



Intensity And Determinants Of Unpaid Work: A Time-Use Data Analysis In Rural And Urban India.

Sreejith S¹

PhD Scholar

Department of Economics
Central University of Kerala
Kasargode-671320.

Abstract

The present paper examines the intensity and determinants of unpaid work in India through a gender perspective. The study used Indian time use survey data 2019 for the analysis. Cross tabulation and Tobit regression model is applied for identifying various factors determining unpaid work. The analysis found gender imbalance in unpaid work and the intensity of unpaid work vary between regions. The Tobit analysis identified the prominent role of marital status, work status, religion, and social group on the time allocation of unpaid work. However, female education does not impact the burden of unpaid work because higher educated women dedicate more time than illiterate women for unpaid work. Similarly, the effect of household expenditure and household size on unpaid work is negative. But land size positively associated with unpaid work because higher land possession increases the unpaid production activities for both males and females. Overall analysis identified the significant influence of socio-economic factors selected in the Tobit model.

Keyword: Unpaid Work, Time use data, Tobit Model.

I. Introduction

In India, unpaid work is widespread in the economy, and women carry out a more significant portion of unpaid work than men. Unpaid work is unremunerated work without any market value, including unpaid domestic work, care work, and voluntary work (Hirway, 2015). The disparity in unpaid work distribution across genders in India excessively affects women. Women are primarily involved in unpaid work because of socio-cultural norms and labour market restrictions (Dutta, 2016). Similarly, female labour force participation is meagre and has been falling since the 1990s in India. The principal cause of this scenario is insufficient employment opportunities and a heavier load of unpaid work for women (Rangarajan et al., 2011).

According to empirical investigations, the persistence of patriarchal traditions and the dearth of employment possibilities in India are the root causes of the gender inequity in unpaid work (Singh and Pattnaik, 2018). The employment and unemployment survey data reveal that female labour force participation has fallen despite economic growth. Since the economic reforms in 1991, India has attained higher economic growth and increased education levels and literacy. However, women's work participation is meagre, and their engagement in unpaid activities is higher during this growth period (Rangarajan et al., 2011, Singh and Pattnaik, 2020). The heavy burden of unpaid caregiving, household chores, and volunteer work placed on women contributes to the decline in female employment. It is clear that women unpaid workers receive no financial assistance, and they come outside the protective labour laws in India (Swaminathan, 2009).

Similarly, unpaid work comes outside the realm of the system of national income production boundary. (Pradeep and Adaina, 2019). Unpaid work, including care, domestic, and voluntary work, comes outside the production boundary but within the general production boundary of SNA (Hirway, 2015). Notably, all unpaid activities are not precluded from the production boundary; activities like subsistence production, unpaid family enterprises work, and the collection of free goods come within the domain of the production boundary (Hirway and Jose, 2011). Thus, unpaid production of goods is included, whereas unpaid production of services is excluded from the production boundary of national income. The prime cause is the lack of well-designed methodologies for integrating unpaid services into the national income (Folbre, 2015).

The substantial contribution of unpaid work to reproducing the labour force and human welfare is undeniable. The unpaid time devoted to care and domestic work contribute to economic living standard and enhances social well-being (Folbre, 2015). However, unpaid work does not come under the ambit of national income accounting. In addition, the conventional employment and unemployment survey in India excluded unpaid work from the labour force and treated unpaid work as a 'non-working group' (Rajesh, 2018). However, the time-use survey assists in uncovering the hidden contribution of unpaid work to the economy. It gives detailed information on the time allocation of various activities without any socio-cultural bias (Hirway, 1999, 2007). It is a methodological instrument for gathering information regarding people's activities in a particular time period, including the time spent on all forms of work such as paid work, care and domestic work, voluntary work and personal activities (ECLAC, 2019).

Studies on unpaid work found gender inequality in unpaid work in India (Tasnim, 2020). Women expended 51 per cent of their time to unpaid work, whereas men dedicated only 33 per cent in India. (Chakraborty, 2005). Men allocate 36.2 hours to paid work and 8.8 hours to unpaid work in a week. In contrast, women spent 23.1 hours' time on paid work and 28.1 hours on unpaid work per week, threefold higher than men (Reddy. et al., 2021). Similarly, a primary-level study conducted in Assam found that higher work participation of women does not lessen the load of unpaid work and that working women have to allocate time for both paid and unpaid work. Therefore, work's dual responsibility unfavourably affects women's healthiness and well-being (Molankal, 2015). Socio-religious constraints the unavailability of other members cause the higher burden of unpaid work for a women. In addition, the lack of income for hiring labour from the market also leads to a higher load of unpaid work (Singh and Pattanaik, 2020). Women are highly engaged

or bound to participate in unpaid and home-based work in rural areas than urban areas (Hirway and Roy, 1999). Thus, the overburden of unpaid work makes women pathetic in terms of socio-economic status (Samantroy, 2020).

The unequal time allocation between men and women for unpaid work in India is highly visible. Though there is an increase in income and employment in India, women are confined to household and care activities. Still, their involvement in the labour market is meagre. Similarly, time-use studies found gender disparity in the of unpaid work time allocation in India. In this context, the present paper wants to inspect the intensity of unpaid work between males and females in India. In addition, the determining factors of unpaid work are compared between rural and urban areas,

II. Objectives and Methodology

Based on the research gap and identified research issue, the present paper wants to identify and compare the determining factors of unpaid work across rural and urban areas of India. Specifically, the objective is to explore the influence of various socio-demographic factors on the time allocated to unpaid work by men and women in rural and urban regions. The study uses the Indian Time Use Survey 2019 unit-level data for addressing the identified issue. A sample of 445170 individuals comprising 272049 from rural (137730 male and 134319 female) and 173121 from urban areas (male-88914 and female-84207) is selected for the analysis. The extensive data set is viable for comprehensive analysis of the incidence of unpaid work across genders and regions. Gender disparity is examined by comparing the average time allocation of unpaid work between men and women using the cross-tabulation technique. Additionally, the Tobit regression model is used to identify the key determining factors of unpaid work in India. The Tobit model address potential issues from zero observations and helps separate the socio-demographic factors significantly affecting unpaid work time.

III. Framework of the Model

The Tobit regression model is employed to identify factors influencing the time allocation to unpaid activities. Ordinary Least Squares (OLS) regression is often adequate for determining the factors affecting a dependent variable. However, time-use data poses unique challenges, and it includes instances where some individuals spend zero minutes on certain activities, leading to censored observations. Using OLS on this data type could result in biased estimates, as it fails to account for the censoring inherent in time-use records. A censored or Tobit regression model is more appropriate to address this limitation. The Tobit model is represented as follows:

$$Y^* = \beta_0 + \beta_i X_i + \mu_i$$

$$Y^* = \beta_0 + \beta_1 \text{household size}_i + \beta_2 \text{land}_i + \beta_3 \text{household expenditure}_i + \beta_4 \text{age}_i + \beta_5 \text{education}_i + \beta_6 \text{work_status}_i + \beta_7 \text{religion}_i + \beta_8 \text{marital status}_i + \beta_9 \text{social_group}_i + \mu_i$$

Where Y^* is the observed time spent on unpaid activities.

$$Y_i = 0 \quad \text{if } Y^* \leq 0 \text{ or}$$

$$Y_i = Y^* \quad \text{if } Y^* > 0$$

μ_i = error terms.

where $\mu_i \sim N(0, \sigma^2)$ and where Y_i are the realised or actual time allocated for unpaid activities.

The parameters of the model are estimated by applying the maximum likelihood method.

In this model, the relationship of the determining factors with the unpaid work is examined by the nature of coefficient values.

IV. Results and Discussion

Table 1 shows the time devoted to unpaid work by males and females in India. The data reveals that females spent more time on unpaid work in rural and urban India. On the other hand, males are less engaged in unpaid work compared to women. Males allocate only 87 and 44 minutes for unpaid work in rural and urban areas.

Table 1 Details of time spent on Unpaid work in India (minutes)

Sector	Gender	Time
Rural	Male	87
	Female	333
	Difference	246
Urban	Male	44
	Female	295
	Difference	251
Rural + Urban	Male	70
	Female	318
	Difference	248

Source: Time use survey 2019.

In contrast, females dedicate 333 minutes in rural areas and 295 minutes in urban areas. The gender difference is 246 minutes in the rural and 251 minutes in the urban regions. Both males and females devote more time to rural areas than urban areas. Thus, the data underscores the prevalence of a higher burden of unpaid on women in India. The rural-urban comparison shows higher time allocation in rural than in urban zones. This is mainly due to the infrastructure development in urban regions.

The Tobit regression model is used to analyse the factors determining unpaid work. The model uses nine variables based on the inference drawn from the previous studies and preliminary analysis. The factors used in the model are depicted in Table 2, and the Tobit regression model result is presented in Table 3.

Table 2 Description of variables

Sl. No.	Variables	Type
1	Household Size	Continues
2	Land Possession	Continues
3	Household Expenditure	Continues
4	Age Group	Categorical
5	Education	Categorical
6	Work Status	Categorical
7	Religion	Categorical
8	Marital Status	Categorical
9	Social Group	Categorical

The Tobit model analyses the influence of socioeconomic factors on unpaid work. Among the continuous variables, household size and household negatively influence unpaid work for both males and females. However, the coefficient value for household expenditure is very low, indicating the minute effect on unpaid work. At the same time, the relationship between household size and urban males is more pronounced, and the coefficient value is 9.119. The working age group (15-59) disbursed more time on unpaid work than other age groups for both males and females in rural and urban regions. Notably, higher-educated women dedicate considerably more time to unpaid work than illiterate in rural and urban regions, and the results are highly significant. However, the results of education for men are not statistically significant. Thus, increasing women's education level does not reduce the responsibility of unpaid work. In the case of work status, those confined to domestic duties perform more unpaid work; the results are significant for both men and women.

The religion-wise result reveals that Christian women devote less time in rural areas. On the contrary, Hindu women devote less time in urban areas than other groups. Muslim men tends to dedicate significantly less time to unpaid work than other religious groups in both rural and urban settings. Similarly, married women are the prime doers of unpaid work in the household. The coefficient values are higher than those of other marital statuses and significant for married women. On the other hand, men belonging to the widowed category allocate substantial time for unpaid work in both rural and urban areas. Analysing the social group found a higher incidence of unpaid work among the ST category males and females than other social groups.

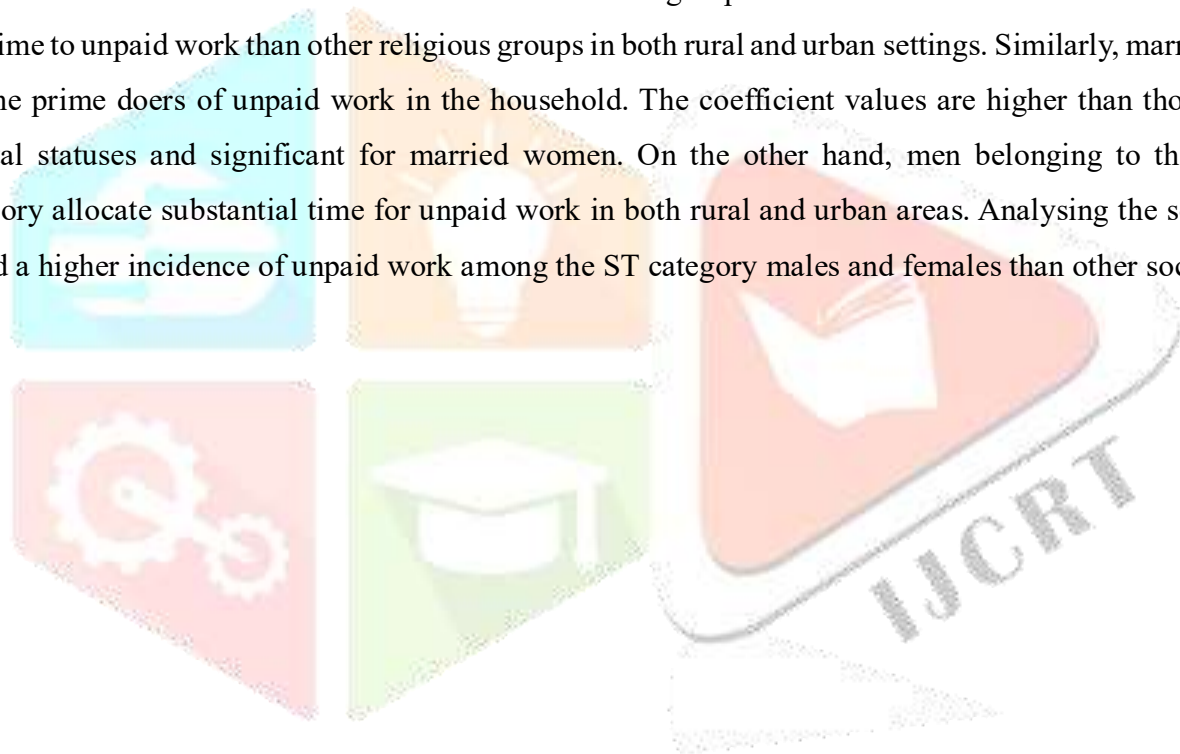


Table 3 Determinants of Unpaid Work in India- Tobit Regression

Factors	Rural		Urban	
	Male	Female	Male	Female
Household size	-0.416 (-1.02)	-2.805*** (-10.06)	-9.119*** (-19.95)	-1.351*** (-3.93)
Land possessed	3.895*** (17.29)	1.325*** (7.97)	3.164*** (12.16)	0.68*** (2.75)
Household expenditure	-0.003*** (-19.27)	-0.003*** (-25.65)	-0.001*** (-12.15)	-0.002*** (-28.20)
Age (15-59)				
6 To 14	-101.886*** (-28.79)	-155.186*** (-62.47)	-86.16*** (-19.80)	-147.232*** (-45.18)
60 And above	-3.583 (-1.47)	-108.095*** (-59.70)	-17.466*** (-5.54)	-127.649*** (-58.32)
Education (Not Literate)				
Below Primary	-4.495 (-1.65)	2.357 (1.33)	1.766 (0.41)	5.706** (2.04)
Primary	3.1 (1.27)	32.8*** (20.5) ***	7.184 (1.91)	31.635*** (13.19)
Upper Primary	1.387 (0.6)	37.314*** (23.89)	4.843 (1.4)	43.883*** (19.84)
Secondary And above	-7.568*** (-3.25)	33.65*** (21)	4.57 (1.41)	45.339*** (22.37)
Diploma And All	4.865 (0.97)	20.613*** (4.64)	13.557 (2.9)	40.788*** (10.41)
Graduate And above	-2.083 (-0.6)	34.888*** (12.76)	18.214*** (5.23)	47.106*** (20.4)
Work Status (Unemployed)				
Self Employed	33.62*** (6.6)	15.852** (2.47)	-53.505*** (-10.80)	-29.028*** (-4.74)
Regular Wage/ Salaried Employee	-94.245*** (-17.50)	-112.241*** (-16.49)	-62.644*** (-12.85)	-110.371*** (-18.89)
Casual Labour	-60.823*** (-11.72)	-79.175*** (-12.11)	-46.349*** (-8.84)	-50.235*** (-7.50)
Attended Educational Institutions	-128.292*** (-24.31)	-156.617*** (-24.65)	-108.906*** (-21.06)	-137.577*** (-23.88)
Attended Domestic Duties	111.51*** (14.88)	85.13*** (13.51)	115.035*** (15.28)	83.98*** (14.82)
Others	-86.862*** (-14.55)	-66.931*** (-9.98)	-13.552** (-2.35)	-52.846*** (-8.33)
Religion (Hindu)				
Islam	-2.132 (-0.89)	14.415*** (8.84)	-12.223***	8.386***
Christianity	37.352*** (11.54)	-13.026*** (-5.62)	42.613*** (10.85)	19.723*** (6.59)
Others	27.443*** (7.68)	25.868*** (10.22)	-4.304 (-1.04)	8.397*** (2.71)
Marital Status (Not Married)				
Currently Married	72.316*** (31.54)	178.979*** (86.01)	52.865*** (22.45)	209.487*** (85.06)
Widowed	131.141*** (29.12)	80.797*** (29.55)	92.983*** (17.14)	116.362*** (36.46)
Divorced or separated	114.629*** (11.67)	80.827*** (11.53)	70.848*** (6.39)	113.618*** (15.92)
Social Group (Others)				
Scheduled Tribe	44.796*** (18.5)	30.538*** (17.95)	28.719*** (8.29)	25.048*** (9.5)
Scheduled Caste	1.558 (0.68)	9.607*** (6.13)	5.644 (2.26)	14.822*** (7.8)
Other Backward Class	-1.096 (-0.58)	-2.944** (-2.28)	3.098 (1.68)	7.79*** (5.53)
Constant	-3.579 (-0.63)	229.999*** (35.21)	-9.867 (-1.66)	144.732*** (23.72)
variance	50371.29	29077.62	35387.99	26794.53

Source: Estimated

The Tobit analysis reveals several factors that influence unpaid work. Among the household features, household size negatively influences unpaid work and land possession shows a positive association with

unpaid work. However, household expenditure does not exhibit a significant influence on unpaid work. Age group, marital status, work status, religion and social group influence the time use pattern of female unpaid work. However, the female increased education level does not curtail the burden of unpaid work

V. Conclusion

The study attempted to uncover the intensity and determining factors of unpaid work in India with a special focus on women. The preliminary analysis shows that women contribute more time for unpaid work than men in India. Compared to urban areas, men and women devote significantly higher time for unpaid work in rural areas. Following this, the study identified the determining factors of unpaid work using a Tobit regression model. The unique features of the time use data make the Tobit model an appropriate technique for the objective. The Tobit analysis reveals valuable insights into the various factors determining unpaid work.

This study identified the key factors that significantly influence the unequal distribution of unpaid work between men and women. The study found that household expenditure does not considerably influence female unpaid work. However, land possession positively influences unpaid work. Because higher land possession increases the unpaid production activities for both males and females. At the same time, household size negatively influences unpaid work. A larger household size eases the responsibility due to the potential shared burden of unpaid work among household members. Notably, higher-educated women allocate significantly more time for unpaid work than illiterate women, which indicates that educational level advances do not influence the burden of unpaid female work. Marital status and work status plays a prominent role in the distribution of male and female unpaid work. However, married women face a higher burden of unpaid work, and married men are less engaged in unpaid work. Work status also influences unpaid work, but the intensity varies between genders and regions. Similarly, religion and social groups highly influence unpaid work. The below social group category shows a higher burden of unpaid work than other social groups. Religion influence varies between genders and regions.

The analysis found a notable impact of marital status, work status, religion, and social group on the time allocation of unpaid work with distinct patterns across genders and regions. These findings highlight the important socioeconomic factors influencing female unpaid work in India. This is vital for implementing policies addressing gender disparity and improving female participation in economic activities, specifically in rural and urban settings. However, due to its cross-sectional nature and model constraints, the analysis may not capture the full dynamics of female unpaid work in India. Future research based on additional socio-economic factors can contribute to the present study. Overall, the present study contributes to understanding the gendered dynamics of unpaid work and can inform gender-sensitive policies aimed at addressing the issue of gender disparity in unpaid work.

References

- [1] Chakraborty, L. S (2005). Public investment and unpaid work in India: selective evidence from time use data. Unpaid Work and the Economy: Gender, Time Use and Poverty in Developing Countries.
- [2] Dutta, S. (2016). The Extent of Female Unpaid Work in India: A Case of Rural Agricultural Households. Asia-Pacific Population Journal, 31(2).

- [3] ECLAC (Economic Commission for Latin America and the Caribbean) (2019), Time-use measurements in Latin America and the Caribbean.
- [4] Folbre, N. (2015). Valuing non-market work. Human Development Report Office. UNDP, Think Piece.
- Government of India. (2000). Report of the Time Use Survey 1998–99. Central Statistical Organization. Ministry of Statistics and Programme Implementation. New Delhi: Government of India.
- [5] Government of India. (2020), Time Use Survey 2020, New Delhi: National Statistical Organisation.
- [6] Hirway, I. (1999, December). Estimating work force using time use statistics in India and its implications for employment policies. In international seminar on time use studies (pp. 7-10).
- [7] Hirway and Roy, 1999). Women in rural economy: The case of India. Indian Journal of Agricultural Economics, 54(3), 251-271.
- [8] Hirway, I. (2007). Time spent on paid work in India: Issues emerging from measuring paid work using time use statistics. In IATUR Conference 2007.
- [9] Hirway, I., & Jose, S. (2011). Understanding women's work using time-use statistics: The case of India. Feminist Economics, 17(4), 67-92.
- [10] Hirway, I. (2015). Unpaid work and the economy: linkages and their implications. Indian Journal of Labour Economics, 58(1), 1-21.
- [11] Molankal M (2015). Women's Paid and Unpaid Work in Unorganised Sector. International Journal of Social Science and Humanities, Volume 1; Issue 1; November 2015; Page No. 23-29.
- [12] Pradeep, D., & Adaina, K. C. (2019). "Situating women's unpaid work in a development context." Asian Journal of Multidimensional Research (AJMR), 8(5), 108-122.
- [13] Rajesh I.D. (2018). "An Enquiry into The Nature of Unpaid Domestic Activities Among Females In India." Labour & Development, Vol. 25, No. 2, December 2018.
- [14] Rangarajan, C., Kaul, P.I. and Seema (2011). "Where is the Missing Labour Force?." Economic and Political Weekly, 68-72.
- [15] Reddy, A. A., Mittal, S., Singha Roy, N., & Kanjilal-Bhaduri, S. (2021). "Time allocation between paid and unpaid work among men and women: an empirical study of Indian villages." Sustainability, 13(5), 2671. <https://doi.org/10.3390/su13052671>
- [16] Samantroy, E. (2020). Women's Participation in Domestic Duties and Paid Employment in India: The Missing Links. The Indian Journal of Labour Economics, 63(2), 437-457.
- [17] Singh, P., & Pattanaik, F. (2018). "Economic status of women in India: paradox of paid–unpaid work and poverty." International Journal of Social Economics.
- [18] Singh, P., Pattanaik, F (2020). "Unfolding unpaid domestic work in India: women's constraints, choices, and career." Palgrave Commun 6, 111 (2020).
- [19] Tasnim, G. (2020). "Making women's unpaid care work visible in India: importance and [6] challenges." Journal of International Women's Studies, 21(2), 28-35.