

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

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I think it is pertinent to think about some of the issues faced by Muslim women in relation to Ramadan. My mother is a great example of this. She was saddled with the double burden of strengthening her relationship with God and tending to a house full of really hungry people. The work increased for all of the women I knew during Ramadan, and I think it is worthwhile to stop and think about how the burdens of a more gruelling social and spiritual calendar are distributed within the household.

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Research Question: How does Ramadan affect the gendered use of time within Muslim households in India?

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Background

- In India as in many other developing nations, everyday time use within households is gendered.
(Dasgupta and Datta (2023), Galvez-Munoz et. al. (2011), Gamage 2010)
- How to measure intra-household gendered time use?
- Is female employment a good proxy? Not Really!
(Dasgupta and Datta (2023))
- (Value-free) gendered time use metric for a household: Euclidean or Manhattan distance between male and female time use vectors.

▶ Gender Distance Metric: Definition

▶ Gender Distance Metric vs FLFP: Mismatch Map

- Causal effect of Ramadan on economic variables of interest: maternal health, education, nutrition and labour supply.
(Almond and Mazumder, 2011; van Ewijk, 2011; Majid, 2015; Schofield, 2020; Weiner, 2021)
- Gender differences in time use and the effect of exogenous events and institutions on it.
(Galvez-Munoz et al., 2011; Gimenez-Nadal and Molina, 2013; de Bruin and Liu, 2020; Garg et al., 2020; Li, 2023)
- Gender disparities and Islamic religious institutions.
(Moghissi, 1999; Charrad, 2001; Jejeebhoy and Sathar, 2001; Moghadam, 2004; Offenauer, 2005; Alexander and Welzel, 2011; Fish, 2011; Ross, 2012)

Overview of Major Results

- Significant negative effect of Ramadan on the intra-household gender difference in time use.
- Decline seems to be mediated by a decline in gender gaps in employment, unpaid household work and learning, which compensates for the increased gender gap in community participation (incl. religion).
- Effects to be much stronger for regions with a high concentration of Muslim population suggesting the importance of communitarian ethics in ensuring a more equitable share of time.
- Heterogeneity in this effect across geographical regions. The effect is stronger outside the region of the Northern Gangetic plains.

Data

- Time Use Survey-2019 (TUS-2019) conducted by the MoSPI, GoI in 2019.
- 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 the interview to 4:00 on the day of the interview.
- ICATUS-2016 classification of activities into 56 divisions and 9 major divisions. Time use over activities adds up to 1440 minutes.
- Distance metrics calculated for either 56 divisions or 9 major divisions.
- Survey conducted over the year 2019. The date of survey reveals if a household was surveyed during Ramadan (5th May to 4th June 2019)

Empirical Strategy

Household Level Regression:

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

Coefficient of Interest: β_3 δ_t : day of survey fixed effects

μ_t : month of survey fixed effects

γ_d : geographical unit (state or district) fixed effects κ : (district \times month) fixed effects

Z_{idt} : vector of demographic, educational and economic controls at the household level.

2X2 DD Table

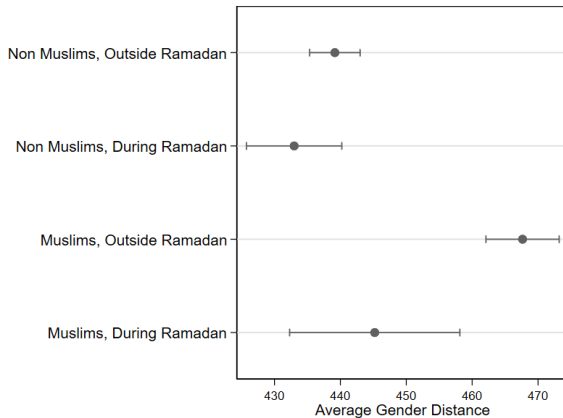
Individual Level Regression:

For major activity division $i = 1, 2, \dots, 9$,

$$Y_{jh}^i = \delta_0^i + \delta_1^i Female_{jh} + \delta_2^i (Ramadan_h \times Female_{jh}) + \\ \delta_3^i (Muslim_h \times Female_{jh}) + \\ \delta_4^i (Muslim_h \times Ramadan_h \times Female_{jh}) + \phi_h^i + Z_{jh} \alpha^i + \varepsilon_{jh}^i$$

$$\delta_4^i = \text{Ramadan Effect}_{Female}^i - \text{Ramadan Effect}_{Male}^i$$

Results



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

Summary Statistics

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

	Euclidian Distance (56)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Muslim	26.17*** (2.69)	19.98*** (2.34)	18.65*** (2.05)	15.97*** (2.09)	16.43*** (2.03)	16.19*** (2.09)	16.19*** (2.08)
Ramadan	-6.59** (2.88)	-12.97* (6.67)	-9.95 (6.21)	-0.60 (7.49)	-4.28 (6.90)	-4.69 (6.72)	-4.91 (6.76)
Muslim × Ramadan	-19.14*** (6.50)	-22.14*** (6.29)	-17.25*** (5.57)	-19.99*** (5.99)	-17.78*** (5.86)	-19.10*** (5.86)	-19.12*** (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

Robustness+Sub-Population Analysis

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

Falsification Tests

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

Heterogeneity: Geography

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

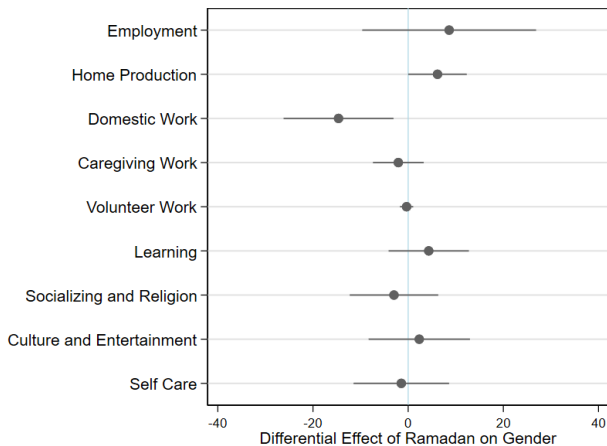
Heterogeneity: High Muslim Proportion Districts

	Euclidian Distance (56)			
	(1)	(2)	(3)	(4)
Muslim \times Ramadan \times Muslim Majority District	-51.91*** (19.31)	-46.66*** (17.66)		
Muslim \times Ramadan \times Medium Muslim Proportion District			-15.26 (18.99)	-21.78 (17.42)
Muslim \times Ramadan \times High Muslim Proportion District			-39.78** (18.23)	-28.24* (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

Impact of Ramadan on Gender Specific Time Use

Major Division	Male	Female
Employment	-16.68** (7.46)	3.09 (4.56)
Production of goods for own final use	-0.41 (3.31)	2.86 (2.34)
Unpaid domestic services	4.08* (2.38)	-7.98 (5.69)
Unpaid caregiving services	0.60 (1.23)	-0.64 (2.35)
Unpaid volunteer & trainee work	-0.52 (0.64)	-0.39 (0.46)
Learning	-8.13** (3.82)	-4.05 (3.35)
Socializing & community participation (incl. religion)	35.19*** (6.05)	28.25*** (5.24)
Culture & Entertainment	-6.17 (4.66)	-8.42 (5.33)
Self Care & Maintenance	-7.96 (5.33)	-12.71** (5.48)
Observations	117798	117798

Gender Differential Effect: Individual Level Regression



Gender Differential Effect of Ramadan: Coefficient of
Muslims \times *Ramadan* \times *Female*

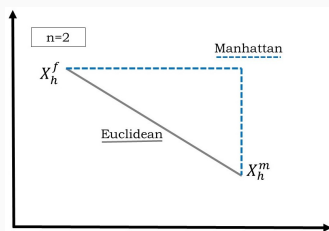
Directions of Future Work

- We also explore caste and age heterogeneities within Muslims. We do not find evidence of caste heterogeneities, but we do find evidence for the latter.
- Reorganization of time use in response to Ramadan has the 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.
- Since Ramadan has a significant negative impact on time spent on educational learning, it is important to understand the impact on educational outcomes.

Appendix

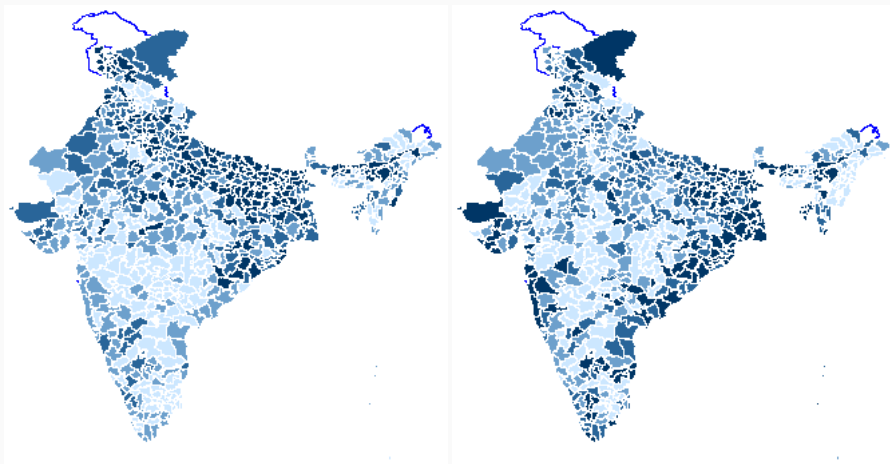
Distance Metric

- Let $X_i \in \mathbb{R}^n$ be time use vector for individual i , where n is the number of mutually exclusive and collectively exhaustive activity categories.
- Let X_h^M is the average male time use vector for household h . The average is calculated over all male individuals (≥ 6) in household h .
- Similarly, X_h^F is the average female time use vector for household h .
- We consider Euclidean and Manhattan distance between X_h^M and X_h^F : Gender Distance of household h .



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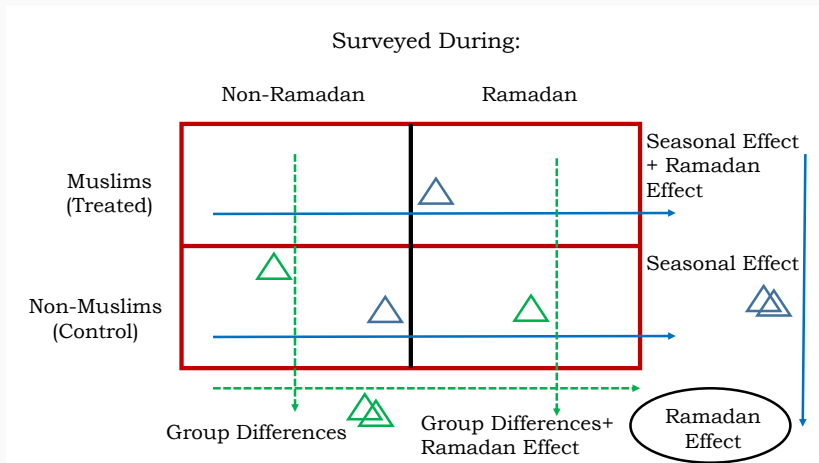
FLFP vs Gender Distance



Comparison of female unemployment (Left) and Euclidean distance (Right)

Notes: Darker shades of blue denote higher quartiles.

2 X 2 Canonical Model



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Summary Statistics

	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