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Exploring Gender Disparity in Unpaid Work: A Time-Use Data Analysis in India

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Abstract

Unpaid work is an important part of human activity, and its substantial contribution to human survival and wellbeing is undeniable. However, unpaid work role in terms of labour and welfare is largely unrecognized in the economy. The disputes over incorporating unpaid work in national income accounting continue among economists. Still, unpaid activities remain categorized as non-SNA activities and omitted from the system of national income accounting. Though unpaid work accounts for a sizable portion of the global economy, official labour statistics and national income do not consider this for evaluation and accounting. Women bear the larger share of unpaid work, and the incumbrance of unpaid work curtails their labour market participation. It is also adversely affecting their mental and physical health. Considering this, the present paper made a state-wise comparison of the unpaid work distribution between males and females in India. It also highlights the time allocated to SNA, non-SNA and other residual activities between males and females. In addition, a composite gender disparity index was framed based on SNA, non-SNA, and other activities to explore the gender bias in the time spent on activities that come inside and outside the production boundary of national income.

Keywords: Unpaid Work, SNA activity, non-SNA activity.

I. Introduction

Unpaid work plays a substantial role in enhancing global well-being (Duran, 2015). Economic theories and national income accounting should have paid more attention to the importance of unpaid work. However, it is treated as a non-economic activity and comes outside the purview of macro-economic analysis (Hirway, 2015, Ferrant and Thim, 2019). Unpaid work means work without monetary reward or market transaction. In other words, it is the work performed at home to sustain a household, such as household chores, child care, and elderly care. These deeds are productive because they use scarce resources to fulfil human needs (Sweibel, 1999). However, it is not incorporated in the national income accounting, because unpaid work is not compensated by salary or wage (Pradeep and Adaina, 2019). Though unpaid work is exempted from the national income production boundary, its contribution to human development and well-being is remarkable (UNDP, 1999).

Time use survey is an efficient tool to unveil the hidden contributions of unpaid activities in the economy (Folbre, 2011). It classifies the activities into various categories and describes the time allocated for each activity. Thus, a time use survey is a feasible approach towards measuring the value of multiple types of unpaid work. (ECLAC (Economic Commission for Latin America and the Caribbean), 2019). Since the dispute over integrating unpaid work into the national income has continued among economists, time-use data aids in uncovering the quantum and vastness of unpaid work in the economy (Hirway and Jose 2011).

Subsequent studies identified the persistence of gender disparity in paid and unpaid work. The divergence is visible worldwide and very high in underdeveloped countries (Miranda, 2011, Dong and An, 2012, Ferrant, 2014). India also experiences gender disparity in paid and unpaid work. The prominent time-use studies witness the women's higher burden of unpaid activities, particularly care work and domestic work. In contrast, men dominate paid activities and are less engaged in unpaid activities (Hirway, 2015). It is evident from the time use survey 2019 that rural women expend 85.2 per cent of total time on unpaid activities and 14.8 per cent of the time on paid activities. On the contrary, men allocate only 26.5 per cent to unpaid activities, but they get 73.5 per cent of their time for paid activities. Similarly, urban women devote 82.9 per cent to unpaid work and 17.1 per cent to paid activities. It is 12.1 per cent and 87.9 per cent for men, respectively (Indian time use survey, 2019). Prior studies confirmed that socio-cultural norms and labour market conditions are the primary cause of the gender discrepancy in paid and unpaid work in India (Singh and Pattnaik, 2020).

According to the time use survey, activities are classified into SNA and non-SNA activities to give insight into the national income accounting and time use of people on economic and non-economic activities (Hirway, 2022). SNA activities cover activities included within the SNA production boundary. On the other hand, non-SNA activities are not included in the production boundary but come within the realm of the general production boundary. The detailed classification of SNA activities includes employment activities, production for self-consumption, and unpaid production goods. On the contrary, non-SNA activity comprises unpaid domestic, care and voluntary work (Time use survey, 2019). Notably, SNA does not exclude all unpaid activities from the production boundary; unpaid activities like primary production for own use, unpaid works in family enterprises and free collection of goods are included in national income. However, unpaid care, domestic work, and voluntary work are not included in the national income production boundary, which belongs to non-SNA activities (Hirway, 2010).

Comparative studies about the SNA and non-SNA activities recognised the prevalence of the uneven distribution of SNA and non-SNA activities between men and women in India (Hirway and Jose, 2009). Men aged 15-59 devote 438 minutes to SNA and 102 minutes to non-SNA activities daily, whereas women spend only 241 minutes for SNA but 361 minutes for non-SNA activities (Indian time use survey, 2019).

Gender imbalance in unpaid and paid activities and SNA and non-SNA activities prevail in India. Empirical studies identified that women are highly involved in unpaid and non-SNA activities (Chakravarty, 2015). It reflects socio-cultural norms and insufficient employment opportunities for women (Upadhyay, 2013). Since India is a diversified country, the socio and economic environment varies across states. The disparity in unpaid and non-SNA activities varies among different regions. Moreover, India's conventional employment and unemployment survey does not include unpaid activities in the labour force or unemployed group (Deshpande and Kabeer, 2021). Therefore, the immense amount of women's contribution to the nation as unpaid work is unrecognised and undervalued.

Given this background, the current study examines the intensity of unpaid work throughout India and gender disparity in SNA and non -SNA activities among all states. Since India

is a diversified nation in geography and culture, the incidence of unpaid and non-SNA work may vary. Therefore, the study investigates the gender disparity in different states, and it helps to make gender-sensitive policies for the upliftment of women. Generally, the government implement policies entirely based on the market economy. Since a more significant segment of women is involved in the unpaid economy, they do not get the benefit from it. Thus, this paper focuses on the disparity in unpaid, SNA and non-SNA activities among various Indian states.

II. Review of Literature

Relevant literature on unpaid and non-SNA work established the prevalence of gender discrepancy in paid and unpaid work, SNA, and non-SNA work in India. Studies based on primary data identified the gender imbalance in paid and unpaid work. Men devote 36.2 hours per week for paid work and 8.8 hours to unpaid work whereas women allocate 23.1 hours per week to paid work and 28.1 hours per week to unpaid activities (Reddy et al., 2021). Similarly, the time-use study confirmed the gender disparity in SNA and non-SNA activity in rural and urban India (Hirway and Jose, 2011, Deb, 2021). Men spend 42 hours and women spend 19 hours a week for SNA activity. On the contrary, men spent only four hours on non-SNA activities while women spent 35 hours for the same (Chakravarty, 2015). Similarly, there is a strong connection between SNA work and non-SNA work because macroeconomic forces significantly impact the nature and size of non-SNA activities (Hirway, 2015).

Factors including asset possession, farm size, irrigated area, literacy, marital status, and caste influence the women's time distribution on paid and unpaid work (Rajesh, 2018, Reddy et al., 2021). The burden of unpaid work also varies between regions and the size of land ownership (Bhaduri, 2018). The studies based on the NSSO employment and unemployment survey confirmed that the higher burden of women's unpaid work is due to socio-religious constraints, non-availability of other household members to perform the unpaid work and limited income to hire labour for doing unpaid work (Mukherjee and Majumder, 2015, Singh and Pattanaik, 2020).

Prominent studies found that the increased work participation of females does not reduce the burden of unpaid work and women's education level does not significantly influence the time allocation of unpaid work (Bhatia, 2002, Shimray, 2004, Molankal, 2015).). It confirms the existence of socio-cultural norms and the paucity of congenial employment opportunities for women in India. Asymmetric information on accessing employment and social norms are the major constraints for women's paid work in the labour market. Therefore, employment opportunities for women can be raised by implementing policies which facilitate part-time or flexible work arrangements for women. Similarly, providing skill training and gender-based employment quotas can increase female paid work (Fletcher et.al, 2017).

The debate on including unpaid work in the national income estimation is ongoing in academia. The time use data clearly distinguishes between SNA and non-SNA activities to understand the activities that come within and outside the national income production boundary. Non-SNA activities are unpaid activities which are excluded from national income. It is visible that women are primarily engaged in non-SNA activities than men. Therefore, women's contribution to non-SNA activities is hidden in the economy. Similarly, the responsibility of non-SNA activities curtails their engagement in SNA activities and other activities. Thus, the time allocated to non-SNA and unpaid activities affect the SNA and other activities. Therefore, examining the time allocated to SNA, non-SNA and other activities is inevitable to understand individuals' contribution inside and outside the national income production boundary.

It is evident that the disparity in SNA and non-SNA activities varies across regions due to India's cultural and geographical divergence. Previous studies on this area did disparity analysis on a particular state or India as a whole. However, India is a diversified nation

in culture and geography, and the prevalence of SNA and non-SNA may vary across regions. Therefore, the present paper wants to compare the gender disparity in all states and union territories of India grouped into six regions. Further, the gender perspective analysis gives insights into women's role in total activities, including other residual activities. Because the burden of women's non-SNA activities ultimately leads to time poverty for women. Since women's unpaid or non-SNA activities in the economy are unrecognised and under-valued in the economy, this paper attempts to unveil the economic and non-economic contribution of women to the economy of India.

The paper initially compares the incidence of unpaid work among all states and union territories of India. Then it frames a gender disparity index (GDI) considering SNA, non-SNA and other activities to understand the difference in male and female contribution to SNA and non-SNA activities. In addition, the GDI index is compared among all states and regions to frame a GDI rank for all states and union territories. Therefore, it helps to understand the depth of gender disparity in different regions, thereby implementing policies for reducing the burden of women's non-SNA or unpaid work as well as adopting suitable employment opportunities for women to ensure their labour market participation.

III. Materials and methods

The present paper focuses on exploring the gender disparity in SNA and non-SNA work across different states in India. The data is selected from the Indian Time Use Survey conducted by NSSO (National Sample Survey of India) in 2019. The data on time allocation is taken from all states and union territories. It has been further grouped into six regions such as north, central, northeast, east, west, and south regions. The time allocated to different activities is examined using simple cross-tabulation techniques. In addition, a gender disparity index is developed to compare the gender disparity among India's different states and union territories. It also depicts state-wise rank in gender disparity to perceive the intensity of gender disparity among different states of India.

IV. Time Allocation on Unpaid Work in India

The time distributed on unpaid work is examined to identify the intensity of unpaid work in various states. Unpaid work includes care, domestic, voluntary, and unpaid work in family enterprises and collection of free goods. Table 1 shows the state-wise average time allocation for unpaid work between males and females in India. It also shows the absolute difference in time allocation between males and females. Time allocation per day is estimated by considering all the activities in the time slot and the average time is given per person rather than participants. The average time allocated per person is estimated by the total time allocated on a particular activity divided by the total number of persons. Similarly, considering all activity in the time slot indicates that all activities performed, including major and minor activity, is reckoned to estimate average time.

Table 1 data shows that females are more engaged with unpaid work in every state. On average, females perform five times more unpaid work compared to men all over India. It is four times in rural areas, whereas seven times in urban areas. However, in terms of time allocation, rural women devote 317 minutes, and urban women devote 276 minutes a day to unpaid work. The absolute difference is higher for women in urban areas than in rural areas. However, rural women devote more time to unpaid work than urban women in all states except Goa, Tamil Nadu, Telangana, Andaman, Dadra and Nagar Haveli. In rural areas, the absolute difference is low in Arunachal Pradesh and Nagaland and higher in Delhi, Punjab, Telangana, Puducherry and Chandigarh. In urban regions, the absolute difference is low in North-eastern states like Meghalaya, Nagaland, Arunachal Pradesh and Assam. Similarly, the absolute difference is low in Goa state and more extensive in other states. The absolute difference is higher in Maharashtra, Gujarat, Haryana (nine times), and Rajasthan (10 times). Notably, comparing absolute

differences in the rural and urban regions reveals that the disparity is higher in urban regions.

It is evident that females perform the major part of unpaid work across India. The prevalence of differences in the cultural and social systems and geographical locations significantly influence the extent of unpaid work. The data shows that disparity is higher in urban areas compared to the rural because the agricultural sector provides considerable employment opportunities for rural women. Similarly, the disparity is lower in north-eastern states compared to other states due to the socio-cultural difference. The findings reveal the dominance of gender disparity in the time allocation of unpaid work in all states and union territory of India.

Table 1 Average Time Spent on Unpaid Work in India.

Region	States	Rural			Urban			Rural +Urban		
		Male	Female	*	Male	Female	*	Male	Female	*
North	Chandigarh	45	344	8	33	251	8	33	254	8
	Delhi	46	311	7	37	280	8	37	281	8
	Haryana	57	305	5	27	256	9	46	288	6
	Himachal Pradesh	94	340	4	45	237	5	89	331	4
	Jammu & Kashmir	103	313	3	37	264	7	88	301	3
	Punjab	44	318	7	39	300	8	42	312	7
	Rajasthan	74	324	4	28	275	10	62	313	5
	Uttarakhand	110	379	3	47	285	6	96	361	4
Central	Chhattisgarh	89	294	3	38	267	7	79	289	4
	Madhya Pradesh	106	313	3	36	274	8	89	304	3
	Uttar Pradesh	99	323	3	40	262	7	86	310	4
East	Bihar	80	373	5	60	350	6	78	370	5
	Jharkhand	133	362	3	56	298	5	118	350	3
	Odisha	82	338	4	47	291	6	77	332	4
	West Bengal	61	340	6	45	278	6	56	322	6
North-east	Arunachal Pradesh	209	392	2	78	338	4	196	387	2
	Assam	136	371	3	92	360	4	131	370	3
	Manipur	73	279	4	67	287	4	72	281	4
	Meghalaya	110	275	3	74	241	3	106	271	3
	Mizoram	131	378	3	75	344	5	107	363	3
	Nagaland	159	343	2	81	282	3	135	325	2
	Sikkim	96	290	3	66	274	4	88	287	3
	Tripura	86	357	4	68	306	5	82	345	4
West	Dadra & Nagar Haveli	85	328	4	60	369	6	70	345	5
	Daman & Diu	40	346	9	44	336	8	43	338	8
	Goa	74	264	4	90	290	3	84	279	3
	Gujrat	54	301	6	32	295	9	43	298	7
	Maharashtra	53	286	5	32	279	9	44	283	6
South	A & N Islands	52	244	5	48	269	6	50	252	5
	Andhra Pradesh	42	254	6	30	242	8	39	250	6
	Karnataka	91	304	3	34	279	8	67	294	4
	Kerala	60	291	5	56	286	5	58	289	5
	Lakshadweep	55	326	6	47	311	7	49	315	6
	Puducherry	60	274	5	46	260	6	50	265	5
	Tamil Nadu	38	243	6	36	255	7	37	248	7
	Telangana	35	229	7	34	244	7	35	235	7
India		**80**	**317**	**4**	**39**	**276**	**7**	**67**	**305**	**5**

Source: Time use survey of India 2019.

Note: 1 * Represents the difference in unpaid work between males and females in terms of no. times/fold.

2 Time spent for unpaid work is given by considering all the activities performed in a time slot.

V. SNA, Non-SNA, and Other Activities.

The system of national income accounting precludes unpaid work from the national income production boundary. However, time-use statistics consider all human activities and distinguish activities into SNA, non-SNA, and other activities. SNA activities indicate the system of national income activities included within the national income production boundary. Non-SNA activities come outside the production boundary but inside the general production boundary of national income. Other activities consist of leisure, personal care, learning and socialising activities.

5.1 SNA and non-SNA Activities

System of National Income Accounting (SNA) is an internationally concorded standard set of recommendations to compile and measure economic activities. SNA provides the basis for measuring and comparing national income internationally. The SNA has two production boundaries: the SNA production boundary and the SNA general production boundary. SNA production boundary considers only economic production activities, whereas the general production boundary includes non-economic production activities like unpaid production of services in the household. Time use survey is better approach to understand the activities come in the realm of national income accounting. Because time-use survey clearly outlines the comprehensive information on SNA and non-SNA production activities to clarify the status of activities that come within or outside the production boundary of national income estimation.

SNA production activities are the activities that come within the production boundary of national income. It comprises employment-related activities, production of goods for own consumption, unpaid trainee work, and unpaid voluntary and community or organization-based production of goods. On the other hand, non-SNA activities are unpaid activities that come outside the realm of the national income production boundary. It consists of unpaid domestic, care, voluntary work (services only) and community or organization-based work (services only).

The activity classification in time uses statistics, and their connection to the “system of national income accounting” is depicted in Figure 1.

Figure 1. Work and its Relation to System of National Income Accounting.

Intended destination of production	For own final use		For use by others					
Types of work	Own-use production work		Employment (work for pay or profit)	Unpaid trainee work	Other work activities	Volunteer work		
	of services	of goods				In market and non-market units	In households producing	
							goods	services
Relations to SNA		Activities inside the SNA production boundary						
		Activities inside the SNA general production boundary						

Source: Resolution 1 concerning statistics of work, employment and labour underutilisation, 19th ICLS,

ILO Geneva, 2013.

Figure 1 shows the activities classified in the time use survey and their relationship to the system of national income accounting. There are two classification of SNA boundaries: SNA production boundary and SNA general production boundary. The activities comprising employment, unpaid trainee work, other work activities and the own-use production of goods come with in production boundary. However, own-use and voluntary production of services are excluded from the production boundary and not measured in national income. Similarly, the own-use production of services includes care and domestic work also not come under SNA production boundary but these are included in general production boundary. The lack of methodology and the absence of efficient statistical techniques is the primary cause of excluding these activities from the national income.

5.2. Gender Disparity in India.

This section deals with the activities gender disparities in India's states and union territories. The data is taken from only the participants of these activities. The average time is estimated by dividing the number of participants from the total time allocated by participants in a particular activity.

The gender disparity index is developed based on the Gender-related Development index given

in the United Nations human development report 1995 and methodology adopted in Bhatia's (2002) research paper on "measuring gender disparity based on time use statistics". The gender disparity index is formed by taking SNA, non-SNA and other activities. The absolute difference is initially calculated for each activity to make a composite index. The difference in men's and women's time allocation to SNA activities represents disparity in the market sector, and disparity in non-SNA activities indicates the disparity in household production activities. Similarly, the disparity in other activities indicates the disparity in time devoted to self-care, learning, socialising, and leisure activities. The Gender disparity index is developed by considering SNA, non-SNA and other activities. Therefore, it enables us to explore the gender dimensions of time allocation on both economic and non-economic activities.

The index value is calculated by finding the absolute difference between each activity. Then index value is calculated for each state by the following method. Finally, the composite index value is estimated by taking the average value index value of SNA, non-SNA and other activities.

$$Index\ value = \frac{(actual\ value - minium\ value)}{(maxium\ value - minium\ value)}$$

$$Gender\ disparity\ index = \sum_{j=1}^{3} (Index\ value)/3$$

As observed in the literature, women are primarily engaged in non-SNA activities compared to men. It is evident that women undertake three times more non-SNA work than men in both rural and urban India. The data on these activities is given in three Tables: Tables 2,3 and 4. Table 2 represents the data on the north and central regions, Table 3 represents the east and north-east regions, and Table 4 represents the west and South regions. The regional-wise comparison would give some valuable insights since India is divergent in culture and geography.

5.2.1 Time allocation on SNA non-SNA and other activities

State-wise comparison of absolute difference shows women perform three to four times non-SNA work in every state. On the contrary, men devote more time to SNA activities compared to women, In rural India, men spend 405 minutes on SNA activities, while women spend only 225 minutes daily. For non-SNA activities, women devote 339 minutes, while men contribute only 105 minutes.

Similarly, men get 1139 minutes for other activities, whereas women get 1067 for the same. At the same time, men allocate 478 minutes, and women allocate 273 minutes for SNA activities in urban regions. The time allocation of other activities for men is 1119 minutes, and for women is 1107 minutes. Rural men in Punjab, Gujarat and Tamil Nadu devote more time to SNA activities than in other states. It is lower in north-eastern states such as Arunachal Pradesh, Meghalaya and Nagaland. Similarly, urban men's time allocation on SNA is higher in Rajasthan, Punjab and Telangana.

The average time allocation for non-SNA is higher in Bihar for rural women, where women spend 431 minutes a day for non-SNA work, and it is lower in Telangana, 231 minutes. On average, men devote only 105 minutes a day to non-SNA work in rural India, it is lower in Haryana, 86 minutes and higher in Delhi, 157 minutes a day. In urban areas also, Bihar women allocate more time compared to other states, 417 minutes a day to non-SNA work, whereas Megha-

laya women allocate the least time, 273 minutes. Similarly, Haryana and Chhattisgarh men allocate less time to non-SNA work, 85 and 84 minutes, respectively. It is higher in Tripura and Manipur men, 124 and 126, respectively.

The gender disparity in SNA and non-SNA activities is visible in India. The time allocation for these activities is interdependent. SNA indicate the time spent on paid or income-generating activities, non-SNA deals with unremunerated unpaid activities. Other activities include time left for leisure, learning and personal care activities. All these activities are affecting the overall time allocation of individuals.

5.2.2 Gender Disparity Index

It is observed that in rural India, the gender disparity index is 0.56, which is higher than in urban India at 0.31. Segregated indices reveal that SNA disparity is higher in rural (0.68) than in urban (0.39). However, the disparity in non-SNA activity is higher in urban areas (0.44) than in rural (0.45). It indicates the prevalence of higher female unemployment in the urban region. Though the disparity in non-SNA is higher in the urban region, the disparity in other activities is very low compared to the rural region.

The region-wise comparison reveals that the gender disparity is higher in both rural and urban eastern regions, which is higher than the national average. All these are economically backward states where women have to spend more time on non-SNA activities. On the other hand, gender disparity seems to be lower in the southern region, where the disparity is lower than the national average except in the union territory Lakshadweep. However, it is higher than the national average in urban Kerala and Lakshadweep. In the rural West region, GDI is lower than the national average except in Daman and Diu. But in the urban areas, it is higher than the national average.

In the rural northern region, Chandigarh, Haryana's GDI appears to be higher than India's, and the GDI is closer to the national average in Rajasthan and Uttarakhand. The GDI is very low in Delhi 0.13in rural areas and 0.24 in Urban areas. Notably, the central region GDI is almost closer to the national average in rural and urban areas. It is observed that the GDI value is divergent among Northeastern states; Sikkim has a lower value of 0.26, whereas Assam's GDI is 0.70 in the rural area, and it is 0.12 and 0.56, respectively, in the urban region.

State-wise analysis shows that the overall gender disparity in rural areas is higher in Bihar, Assam and Odisha; the value is greater than 0.70. Similarly, it is higher in Union territories like Lakshadweep and Puducherry. In rural regions, the gender disparity is very low in Delhi (0.13), followed by Sikkim (0.26), Telangana (0.30), Meghalaya and Tamil Nadu (0.35). In urban areas, the gender disparity is low in Sikkim (0.12), Himachal Pradesh (0.16), Meghalaya and Telangana (0.18) and Delhi (0.24). On the other hand, the disparity is higher in Bihar (0.62), Assam (0.56) and Arunachal Pradesh (0.53). Among the union territories, Chandigarh and Puducherry show a low disparity of 0.21 and 0.24, respectively. It is hugely higher in Dadra & Nagar Haveli (0.93). It is evident that the gender disparity is more in rural regions as compared to the urban regions among all states and union territories except Delhi and Dadra & Nagar Haveli.

Table 2 Gender Disparity in Time Allocation for SNA, Non-SNA and Other Activities in North and Central Region.

Sl. No.	States	Activities	Rural					Urban					Total (Rural + Urban)				
			Male	Female	Absolute* Difference	Disparity Indices	GDI	Male	Female	Absolute* Difference	Disparity Indices	GDI	Male	Female	Absolute* Difference	Disparity Indices	GDI
North Region																	
1	Chandigarh	SNA	519	282	237	0.89	0.62	481	376	105	0.08	0.21	482	374	108	0.09	0.19
		Non-SNA	100	377	277	0.73		81	301	220	0.37		82	304	222	0.31	
		Others	1021	1059	38	0.24		1091	1116	25	0.18		1088	1114	26	0.15	
2	Delhi	SNA	478	480	2	0.00	0.13	500	378	122	0.13	0.24	500	378	122	0.16	0.21
		Non-SNA	157	382	225	0.38		111	355	244	0.53		112	355	243	0.46	
		Others	1111	1123	12	0.00		1107	1116	9	0.07		1107	1116	9	0.00	
3	Haryana	SNA	400	203	197	0.74	0.60	445	287	158	0.25	0.25	416	222	194	0.50	0.42
		Non-SNA	86	328	242	0.50		85	319	234	0.46		86	325	239	0.44	
		Others	1179	1108	71	0.55		1145	1141	4	0.03		1166	1120	46	0.34	
4	Himachal Pradesh	SNA	399	246	153	0.57	0.41	490	370	120	0.13	0.16	406	252	154	0.31	0.29
		Non-SNA	109	291	182	0.10		110	301	191	0.18		109	292	183	0.04	
		Others	1139	1066	73	0.57		1119	1095	24	0.17		1137	1069	68	0.54	
5	Jammu & Kashmir	SNA	430	165	265	1.00	0.50	460	220	240	0.50	0.30	437	171	266	0.84	0.42
		Non-SNA	101	323	222	0.36		113	336	223	0.39		104	326	222	0.31	
		Others	1133	1108	25	0.12		1146	1147	1	0.01		1136	1117	19	0.09	
6	Punjab	SNA	462	222	240	0.90	0.64	503	320	183	0.33	0.33	477	251	226	0.65	0.50
		Non-SNA	95	373	278	0.74		99	363	264	0.66		97	369	272	0.67	
		Others	1128	1086	42	0.28		1094	1093	1	0.01		1116	1088	28	0.17	
7	Rajasthan	SNA	448	242	206	0.78	0.56	526	270	256	0.55	0.35	466	244	222	0.63	0.44
		Non-SNA	105	310	205	0.25		101	331	230	0.44		104	315	211	0.24	
		Others	1141	1060	81	0.64		1113	1123	10	0.07		1134	1075	59	0.45	
8	Uttarakhand	SNA	436	233	203	0.76	0.57	493	316	177	0.31	0.32	449	238	211	0.58	0.45
		Non-SNA	125	343	218	0.34		101	341	240	0.50		120	342	222	0.31	
		Others	1119	1043	76	0.60		1095	1116	21	0.15		1114	1056	58	0.45	
Central Region																	
1	Chhattisgarh	SNA	367	231	136	0.51	0.47	479	215	264	0.58	0.30	390	229	161	0.34	0.34
		Non-SNA	107	286	179	0.08		84	295	211	0.31		103	288	185	0.05	
		Others	1158	1059	99	0.81		1099	1098	1	0.01		1146	1067	79	0.64	
2	Madhya Pradesh	SNA	402	219	183	0.69	0.52	456	216	240	0.50	0.37	415	219	196	0.51	0.42
		Non-SNA	115	325	210	0.28		101	324	223	0.39		112	325	213	0.25	
		Others	1134	1059	75	0.59		1142	1114	28	0.20		1136	1073	63	0.49	
3	Uttar Pradesh	SNA	385	199	186	0.70	0.57	464	278	186	0.34	0.26	402	207	195	0.50	0.43
		Non-SNA	110	348	238	0.47		103	327	224	0.40		109	343	234	0.40	
		Others	1165	1096	69	0.53		1143	1149	6	0.04		1160	1107	53	0.40	

Source: Indian time use survey 2019.

Note: 1. SNA, Non-SNA, and other activities are given by considering all the activities in a time slot.

2. Absolute* represent absolute difference between male and female time allocation and GDI shows the Gender disparity Index.

Table 3 Gender Disparity in Time Allocation for SNA, Non-SNA and Other Activities in East and Northeast Region

Sl. No.	States	Activities	Rural					Urban					Total				
			Male	Female	Absolute* Difference	Disparity Indices	GDI	Male	Female	Absolute* Difference	Disparity Indices	GDI	Male	Female	Absolute* Difference	Disparity Indices	GDI
East Region																	
1	Bihar	SNA	401	161	240	0.90	0.86	443	243	200	0.38	0.62	405	165	240	0.72	0.79
		Non-SNA	113	431	318	1.00		102	417	315	1.00		112	430	318	1.00	
		Others	1136	1053	83	0.66		1141	1075	66	0.48		1136	1055	81	0.65	
2	Jharkhand	SNA	423	202	221	0.83	0.56	450	238	212	0.42	0.40	427	206	221	0.63	0.48
		Non-SNA	115	355	240	0.48		110	348	238	0.49		114	354	240	0.44	
		Others	1108	1057	51	0.36		1145	1103	42	0.30		1115	1066	49	0.36	
3	Odisha	SNA	393	164	229	0.86	0.71	452	199	253	0.55	0.37	401	167	234	0.69	0.61
		Non-SNA	98	354	256	0.59		112	344	232	0.45		100	353	253	0.54	
		Others	1154	1069	85	0.68		1116	1102	14	0.10		1149	1073	76	0.61	
4	West Bengal	SNA	430	192	238	0.90	0.67	496	330	166	0.27	0.26	448	219	229	0.67	0.44
		Non-SNA	110	390	280	0.75		104	344	240	0.50		108	377	269	0.65	
		Others	1106	1054	52	0.37		1091	1103	12	0.09		1102	1068	34	0.23	
Northeast Region																	
1	Arunachal Pradesh	SNA	346	260	86	0.32	0.57	388	280	108	0.09	0.53	350	261	89	0.00	0.45
		Non-SNA	115	341	226	0.39		110	365	255	0.60		115	343	228	0.36	
		Others	1133	1014	119	1.00		1162	1040	122	0.88		1136	1017	119	1.00	
2	Assam	SNA	355	141	214	0.81	0.70	378	172	206	0.40	0.56	357	143	214	0.60	0.63
		Non-SNA	115	397	282	0.76		112	403	291	0.84		115	398	283	0.75	
		Others	1109	1039	70	0.54		1110	1048	62	0.45		1109	1040	69	0.55	
3	Manipur	SNA	386	255	131	0.49	0.52	381	276	105	0.08	0.46	385	260	125	0.17	0.43
		Non-SNA	102	307	205	0.25		126	333	207	0.28		108	314	206	0.20	
		Others	1170	1070	100	0.82		1182	1044	138	1.00		1173	1064	109	0.91	
4	Meghalaya	SNA	332	198	134	0.50	0.35	352	242	110	0.10	0.18	334	203	131	0.20	0.22
		Non-SNA	105	285	180	0.09		109	273	164	0.00		106	284	178	0.00	
		Others	1174	1114	60	0.45		1195	1133	62	0.45		1176	1117	59	0.45	
5	Mizoram	SNA	381	276	105	0.39	0.61	417	338	79	0.00	0.44	395	297	98	0.04	0.48
		Non-SNA	121	379	258	0.60		110	357	247	0.55		117	369	252	0.53	
		Others	1079	977	102	0.84		1128	1020	108	0.78		1100	996	104	0.86	
6	Nagaland	SNA	350	246	104	0.39	0.48	375	225	150	0.22	0.30	357	242	115	0.12	0.34
		Non-SNA	110	289	179	0.08		122	304	182	0.12		114	293	179	0.01	
		Others	1177	1060	117	0.98		1199	1120	79	0.57		1184	1078	106	0.88	
7	Sikkim	SNA	407	292	115	0.43	0.26	459	364	95	0.05	0.12	419	304	115	0.12	0.14
		Non-SNA	115	312	197	0.20		108	311	203	0.26		113	312	199	0.15	
		Others	1077	1048	29	0.16		1076	1068	8	0.06		1077	1053	24	0.14	
8	Tripura	SNA	405	199	206	0.78	0.64	450	252	198	0.37	0.32	414	207	207	0.56	0.52
		Non-SNA	113	383	270	0.68		124	368	244	0.53		115	380	265	0.62	
		Other	1102	1039	63	0.48		1095	1086	9	0.07		1100	1050	50	0.37	

Source: Indian time use survey 2019.

Note: 1. SNA, Non-SNA, and other activities are given by considering all the activities in a time slot.

2. Absolute* represent absolute difference between male and female time allocation and GDI shows the Gender disparity Index.

Table 4 Gender Disparity in Time Allocation for SNA, Non-SNA and Other Activities in West and South Region.

	States	Activities	Rural					Urban					Total				
			Male	Female	Absolute* Difference	Disparity Indices	GDI	Male	Female	Absolute* Difference	Disparity Indices	GDI	Male	Female	Absolute* Difference	Disparity Indices	GDI
West Region																	
1	Dadra & Nagar Haveli	SNA	540	336	204	0.77	0.29	639	241	398	1.00	0.93	602	303	299	1.00	0.62
		Non-SNA	108	275	167	0.00		98	413	315	1.00		101	335	234	0.40	
		Others	1016	994	22	0.09		864	975	111	0.80		926	986	60	0.46	
2	Daman & Diu	SNA	513	320	193	0.73	0.77	692	575	117	0.12	0.49	672	529	143	0.26	0.49
		Non-SNA	87	385	298	0.87		90	364	274	0.73		90	368	278	0.71	
		Others	1131	1042	89	0.72		907	992	85	0.62		940	1003	63	0.49	
3	Goa	SNA	291	159	132	0.49	0.49	313	174	139	0.19	0.34	306	170	136	0.22	0.35
		Non-SNA	103	338	235	0.45		102	308	206	0.28		102	319	217	0.28	
		Others	1210	1142	68	0.52		1155	1079	76	0.55		1174	1105	69	0.55	
4	Gujrat	SNA	440	258	182	0.68	0.48	521	275	246	0.52	0.37	476	262	214	0.60	0.39
		Non-SNA	93	306	213	0.30		93	344	251	0.58		93	323	230	0.37	
		Others	1101	1041	60	0.45		1089	1089	0	0.00		1095	1063	32	0.21	
5	Maharashtra	SNA	392	260	132	0.49	0.53	494	247	247	0.53	0.38	435	256	179	0.43	0.41
		Non-SNA	98	307	209	0.28		93	330	237	0.48		96	317	221	0.31	
		Others	1146	1047	99	0.81		1113	1094	19	0.14		1131	1067	64	0.50	
South Region																	
1	A & N Islands	SNA	322	219	103	0.38	0.34	390	295	95	0.05	0.26	350	241	109	0.10	0.23
		Non-SNA	87	301	214	0.31		91	313	222	0.38		89	305	216	0.27	
		Others	1178	1132	46	0.32		1146	1098	48	0.35		1164	1120	44	0.32	
2	Andhra Pradesh	SNA	395	246	149	0.56	0.41	456	254	202	0.39	0.25	412	248	164	0.36	0.29
		Non-SNA	92	281	189	0.15		87	289	202	0.25		90	283	193	0.11	
		Others	1157	1088	69	0.53		1142	1125	17	0.12		1152	1099	53	0.40	
3	Karnataka	SNA	395	263	132	0.49	0.50	485	319	166	0.27	0.31	430	279	151	0.30	0.36
		Non-SNA	87	328	241	0.49		92	346	254	0.60		89	335	246	0.49	
		Others	1125	1058	67	0.51		1100	1092	8	0.06		1115	1072	43	0.31	
4	Kerala	SNA	384	234	150	0.56	0.54	404	253	151	0.23	0.40	393	242	151	0.30	0.43
		Non-SNA	107	331	224	0.38		110	337	227	0.42		109	334	225	0.34	
		Others	1178	1094	84	0.67		1174	1099	75	0.54		1176	1096	80	0.65	
5	Lakshadweep	SNA	357	236	121	0.45	0.70	383	277	106	0.08	0.49	376	268	108	0.09	0.53
		Non-SNA	95	387	292	0.83		90	347	257	0.62		91	356	265	0.62	
		Others	1185	1085	100	0.82		1196	1090	106	0.77		1193	1089	104	0.86	
6	Puducherry	SNA	416	282	134	0.50	0.36	462	274	188	0.34	0.24	447	277	170	0.39	0.24
		Non-SNA	105	314	209	0.28		106	305	199	0.23		106	308	202	0.17	
		Others	1131	1087	44	0.30		1119	1099	20	0.14		1123	1095	28	0.17	
7	Tamil Nadu	SNA	439	282	157	0.59	0.35	459	286	173	0.29	0.24	448	283	165	0.36	0.24
		Non-SNA	85	268	183	0.11		91	294	203	0.26		88	280	192	0.10	
		Others	1127	1076	51	0.36		1127	1106	21	0.15		1127	1090	37	0.25	
8	Telangana	SNA	424	344	80	0.30	0.30	503	357	146	0.21	0.18	456	347	109	0.10	0.16
		Non-SNA	83	256	173	0.04		90	298	208	0.29		86	273	187	0.06	
		Other activities	1115	1044	71	0.55		1105	1101	4	0.03		1111	1068	43	0.31	
	all-India	SNA	**405**	**225**	**180**	**0.68**	**0.56**	**478**	**273**	**205**	**0.39**	**0.31**	**427**	**235**	**192**	**0.49**	**0.43**
		Non-SNA	**105**	**339**	**234**	**0.44**		**99**	**331**	**232**	**0.45**		**103**	**337**	**234**	**0.40**	
		Other activities	**1139**	**1067**	**72**	**0.56**		**1119**	**1107**	**12**	**0.09**		**1133**	**1079**	**54**	**0.41**	

Source: Indian time use survey 2019.

Note: 1. SNA, Non-SNA, and other activities are given by considering all the activities in a time slot.

2. Absolute* represent absolute difference between male and female time allocation and GDI shows

5.3. Gender Disparity in Time Use.

This section deals with the ranking of state GDI index to perceive the intensity of gender disparity in various states and regions.

Table 5 represents the state-wise rank of gender disparity in rural and urban India. The data reveal that Delhi holds the first position in rural India, where inequality is the least, followed by Sikkim, Dadra & Nagar Haveli, Telangana etc. The infrastructure development in the region mainly causes the low GDI in Delhi because Investment in public infrastructure can reduce the time spent on non-SNA activities (Chakraborthy,2005). Similarly, the higher female labour force participation in Telangana and Sikkim is one major cause for low GDI.

The disparity is higher in Bihar, Daman & Diu, Odisha, Lakshadweep, Assam, West Bengal etc. The state Bihar shows a low female labour force participation (6.4) and low literacy rate (64.9) (PLFS, 2019). These might be the major cause of higher GDI in Bihar. In urban India, the top-ranked states are Sikkim, Himachal Pradesh, Meghalaya, Telangana, Chandigarh, Delhi etc. On the contrary, the disparity is higher in Dadra & Nagar Haveli, Bihar, Assam, Arunachal Pradesh, Lakshadweep, Daman & Diu, Manipur etc. Similarly, the total rural and urban data shows Sikkim, Telangana, Chandigarh, Delhi, and Meghalaya hold the leading position. At the same time, states like Bihar, Assam, Dadra & Nagar Haveli, Odisha, Lakshadweep, Tripura etc. come at the bottom in the rank. The low GDI in Northern state may be due to the customary laws and distinct culture followed by them.

The national gender disparity is 0.56 and 0.31 in rural and urban areas respectively. The comparison among various states shows that it varies from 0.13 to 0.86 in rural areas and 0.14 to 0.79 in urban areas. It reflects the dissimilarity in culture and social customs across India which affects women's participation in paid and unpaid work. It is evident that the GDI is lower in those states where the female labour force participation is higher such as Telangana, Sikkim, Himachal Pradesh, and Chhattisgarh. Thus, implementing policies for enhancing women labour force participation can reducing Gender disparity. However, the policies should be formed by considering the regional, social, and economic characteristics of different states or regions.

Table 5 Gender Disparity in Time Use.

Region	States	Rural		Urban		Rural + Urban	
		GDI	Rank	GDI	Rank	GDI	Rank
North	Chandigarh	0.62	28	0.21	5	0.19	3
	Delhi	0.13	1	0.24	6	0.21	4
	Haryana	0.6	26	0.25	10	0.42	17
	Himachal Pradesh	0.41	10	0.16	2	0.29	10
	Jammu & Kashmir	0.5	15	0.3	15	0.42	18
	Punjab	0.64	29	0.33	20	0.5	30
	Rajasthan	0.56	22	0.35	22	0.44	23
	Uttarakhand	0.57	24	0.32	19	0.45	26
Central	Chhattisgarh	0.47	11	0.3	14	0.34	11
	Madhya Pradesh	0.52	17	0.37	24	0.42	19
	Uttar Pradesh	0.57	25	0.26	11	0.43	22
East	Bihar	0.86	36	0.62	35	0.79	36
	Jharkhand	0.56	21	0.4	27	0.48	27
	Odisha	0.71	34	0.37	25	0.61	33
	West Bengal	0.67	31	0.26	12	0.44	24
North-east	Arunachal Pradesh	0.57	23	0.53	33	0.45	25
	Assam	0.7	32	0.56	34	0.63	35
	Manipur	0.52	18	0.46	30	0.43	21
	Meghalaya	0.35	6	0.18	3	0.22	5
	Mizoram	0.61	27	0.44	29	0.48	28
	Nagaland	0.48	13	0.3	16	0.34	12
	Sikkim	0.26	2	0.12	1	0.14	1
	Tripura	0.64	30	0.32	18	0.52	31
West	Dadra & Nagar Haveli	0.29	3	0.93	36	0.62	34
	Daman & Diu	0.77	35	0.49	31	0.49	29
	Goa	0.49	14	0.34	21	0.35	13
	Gujrat	0.48	12	0.37	23	0.39	15
	Maharashtra	0.53	19	0.38	26	0.41	16
South	A & N Islands	0.34	5	0.26	13	0.23	6
	Andhra Pradesh	0.41	9	0.25	9	0.29	9
	Karnataka	0.5	16	0.31	17	0.36	14
	Kerala	0.54	20	0.4	28	0.43	20
	Lakshadweep	0.7	33	0.49	32	0.53	32
	Puducherry	0.36	8	0.24	8	0.24	8
	Tamil Nadu	0.35	7	0.24	7	0.24	7
	Telangana	0.3	4	0.18	4	0.16	2

Source**:** Computed
Note: 1. GDI represent the Gender disparity Index

VI. Conclusion

This paper analyses the gender disparity in SNA, non-SNA and other activities among all states and union territories of India. It also examines the time allocation for unpaid work in various Indian states. The study found gender disparity in SNA and non-SNA activities time allocation in India. However, the intensity differs among various states due to socio-cultural differences. It is observed that the disparity is higher in Bihar, both in the rural and urban regions. In contrast, the disparity is low in Sikkim, Telangana, Chandigarh, Delhi, and Meghalaya. It is observed that men are more engaged in SNA and Other activities while women are more engaged in non-SNA activities. Therefore, women's contribution is invisible in the National income.

The prevailing studies reveal that responsibility for unpaid work is a prominent cause of low female labour force participation. This paper highlighted the disparity depth in various states and union territories. Notably, the disparity in non-SNA activities is more significant in urban areas compared to rural areas. Thus, the distribution of unpaid work between men and women varies across states and regions. The disparity is lower in states having higher female labour force participation. Therefore, implementing gender-sensitive policies in the prompt areas helps to improve female labour force participation and other benefits.

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