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Aparajita Dasgupta, Ashoka University
Ashokankur Datta,Shiv Nadar University

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Religious Institutions and Gendered Time Use: Evidence from Ramadan Festivities in India

Aparajita Dasgupta* and Ashokankur Datta †

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Abstract

How does religious institutions bear upon the gender-gap in time use for individuals? In this paper we examine how religious mandates of the holy month of Ramadan affects the gendered distribution of time use within Muslim households in India. Using rich data from a nationally representative time use survey we construct a composite measure of gendered life that incorporates gender gaps. We employ a difference-in-difference methodology to test if this gender imbalance in accentuated by Ramadan. We find that contrary to popular belief, Ramadan moderates the gender disparities in intra-household time use for Muslim households. The moderating influence is stronger in districts with a higher Muslim proportion. We find a reduction in absolute gender gap in time use for employment, unpaid domestic work and learning activities. However at an individual level, men and women in different age groups are differentially affected by Ramadan.

Keywords: Gendered Time Use, Religion, Ramadan, Institutions

JEL Codes: J16, J22, O43, Z12, Z13

*Department of Economics, Ashoka University, Rajiv Gandhi Educational City, Sonipat, Haryana 131029. E-mail: aparajita.dasgupta@ashoka.edu.in

†Department of Economics, School of Humanities and Social Sciences, Shiv Nadar University, Gautam Budh Nagar, Uttar Pradesh 201314. E-mail: ashokankur.datta@snu.edu.in

1 Introduction

Gender differences in time use patterns, in addition to being an indicator of the absence of a gender blind society, has important consequences for development (Gammage, 2010; Floro and Komatsu, 2011; Ferrant et al., 2014; Rubiano Matulevich and Viollaz, 2019; Rao and Raju, 2020; Srivastava, 2020). The gender gaps in activities, such as paid and unpaid work, learning and leisure can drive differential access to economic opportunities. The economic literature on fractionalization, collective action and conflict in society suggests that distinctness in the lives of the two genders can inhibit cooperation and collective action and increase potential intra-household conflict (Alesina and Ferrara, 2000, 2005; Montalvo and Reynal-Quero, 2005; Desmet et al., 2017). Even a temporary reduction in differences might make people appreciative of the contributions of opposite gender in the household, and increase gender sensitivity within the household. It is further believed that gender equality within households play an important role in shaping aspirations and notions of fairness in the world outside the household (Smith and Johnson, 2020). In this context it is important to examine how religious festivals, which play an integral part of our daily lives and economic well-being (Banerjee and Duflo, 2007; Montero and Yang, 2022), shapes gendered time-use. In this paper, we investigate how the gender gap in time use changes during the month long celebration of Ramadan for Muslim households.

Ramadan is the ninth month in the Islamic lunar calendar when Muslims around the world are expected to participate in a life of piety involving fasting, prayer and brotherhood. This paper tries to understand how the religious expectation from Muslims during this month affects the allocation of time within households. We specifically study how the religious mandates of this month affect the gender imbalance in time use of households. Islam expects all Muslims (with some exceptions) to abstain from food, drink and sexual relations from sunrise to sunset during the month of Ramadan. In addition to such abstinence, believers are expected to observe a period of spiritual discipline and participate in the communitarian spirit of Islam through special communal prayers like Tarawih (in addition to five daily prayers), communal feast with coreligionists (Iftar) and practice of charity towards the less fortunate. Such Ramadan specific practices lead to a household level reorganization in time use patterns.

It is often popularly believed that the burden of additional work during Ramadan

falls disproportionately on women. In an anecdotal article, Alvi (2019) states that Ramadan magnifies the gendered roles in Muslim households as the burden of preparing food at odd hours (often for people beyond the immediate family) falls disproportionately on the women in the family. In addition, importance given to piety during Ramadan involves stricter restrictions of the mobility of women and their choice of clothing. In another personalised writing, Yasin (2011) reflects on the gendered distribution of household labour during Ramadan and comments on how women in her family were often saddled with the 'double burden of strengthening their relationship with God and tending to a household of hungry people'. Similar account of gender specific burden of Ramadan can be found in the writings of other journalists and activists (Asfour, 2014; Hedayat, 2018).

However, academic work on the gender effects of Ramadan on time use is relatively scarce. There exists some literature (especially from the field of medical science) that studies the impact of Ramadan on specific kinds of time use like sleep and leisure. Husain et al. (1987) studies the effect of Ramadan on Malayasian Muslims and finds that though Ramadan increases the time allocated to praying for both men and women, the increase was larger for men. The paper also finds while Ramadan had no effect of time allocation to domestic work for men, the same increased for women during the later part of Ramadan. While Husain et al. (1987) is one of the first papers to study the impact of Ramadan on gender specific daily activity patterns, the results are based on a before-after comparison of Muslims participating in Ramadan fast. The absence of a control group, self-selection in the sample, the unspecified sample size and focus on a few activities, does not allow us to use this study to comment on the causal effect of Ramadan on gendered time use. Margolis and Reed (2004); Bahammam (2006) studies the impact of Ramadan on time allocated to sleep and find no effect on the total hours of sleep. Margolis and Reed (2004) find some effect on the distribution of sleep time over the day. Afifi (1997) observes that Ramadan decreases sleep hours and increases the time spent on watching TV, among university students. However, neither of the three studies conduct a gendered analysis of the impact of Ramadan. Nevertheless, Husain et al. (1987) finds a larger decline in body weight during Ramadan for Muslim women than Muslim men.

While not explicitly focused on time use and activity patterns, there exists studies that examine the gender specific impact of Ramadan on other outcomes, that might be

impacted by gender differentials in time use. Oosterbeek and van der Klaauw (2013) studies the impact of Ramadan on the educational outcomes of Muslim students in an university in Netherlands to find that exposure to Ramadan reduces the grades of students, but the effect is equal for male and female students. Fernando et al. (2019)'s meta-analysis of the impact of Ramadan on weight loss concludes that there is no evidence in favour of gender differentials in Ramadan induced weight loss.

In this paper, we use a nationally representative dataset to study the impact of Ramadan festivities on the gendered time use patterns within Muslim households in India. We construct a composite measure of gendered life that incorporates gender gaps in 56 kinds of activities and use a difference-in-difference methodology to test if this gender imbalance is accentuated by Ramadan. We also unpack the index to identify the major activities in which gender gap is influenced by Ramadan. In the process, we test if there is an increased burden of domestic work on women during Ramadan, as suggested by anecdotal evidence mentioned earlier. Lastly, we explore heterogeneities related to neighbourhood demographics and age of individuals. We check if districts with a higher proportion of Muslims are different in terms of the gender-specific burden that is imposed during Ramadan. We also explore how the change in time use patterns is distributed across age cohorts of both the genders.

The paper contributes to three distinct strands of the literature. Firstly, we contribute to the broad strand of the literature that studies the impact of religious institutions on economic development (Iyer, 2016; Montero and Yang, 2022). In this context, we build upon the existing work that examines the causal effect of Ramadan on various economic variables of interest like maternal health, education, nutrition and labour supply (Almond and Mazumder, 2011; van Ewijk, 2011; Majid, 2015; Schofield, 2020; Weiner, 2021). Secondly, our work adds to the literature that studies gender differences in time use (Li, 2023) and the effect of exogenous events and institutions on it (Gálvez-Muñoz et al., 2011; Gimenez-Nadal and Molina, 2013; de Bruin and Liu, 2020; Garg et al., 2020). Lastly, we contribute to the literature studying the connections between gender disparities and Islamic religious institutions (Moghissi, 1999; Charrad, 2001; Jejeebhoy and Sathar, 2001; Moghadam, 2004a,b; Offenhauer, 2005; Alexander and Welzel, 2011; Fish, 2011; Ross, 2012).

The rest of the paper is structured as follows: Section 2 discusses the data and the

construction of relevant variables, Section 3 describes the empirical strategy, Section 4 discusses the results of the empirical exercise, and Section 5 concludes.

2 Data

The data used in this paper is from the nationally representative Time Use Survey-2019 (TUS-2019) conducted by the National Sample Survey Organization in 2019. This time use survey collected information on detailed time use, demographic and economic characteristics of 445299 individuals from 138799 households, spread over 9946 villages or urban wards, 676 districts and 36 states or union territories. For every sampled household, the survey collects time use information for each household member of age 6 years and above, with a reference period of 24 hours that extended from 4:00 on the day before the date of interview to 4:00 on the day of the interview.

Individuals reported time spent on an activity chosen from an exhaustive list of 165 activities provided by the International Classification of Activities for Time Use Statistics 2016 (ICATUS-2016). Every activity in ICATUS-2016 is given a three digit code, which are grouped into 56 sets called Divisions, which are further grouped into 9 major divisions. The time spent on all activities add to 1440 minutes.[1] The survey also collects information on household demographics (age, sex), education status, and employment status of every household member and information on household level variables like caste, religion, land owned, consumption expenditure of every sampled household.

Using the data mentioned above and using the measures of distance between vectors in a n dimensional Euclidean space, we construct a gender distance index that measures how different is the distribution of time over activities between men and women. A higher value for this index indicates that the daily lives of men and women are starkly different.[2]

[1] In case more than one activity was performed during a 30 minute slot, individuals were asked to report one of the activities as the *major* activity and the rest as *minor* activities. If only the time used on major activities are considered, then for every individual the time spent on major activities adds up to 24 hours (1440 minutes). Since the data does not mention the relative importance of major and minor activities, unless otherwise mentioned, the analysis in this paper is based only on time spent in major activities.

[2] This index can be constructed for only those households that have both male and female members

Suppose all activities that are potentially performed by an individual is classified into n activities. Let $x_{ij} = (x_{ij}^1, x_{ij}^2, \ldots, x_{ij}^n)$ be a vector that denotes the time spent by the i^{th} individual of the j^{th} household on the n activities. Let k_j denote the number of household members in household j above the age of 6 years, k_{mj} are male individuals. Without loss of generality let us assume that the first k_{mj} members are male and the rest of the household members are female. Let $k_{fj} = k_j - k_{mj}$. Let $\overline{x_{mj}}$ ($\overline{x_{fj}}$) be an n-vector, the l^{th} element of which measures the average time spent by the male (female) members of the household j in activity l. D_{ijg} is a dummy variable that takes the value 1 if the i^{th} individual of j^{th} household belongs to gender g, zero otherwise.

$$\overline{x_{gj}} = \frac{1}{k_{gj}} \sum_{i=1}^{k_j} D_{ijg} x_{ij} \ , \ g = m, f$$

Thus for every household j, we have two n-vectors $\overline{x_{mj}}$ and $\overline{x_{fj}}$, each denoting the average time use for respective gender. The difference between these two vectors is a measure of how gendered life within the household is. We use two vector distance measures: Euclidean distance measure ($E(\overline{x_{mj}}, \overline{x_{fj}})$) and Manhattan distance measure ($M(\overline{x_{mj}}, \overline{x_{fj}})$). Unless otherwise mentioned, the results reported in this paper use the Euclidean distance measure as it is the most intuitive measure of distance between vectors.[3]. The gender distance measures are defined in such a way that it does not assign greater importance to differences in one kind of activity over the other.

3 Empirical Strategy

We employ a difference-in-differences estimation strategy by comparing the gender-gap in time use for Muslim and non-Muslim households during and outside the period of Ramadan. Non-Muslims in the sample, who are unaffected by socio-religious expectations of Ramadan (since they are directed towards Muslims) act as an control group. Since household were asked to report time use of the day before the survey, there exists variation in the period of the year for which households report their time use. Approximately 9% of households in our dataset were surveyed during the period of Ramadan which in 2019 was from 5th May to 4th June. Thus 9% of our sample

above 6 years age. Households that do not satisfy this criteria are excluded from the analysis.

[3]Details about these measures can be found in the appendix titled Additional Appendix: Technical Notes. Results using the Manhattan measures of distance can be found in the appendix titled Additional Tables and Diagrams

was a part of the treatment period. [4]
We estimate the following regression to estimate the effect of Ramadan:

$$Y_{idt} = \beta_0 + \beta_1 Muslim_{idt} + \beta_2 Ramadan_{idt} + \beta_3 (Muslim_{idt} \times Ramadan_{idt}) + \delta_t + \mu_t + \gamma_d + \kappa_{dt} + Z_{idt}\alpha + \varepsilon_{idt} \quad (1)$$

where Y_{idt} is the gendered outcome of household i in district d interviewed about date t. $Muslim$ is a dummy variable that takes the value one if the individual is Muslim, zero otherwise. $Ramadan$ is a dummy variable that takes the value one if the household was interviewed about a day in the period of Ramadan, zero otherwise. δ_t is the day of survey fixed effects, μ_t is the month of survey fixed effects, γ is the geographical unit (state or district) fixed effects and κ are (district $\times$ month) fixed effects. Z_{idt} are a host of demographic, educational and economic controls at the household level.

β_1 is the Muslim-Non-Muslim gap in outcome during the non-Ramadan period. β_2 is the difference in the outcome for Ramadan and non-Ramadan period for non-Muslims. Since Ramadan does not involve any restriction on lives of non-Muslims, this coefficient is expected to be close to zero, especially as month fixed effects are controlled for. β_3 is the variable of interest that measures the effect of Ramadan on outcomes. It is the extent by which the Ramadan-Non Ramadan gap for Muslims is higher than the same gap for non-Muslims.

In order check for the robustness of our results, we use alternative definitions of the control group and non-treatment period. We also restrict our sample to various sub-populations to check if the results are being driven by particular sections of the sub-population. Further, we conduct falsification tests by constructing pseudo-treatment groups or pseudo-treatment periods. In none of the falsification test, the treatment effect is significant.

In order to identify the activities responsible for generating the negative impact of Ramadan on gender distance, we estimate the impact of Ramadan on the absolute

[4]Data in the Time Use Survey (TUS-2019) was collected over a one year period starting from 1st January 2019 to 31st January 2019. A negligible number of households were surveyed during the first two weeks of January 2020. The reason for this seems to be the fact that compared to the average, fewer households were surveyed in the first 10 days of 2019. It was not the case the households belonging to certain geographic or demographic categories were surveyed earlier in the years. The roll-out of the survey was evenly spread over all regions of the country.

gender gap in time spent in each of the major time use divisions.[5]. In order to estimate the Ramadan effect on absolute gender gap in time spent on major division i, we estimate equation 1 by substituting the dependent variable by the absolute gender gap in time allocated to major division i. We also estimate the effect of Ramadan on male and female allocation of time to major division i to understand if a change in the absolute gender gap is due to a change in male time allocation or female time allocation or both. The same analysis is conducted at a division level (sub-categories of each major division) to identify the narrowly defined activities responsible for the Ramadan effect.

In addition to household level regressions, we also use the triple difference methodology to identify the gendered impact of Ramadan on time use in specific categories (major divisions) from an individual level regression with household fixed effects:
For $i = 1, 2, \ldots, 9$,

$$\begin{aligned} Y^i_{jh} &= \delta^i_0 + \delta^i_1 Female_{jh} + \delta^i_2(Ramadan_h \times Female_{jh}) + \delta^i_3(Muslim_h \times Female_{jh}) \\ &\quad + \delta^i_4(Muslim_h \times Ramadan_h \times Female_{jh}) + \phi^i_h + Z_{jh}\alpha^i + \varepsilon^i_{jh} \end{aligned} \tag{2}$$

The advantage of an individual level triple difference regression is that it allows us to use household fixed effects that controls for all household level observables (month and day of interview[6], religion, caste, household size and composition, etc) and unobservables. The disadvantage is that we are unable to find a composite measure of the Ramadan effect on intra-household gender disparity. In addition, we are unable to estimate the coefficient of any household level variable that might be of interest. In this regression, the coefficient of interest is δ^i_4 that is equal to the impact of Ramadan on female time use in major division i minus the impact of Ramadan on male time use in major division i. The same triple difference analysis is then conducted at a division level (sub-categories of each major division) to identify the narrowly defined activities responsible for the Ramadan effect.

In this paper, we explore two major sources of heterogeneity in the Ramadan effect. First we check if the aggregate Ramadan effect is driven by districts with certain demographic composition. We use data from Census of India 2011 to group districts on the basis of the Muslim proportion in population and estimate the household and

[5]For major division i, the absolute gender gap is $|\overline{x^i_{mj}} - \overline{x^i_{fj}}|$

[6]0.4 percent individuals were surveyed in a day in which all other household members were not surveyed. We ignore this and assume that all household members were surveyed on the same date

individual level regressions for each of the sub-populations.[7] We also check if the Ramadan effect for individuals are dependent on age: we divide the individual sample into five age groups and estimate the individual level triple difference estimator separately for each age group.

4 Results

4.1 Descriptive Statistics

Table 11 provides the summary statistics for mixed sex households in the dataset. Approximately 87 percent of the households in TUS-2019 dataset are mixed sex households and they constitute the sample of interest in this paper. Approximately 12 percent of the households are Muslims who are expected to observe the religious rituals of the month of Ramadan. 9 percent of the sample were surveyed during the month of Ramadan in 2019. It is not the case that the proportion of Muslims surveyed during the month of Ramadan was different from the proportion of non-Muslims surveyed during the same period (Refer to Table 11 in Online Appendix). The Muslim sub-sample had a higher level of gender distance on average when compared to their non-Muslim counterparts. This difference between Muslims and Non-Muslims continue to exist even after other observable explanatory variables are controlled for (Dasgupta and Datta, 2022). The average Muslim household in the sample was also poorer, had a larger household size and a younger intra-household composition.

4.2 Ramadan Effect on Gender Distance

Figure 1 shows the average gender distance of Muslims and non-Muslims during two periods: Ramadan and the period outside Ramadan. While the difference between the two periods for non-Muslims is negative, it is not statistically significant at 5% level of significance. For Muslims, the gender distance during the Ramadan period is 23 minutes (0.16 times the standard deviation) less than the average gender distance outside the month of Ramadan and the difference is statistically significant

[7]The Census of India 2011 contains information on 640 districts. 36 new districts were formed during the period 2011-2019. We map all TUS-2011 districts back to the 2011 census districts. Few multi-parent districts could not be uniquely mapped and hence were dropped from the analysis.

(p-value=0.00). During the period of Ramadan, the gender distance is higher for Muslims but is not statistically significant at 5% level of significance. More importantly, the period-wise difference for Muslims is less than the difference for non-Muslims by 16 minutes (0.11 times the standard deviation) and this difference is statistically significant. This double difference term reflects the impact of Ramadan on gender distance. We find that Ramadan improves the gender balance in time use for Muslim households[8]

In Table 2 we report the estimated effects of Ramadan on gender distance. Column (1) reports the estimates of the baseline specification where in addition to the Muslim dummy, the Ramadan dummy and their interaction, we have only one other explanatory variable: an indicator of urban sector. We find that Ramadan reduces the gender distance in Muslim households by 18 minutes (0.12 times the standard deviation). In column (2), we add state fixed effects, (English calendar) month fixed effects and day of week fixed effects. This increases the magnitude of the impact of Ramadan to 22 minutes. In column (3) we add district fixed effects and in column (4) we add (district $\times$ month) fixed effects. The coefficient of the interaction between Ramadan and Muslim continues be negative and statistically significant. In column (5), (6) and (7) we add demographic controls, educational controls and economic controls sequentially. In all specifications reported in Table 2, the Ramadan effect on gender distance is negative and ranges from 12 to 15 percent of standard deviation. In Table 13 and Table 14 in the online appendix, we estimate the regression specifications of Table 2 separately for rural and urban sector. The Ramadan effect is qualitatively similar in both the sectors, though the magnitude is stronger in the rural sector.

In Table 3, we report the results of various robustness checks we conduct to ensure that the results are robust to modifications in definitions of control group and non-control period and exclusion of some parts of the sample. In column (1), we estimate the regression with all controls and fixed effects, but restricting the sample to only Hindus and Muslims. In other words, only Hindus constitute the control group in this specification. The Ramadan effect does not change qualitatively and the magnitude does not change significantly from the estimates in Table 2. In column (2) we restrict

[8]A DID estimator is based on the assumption that in the absence of Ramadan the difference between the Muslims and non-Muslims is constant over time (days of the 2019 in our context). In Figure 4 and Table 4 we check for differences in trends for Muslims and non-Muslims in the period outside Ramadan. We find no evidence of non-parallel trend during the period without treatment.

the sample to the period starting 15 days before the start of Ramadan and ending 15 days after the end of Ramadan. In column (3) we exclude small states and union territories from our sample. In column (4) and (5), we restrict the sample to households from OBC and upper castes respectively. In none of the columns do we observe any significant change in results. In column (6) to column (9), we restrict the sample to households belonging to a specific quartile of the MPCE distribution. While the magnitude of the Ramadan effect is approximately same irrespective of the quartile, the results are not statistically significant at 5% level of significance for the top two quartiles.

In order to check that the results are not driven by a particular state (province), we re-estimate the functional form with all controls (last column of Table 2) 36 times, excluding a specific state in an iteration. We find that there does not exist a state– the exclusion of which– changes the Ramadan effect substantially. Each of the 36 coefficients are negative and statistically significant at 1% level of significance (Refer to Figure 5 in the online appendix).[9]

4.3 Falsification Tests

In order to strengthen our assertion that the effect we identify is indeed the Ramadan effect and is not driven by some seasonality or some aspect of Muslims being economically backward, we conduct a series of falsification tests, the results of which are reported in Table 4. We construct a pseudo-Ramadan period that consists of the 15 days prior to the start of Ramadan and 15 days that follows the end of Ramadan. In column (1) we report the estimates of a regression with all controls, where a dummy variable for the pseudo-Ramadan period is introduced in place of the Ramadan dummy variable. We do not find any gender distance reducing effect of the pseudo-Ramadan period. In column (2) we estimate the same regression but after excluding the actual Ramadan period from the same. The coefficients of the interaction of pseudo-Ramadan period and the interaction term remain statistically insignificant at conventional levels. These results suggests our estimates are actually capturing the gender distance

[9]Exclusion of West Bengal yields the smallest effect (-16.84 minutes) and exclusion of Bihar generates the largest effect (-21.41 minutes).

reducing effect of Ramadan.[10] In column (3) and (4) we assume two caste groups (SCs and STs) to be the treated groups: groups affected by the religious expectations of Ramadan. Like Muslims, SCs and STs are socio-economically backward groups. However, we find no effect of Ramadan for these two groups. In column (5) we assume the non-Muslim religious minority to be the treated group. Column (6) is similar to column (5) except for the fact the Muslims are excluded from the non-treated group. In neither of the last two columns do we find a Ramadan effect on the 'treated'.

4.4 Heterogeniety

In Table 3 we have already explored two sources of heterogeneity in the Ramadan effect. We know that the gender distance reducing Ramadan effect is more pronounced among upper caste (*Ashraf*) Muslims than among OBC (*Pasmanda/Arzal/Afjal*) Muslims. We also noted that while the Ramadan effect is similar across MPCE quartiles, the estimates are statistically more significant for lower quartiles. In this subsection, we explore two additional sources of heterogeneity based on geography and demographic composition of districts. Firstly, we estimate the Ramadan effect on gender distance separately for the four regions of India: Northern, Eastern & North Eastern, Western & Central and Southern.[11] It is popularly believed that South and North-East India reflect more progressive gender norms than North India (Karve, 1965; Dyson and Moore, 1983; Basu, 1992; Jejeebhoy and Sathar, 2001; Rahman and Rao, 2004). The practice of Islam is also different in South and North India. While Islam arrived in North India through the invasion from the Central Asia in 12th century AD, in South India it arrived through trade in 7th Century AD. Mines (1975) writes that while Muslims in North India were reluctant acceptors of their minority status, that was not the case in South India, specifically in Tamil Nadu. This meant religious antagonisms between Muslims and Hindus was low in South India. Muslims in South India are much more integrated into the local (Tamil) culture and language, than their North-Indian counterparts. In Table 5 we report the estimates for the four geographic

[10] It should be noted that general elections were held in India from 11th April 2019 to 19th May, 2019. The election was held in 7 phases. Only 3 of the 30 days of Ramadan were election days. However, both Muslims and Non-Muslims participate in elections, and election effect (to the extent it is additive) gets cancelled out in the calculation of a double difference. In addition, we also find that the pseudo-Ramadan period which also includes election days has no effect on gender distance.

[11] The composition of the geographical regions can be found in Table 15 of online appendix.

regions separately. The gender distance reducing Ramadan effect is the largest for Eastern and North-Eastern India. The effect is statistically significant at 10% level of significance. Interestingly, this is the region which does not have a statistically significant Muslim-Non-Muslim gender distance gap outside the Ramadan period. The Ramadan effect is smallest for Northern India and the effect is not even statistically significant. The gender distance reducing effect of Ramadan for Western & central region and the Southern region is similar in magnitude to the all-India effect.

We also test if the impact of Ramadan on gender distance is related to the numerical dominance (or the lack of it) in a geographical region. A district is said to be a Muslim majority district if the Muslim proportion in the district is greater than half. In column (1) and column (2) we allow for a saturated model involving all possible interactions between the following three variables: Muslim dummy, Ramadan dummy and Muslim majority dummy. Other fixed effects and controls enter the regression equation additively. We only report the estimate of the triple interaction term which is negative and significant at 1% level of significance. This implies that the gender distance reducing Ramadan effect is stronger in Muslim majority district. In column (3) and column (4), we classify districts, on the basis of Muslim proportion, into: high , medium and low. The dummy variable for medium and high districts is interacted with Ramadan and Muslim dummy in all possible ways. We find that the Ramadan effect of low Muslim proportion districts and medium Muslim proportion districts are not significantly different, but the Ramadan effect is much stronger for high Muslim proportion districts.

In Figure 2 we sequentially restrict the sample to smaller sub-samples based on the proportion of Muslim population in the district. We estimate equation 1 for the entire sample and three sub-samples: sub-samples when data is restricted to districts with Muslim proportion above 0.1, 0.3 and 0.5. We see that the Ramadan effect does not change much when we consider just the districts with Muslim proportion above 0.1 or 0.3, but the Ramadan effect is much more pronounced when sample is restricted to Muslim majority districts. It is plausible a major part of household work (mainly food preparation) moves to the realm of the community (from the realm of the household) during the month of Ramadan. Food is often bought and communally shared with others. This might reduce the time that women in a household spend on food preparation and other domestic tasks. This is specially true if there are economies

of scale in such domestic production activities. Muslim majority districts are regions where such communalization of domestic work is possible. Hence, such areas witness a sharper decline in participation of women in domestic work and consequent decline in gender distance. We elaborate this in the next subsection when we unpack the distance index to understand what drives the distance reducing Ramadan effect.

4.5 Unpacking the Ramadan Effect on Distance Index

4.5.1 Ramadan Effects on absolute gender gap in time spent on specific activities

The square of the gender distance is equal to the sum of the squares of absolute gender gaps in each of the 56 activities considered. In order to understand why Ramadan reduces gender distance, we need to understand how Ramadan affects these gender gaps. For expositional simplicity, we group all the activities in 9 major divisions in accordance with ICATUS-2016. We regress the time use gender gap in each of these major divisions on Ramadan variable, Muslim variable and interaction of the two. We also control for a host of fixed effects and other controls (details mentioned in table notes of Table 7). The coefficient of the interaction term is the Ramadan effect on absolute gender gap in each of the major divisions. Table 7 reports the coefficient of these terms for two alternative specifications. We find that Ramadan reduces the gender gap in time use for employment, unpaid domestic services and learning significantly. However, the gender gap in time use increases for socialising & community participation (that includes participation in religious activities) and self care & maintenance. However, from Table 7 we see that the former effects are much larger in absolute magnitude than the later effects ensuring a fall in gender distance. In order to identify which activities actually contribute towards these effects on gender gaps in every major division, we estimate similar regressions for each of the 56 activities. To ensure a brief presentation of the results, in Table 9 we report the results for only those divisions for which we find significant effects for at least one of the two specifications we consider. We find that within unpaid domestic services the gender gap decreases the most for time spent in food preparation. Ramadan also accentuates the absolute gender gap in religious practices. Within employment, gender gap in time spent in travelling for work is significantly reduced.

4.5.2 Ramadan Effects on average male and female time spent

In the last subsection, we estimated the impact of Ramadan on time spent in various activities. To understand the movement in gaps, we check for the Ramadan effect on average time use by men and women in these activities. In Table 10, we find that Ramadan decreases the gender gap in employment due to a significant decline in male time spent on employment, the female employment remaining unchanged. In domestic work, male participation increases (albeit at 10% level) while female participation is unaffected. This decreases gender gap in domestic work. Time devoted for learning activities declines for both gender but the magnitude is higher for men. Time spent of community participation (including religious practices) increases for both men and women. However, the magnitude is larger for the former which increases gender gap in this activity.

4.6 Individual Level Results and Heterogeniety

Till now we have used variation across household in survey time and religion to identify the effect of Ramadan. We now estimate a individual level regression with household fixed effects as described in equation 2. The advantage of such an estimation is that it controls for all household level heterogeneities. The coefficient of interest δ_4^i determines if for activity i, the Ramadan effect of female individuals is less or greater than the Ramadan effect for men. Figure 3 reports the coefficient of the triple interaction terms in a regression with household fixed effects and controls like age categories, marital status, relationship with household head and years of schooling. We find that for most activities except for unpaid domestic work and home production, the triple interaction term is insignificant at 1% level of significance. For unpaid domestic work, the Ramadan effect for women is 15 minutes less than the Ramadan effect for men. However, for home production activities the Ramadan effect for men is stronger than the same for women by 6 minutes at a 5% level of significance. The presence of household fixed effects ensure that we can only identify the gender differences in the Ramadan effect, and not the effect separately for men and women. Besides, the presence of fixed effects absorbs much of the variation in explanatory variables of interest and that explains the wide confidence interval for most of the activities.

Though in the regression leading to the Figure 3 we allow age to have a non linear

relationship with the dependent variables, we do not allow the effect of Ramadan to be different for different age groups. In Table 10 we estimate the individual level regression equation (equation 2) separately for different age bins.[12] We find that there is a lot of heterogeneity across age groups. For example, in Figure 3 we found the coefficient of the triple interaction term to be negative in the regression related to unpaid domestic work, indicating a lower effect of Ramadan on women compared to men. When the sample is split up across age groups, we find the effect to be in the same direction for lower age groups, but getting reversed for the individuals above 65 years of age. This seems to suggest an increase or an insufficient decrease in the domestic work burden of old women compared to old men. It also suggests that Ramadan leads to some reorganization of work within women in a household. Similarly, we find that the triple interaction effect is negative for young adults in the age group 16-30 years, while it is insignificant for all other age groups. We investigate the effect of Ramadan on time allotted to learning further by estimating the equation for two specific sub-populations: school going age group (6-16) and college going age group (17-23). We find the estimated coefficients to be of opposite signs: for school going age the effect is -17 minutes, while for college going population it is +12 minutes. However, due to the reduced sample sizes, none of the coefficients are statistically significant at conventional levels.

5 Conclusion

The extent to which one's individual life is determined by gender is often conditioned by religious norms. Religion influences the gender division of 'work' either directly through theological injunctions about a man and a women's ideal role in a household/society or indirectly through similar prescriptions about marriage, divorce and fertility decisions. In such a context, it's important to know how important festive religious occasions, representing periods of heightened religiosity and piety, affect the gender differences in everyday life. Religious fervour associated with festivals might strengthen people's belief in gender differentiation prescribed by most religions and thus accentuate gender distance. Similarly, the emphasis on equality, kindness and communitarian ethic might lead to a reorganization of life that equates work burden

[12]Since the regression is estimated separately for different age groups, we obviously no longer use age categories as explanatory variables.

in the changed environment of a festival. In India, as in many other countries, the gender difference in various aspects of everyday life are the most stark among Muslims. In this paper, we study the impact of a month long celebration of Ramadan on gender differences in everyday life. We also study if such an impact is mediated by the presence of coreligionists and economic status of households.

We find significant negative effect of Ramadan on intra-household gender difference in time use which is contrary to popular opinion. This decline seems to be mediated by a decline in gender gaps in employment, unpaid household work and learning, which compensates the increased gender gap in community participation (incl. religion). We also find such effects to be much stronger for regions with high concentration of Muslim population suggesting the importance of communitarian ethic in ensuring a more equitable share of time. Furthermore, we observe heterogeneity in this effect across geographical regions. The effect is much stronger outside the region of Northern Gangetic plains. Lastly, using intra-household variation we find that the effect of Ramadan on time use is a function of age in addition to gender.

The reorganization of time use in response to Ramadan has potential to influence material and mental well-being in a gender differentiated manner. It would be important to understand how Ramadan affects actual and perceived mental well-being in future research. Such work can help us in understanding the costs and benefits of intense religiosity. Secondly, since Ramadan has significant negative impact on time spent on educational learning, it is important to understand the impact on educational outcomes. While there exists some small sample experimental research documenting the role of Ramadan on educational outcomes in Netherlands (Oosterbeek and van der Klaauw, 2013), such studies lack geographical generalizability. Future research needs to look at the impact on educational outcomes in the developing world where a large majority of followers of Islam reside.

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A Tables and Figures

Table 1: Summary Statistics of Major Variables

	N	Mean	SD	Min	Max
Gender Distance					
Euclidian Distance (56)	120826	441.86	145.642	0	1498
Manhattan Distance (56)	120826	1104.72	322.103	0	2640
Controls of Interest					
Muslim	120826	0.12	0.326	0	1
Ramadan	120826	0.09	0.288	0	1
Additional Demographic Controls					
ST	120826	0.14	0.345	0	1
SC	120826	0.18	0.383	0	1
OBC	120826	0.39	0.488	0	1
Household Size	120826	4.07	1.610	2	23
Proportion of Household Members:					
- $<$ 6 years	120826	0.12	0.174	0	0.8
- Male and 6 years $\leq$ age $\leq$ 15 years	120826	0.07	0.129	0	0.8
- Female and 6 years $\leq$ age $\leq$ 15 years	120826	0.05	0.112	0	0.75
- Female and 16 years $\leq$ age $\leq$ 65 years	120826	0.35	0.143	0	0.9
- $>$ 65 years	120826	0.05	0.154	0	1
Additional Educational Controls					
Average adult male education (years)	118824	7.85	4.683	0	17
Average adult female education (years)	120599	6.19	4.804	0	17
Additional Economic Controls					
Pucca House	120826	0.63	0.484	0	1
LPG access	120826	0.67	0.472	0	1
Monthly Per Capita Expenditure (Rs.)	120824	2767.45	2334.919	3	143334

Notes: This table is based on *mixed gender households*: households of the TUS-2019 data that have members in the age group above 6 years for both genders. The objective of this table is to describe the sample dataset and not obtain nationally representative estimates. Thus sampling weights have not been used in the construction of the mean and standard deviation.

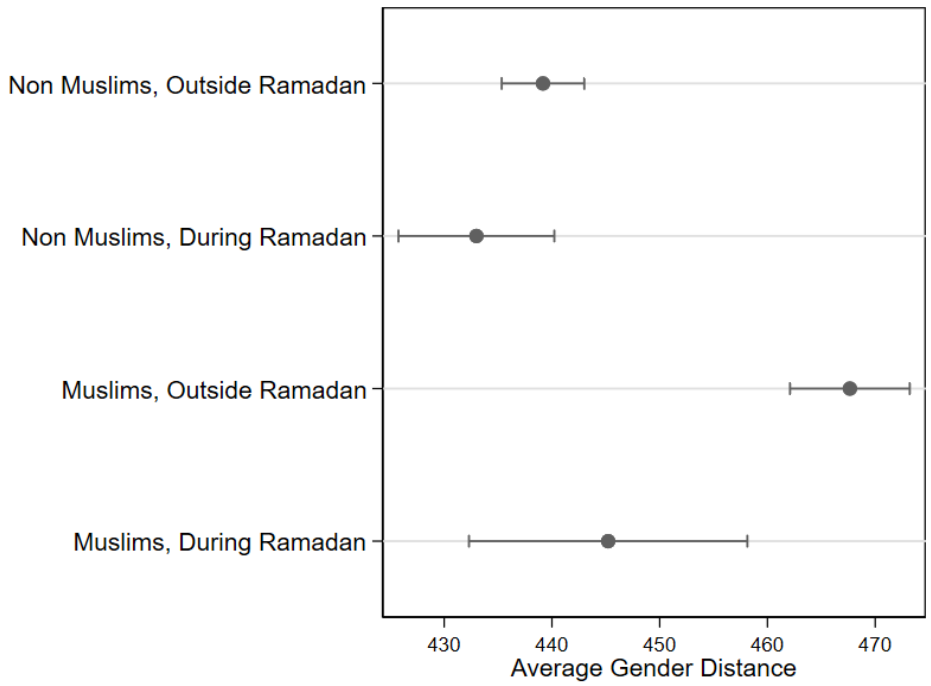

Figure 1: Average Gender Distance of Muslims & Non-Muslims, during Ramadan and non-Ramadan periods

Table 2: Effect of Ramadan on Gender Distance in Time Use (All India)

	Euclidian Distance (56)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Muslim	26.17***	19.98***	18.65***	15.97***	16.43***	16.19***	16.19***
	(2.69)	(2.34)	(2.05)	(2.09)	(2.03)	(2.09)	(2.08)
Ramadan	-6.59**	-12.97*	-9.95	-0.60	-4.28	-4.69	-4.91
	(2.88)	(6.67)	(6.21)	(7.49)	(6.90)	(6.72)	(6.76)
Muslim × Ramadan	-19.14***	-22.14***	-17.25***	-19.99***	-17.78***	-19.10***	-19.12***
	(6.50)	(6.29)	(5.57)	(5.99)	(5.86)	(5.86)	(5.88)
Urban/Rural	YES	YES	YES	YES	YES	YES	YES
State FE		YES					
Day of Week		YES	YES	YES	YES	YES	YES
Month FE		YES	YES				
District FE			YES				
(District X Month) FE				YES	YES	YES	YES
Demographic Control					YES	YES	YES
Education Controls						YES	YES
Economic Controls							YES
Observations	120826	120050	120050	119936	119936	117722	117722

NOTE: The list of demographic, educational and economic controls can be found in the summary statistics tables describing the datatset.

Standard errors, clustered at district level, in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Robustness Checks: Sub-Population Analysis

	Euclidian Distance (56)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Muslim	15.05***	18.66***	15.99***	10.65***	15.34***	16.11***	17.35***	16.35***	11.21**
	(2.10)	(5.44)	(2.11)	(2.71)	(4.19)	(3.29)	(3.61)	(3.21)	(5.53)
Ramadan	-5.35	-3.49	-7.34	0.01	-14.33	9.99	4.68	-22.76**	-10.44
	(7.42)	(6.73)	(6.76)	(11.99)	(10.12)	(10.53)	(13.60)	(11.25)	(12.36)
Muslim × Ramadan	-18.66***	-21.73***	-19.35***	-18.05**	-23.19**	-20.18**	-23.97**	-19.81	-21.51*
	(6.01)	(7.23)	(5.92)	(8.26)	(9.07)	(9.98)	(10.24)	(12.03)	(11.67)
Observations	106360	21706	113220	45893	33957	30865	30826	28967	25101
Sub-Population	Hindus+ Muslims	Ramadam ± 15 days	Large States	only OBC	only UC	MPCE Quartile 1	MPCE Quartile 2	MPCE Quartile 3	MPCE Quartile 4

Notes: Column (1) includes Hindu and Muslim households only, column (2) restricts the sample to households that were survey in the period starting from 15 days prior to start of Ramadan and ending at 15 days after the end of Ramadan, column (3) excludes households from small states and union territories, column(4) excludes all castes other than OBCs and column(5) excludes all castes other than *upper castes*. Column (6) includes households from lowest MPCE quartile, column (7) includes households from second MPCE quartile, Column (8) includes households from third MPCE quartile and Column (9) includes households from the highest MPCE quartile,

Each of the three regressions controls for demographic variables, educational variables, economic variables, sector, FSU fixed effects, day of week fixed effects and month fixed effects.

Standard errors, clustered at the district level, are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Falsification Tests

	Dependent Variable: Euclidian Distance (56)					
	(1)	(2)	(3)	(4)	(5)	(6)
Muslim	13.72***	16.14***				
	(2.22)	(2.24)				
SC			-2.49			
			(1.60)			
ST				-17.52***		
				(2.44)		
Non-Muslim Minority					-7.82***	-6.28***
					(2.46)	(2.38)
Ramadan			-7.19	-7.27	-6.78	-1.29
			(6.66)	(6.71)	(6.80)	(7.19)
Pseudo-Ramadan	-4.36	-5.42*				
	(2.75)	(2.99)				
Muslim × Pseudo-Ramadan	4.83	2.94				
	(5.50)	(5.57)				
SC × Ramadan			0.37			
			(3.93)			
ST × Ramadan				1.55		
				(6.72)		
Non-Religious Minority × Ramadan					-5.15	-9.86
					(8.39)	(8.67)
Observations	117722	106873	117722	117722	117722	103538

NOTES: Pseudo-Ramadan is a period of 30 days that includes 15 days before the start of Ramadan and 15 days after the end of Ramadan.

Column (1) includes data from all days, while column (2) excludes data from the period of Ramadan. Column (5) includes data from from all religious groups, while column (6) excludes Muslim households.

Each of the three regressions controls for demographic variables, educational variables, economic variables, sector, day of week fixed effects and (district×month) fixed effects.

Standard errors, clustered at district level, are in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Heterogeiniety: Geographic Regions of India

	Euclidian Distance (56)			
	Northern	Western & Central	Eastern & North-Eastern	Southern
Muslim	13.32***	21.87***	8.76	15.53***
	(3.16)	(3.80)	(5.45)	(4.02)
Ramadan	4.92	-17.18*	25.30*	-8.90
	(12.75)	(9.90)	(15.06)	(12.27)
Muslim × Ramadan	-11.38	-19.84*	-25.60*	-18.44*
	(10.64)	(11.54)	(13.02)	(10.43)
Observations	35592	32061	26050	24019

NOTE: (District × Month) FE, Day FE, sector dummy variables, demographic, educational and economic controls used as additional controls. Standard errors, clustered at district level, are in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Heterogeiniety: Districts with High Proportion of Muslims in Population

	Euclidian Distance (56)			
	(1)	(2)	(3)	(4)
Muslim × Ramadan × Muslim Majority District	-51.91***	-46.66***		
	(19.31)	(17.66)		
Muslim × Ramadan × Medium Muslim Proportion District			-15.26	-21.78
			(18.99)	(17.42)
Muslim × Ramadan × High Muslim Proportion District			-39.78**	-28.24*
			(18.23)	(16.86)
Urban/Rural	YES	YES	YES	YES
Day of Week	YES	YES	YES	YES
(District X Month) FE	YES	YES	YES	YES
Demographic Control		YES		YES
Education Controls		YES		YES
Economic Controls		YES		YES
Observations	119632.00	117421.00	119632.00	117421.00

NOTE: A district is a Muslim majority district if according to Census of India 2011 data, more than 50% of population are Muslims.

The top one-third of districts with the highest Muslim proportions are called High Muslim Proportion Districts and the bottom one-third are called Low Muslim Proportion Districts. The remaining districts are called Medium Muslim Proportion Districts. In column(3) and (4), Low Muslim Proportion districts are the omitted category.

Standard errors, clustered at district level, are in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

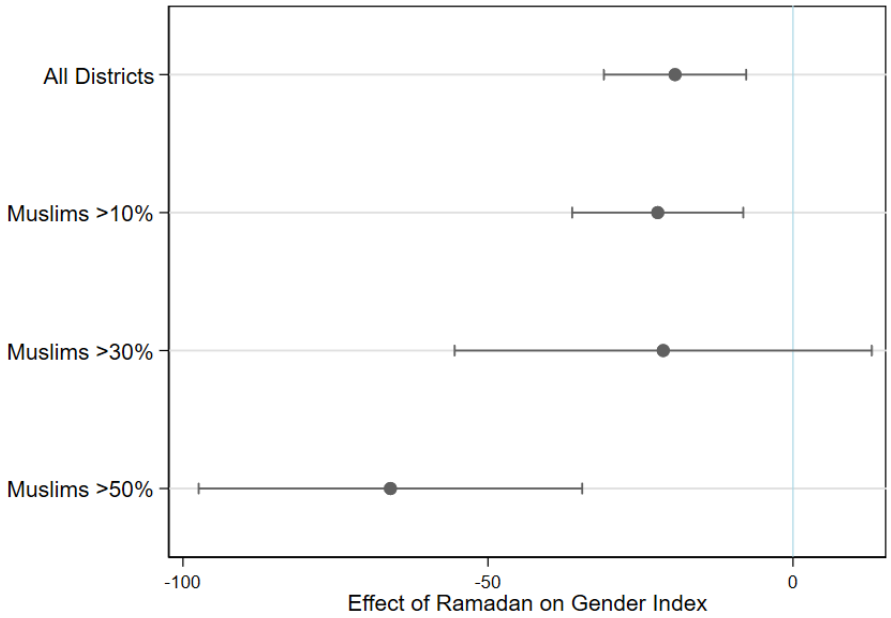

Figure 2: Heterogeneous Effect of Ramadan: Muslim Dominated Districts

Table 7: Ramadan Effect on Absolute Gender Difference in Time Use for each Major Division

Major Division	District & Month FE	(District×Month) FE
Employment	-19.58***	-22.96***
	(7.16)	(8.15)
Production of goods for own final use	-2.42	-2.85
	(2.97)	(2.80)
Unpaid Domestic Services	-11.26**	-10.98*
	(5.21)	(5.78)
Unpaid Caregiving Services	-0.81	-1.18
	(2.10)	(2.35)
Unpaid volunteer & trainee work	-0.97	-1.18
	(0.62)	(0.81)
Learning	-7.27*	-13.06***
	(4.05)	(3.64)
Socializing & community participation (incl. religion)	6.19**	8.88***
	(2.57)	(2.73)
Culture & Entertainment	-4.65	-1.68
	(2.97)	(3.45)
Self Care & Maintenance	8.15**	6.32*
	(3.34)	(3.55)
Observations	117837	117722

NOTES: The coefficient of every cell is the coefficient estimate of the interaction term (Ramadan × Muslim) in a specific regression. The row number of the cell identifies the dependent variable of the regression whose estimates are reported in that row. For example, 1st row reports the coefficient of the interaction term for regressions where the dependent variable is the absolute male-female difference in time allocation to major division called *employment*. In addition to the fixed effects mentioned as column headings, each regression controls for day of week fixed effects, demographic controls, educational controls and economic controls.

Standard errors, clustered at an district levels, are reported in the parenthesis.

Table 8: Impact of Ramadan on Gender Specific Time Use

Major Division	District & Month FE		(District×Month) FE	
	Male	Female	Male	Female
Employment	-16.68**	3.09	-24.98***	-6.77
	(7.46)	(4.56)	(8.41)	(5.11)
Production of goods for own final use	-0.41	2.86	-1.58	3.84**
	(3.31)	(2.34)	(3.18)	(1.91)
Unpaid domestic services	4.08*	-7.98	4.99**	-6.15
	(2.38)	(5.69)	(2.41)	(6.13)
Unpaid caregiving services	0.60	-0.64	1.55	-0.45
	(1.23)	(2.35)	(1.20)	(2.60)
Unpaid volunteer & trainee work	-0.52	-0.39	-0.62	0.06
	(0.64)	(0.46)	(0.81)	(0.49)
Learning	-8.13**	-4.05	-13.32***	-9.66***
	(3.82)	(3.35)	(3.56)	(3.22)
Socializing & community participation (incl. religion)	35.19***	28.25***	37.70***	28.76***
	(6.05)	(5.24)	(5.73)	(4.94)
Culture & Entertainment	-6.17	-8.42	1.66	-0.24
	(4.66)	(5.33)	(5.09)	(5.44)
Self Care & Maintenance	-7.96	-12.71**	-5.41	-9.38*
	(5.33)	(5.48)	(5.23)	(5.12)
Observations	117798	117798	117682	117682

NOTES: The coefficient of every cell is the coefficient estimate of the interaction term (Ramadan × Muslim) in a specific regression. The row number of the cell and Male/Female subheading of the column identifies the dependent variable of the regression whose estimates are reported in that row. For example, the estimate in 1st row and 1st column reports the coefficient of the interaction term for regressions where the dependent variable is the household average of male time allocation to major division 1 (employment). The three columns headings refer to three different regression specifications based on the fixed effects used. In addition to the fixed effects mentioned as column headings, each regression controls for day of week fixed effects, demographic controls, educational controls and economic controls.

Standard errors, clustered at an district levels, are reported in the parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Ramadan Effect on Absolute Gender Difference in some important Divisions

Divisions	District & Month FE	(District×Month) FE
Major Division: Employment		
Traveling & Commuting for employment (18)	-5.07***	-4.33**
	(1.76)	(2.05)
Major Division: Unpaid Domestic Services for Household Members		
Food and meals management and preparation (31)	-17.63***	-14.49***
	(4.63)	(4.82)
Care and maintenance of textiles and footwear (34)	4.10**	4.37**
	(1.80)	(1.86)
Major Division: Learning		
Formal Education (61)	-1.61	-6.38***
	(2.79)	(2.28)
Homework etc. related to Formal Education (62)	-4.60***	-5.41***
	(1.67)	(1.64)
Informal Education (63)	-1.09**	-0.85
	(0.54)	(0.56)
Education related travel (64)	-0.86	-1.30**
	(0.63)	(0.58)
Major Division: Socializing, community participation and religious practice		
Participating in community cultural/social events (72)	-1.38**	-0.62
	(0.56)	(0.65)
Religious Practices (74)	12.26***	12.23***
	(2.18)	(2.47)
Major Division: Culture, leisure, mass-media and sports practices		
Cultural participation, hobbies, games etc. (82)	-2.82*	-1.16
	(1.69)	(1.81)
Mass Media Use 84	-5.50**	-5.20*
	(2.45)	(2.75)

(Table 9 Continued)

	District Month FE	(District × Month) FE
Major Division: Self Care and Maintenance		
Sleep & related activities 91	6.28**	5.52*
	(2.58)	(2.88)
Eating & Drinking (92)	-2.81*	-3.75*
	(1.63)	(1.93)
Personal Hygiene & Care (93)	2.50**	2.47*
	(1.11)	(1.27)

NOTES: The coefficient of every cell is the coefficient estimate of the interaction term (Ramadan × Muslim) in a specific regression. The row number of the cell identifies the dependent variable of the regression whose estimates are reported in that row. The two columns refer to three different regression specifications based on the fixed effects used. In addition to the fixed effects mentioned as column headings, each regression controls for day of week fixed effects, demographic controls, educational controls and economic controls.

Standard errors, clustered at an district levels, are reported in the parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

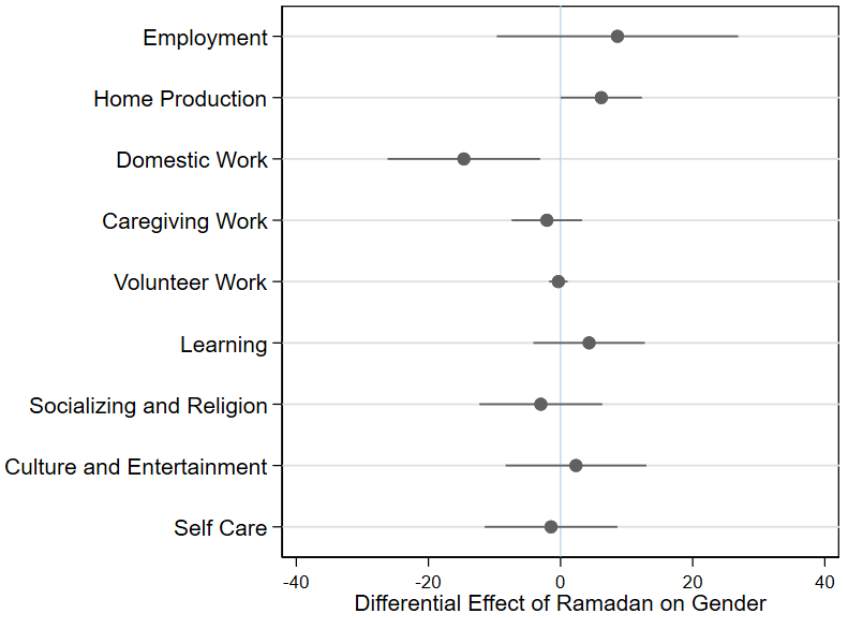

Figure 3: Gender Differential Effect of Ramadan: Coefficient of $Muslims \times Ramadan \times Female$

Table 10: Gendered Effect of Ramadan on Time Use: Sub-Populations of Age:
Coefficient of $Muslim \times Ramadan \times Female$

	$Age \in [6,16]$	$Age \in (16,30]$	$Age \in (30,50]$	$Age \in (50,65]$	$Age \in (65,\infty)$
Employment (1)	7.90	-13.74	18.78	16.00	17.80
	(9.24)	(15.70)	(16.07)	(26.42)	(46.77)
Production of goods for own consumption (2)	2.12	6.10	3.90	9.58	-6.25
	(3.16)	(3.94)	(5.47)	(9.83)	(11.78)
Unpaid domestic Services (3)	-5.83	-16.46*	-18.80*	-24.76	82.68**
	(9.82)	(9.23)	(10.26)	(16.96)	(34.48)
Unpaid caregiving services (4)	2.45	-3.10	1.17	-5.33	8.90
	(2.71)	(5.45)	(5.33)	(5.28)	(13.08)
Unpaid volunteer and trainee work (5)	-1.70	-0.44	-0.56	2.12	4.37
	(1.81)	(1.88)	(0.87)	(1.33)	(3.00)
Learning (6)	-14.26	13.38**	-0.55	2.14	-10.37
	(11.81)	(6.44)	(0.90)	(1.91)	(7.69)
Socializing & community participation (incl. religion) (7)	1.24	-0.66	3.20	5.62	-62.71
	(7.51)	(7.15)	(7.74)	(13.43)	(42.25)
Culture & Entertainment (8)	15.04	11.50	-9.32	4.54	-45.54
	(12.05)	(8.80)	(8.47)	(14.71)	(29.60)
Self care & Maintenance (9)	-6.96	3.41	2.17	-9.91	11.14
	(8.19)	(8.93)	(9.15)	(13.44)	(43.55)
Observations	50273	88418	98671	33441	7790

NOTES: The coefficient of every cell is the coefficient estimate of the interaction term (Ramadan × Muslim × Female) in a specific regression. The row number of the cell and identifies the dependent variable of the regression whose estimates are reported in that row. For example, the estimate in 1st row and 1st column reports the coefficient of the interaction term for regressions where the dependent variable is the individual time spent on major division 1 (employment) for the age group $[6,16]$. In addition to the all possible interactions between Muslim, Ramadan and Female dummy variable, each regression controls for FSU fixed effects and marital status.
Standard errors, clustered at an district levels, are reported in the parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Online Appendix:
Supplementary Tables and Figures

Table 11: Group Specific Summary Statistics of Major Variables

	Mean (SD)	
	Non-Muslim	Muslim
Euclidian Distance (56)	438.6	466.4
	(145.6)	(144.4)
Ramadan	0.0904	0.0993
	(0.287)	(0.299)
Household Size	4.032	4.433
	(1.582)	(1.804)
Proportion of Household Members:		
- < 6 years	0.114	0.156
	(0.171)	(0.190)
- Male and 6 years $\leq$ age $\leq$ 15 years	0.0626	0.0733
	(0.121)	(0.128)
- Female and 6 years $\leq$ age $\leq$ 15 years	0.0496	0.0597
	(0.108)	(0.116)
- Female and 16 years $\leq$ age $\leq$ 65 years	0.356	0.337
	(0.143)	(0.140)
- $>$ 65 years	0.0532	0.0332
	(0.159)	(0.121)
Average adult male education (years)	8.059	6.365
	(4.676)	(4.446)
Average adult female education (years)	6.347	5.204
	(4.849)	(4.338)
Pucca House	0.626	0.635
	(0.484)	(0.481)
LPG access	0.671	0.646
	(0.470)	(0.478)
Monthly Per Capita Expenditure (Rs.)	2829.1	2373.4
	(2415.0)	(1628.4)

Notes: This table is based on *mixed gender households*: households of the TUS-2019 data that have members in the age group above 6 years for both genders. The objective of this table is to describe the sample dataset and not obtain nationally representative estimates. Thus sampling weights have not been used in the construction of the mean and standard deviation.

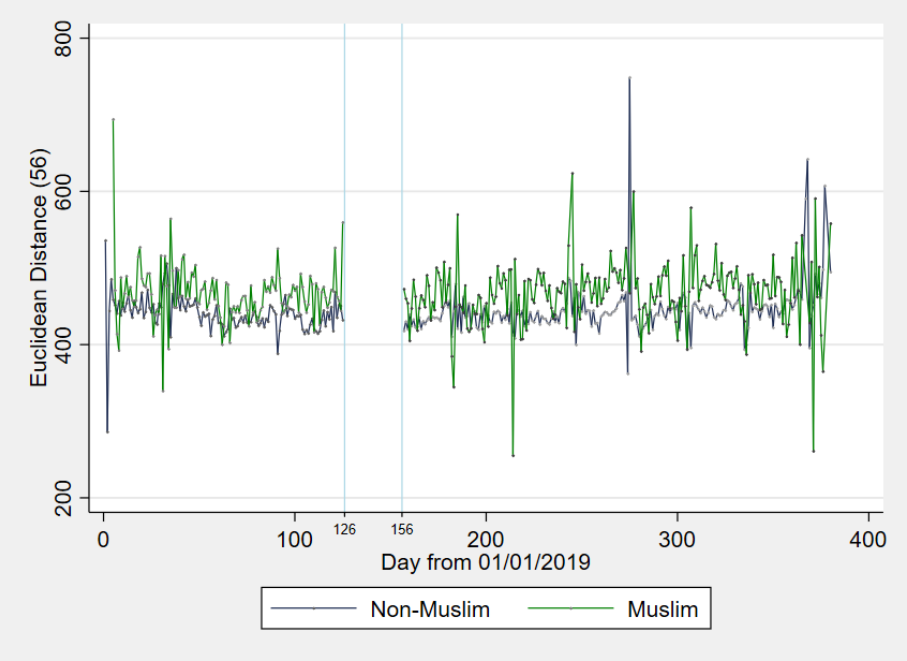

Figure 4: Trends before and after Ramadan

Table 12: Checking for Parallel Trends (for Table 2)

	Euclidian Distance (56)	
	Before Ramadan	After Ramadan
Muslim	21.65***	25.91**
	(8.05)	(11.23)
time	-0.20***	0.08***
	(0.05)	(0.02)
Muslim × time	0.08	0.01
	(0.11)	(0.04)
Observations	37603	71422

Note: Standard errors in parentheses clustered at district level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Effect of Ramadan on Gender Distance in Time Use (Rural India)

	Euclidian Distance (56)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Muslim	33.58***	19.59***	15.68***	16.17***	14.11***	16.17***	12.84***
	(3.52)	(3.24)	(2.80)	(2.84)	(2.50)	(2.56)	(2.49)
Ramadan	-8.67**	-5.94	-9.52	-0.01	-3.73	-4.03	-6.09
	(3.93)	(9.58)	(9.78)	(9.73)	(8.78)	(8.75)	(8.54)
Muslim × Ramadan	-19.32*	-26.10***	-17.79**	-24.37***	-20.16**	-20.76**	-19.06**
	(10.11)	(9.63)	(8.54)	(9.16)	(8.79)	(8.67)	(8.53)
State FE		YES					
Day of Week		YES	YES	YES	YES	YES	YES
Month FE		YES	YES				
District FE			YES				
(District X Month) FE				YES	YES	YES	YES
Demographic Control					YES	YES	YES
Education Controls						YES	YES
Economic Controls							YES
Observations	74278	73797	73797	73685	73685	72070	72070

NOTE: The list of demographic, educational and economic controls can be found in the summary statistics tables describing the datatset.

Standard errors, clustered at district level, in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Effect of Ramadan on Gender Distance in Time Use (Urban India)

	Euclidian Distance (56)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	16.57***	17.00***	18.16***	14.85***	16.07***	12.55***	12.53***
	(3.56)	(3.15)	(3.12)	(3.33)	(2.98)	(3.07)	(3.07)
Ramadan	-3.35	-15.31	-10.10	-4.43	-5.38	-4.79	-4.21
	(3.77)	(9.53)	(9.26)	(11.35)	(11.24)	(10.44)	(10.46)
Muslim × Ramadan	-17.72**	-18.95***	-16.11**	-15.35*	-11.66	-14.32*	-14.36*
	(7.40)	(7.28)	(7.00)	(8.21)	(7.55)	(7.39)	(7.38)
State FE		YES					
Day of Week		YES	YES	YES	YES	YES	YES
Month FE		YES	YES				
District FE			YES				
(District X Month) FE				YES	YES	YES	YES
Demographic Control					YES	YES	YES
Education Controls						YES	YES
Economic Controls							YES
Observations	46548	46253	46252	46180	46180	45581	45581

NOTE: The list of demographic, educational and economic controls can be found in the summary statistics tables describing the datatset.

Standard errors, clustered at district level, in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

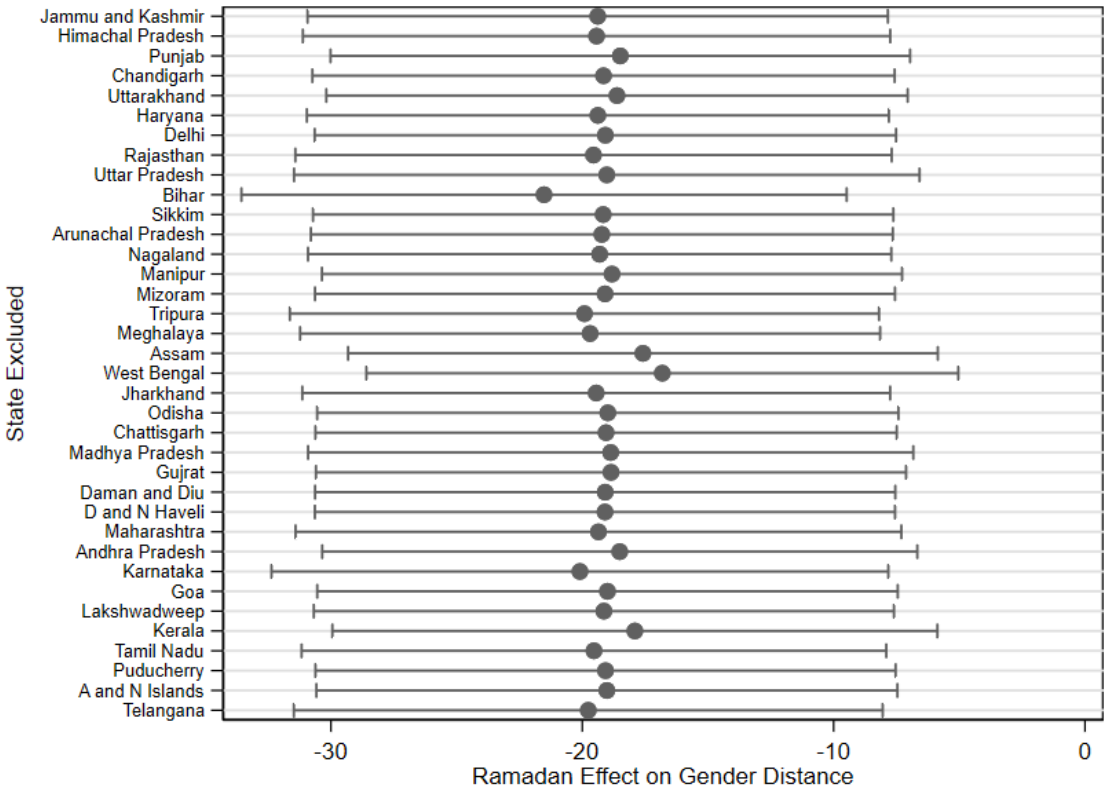

Figure 5: Ramadan Effect after exclusion of one state (or union territory)

Table 15: Classification of States into Geographic Regions

Region	States and Union Territories
Northern	Jammu and Kashmir, Punjab, Haryana, Himachal Pradesh, Chandigarh, Delhi, Uttarakhand, Uttar Pradesh, Bihar, Jharkhand
Western and Central	Rajasthan, Chattisgarh, Madhya Pradesh, Gujarat, Maharashtra, Daman and Diu, Dadra and Nagar Haveli, Goa
Eastern and North Eastern	Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya, Assam, West Bengal, Orissa
Southern and Islands	Andhra Pradesh, Telangana, Karnataka, Kerala, Lakswadweep, Tamil Nadu, Andaman and Nicobar Islands

Table 16: Heterogeniety within Muslims: Caste and MPCE Quartiles

Dependent Variable: Euclidian Distance (56)		
	(1)	(2)
OBC	-3.32	
	(4.13)	
Ramadan	-36.49*	-39.04*
	(20.99)	(22.67)
OBC × Ramadan	-14.46	
	(11.97)	
Quartile 2		5.00*
		(2.96)
Quartile 3		11.68***
		(3.80)
Quartile 4		13.83**
		(6.47)
Quartile 2 × Ramadan		0.79
		(9.19)
Quartile 3 × Ramadan		-4.81
		(12.00)
Quartile 4 × Ramadan		-12.17
		(13.64)
Observations	13596	13596

NOTES: Standard errors, clustered at district level, in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

For both the regressions, the sample is restricted to Muslim households.

Each of the two regressions controls for demographic variables, educational variables, sector, (District × Month) fixed effects and day of week fixed effects, access to LPG and ownership of a *pucca* house.