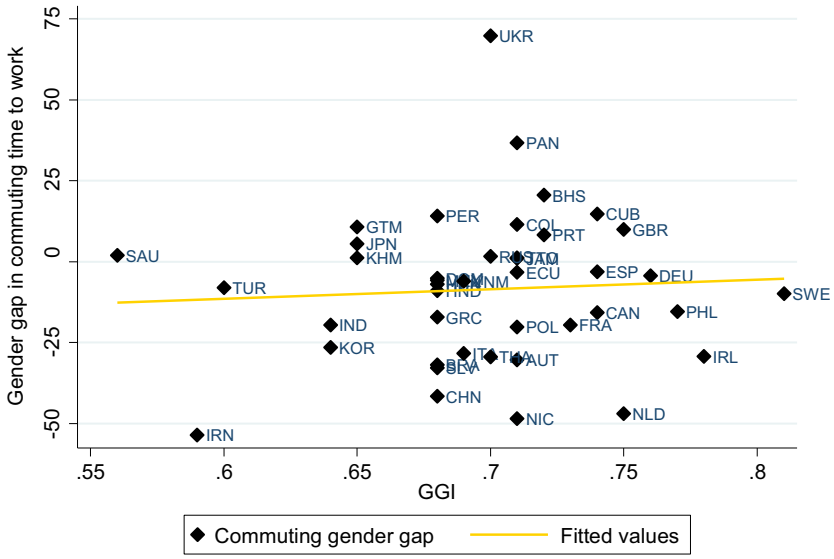

Fig. A1. Gender gap in commuting time to work and the Gender Gap Index (GGI) by country of ancestry.
Notes: This figure displays the relationship between the average gender commuting gap to/from work early-arrival first-generation immigrants and second-generation Americans and our measure of culture in the country of ancestry. The gender gap has been calculated as the average women's minus the average men's commuting time to work (in minutes per day) considering a sample of individuals with children under the age of 18 living in the household.

Table A1
Summary statistics by country of ancestry.

Country of ancestry	Commuting gender gap	GGI	GGI pol.	GGI Ec. Opp.	GGI health	GGI educ.	Obs
Ukraine	69.75	0.70	0.09	0.72	0.98	1.00	6
Panama	36.75	0.71	0.18	0.69	0.98	0.99	9
The Bahamas	20.60	0.72	0.08	0.84	0.98	1.00	7
Cuba	14.73	0.74	0.35	0.62	0.97	1.00	49
Peru	14.17	0.68	0.18	0.61	0.97	0.98	8
Colombia	11.51	0.71	0.15	0.69	0.98	1.00	26
Guatemala	10.71	0.65	0.09	0.57	0.98	0.95	14
United Kingdom	9.90	0.75	0.32	0.71	0.97	1.00	86
Portugal	8.33	0.72	0.20	0.70	0.97	0.99	20
Japan	5.45	0.65	0.07	0.58	0.98	0.99	31
Saudi Arabia	2.00	0.56	0.00	0.32	0.98	0.96	8
Russia	1.61	0.70	0.08	0.73	0.98	1.00	11
Cambodia	1.25	0.65	0.09	0.66	0.98	0.87	6
Trinidad and Tobago	1.13	0.71	0.20	0.68	0.97	0.99	11
Jamaica	1.00	0.71	0.13	0.73	0.98	1.00	26
Spain	−3.18	0.74	0.38	0.63	0.97	1.00	11
Ecuador	−3.20	0.71	0.24	0.62	0.98	0.99	10
Germany	−4.35	0.76	0.38	0.71	0.98	0.99	166
Dominican Republic	−5.11	0.68	0.12	0.63	0.98	0.99	23
Mexico	−5.77	0.68	0.22	0.53	0.98	0.99	616
Vietnam	−6.02	0.69	0.13	0.73	0.95	0.94	25
Hungary	−7.00	0.68	0.07	0.67	0.98	0.99	7
Turkey	−8.00	0.60	0.08	0.43	0.97	0.92	6
Honduras	−9.00	0.68	0.17	0.59	0.98	1.00	6
Sweden	−9.83	0.81	0.49	0.79	0.97	1.00	7
Philippines	−15.42	0.77	0.34	0.78	0.98	1.00	75
Canada	−15.70	0.74	0.22	0.76	0.97	1.00	116
Greece	−17.10	0.68	0.12	0.64	0.97	0.99	19
France	−19.57	0.73	0.27	0.66	0.98	1.00	19
India	−19.61	0.64	0.34	0.40	0.94	0.88	28
Poland	−20.25	0.71	0.19	0.67	0.98	1.00	22

(*continued on next page*)

Table A1 (*continued*)

Country of ancestry	Commuting gender gap	GGI	GGI pol.	GGI Ec. Opp.	GGI health	GGI educ.	Obs
Korea	−26.49	0.64	0.10	0.52	0.97	0.95	45
Italy	−28.36	0.69	0.20	0.58	0.97	0.99	70
Ireland	−29.21	0.78	0.43	0.72	0.97	1.00	25
Thailand	−29.34	0.70	0.07	0.75	0.98	0.99	18
Austria	−30.33	0.71	0.28	0.59	0.98	0.99	8
Brazil	−31.83	0.68	0.10	0.65	0.98	0.99	9
El Salvador	−32.83	0.68	0.18	0.59	0.98	0.99	34
China	−41.62	0.68	0.15	0.66	0.93	0.97	55
Netherlands	−47.03	0.75	0.34	0.70	0.97	1.00	11
Nicaragua	−48.50	0.71	0.32	0.55	0.98	1.00	7
Iran	−53.50	0.59	0.03	0.39	0.97	0.96	8
Average	−8.55	0.70	0.21	0.65	0.97	0.98	
Std. Dev.	23.27	0.05	0.12	0.10	0.01	0.03	

Notes: Data comes from the Integrated Public Use Microdata Series Time Use (IPUMS Time Use) for the period 2006–2019. The sample contains 1764 observations early-arrival first-generation immigrants and second-generation Americans, aged 16–65 who commute on the day of the survey and have children under the age of 18 living in the household, originating from 42 different countries. Commuting time is measured in minutes per day.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jtrangeo.2021.103184.

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