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Who Gets to Work, and How? Caste, Religion, and Time Allocation in Employment in India

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Abstract

Lasting labour market inequalities in India are scaffolded by social institutions, within which individuals continue to experience market exclusion and a "social closure" from economic opportunities on the basis of caste and religion. This study examines labour market inequalities among Hindu Scheduled Castes (SCs), Hindu Upper Castes (UCs), and Muslims, with particular focus on institutional exclusion, socio-religious stratification, and market discrimination. Using national Time Use Survey (TUS, 2019 & 2024) of India, this study investigates daily participation and time allocation in employment activities, with temporal change between 2019-24. The analysis conceptualises labour market inequality as a cumulative outcome of social closure, institutional exclusion, market-level discrimination, and time allocation, which provide advantages to dominant groups, while disserving marginalised groups. The study found that Hindu SCs and Muslim continue to cluster in low paid industries, while Hindu UCs dominate high paid jobs. The evidence also shows that socio-economic and regional effects on participation persist in India. Lastly, despite disparities in participation rate, there is negligible difference in time allocation within industry. However, sectoral variations demonstrate that individuals working in the tertiary sector allocate much higher time compared to primary and secondary workers. Together, the findings suggest that social identity intersects with human capital and labour-market institutions to shape participation and time allocation in employment activities.

Keywords

Exclusion, Institution, Identity, Labour, Inequality, Time allocation

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Introduction

The labour market in India is subject to its own dispositions. Its institutionalised and socially stratified nature stands at odds with the monolithic rendering of labour being a mere economic phenomenon in Western countries. Instead of being scalar, it is deeply embedded in social institutions and historical relations of power and ownership, which continue to reproduce economic inequality (Jodhka, 2002; Darity & Deshpande, 2003; Thorat, 2004; Jodhka & Newman, 2007). In India, economic opportunities are borne of a nexus of social structure, resource ownership and market operations underpinned by social hegemony and exclusion. One of the most important social institutions amongst these is the caste system, which shapes an individual's access to education, employment, asset, and opportunities (Deshpande, 2006; Deshpande & Yadav, 2006; Mohanty, 2006). These practices persist despite the prohibition of all forms of caste and religious discrimination in post-Independence India. The textures of labour markets are not merely outcomes of market competition but a reflection of historically embedded systems of social and cultural stratification, which have inter-generational effects (Das, 2006). The examination of socio-religious discrimination, therefore, is pertinent for understanding policy developments related to non-labour market outcomes, including human capital, housing, living standards, and equal opportunities for marginalised communities.

Labour market discrimination in India cannot be understood in silos of education, productivity, or pure market mechanisms. It instead functions as an outcome of a historically constituted, socially stratified system, in which institutions such as caste and religion function as formal instruments that control accessibility of resources, social and cultural networks, institutional and state operations (Das, 2006; Jodhka & Newman, 2007; Thorat, 2004, 2009). While numerous studies have documented social discrimination in labour market, many of which have focused on intra-Hindu social system, peripheralising Muslim economic transformation (Deshpande & Newman, 2007; Madheswaran & Attewell, 2007). Das (2008) suggests that whilst Muslims cluster in self-employment, simultaneously they are disproportionally excluded from the regular salaried market. Unlike Muslims, Hindu Scheduled Caste face difficulty in setting up small business, but have greater representation in regular salaried jobs because of reserved quota (Das, 2008). Post-independence affirmative programmes catered to a certain section, while similar measures were absent for the Muslim community (Thorat, 2004; Sachar, 2006).

Despite these reservation policies, Thorat and Umakant (2004) found that most of the Hindu SC are concentrated in agriculture and low paid manual jobs. Similarly, studies have suggested that Muslims are crowded into self-employment clusters, with a disproportionately low share in the service sector compared to Hindu UC (Sachar committee, 2006; Thorat & Neuman, 2012). In contrast, the Hindu upper caste dominated

the service sector, owing to better access to a decent job market and social capital that assured higher representation in top positions and businesses (Deshpande & Newman, 2007). The larger question for comparison between Hindu SC and the Muslim in the labour market is: are Muslim and Hindu SC comparable in the current development scenario? In this context, Sachar (2006) suggests that Muslims fare much worse than Hindu SC on multiple development indicators, especially in the institutional arena. Moreover, this disadvantage in Muslim and Hindu SC goes beyond socio-cultural exclusion and agency-level discrimination. Although institutional discrimination can aggravate pre-existing labour market inequalities, it further interacts with other socio-economic factors that play a major role. For instance, literature suggests low levels of educational attainment and resource accumulation among Hindu SC and Muslims, compared to the Hindu upper caste, which has a higher adverse impact on employment opportunities (Deshpande, 2006; Deshpande & Yadav, 2006; Mohanty, 2006).

Max Weber (1978) conceptualised a social closure framework which states that dominant social groups fence out economic advantages by restricting outsiders' access to resources. Caste system in India is an extension of this social closure itself. Similarly, Pierre Bourdieu's (1986) idea of 'cultural capital' denotes the accumulation of skills, education, language, and 'social capital' which includes values, language and cultural competencies that an individual acquires through family and social institutions. This cultural capital, in turn, breeds social inequality, as it is transmitted amongst dominant groups, alongside exclusive access to life opportunities. In contrast, marginalised groups suffer from intergenerational deprivation because of a lack of cultural capital, which compounds over generations. As Sen (1999) argued, freedom from any institutional barrier is pertinent for development. Therefore, income is not the metric for employment; dignity, autonomy, social participation, economic security, and overall well-being are. Similarly, Becker (1957) suggests that income disparities are attributed to systematic bias and prejudice. Nonetheless, Becker (1965) argued that there exists a tradeoff between leisure and labour and suggested that individuals try to maximise their welfare by spending their time in the most optimal activities. In this context, time allocation can be seen as a measure of optimal capacity to produce. For example, participation rate of a person is a general indicator of economic outcome in the labour market, while wage return on their participation is another important indicator, which reflects their human capital and labour market discrimination dynamics. Another indicator in this dynamic could be time spent in employment activities, since it is important to assess whether there is any difference in time allocation apart from participation rate.

As time is money, understanding time allocation in employment can offer a novel perspective about labour market discrimination. In this regard, this study contributes in several ways. First, this study contributes to time use literature by utilising the national Time Use Survey, which provides information on daily employment, as well

as insights about the time allocation of an individual across daily activities, capturing both participation and its intensity in the labour market. Second, this study contributes to the scholarship on socio-religious marginalisation through investigation of labour market participation, occupational segregation and time allocation among Hindu SC, Hindu UC, and Muslim. In this context, it will try to investigate the labour market discrimination within the framework of social closure and cultural capital that plays part in the exclusion of marginalised groups and sustaining the hegemony of the upper-caste. To investigate labour market segregation, this study looks at industry-level participation to understand the hegemony and concentration of communities in different occupations, with their time allocation. Third, in line with Becker's (1965) arguments, this study examines the tradeoffs of time allocation between economic and non-economic activities. It will be interesting to examine whether employment participation differs from time allocation across groups. Fourth, this study investigates the temporal effect on employment activities among Hindu SC, Hindu UC and Muslim.

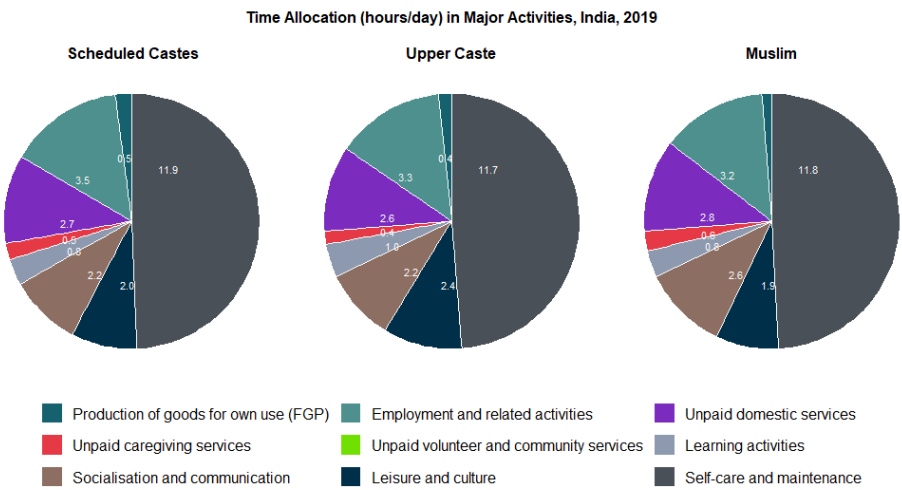


Fig. 1: Time Allocation (Hours/Day) in Major Activities Among Hindu SC, Hindu UC, and Muslim, 2019

Note: Author's calculations based on Time Use Survey data (GoI, 2019).

The paper is organised as follows. The next section on data and methods discusses data sources, sampling design, analytical sampling, outcome, and explanatory factors with econometric strategy. Result section presents and interprets the descriptive and empirical findings followed by the discussion and conclusion section. The preliminary analysis of daily time allocation activities based on Time Use Survey (2019 and 2024) for Hindu Scheduled Caste (SC), Hindu Upper Caste (UC) and Muslim have been shown in Figures (1) and (2). The preliminary findings reveal that Hindu SC allocated 3.5 hours in daily employment activities followed by Hindu UC (3.23 hours) and Muslim (3.2 hours) in 2019. The findings show a marginal increase in their time spent during 2019-24. Muslim individuals continue to spend highest time in unpaid

domestic work as well as socialisation and communication. In contrast, Hindu UC continue to allocate highest time in leisure and cultural activities as well as learning activities compare to Hindu SC and Muslim. Hindu SC spent slightly higher times in daily self-care and maintenance.

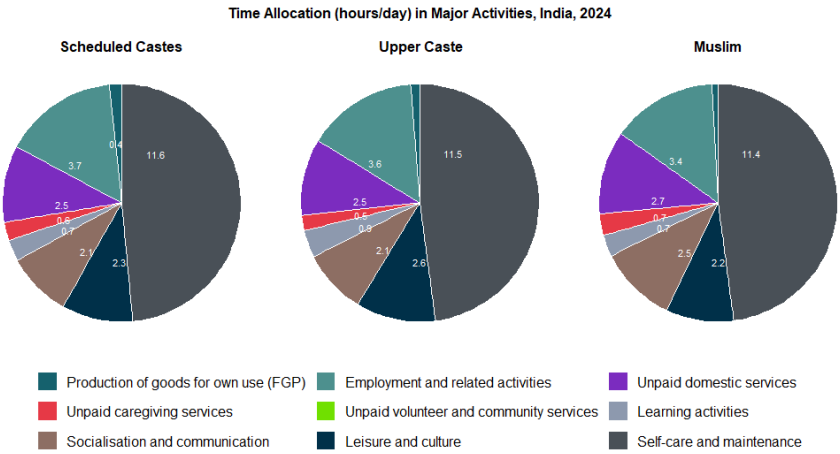


Fig. 2: Time Allocation (Hours/Day) in Major Activities Among Hindu SC, Hindu UC, and Muslim, 2024

Note: Author's calculations based on Time Use Survey data (GoI, 2024).

Data and Methods

Data Sources

This study used nationally representative unit level time-use survey data obtained from the Ministry of Statistics and Programme Implementation (MoSPI), Government of India conducted in 2019 and 2024 (GoI 2019, 2024). The Time Use Survey provides nationally representative information on how individuals allocate their time across paid work, unpaid domestic and caregiving activities, education, leisure, self-care, and other daily activities over a 24-hour reference period. The survey adopted a stratified multi-stage sampling design based on the sampling framework of the National Sample Survey (NSS). In rural areas, villages served as the First Stage Units (FSUs), whereas Urban Frame Survey (UFS) blocks constituted the FSUs in urban areas. Within each selected FSU, households were chosen through systematic random sampling after stratification. All usual members aged six years and above residing in the selected households were eligible for the time-use interview. The sampling design ensured adequate representation across states, Union Territories, rural and urban sectors, and socio-economic groups through appropriate sampling weights. The TUS 2019 covered 138,799 households (82,897 rural and 55,902 urban) across all States and Union Territories, collecting information for 447,250 individuals, of whom

445,299 persons aged six years and above successfully completed the time diary. The TUS 2024 expanded the coverage to 139,487 households (83,247 rural and 56,240 urban), providing time-use information for 454,192 individuals. The large nationally representative samples permit robust comparisons across demographic and socio-economic groups over time.

Data were collected using a 24-hour time diary, in which respondents reported all activities performed during the previous day, beginning at 04:00 a.m. and ending at 04:00 a.m. the following day. The day was divided into 48 consecutive intervals of 30 minutes, and respondents recorded their primary activity for each interval. Whenever applicable, information on simultaneous (secondary) activities was also collected, particularly for caregiving and domestic responsibilities, enabling a more comprehensive assessment of unpaid work that often overlaps with other activities. Trained field investigators conducted face-to-face interviews using standardized questionnaires and activity coding manuals to ensure consistency in recording and classification. Activities were classified according to International Classification of Activities for Time-Use Statistics (ICATUS), which groups time into broad categories such as employment and related activities, production of goods for own final use, unpaid domestic services, unpaid caregiving services, learning, socializing and communication, culture and leisure, self-care, and travel associated with these activities. This internationally comparable classification enhances the consistency and comparability of time-use statistics across countries (ICATUS, 2016).

Socio-religious Groups for Outcome

This study considers three socio-religious groups namely Hindu Upper Caste (UC), Hindu Scheduled Caste (SC) and Muslim. Upper Caste is positioned on the top of caste hierarchy, while scheduled caste is positioned on the bottom of this hierarchy within the Hindu religion. The Muslim group in this study includes all Muslim subgroups, including scheduled tribes, scheduled caste,[1] other backward classes and Others. In the context of the present study, Hindu UC is considered as reference group for socio-religious comparison in employment to understand Muslim and Hindu SC marginalisation in employment and related activities.

[1]Constitution of India does not recognise Scheduled Caste among Muslim under Article 341. The Constitution (Scheduled Castes) Order, 1950 restricts who can be recognized as a Scheduled Caste based on religion. Under the current law (1) a person who professes Islam is not legally entitled to Scheduled Caste status, even if they belong to a caste that is recognised as an SC among Hindus, Sikhs, or Buddhists; (2) if an individual converts from Hinduism (or Sikhism/Buddhism) to Islam, they generally lose eligibility for SC status under the existing legal framework.

Sample Selection for this Study

As the purpose of this study is to understand marginalisation of Hindu SC and Muslims compared with Hindu UC, I considered household and individual samples from these groups and remove other socio-religious categories. In addition, I excluded children (6-14 years) and elderly (65 years and above) for analysis. Both rounds (2019, 2024) of time-use survey data have been utilised to understand the temporal changes in employment related activities. The sample selection for present study is shown in Figure 3.

Outcome Variable

Participation in employment activities is a major division of daily activities based on ICATUS 2016 classification. Although time use survey also provides employment participation based usual principal status, this study utilises activity-level division on daily basis to define employment participation. The employment activities cover major activity division no. 2, which consists of minor and a subdivision of daily activities.

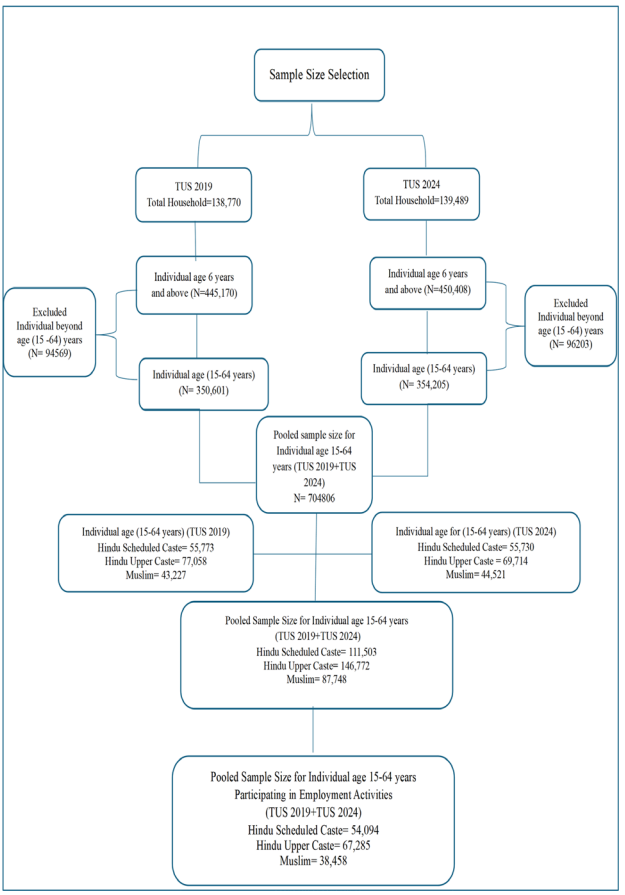


Fig. 3: Sampling Flow Chart for 2019 and 2024 Time Use Survey for Final Analytical Sample

The primary analysis is based on two outcome variables. First, participation in employment activities as a binary variable which takes the value of one if the individual spent time in employment and related activities participation and zero otherwise. Second, the time allocation (in minutes) in employment participation if individual spent any time in employment related activities during the last 24 hours.

Explanatory Factors

Numerous socio-economic and demographic factors influence employment outcome in India. In this study, age group, gender, marital status, level of education, and place of residence, monthly per capita consumption expenditure (MPCE), region, and household size are determining factors in participation and time allocation in employment related activities in it.

Methods

This study employed pooled Two-Part Model to understand heterogeneity and determinants of participation and time allocation in employment activities among Hindu SC, Hindu UC and Muslim. The first part of two-part model employed probit regression method to estimate the probabilities of participation in employment. The second part provides ordinary least squares (OLS) estimates for determinants of time allocation in employment related activities for understanding the impact of determinants on work participation. In the first step, pooled probit model is estimated to understand probability of participation. In the second step, pooled OLS is estimated to understand intensity of time spent in employment activities. This model is widely used for the outcomes with many zeros. It is most suitable in present case, when outcome deal with two issues: (1) do individuals participate in the employment activities and; (2) conditional on participation, how much time an individual allocates in employment (Cameron & Trivedi, 2005; Wooldridge, 2010).

To deal with an outcome with many zeros, Tobin (1958) offered Tobit model and assumes that zeros arise from censoring the underlying latent variable. However, this assumption becomes very restrictive in behavioural areas such as labour market, which intensively involves decision-making and uncertainty. For example, if an individual allocates zero hours in employment, it does not arise due to censoring, but because he or she does not participate in the market. To address this censoring issue, Duan et al. (1983) provided the 'Two-Part Model', in which medical care demand was analysed in two separate processes, namely the decision to use care services and the amount spent on it which was conditional to use. The Two-Part Model assumes independence between the two parts, and if unobserved factors jointly affect participation and intensity, selection models may be more appropriate (Newhouse, 1974; Duan et al., 1983; Belotti et al., 2015; Cameron & Trivedi, 2005).

First Part: Pooled Probit Regression Model

A pooled regression model is specified and preferred over single-year estimation. First, data pooling increases the sample size, which can improve precision and efficiency of parameter estimates. Second, pooled probit model with interaction terms provides a unique framework to examine whether the effect of independent variables differs over time. Estimating separate model for each year only provides coefficient that are not directly comparable, whereas the pooled interaction model allows statistical inferences on the equality of coefficient through the interaction terms. Third, pooling of data helps distinguish between compositional and structural changes, which become difficult to disentangle in separate estimations. Also, it helps in temporal transformational analysis.

In this study, I have combined time use survey 2019 and 2024 to examine the determinants of employment participation in India. The outcome variable, employment participation, is binary and take the value 1 if the individual participates in employment and 0 otherwise. Given the dichotomous nature of the dependent variable, I adopt a latent variable framework in which observed participation is driven by an unobserved propensity. In this study, the model of interest is specified as below:

$$Y_{it}^{*} = \alpha + \delta Year_t + \beta X_{it}' + \gamma(Year_t \times X_{it}') + \varepsilon_{it}, \quad \varepsilon_{it} \sim N(0,1)$$

Where Y_{it}^{*} denotes the latent disposition towards participation in employment related activities of individuals belonging to Hindu SC, Hindu UC or Muslim communities and ε_{it} is error term which follows $\varepsilon_{it} \sim N(0,1)$. The observed outcome can be as following:

$$Y_{it}^{*} = \begin{cases} 1 & \text{if } Y_{it}^{*} > 0 \\ 0 & \text{otherwise} \end{cases}$$

The model formulation implies that the probability can be stated using the standard normal cumulative distribution function as below:

$$P(Y_{it} = 1 \mid X_{it}, Year_t) = \Phi(Z_{it})$$

Where $(Z_{it}) = \alpha + \delta Year_t + \beta X_{it}' + \gamma(Year_t \times X_{it}') + \varepsilon_{it}.\beta$ is coefficient which capture the effects of covariates in the base year (Year=2019), while interaction terms γ capture how these effects change in the subsequent survey period (Year=2024). X_{it}' includes a set of socio-economic variables which includes gender, age, level of education, marital status, place of residence, MPCE, region, and household size. ε_{it} is error term and $\Phi(.)$ is standard normal cumulative distribution function.

The non-linear relationship between outcome and regressor, this study reports average marginal effect (AMEs), which is better for the interpretation of the impact of regressors on participation probabilities. In this model, the regressors are either binary or categorical, so marginal effects are computed as average discrete change in

predicted probabilities. The AMEs for these binary/categorical variables is estimates as follows:

$$AME_k = \frac{\partial P(Y_{it} = 1)}{\partial X_{k,it}} = \frac{1}{N}\sum_{i=1}^{N}[\,\phi(Z_{it}|X_k = j) - \phi(Z_{it}|X_k = ref)]$$

The year specific AMEs capture the temporal changes in the probability of participation in work. For the base survey year (2019), the AME can be written as follows:

$$AME_k^{(2019)} = \frac{1}{N}\sum_{i\in t=2019}^{N}[\,\phi(Z_{i2019}|X_k = j) - \phi(Z_{i2019}|X_k = ref)]$$

For the subsequent survey year (Year=2024):

$$AME_k^{(2024)} = \frac{1}{N}\sum_{i\in t=2024}^{N}[\,\phi(Z_{i2024}|X_k = j) - \phi(Z_{i2024}|X_k = ref)]$$

where the index functions integrate interaction effects, such as:

$$Z_{i,2024} = X_i'(\beta + \gamma).$$

and the term γ captures the change in the effect of β in the later period. The change in marginal effects between the two periods (2019 and 24) can be defined as:

$$\Delta AME_k = AME_{2024} - AME_{2019}$$

Second Part: Pooled Ordinary Least Squares Method

In the second part of econometric specification, ordinary least squares (OLS) method is utilised to investigate the impact of socio-economic factors on time allocation in employment activities. The conditional linear regression model is employed to examine the determinants of time spent in employment activities among individuals who participate in employment activities in a day. If i denotes individual and $t \in$ 2019,2024 denote the survey period, the model can be specified as:

$$y_{it} = \alpha + \beta_1 Year_t + X_{it}'\beta + (Year_t \times X_{it}')\gamma + \varepsilon_{it}, \qquad \text{for } y_{it} > 0.$$

where y_{it} represents the total time spent in employment activities by individual i in a day in period t conditional on those individuals who report to participate in employment activities. The vector X_{it}' comprises socio-economic characteristics of an individual. The coefficient β captures the impact of the socio-economic factors on time spent in employment activities in base period (Year=2019). β_1 reflects the overall shift in average time spent between 2019-24 for the reference group. γ represents the interaction between survey year and regressors, which captures how the relationship

between socio-economic characteristics and time spent in employment evolves over time. ε_{it} is error term. Furthermore, as this model is linear, marginal effects can be directly interpreted from the estimated coefficients. For example, for any covariate X_k, the effect in the base survey period (2019) can be written as:

$$MarginalEffect_k^{2019} = \beta_k$$

and in the subsequent survey period (Year=2024):

$$MarginalEffect_k^{2024} = \beta_k + \gamma_k$$

Thus, the interaction coefficient γ_k captures the temporal change in the marginal effect of the regressor and can be expressed as:

$$\Delta MarginalEffect_k = \gamma_k$$

Descriptive Results

Table 1 shows the participation rate of individuals belonging to Hindu SC, Hindu UC and Muslim in employment activities in India during 2019-24. Overall, participation rate increased across all socio-religious groups, with the highest improvement in Hindu SCs (3.7 per cent) followed by Hindu UCs (2.9 per cent) and Muslims (2.3 per cent) during 2019-24. For example, participation rate among Hindu SCs increased from 46.8 per cent to 50.5 per cent, while it increased from 44.3 per cent to 47.2 per cent among Hindu UCs overtime. Similarly, participation rate among Muslims increased from 42.9 per cent to 47.2 per cent in the same period. Despite the participation increase among male and female across groups, males fared better than females.

Additionally, gender differences in employment activities remained substantial in both periods, with a higher gender gap in the Muslim community. Muslim males had a higher participation rate than Hindu SCs and Hindu UCs, while Muslim females had the lowest participation rate in both periods. Education shows a mixed relationship with employment participation. Individuals with secondary education had the lowest participation across groups in both years, while those with primary and middle education experienced notable increases. Graduates and above generally recorded relatively high participation. During 2019-24, individuals belonging to Hindu SC and Muslim groups with graduate and above education experienced a decline of 0.6 per cent and 1.5 per cent in participation rate, respectively. In contrast, Hindu UC individuals with a graduate and above degree experienced a 3.1 per cent increase in employment activities participation in same period. Widowed individuals from all these socio-religious groups recorded highest participation rate followed by currently married, divorced, and never married individuals.

Place of residence has a major role in determining employment opportunities. The results demonstrate that urban areas record a higher participation rate than rural

setting among all socio-religious groups. The participation increase was higher for Hindu SC in rural areas, while Hindu UC recorded the highest increase in urban settings. In 2019, individuals belonging to poor households had a higher participation rate across socio-religious groups, which shifted to the richest stratum in 2024. Hindu SC individuals from the richer and richest strata recorded a 7.5 and 10.9 percent of participation increase over time. Similarly, individuals belonging to Hindu UC and Muslim from the richest stratum recorded absolute increases in participation of 5.7 per cent and 6.7 per cent, respectively. Regional differences in employment activities participation can be observed. Hindu SC had a higher participation rate in all regions across years. In addition, Hindu SC recorded the highest participation rate in South India, with a higher growth rate than Hindu UC and Muslims. Although an increase in participation rate across regions and socio-religious groups can be observed during 2019-24, Muslim from North India experienced a decline in participation rate.

Table 1: Participation Rate (%) in Employment Activities among Hindu SC, Hindu UC, and Muslim in India

	2019			2024		
	Hindu SC	**Hindu UC**	**Muslim**	**Hindu SC**	**Hindu UC**	**Muslim**
Gender						
Male	70.9	**68.5**	74.2	**74.9**	72.7	76.6
Female	22.4	19.3	12.5	**26.2**	20.9	14.9
Age Group						
15–24 years	27.5	23.0	28.2	**28.1**	22.4	28.7
25–34 years	51.5	49.8	48.2	**53.3**	52.0	50.0
35–44 years	59.0	54.6	52.7	**64.4**	59.3	56.0
45–54 years	57.3	53.5	49.8	**62.4**	56.9	52.6
55–64 years	44.2	41.3	41.3	**52.6**	43.0	44.6
Education Level						
Illiterate	44.9	41.4	40.6	**50.3**	44.1	43.8
Primary	51.5	46.6	47.3	**56.5**	49.3	51.7
Middle	48.2	43.4	43.3	**51.3**	46.6	45.7
Secondary	42.3	40.0	38.8	**45.0**	42.1	38.9
Graduate and above	52.8	52.0	50.7	**52.2**	55.1	49.2
Marital Status						
Never Married	35.1	34.3	35.6	**36.9**	36.8	36.6
Currently Married	50.5	48.3	46.1	**55.0**	51.4	48.5
Divorced/Separated	47.1	35.1	32.0	**51.8**	36.3	36.8
Widowed	64.6	60.9	52.1	**68.5**	64.8	58.1
Place of Residence						
Rural	46.0	43.5	42.1	**49.9**	47.0	45.0
Urban	49.1	45.4	44.4	**52.3**	47.5	45.6
Household Size						
Household with less than 5 members	48.8	45.7	44.3	**52.9**	48.2	47.0

	2019			2024		
	Hindu SC	**Hindu UC**	**Muslim**	**Hindu SC**	**Hindu UC**	**Muslim**
Household with 5 or more members	44.1	41.7	41.5	**47.6**	45.6	43.6
MPCE						
Poorest	46.5	**45.8**	43.0	**47.1**	45.1	44.8
Poor	48.7	46.2	44.0	**49.6**	47.1	45.1
Middle	46.3	44.3	43.2	**52.2**	46.5	44.7
Richer	46.2	43.9	42.5	**53.7**	46.9	44.9
Richest	45.4	43.6	42.0	**56.3**	49.2	48.7
Region						
North	44.8	40.8	45.2	**49.9**	45.3	44.8
Central	41.3	36.5	38.5	**46.4**	42.1	44.6
East	45.5	42.1	44.6	**48.1**	43.3	46.5
Northeast	43.9	42.9	40.9	**47.3**	45.3	43.8
West	54.0	53.1	47.9	**56.0**	55.6	48.9
South	54.8	48.5	42.7	**59.0**	51.0	42.6
Total	46.8	44.3	42.9	50.5	47.2	45.2

Table 2: Average Time Allocation (In hours) in Daily Employment Activities among Participant across Socio-Religious Groups in India

	2019			2024		
	Hindu SC	**Hindu UC**	**Muslim**	**Hindu SC**	**Hindu UC**	**Muslim**
Gender						
Male	7.9	8.0	7.9	8.0	8.1	8.0
Female	5.9	5.6	5.0	5.8	6.0	4.8
Age Group						
15–24 years	7.1	6.8	7.3	7.4	7.3	7.3
25–34 years	7.6	7.8	7.7	7.7	8.0	7.6
35–44 years	7.5	7.6	7.6	7.4	7.8	7.5
45–54 years	7.4	7.4	7.4	7.3	7.7	7.3
55–64 years	6.9	6.9	6.9	6.8	7.0	6.8
Education Level						
Illiterate	7.1	6.7	7.2	6.9	6.9	6.9
Primary	7.5	7.2	7.4	7.3	7.3	7.5
Middle	7.5	7.4	7.7	7.6	7.6	7.5
Secondary	7.6	7.5	7.7	7.7	7.8	7.6
Graduate and above	7.6	7.9	7.7	7.7	8.0	7.5
Marital Status						
Never Married	7.3	7.4	7.6	7.7	7.8	7.6
Currently Married	7.5	7.5	7.5	7.4	7.7	7.4
Divorced/Separated	6.9	6.2	6.0	6.8	6.7	6.4
Widowed	7.4	7.6	6.8	6.9	7.5	7.0
Place of Residence						
Rural	7.2	6.7	7.0	7.1	7.0	7.1
Urban	8.1	8.3	8.3	8.2	8.4	8.0

	2019			2024		
	Hindu SC	Hindu UC	Muslim	Hindu SC	Hindu UC	Muslim
Household Size						
Household with less than 5 members	7.4	7.5	7.4	7.4	7.7	7.4
Household with 5 or more members	7.4	7.3	7.5	7.4	7.5	7.4
MPCE						
Poorest	7.1	6.7	6.8	7.3	7.3	7.4
Poor	7.3	7.0	7.1	7.2	7.3	7.3
Middle	7.3	7.2	7.4	7.4	7.5	7.3
Richer	7.6	7.5	7.8	7.5	7.7	7.4
Richest	7.8	7.9	8.0	8.1	8.2	8.1
Region						
North	8.0	7.6	7.7	7.9	8.1	7.3
Central	7.2	6.8	7.5	7.4	7.3	7.7
East	7.2	7.5	7.4	7.0	7.4	6.9
Northeast	6.3	6.7	5.5	7.2	7.6	7.4
West	7.7	7.7	8.1	7.9	8.0	8.0
South	7.5	7.5	7.9	7.4	7.4	7.7
Total	7.4	7.5	7.5	7.4	7.7	7.4

Table 2 presents the average daily time allocation on employment activities among individual those participated in employment activities across socio-religious groups. Overall, participants allocated 7.4 hours to 7.7 hours daily in employment activities, which remained stable overtime despite an increase in participation rate. Hindu UC recorded a modest increase in average time spent in employment activities from 7.5 hours to 7.7 hours, while Hindu SC maintained their time allocation in both years. In contrast, Muslim experienced a negligible decline from 7.5 hours to 7.4 hours during 2019-24. Gender inequality in daily time allocation is pronounced across socio-religious groups in both years. For example, female from Hindu SC allocate 2 hours less than their male counterpart, and this gap remained stable overtime. Similarly, Hindu UC females spent 2.4 hours less than their male counterparts, however, this gap reduced over time. In contrast, Muslim females spent the lowest time in daily employment activities across socio-religious groups, with 2.9 hours less than their male counterparts. This gender disparity in time allocation among Muslim females increased over time. Across all socio-religious groups, illiterate individuals allocated less time in employment activities, while individuals with graduate and above education spent the highest time. The time allocation to employment activities increases with education level, and Hindu UC with graduate degree or above degree spent the highest time in employment activities. Rural individuals spent less time than urban individuals across socio-religious groups. Interestingly, Hindu UC spent less time in rural areas

and highest time in urban settings. In smaller families, Hindus spent more time in employment activities, while Muslims with larger family size spent the most. The findings show that time allocation in employment activities increases with increasing household MPCE, and individuals belonging to the richest stratum allocate the highest time in daily employment activities. Hindu SC from North India allocate highest time in employment activities, while Muslims from the North-East region allocated the least time. Interestingly, time allocation of Hindu SC and Muslim declined in North India during 2019-24, with a substantial decline in Muslim community.

Empirical Results

Impact of Socio-Religious Groups on Participation in Employment Activities

Figure 4 presents the AMEs of socio-religious categories on the probability of participation in employment activities. In the unadjusted model, Hindu UC exhibit a positive and statistically significant association with participation in employment activities in both years. The findings show that probability of participation in employment activities of Hindu SC was 2.1 percentage points higher than Hindu UC, which increased 3.0 percentage points in 2024. In contrast, the probability of participation of Muslim was 1.9 percentage points lower than Hindu UC, which further deteriorated in 2024. In contrast, the adjusted model controls for the socio-economic factors and shows that the probability of participation of Hindu SC becomes stronger as it was 6-7 percentage points higher than Hindu UC. The findings also suggest that after controlling for the other factors, Muslims had a positive probability of participation in employment activities compared to Hindu UC. The adjusted results show a 3 percentage points higher participation than Hindu UC; however, this advantage declined to 2 percentage points by 2024. Corresponding to probit regression results, the OLS estimates are shown in Appendix Table A1.

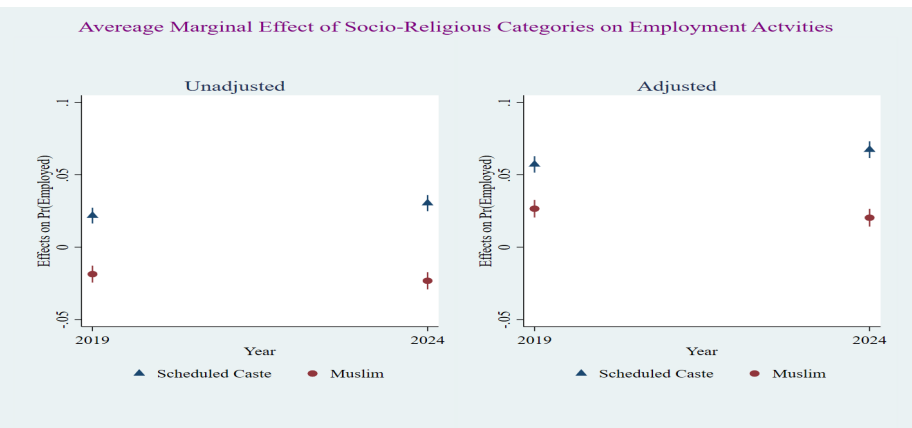


Fig. 4: Average Marginal Effects (Unadjusted vs Adjusted) of Socio-Religious Group on Participation in Employment Activities in India, 2019-24

Impact of Non-Employment Activities of Participation in Employment Activities

Figure 5 presents AMEs of participation in non-employment activities—including food production for own use, unpaid domestic services, unpaid care, learning, socialisation and communication, and leisure and cultural activities—on the probability of employment participation among Hindu SC, Hindu UC, and Muslim individuals in India during 2019–24. Overall, participation in non-employment activities is negatively associated with employment participation across all socio-religious groups, although the magnitude varies by activity and year.

Among Hindu SCs (Figure 5a), unpaid domestic work reduces the probability of employment by 37.8 percentage points in 2019 and 34.7 percentage points in 2024. Learning has an even stronger negative association, increasing from 40.4 to 50.3 percentage points over the same period. Food production for own use reduces employment participation by 13.6 and 13.1 percentage points, while unpaid caregiving reduces it by approximately 11.5–13.1 percentage points. Socialisation and leisure show comparatively smaller negative effects. For Hindu UCs (Figure 5b), unpaid domestic work remains strongly associated with lower employment participation, with effects of 39.0 and 39.2 percentage points in 2019 and 2024, respectively. The negative association of learning increases from 39.2 to 46.3 percentage points. Food production and unpaid caregiving reduce employment participation by approximately 11–13 percentage points, while socialisation and leisure also show significant negative effects. Among Muslims (Figure 5c), unpaid domestic work has the largest negative association, reducing employment probability by 47.1 percentage points in 2019 and 44.8 percentage points in 2024. Learning shows an increasing negative association, from 39.5 to 47.0 percentage points. Unlike the other groups, the effect of food production becomes stronger, increasing from 8.4 to 14.3 percentage points.

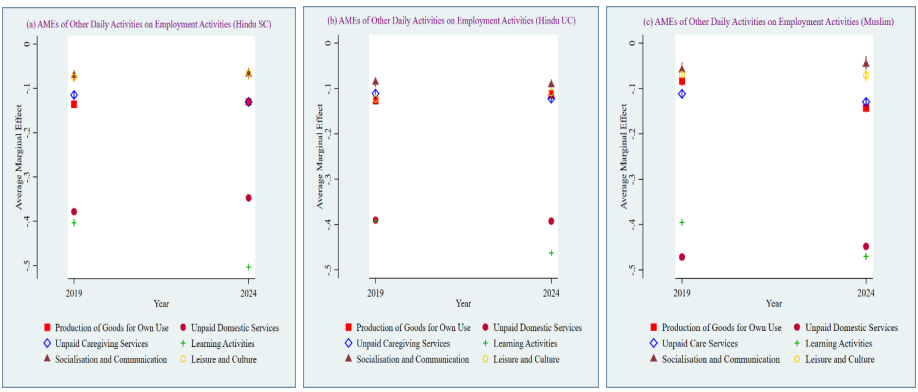


Fig. 5: Average Marginal Effects of Other Daily Life Activities Participation on Employment Activities across Hindu SC, Hindu UC, and Muslim in India, 2019-24

The OLS estimates in Appendix Table A2 support these findings. Learning is associated with the largest reduction in employment time—4.59 hours among SCs, 3.98 hours among UCs, and 4.14 hours among Muslims. Food production reduces employment time by 1.81–2.46 hours, while unpaid domestic work reduces it by approximately 1.52–1.75 hours. Overall, the results indicate substantial trade-offs between employment and competing activities, particularly learning and unpaid domestic work, with meaningful differences across socio-religious groups and over time (see Appendix Table A2).

Determinants of Participation and Time Allocation in Employment Activities

Table 3 presents the average marginal effects (AMEs) from pooled probit models, estimated separately for Hindu SC, Hindu UC, and Muslim individuals to examine the determinants of employment participation. Overall, age, marital status, education, household consumption expenditure (MPCE), household size, and region significantly influence employment participation, although the magnitude and direction of effects vary across socio-religious groups and over time. The period effect is positive and significant for Hindu SC and Hindu UC, with employment probability increasing by about 2.4 percentage points, while no significant change is observed among Muslims.

Education is positively associated with employment participation relative to illiteracy. Primary and middle education generally increase participation, while graduates retain a substantial advantage, particularly among Hindu UCs. In 2019, graduate participation was 15.5 percentage points higher among Hindu UCs, compared with 12.4 points among Hindu SCs and 10.7 points among Muslims. Although the positive effect persisted in 2024, its magnitude declined across all groups, suggesting that educational expansion has not translated proportionately into employment opportunities. Urban residence has limited effects. It is insignificant for Hindu SCs, negatively associated with Hindu UC participation, and provides only a modest advantage for Muslims in 2019 that disappears by 2024. Higher MPCE was associated with lower participation in 2019, particularly among Hindu UCs and Muslims, but these differences weakened by 2024. Larger households generally reduce participation, especially among Hindu SCs and Muslims. Regional disparities remain substantial. Western and Southern regions generally show higher participation, while Central, Eastern, and Northeastern regions report lower participation than the North. The Western region shows the largest advantage, whereas Muslims in the Southern region exhibit lower participation despite positive regional effects among Hindu SCs and Hindu UCs.

Table 3: Average Marginal Effects (Estimates of Pooled Probit Regression) of Socio-Economic Characteristics on Participation in Employment Activities among Hindu SC, Hindu UC, and Muslim in India, 2019-24

Background Characteristics	Hindu SC		Hindu UC		Muslim	
	2019	2024	2019	2024	2019	2024
	AME (SE)	AME (SE)	AME (SE)	AME (SE)	AME (SE)	AME (SE)
Age Group 15–24®						
25–34	0.273*** (0.006)	0.292*** (0.007)	0.315*** (0.005)	0.335*** (0.005)	0.254*** (0.007)	0.280*** (0.007)
35–44	0.373*** (0.007)	0.418*** (0.007)	0.397*** (0.006)	0.451*** (0.006)	0.333*** (0.008)	0.359*** (0.008)
45–54	0.373*** (0.008)	0.408*** (0.008)	0.400*** (0.006)	0.447*** (0.006)	0.319*** (0.009)	0.339*** (0.009)
55–64	0.255*** (0.009)	0.323*** (0.009)	0.292*** (0.007)	0.330*** (0.007)	0.244*** (0.010)	0.273*** (0.010)
Marital Status Never Married®						
Currently Married	−0.065*** (0.007)	−0.078*** (0.007)	−0.116*** (0.006)	−0.136*** (0.006)	−0.114*** (0.008)	−0.126*** (0.007)
Divorced/ Separated	−0.115*** (0.011)	−0.134*** (0.011)	−0.229*** (0.010)	−0.241*** (0.010)	−0.253*** (0.013)	−0.242*** (0.013)
Widowed	0.044* (0.026)	−0.002 (0.026)	−0.034 (0.024)	−0.035 (0.025)	−0.100*** (0.034)	−0.038 (0.031)
Education Level Illiterate®						
Primary	0.094*** (0.006)	0.075*** (0.006)	0.057*** (0.007)	0.052*** (0.008)	0.083*** (0.007)	0.098*** (0.007)
Middle	0.108*** (0.006)	0.084*** (0.006)	0.066*** (0.007)	0.055*** (0.008)	0.074*** (0.007)	0.081*** (0.008)
Secondary	0.073*** (0.006)	0.045*** (0.007)	0.067*** (0.006)	0.049*** (0.007)	0.042*** (0.007)	0.032*** (0.008)
Graduate and above	0.124*** (0.009)	0.056*** (0.009)	0.155*** (0.007)	0.137*** (0.008)	0.107*** (0.010)	0.083*** (0.010)
Place of Residence Rural®						
Urban	0.007 (0.005)	−0.007 (0.005)	−0.010** (0.004)	−0.040*** (0.004)	0.022*** (0.005)	−0.000 (0.005)
MPCE Poorest®						
Poor	0.002 (0.007)	0.010* (0.006)	−0.004 (0.008)	0.004 (0.007)	−0.015* (0.009)	0.001 (0.007)
Middle	−0.024*** (0.007)	0.011* (0.006)	−0.032*** (0.008)	−0.013* (0.007)	−0.031*** (0.009)	−0.003 (0.007)
Richer	−0.045*** (0.007)	0.005 (0.007)	−0.057*** (0.007)	−0.026*** (0.007)	−0.040*** (0.009)	−0.013* (0.008)
Richest	−0.068*** (0.008)	0.005 (0.009)	−0.097*** (0.008)	−0.039*** (0.007)	−0.068*** (0.010)	0.008 (0.010)

Background Characteristics	Hindu SC		Hindu UC		Muslim	
	2019	2024	2019	2024	2019	2024
	AME (SE)	AME (SE)	AME (SE)	AME (SE)	AME (SE)	AME (SE)
Household Size <5 members®						
5 members or more	−0.008* (0.004)	−0.028*** (0.004)	0.004 (0.004)	−0.016*** (0.004)	−0.014*** (0.005)	−0.030*** (0.005)
Region North®						
Central	−0.044*** (0.007)	−0.021*** (0.007)	−0.056*** (0.006)	−0.035*** (0.006)	−0.057*** (0.008)	0.015* (0.008)
East	−0.022*** (0.007)	−0.027*** (0.006)	−0.022*** (0.005)	−0.033*** (0.006)	−0.013 (0.009)	0.031*** (0.008)
Northeast	−0.041*** (0.010)	−0.059*** (0.010)	0.012 (0.008)	0.006 (0.008)	−0.038*** (0.010)	−0.001 (0.009)
West	0.059*** (0.009)	0.041*** (0.009)	0.103*** (0.005)	0.096*** (0.006)	0.025** (0.010)	0.035*** (0.009)
South	0.057*** (0.007)	0.057*** (0.007)	0.048*** (0.006)	0.045*** (0.007)	−0.053*** (0.009)	−0.040*** (0.008)

Note: Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 4 presents OLS estimates of differences in the determinants of time allocation to employment activities across Hindu SC, Hindu UC, and Muslim individuals. The period effect is insignificant for Hindu SCs and Muslims, while Hindu UCs experienced a significant increase in working hours in 2024 relative to 2019. Employment time is higher among prime-age individuals but declines among those aged 55–64. Widowed, divorced, and separated individuals consistently report fewer working hours than never-married individuals. Urban residence is positively associated with employment hours across all groups, with the largest effect among Hindu UCs. Education generally increases work intensity among Hindu SCs and Hindu UCs, while among Muslims, primary and middle education increase working hours but graduate education is associated with fewer hours. Higher MPCE is positively associated with work intensity, particularly among Muslims. In contrast, individuals from larger households consistently report fewer employment hours across all groups. Substantial regional differences are also observed. Compared with the Northern region, Central and Northeastern residents generally report fewer working hours, while the effects of Eastern, Western, and Southern regions vary across socio-religious groups.

The interaction effects indicate that changes in work intensity between 2019 and 2024 were uneven across socio-economic groups. Among Hindu UCs, increases in working hours were moderated for older, urban, and Eastern and Southern residents. Among Hindu SCs, year effects were stronger for individuals with secondary and higher education, larger households, and residents of Central, Northeastern, and Western regions. Among Muslims, significant interactions with education, household

size, MPCE, and region indicate heterogeneous changes, including increased work hours among educated individuals and those in larger households, while the positive association with higher MPCE weakened in 2024.

Table 4: Estimates of Pooled OLS Regression for Time Allocation (in Hours) in Daily Employment Activities Among Hindu SC, Hindu UC, and Muslim in India, 2019-24

	Hindu SC	Hindu UC	Muslim
	Coef. (SE)	Coef. (SE)	Coef. (SE)
Survey Year (Ref: 2019)			
2024	0.106 (0.111)	0.929*** (0.131)	-0.175 (0.141)
Age Group (Ref: 15–24)			
25–34	0.586*** (0.061)	0.982*** (0.059)	0.544*** (0.069)
35–44	0.558*** (0.067)	0.863*** (0.066)	0.445*** (0.078)
45–54	0.464*** (0.072)	0.769*** (0.068)	0.339*** (0.084)
55–64	0.067 (0.080)	0.428*** (0.073)	-0.051 (0.094)
Marital Status (Ref: Never married)			
Currently Married	0.008 (0.057)	0.000 (0.049)	0.013 (0.066)
Divorced/Separated	-0.559*** (0.094)	-0.961*** (0.096)	-1.172*** (0.132)
Widowed	-0.206 (0.183)	0.184 (0.184)	-0.830** (0.274)
Place of Residence (Ref: Rural)			
Urban	0.809*** (0.037)	1.497*** (0.034)	0.992*** (0.043)
Education (Ref: Illiterate)			
Primary	0.324*** (0.048)	0.322*** (0.063)	0.145* (0.057)
Middle	0.365*** (0.051)	0.458*** (0.062)	0.257*** (0.062)
Secondary	0.244*** (0.051)	0.355*** (0.057)	0.072 (0.061)
Graduate and above	0.037 (0.069)	0.150* (0.062)	-0.319*** (0.083)
MPCE Quintile (Ref: Poorest)			
Poorer	0.108* (0.052)	-0.058 (0.067)	0.115 (0.072)
Middle	0.081 (0.053)	0.064 (0.065)	0.348*** (0.071)
Richer	0.158** (0.057)	0.154* (0.064)	0.497*** (0.073)
Richest	0.157* (0.065)	0.153* (0.065)	0.549*** (0.079)
Household Size (Ref: <5 members)			
5 members or more	-0.086* (0.036)	-0.083* (0.033)	-0.181*** (0.043)
Region (Ref: North)			
Central	-0.603*** (0.055)	-0.502*** (0.053)	-0.266*** (0.069)
East	-0.565*** (0.055)	0.113* (0.049)	-0.261*** (0.070)
Northeast	-1.172*** (0.079)	-0.898*** (0.065)	-1.625*** (0.082)
West	-0.285*** (0.067)	0.104* (0.045)	-0.062 (0.077)
South	-0.408*** (0.054)	0.010 (0.051)	-0.166* (0.072)

	Hindu SC	Hindu UC	Muslim
	Coef. (SE)	Coef. (SE)	Coef. (SE)
Survey Year × Age Group			
2024 × 25–34	-0.090 (0.086)	-0.248** (0.087)	-0.074 (0.098)
2024 × 35–44	-0.109 (0.095)	-0.210* (0.097)	-0.043 (0.110)
2024 × 45–54	-0.052 (0.101)	-0.163 (0.100)	-0.109 (0.119)
2024 × 55–64	0.077 (0.111)	-0.227* (0.107)	-0.020 (0.132)
Survey Year × Marital Status			
2024 × Currently Married	-0.303*** (0.079)	-0.156* (0.070)	-0.170 (0.092)
2024 × Divorced/Separated	-0.178 (0.129)	0.028 (0.136)	0.152 (0.184)
2024 × Widowed	-0.606* (0.256)	-0.697** (0.262)	-0.106 (0.356)
Survey Year × Place of Residence			
2024 × Urban	0.039 (0.052)	-0.318*** (0.048)	-0.315*** (0.059)
Survey Year × Education			
2024 × Primary	-0.041 (0.068)	-0.170 (0.095)	0.203* (0.082)
2024 × Middle	0.153* (0.073)	-0.144 (0.094)	0.006 (0.090)
2024 × Secondary	0.303*** (0.071)	0.045 (0.086)	0.210* (0.088)
2024 × Graduate & Above	0.317*** (0.095)	0.016 (0.092)	0.238* (0.115)
Survey Year × MPCE			
2024 × Poorer	-0.216** (0.068)	-0.011 (0.089)	-0.072 (0.090)
2024 × Middle	-0.136 (0.072)	-0.146 (0.087)	-0.308*** (0.091)
2024 × Richer	-0.247** (0.079)	-0.221* (0.087)	-0.525*** (0.097)
2024 × Richest	-0.070 (0.095)	-0.130 (0.091)	-0.152 (0.114)
Survey Year × Household Size			
2024 × 5 members or more	0.172*** (0.050)	0.074 (0.048)	0.193*** (0.060)
Survey Year × Region			
2024 × Central	0.285*** (0.075)	0.177* (0.075)	0.766*** (0.095)
2024 × East	-0.050 (0.074)	-0.471*** (0.069)	0.077 (0.095)
2024 × Northeast	0.508*** (0.111)	0.287** (0.093)	1.789*** (0.112)
2024 × West	0.276** (0.094)	0.057 (0.065)	0.781*** (0.107)
2024 × South	0.061 (0.075)	-0.390*** (0.075)	0.369*** (0.099)
Constant	6.961*** (0.079)	5.708*** (0.088)	6.708*** (0.100)

Note: Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Heterogeneity in Labour Market Participation in Different Sectors

Table 5 shows distinct patterns of industrial employment among Hindu SC, Hindu UC, and Muslim workers during 2019–24. Hindu SCs remained concentrated in the primary sector, although their share declined slightly from 34.8 per cent in 2019 to

33.4 per cent in 2024, indicating continued dependence on agriculture. Hindu UCs had the highest concentration in the tertiary sector, increasing from 46.9 per cent to 49.8 per cent, reflecting greater participation in service-oriented and relatively skilled activities. Muslims remained strongly concentrated in the secondary sector, although their share declined marginally from 40.6 percent to 40.0 percent.

At the detailed industry level, agriculture, forestry, and fishing remained the largest employer of Hindu SCs, followed by construction and manufacturing. Their declining shares in agriculture and construction, alongside increases in manufacturing and retail trade, indicate gradual employment diversification. However, their representation remained limited in information and communication, finance, and professional and technical activities. Hindu UCs showed greater participation in higher-value service activities. Alongside agriculture and manufacturing, their employment increased in wholesale and retail trade and information and communication, while construction declined. They also maintained comparatively higher shares in education, finance, and professional activities. Muslims displayed a distinct concentration in manufacturing, construction, and wholesale and retail trade. Manufacturing increased from 19.7 per cent to 20.3 per cent, while trade rose from 15.3 per cent to 17.6 per cent. Transportation and storage also remained important. However, Muslim participation continued to be relatively low in information and communication, financial, professional, technical, and public administration activities (Appendix Table A3).

Table (6) shows time allocation across major industries and socio-religious groups during 2019–24. Time spent in primary activities declined slightly, particularly among Muslims. Secondary-sector time remained stable for Hindu SC and Hindu Others but declined among Muslims. Tertiary-sector time was largely stable, indicating persistent differences in work-time allocation across industries and groups. Corresponding to this, average time spent in employment activities varied modestly across industries and socio-religious groups between 2019 and 2024 (see Appendix Table A4). Longer working hours were generally observed in transportation, accommodation and food services, information and communication, wholesale and retail trade, construction, and mining, where workers typically spent 8–9 hours per day. In contrast, agriculture and education recorded comparatively shorter working hours, averaging 6–7 hours across all groups. Hindu Upper Castes generally reported slightly longer working hours in knowledge-intensive and formal sectors, while Hindu SCs and Muslims exhibited similar work durations in manual occupations. Overall, average daily working hours remained relatively stable over time despite minor sector-specific changes (see Appendix Table A4).

Table 5: Major Industry division of Labour Market Participation (%) across Socio-Religious Groups in India (2019-24)

	2019			2024		
	Hindu SC	**Hindu UC**	**Muslim**	**Hindu SC**	**Hindu UC**	**Muslim**
Primary	34.8	28.9	21.7	33.4	27.2	20.6
Secondary	37.5	24.2	40.6	36.7	23.0	40.0
Tertiary	27.8	46.9	37.7	29.9	49.8	39.4

Table 6: Time Allocation (in hours) across Major Industry and Socio-Religious Groups, 2019-24

	2019			2024		
	Hindu SC	**Hindu UC**	**Muslim**	**Hindu SC**	**Hindu UC**	**Muslim**
Primary	6.7	6.3	6.4	6.5	6.4	6.1
Secondary	8.2	8.5	8.1	8.2	8.5	7.7
Tertiary	8.2	8.4	8.2	8.1	8.4	8.2

Discussion and Conclusions

The study has attempted to investigate the disparities in participation and time allocation among Hindu SC, Hindu UC, and Muslim in employment activities, by positing that socio-religious identity plays a critical role in labour market outcomes through entrenched historical and social division of labour (Jodhka, 2002; Darity & Deshpande, 2003; Thorat, 2004). Although Hindu SC and Muslim both experience socio-religious discrimination, the nature and extent of it varies (Thorat, 2004, 2009; Das, 2006). Household characteristics intersect with socio-religious institutions in ways that upward mobility remains out of reach, restricting marginalised communities to low-return occupations (Das & Dutta, 2007; Agrawal, 2011; Thorat et al., 2021).

Social and cultural capital continues to ration out better labour opportunities to Hindu UC (Thorat et al., 2021; Tiwari et al., 2022). While scholarship has focused on caste, labour market, and wage, fewer studies have investigated the time-use-employment nexus beyond the gendered aspect (Eswaran et al., 2013; Dasgupta & Datta, 2023). Modelling on Becker's (1965) labour-leisure thesis, time investment as proxy for employment could help to understand productivity and investment in employment activities.

Several important findings emerged from this study. First, overall participation in employment activities increased across socio-religious groups during 2019-24 with highest participation among Hindu SC followed by Hindu UC. Improvement in Muslim's employment activities is also evident, yet they have the lowest participation rate, and where it exists, it is largely distress-driven and led by women, particularly after COVID-19. This is a classic case of the 'added worker effect', whereby women join the labour market to compensate for male income loss (Lundberg, 1985). Despite

this increase, the gender gap in labour market is clear across all groups, with highest gender gap among Muslims (62 per cent) in both periods. For instance, Hindu SC women entered in the labour market in greater numbers, as compared to Hindu UC and Muslim women, because of poor household financial condition as well low status issues (Eswaran et al., 2013). In contrast, women from Hindu UC category, might not join labour market, especially agricultural sector to maintain their household social status. Similarly, low participation of Muslims reflects that despite distressed household economic condition, Muslim women experienced more restrictions on their employment activities (Eswaran et al., 2013). This is evident in the fact that the gap remained stable in Hindu SC and Muslim, while it increased for Hindu UC from 49 per cent to 52 per cent during 2019-24.

Education is another vector of labour market outcomes, with returns to education differing across socio-religious groups (Thorat & Attewell, 2007; Thorat et al., 2021). The findings demonstrate that Hindu UC with higher education record the highest participation rate, followed by Hindu SC and Muslims. This is consistent with other Indian studies which suggest a low return on education for Muslims (Sachar, 2006; Das, 2008; Thorat & Neuman, 2012; Deshpande & Newman, 2007). In contrast, Hindu UC with higher education experienced an improvement of 3.1 per cent in labour force participation over time, a trend that is consistent with the literature on hegemonic domination of the Hindu UC (Thorat & Newman, 2007; Deshpande & Newman, 2007; Mamgain, 2018).

Urban areas illustrate another aspect of market discrimination, where Muslim participation trailed during 2019-24 (Shaban, 2016; Thorat & Attewell, 2007; Thorat et al., 2021). Interestingly, labour market participation improved across all regions and socio-religious groups. However, Muslim experienced a 0.5 per cent decline in North India during 2019-24, which reflects negligible but important market exclusion. This could reflect the emergence of recent Hindu majoritarian local institutions in North and Central India. The empirical evidence suggests that Muslims had the lowest probabilities of labour market participation compared to Hindu UC, while Hindu SC show higher chances of participation. In addition, the period effect shows an adverse effect on Muslim labour market and a positive effect on Hindu SC. The findings substantiate the labour market exclusion of Muslims in India, which could be an appendage of the rise in Hindu majoritarian institutions and the subsequent social closure they breed, leading to the exclusion of Muslim workers due to historical regard of them as outsiders (Weber, 1978). In contrast, Hindu SC show higher probabilities of participation than Hindu UC with an increase over time, characteristic of distress participation as well as social closure. For example, Hindu SCs concentrate in low-skilled jobs due to lower economic capital and less bargaining power. First, it is possible that the recorded positive effect of period is an impact of COVID-19 induced economic marginalisation which compelled many women and younger people to

participate in the labour market. Second, under the aegis of the recent development of Hindutva led institution, firms or local market preferring Hindu SC in the secondary sector remain excluded.

This study also explored how non-economic activities influence individuals' employment activities across Hindu SC, Hindu UC and Muslim with temporal changes. The findings suggest a massive adverse effect of non-economic activities on employment activities across socio-religious groups. Although all major non-economic activities had a strong and negative effect, learning and unpaid domestic work occupy the lion's share in deciding employment activities. Importantly, learning activities had the highest impact on Hindu SC, followed by Hindu UC and Muslims. A possible explanation could be the increasing enrolment of Hindu SC and Hindu UC in educational institutions, subsequently affecting their participation in the labour market. Although Muslims also demonstrate adverse effect of learning activities on employment, it is lower than that of Hindu SC and Hindu UC. Unpaid domestic work also showed higher adverse impact on employment activities across all socio-religious groups. However, the extent and nature of impact varied across all groups. For example, unpaid domestic work had a strong negative impact on employment activities for Hindu UC, followed by Muslim and Hindu SC.

Indian feminist scholarship suggests that women from upper castes do not participate in the low skilled labour market to preserve their household social status (Eswaran et al., 2013). Additionally, post COVID-19 a spike in female work participation has largely been concentrated in the agricultural sector, where Hindu SCs have historically been engaged due to poverty and economic distress, while Hindu UC and Muslims record lesser participation. Therefore, Hindu SC women can enter in and out of the workforce much more easily, a pattern that is consistent with the added worker theory.

Another important finding emerged from changes over time across groups. Compared with 2019, the adverse impact of unpaid domestic work was reduced among Hindu SC and Hindu UC, but it increased among Muslims. It is possible that Hindu UC and Hindu SC transitioned into the informal market or agriculture, while Muslims are placed far worse in the informal market. Time allocation behaviour in employment activities among Hindu SC, Hindu UC and Muslim is also one of the findings of the study. Negligible differences in daily time spent in employment activities among socio-religious groups are noted, with almost a stagnant trend. It reflects that although participation rate increased across socio-religious groups, the time investment remained unchanged. However, intra-group disparities in time allocation are clearly visible. The gender gap in time allocation is pronounced across all groups, with a massive gender difference among the Muslim category, suggesting marginalisation of Muslim women in the labour market overtime. Importantly, amongst educated Hindu SC and UC, time spent on unpaid domestic work decreased over time, a direct outcome of better returns

to their education. In contrast, the time spent in employment activities by educated Muslim individuals reduced over time, especially among those with a graduate degree or above. This could be a result of high concentration of Muslims in the informal sector and self-employment, which might restrict their access to decent labour market and service sector (Thorat & Newman, 2007; Das, 2008). It is also possible that because of their low educational attainment (Deshpande, 2006; Deshpande & Yadav, 2006; Mohanty, 2006), Muslims are highly concentrated in sectors where returns on their education and requirement of time investment are low.

Urban-rural differences in time allocation are prevalent across all socio-religious groups, notwithstanding that the location difference reduced over time. Amongst Muslims, this reduction emerged due to a decline in time spent in urban areas, where they might experience discrimination in the labour market due to perceived labourer preferences, housing segregation, and restriction in some sectors (Mishra, 2023; Thorat & Attewell, 2007; Thorat et al., 2021). This study also suggests that rich individuals across all socio-religious groups spent greater time, owing to their higher human and social capital, with the returns on their capital encouraging them to spend more time in employment activities. Regional differences in time allocation within groups are highly visible. Individuals from the North-East spent the lowest time in employment activities, with Muslims accounting for the least time spent among socio-religious groups in 2019. However, time spent by all socio-religious groups from the North-East increased massively in 2024, with maximum gains among Muslims. In contrast, Muslims experienced a substantial decline in time spent in North India, while time spent by Hindu UC and SC increased during 2019-24, which strengthened the exclusionary labour market state for Muslims. Although the period effect shows an insignificant impact on Muslim time allocation, the direction suggests an adverse impact on it. This study clearly shows that Hindu SC and Hindu UC received the advantage of period, with strong and significant positive impact on time allocation among Hindu UC. This study also suggests a positive and strong association of time allocation and education among Hindu SC and Muslim, although the period effect had a more positive impact on educated Hindu SC.

Although participation rate and time allocation are able to explain the market discrimination across socio-religious groups, the industry-level participation can strengthen the above findings through the classification of individual participation and time allocation across groups. This study reconfirms the findings of previous scholarship that Hindu SC were highly concentrated in the primary sector (Thorat & Umakant, 2004; Thorat, 2009). In contrast, Hindu UC were highly concentrated in the tertiary sector which increased over time. This finding is also consistent with other Indian scholarship that suggested a high concentration of upper caste Hindus in the tertiary or service sector (Deshpande & Newman, 2007), while lower representation of Hindu SC and Muslim (Thorat, 2009). In addition, Muslim were highly concentrated

in the secondary sector (Sachar, 2006; Thorat & Neuman, 2012; Thorat & Attewell, 2007). Further segregation of industrial engagement reconfirms labour market discrimination and hegemony of upper caste in decent and service sector. For example, high-paid jobs such as real estate, professional, scientific services, public administration, administrative positions, health and social services, and education sectors are highly occupied by Hindu UC. These jobs required high skills, social networks, human, cultural, and social capital, where Hindu UC get an advantage due to their intergenerational hegemony, social hierarchy, better human capital and social closure in these top positions and businesses (Das, 2006; Deshpande, 2006; Deshpande & Yadav, 2006; Mohanty, 2006; Jodhka & Newman, 2007).

These findings are consistent with the Weberian framework of social closure, where dominant groups maintain their economic hegemony by restricting weaker groups' access to resources and markets (Weber, 1978). The study also tailgates Bourdieu's (1986) idea of cultural and social capital, which are preserved by dominant groups to fence off the gains of the market. For instance, the tertiary sector's occupations require a specific and high-skilled human capital, which is easily available to the Hindu upper castes through their social, economic and political hegemony, with an entrenched caste-system making the scaffolding. The idea of cultural capital also extends to communication and information, which is again dominated by Hindu UC. In contrast, Hindu SC and Muslim face difficulty in acquiring such advantages due to their intergenerational capital deprivation and social closure, as well as low education and poor human capital. For example, Bourdieu (1986) suggested that family and social institutions are the main contributors in human capital development through transmission of health, knowledge, language and values, all highly regarded in top market positions. In India, this is apparent in the hegemony of upper castes over social and cultural institutions as an appendage of their economic hegemony and caste hierarchy.

Furthermore, while the representation of Hindu SC in the tertiary sector is low, their representation is higher than Muslims, which reflects a positive impact of mandatory caste reservation. The low participation of Muslims in agriculture and the tertiary sector, and their higher concentration in manufacturing and construction is consistent with previous scholarship. Ali and Mondal (2025) suggested that landholding among Muslims is lower compared with that of Hindu UC and SC, which restricts their participation in agriculture sector. Similarly, due to low human capital and market discrimination, Muslims are compelled to work in construction and manufacturing sector, which need semi-skilled workers (Deshpande, 2006; Deshpande & Yadav, 2006; Mohanty, 2006). In addition, Muslims have the least representation in white-collar occupations such as professional, scientific services, public administration, administrative position, health and social services and education sector. This exclusion could be a reflection of repeated discrimination, poor social networks, and

intergenerational experiences, which over time created a perception of low return on education and discrimination among Muslims.

While this study does not find differences in time allocation within sector among Hindu SC, Hindu UC and Muslims, inter-sectoral disparities are clearly visible, with individuals engaged in the primary sector spending less time than those in the secondary and tertiary sectors. Further sectoral segregation suggests time allocation with visible differences. Individual working in high paid jobs spent more time than those involved in agriculture across all social groups. Interestingly, this study suggests that individuals engaged in the education sector spent the least time than any other industry. Overall, this study finds and substantiates massive differences and representation in the labour market participation. This study concludes that Hindu UC have maintained their market hegemony through their strong hold on social and economic institutions. The social walls of the market restrict Hindu SC and Muslims, prevent them from accessing upward mobility, and provide an advantage to Hindu UC in decent work. Hindu SC continue to work in informal and low-paid jobs, while Muslims crowd in the secondary sector, reflecting their low human capital as well as market exclusion.

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Appendices

Table A1: Estimates for Impact of Socio-Religious Groups on Time Allocation (in Hours) in India, 2019-24

Independent Variables	Unadjusted Model	Adjusted Model
	Coef. (SE)	Coef. (SE)
Survey year (Ref: 2019)		
2024	0.207*** (0.021)	0.535*** (0.076)
Caste group (Ref: Hindu UC)		
Hindu SC	-0.001 (012)	0.312*** (0.024)
Muslim	0.006 (0.025)	0.205*** (0.026)
Survey year × Caste group		
2024 × Hindu SC	-0.237*** (0.032)	-0.210*** (0.034)
2024 × Muslim	-0.233*** (0.035)	-0.254*** (0.037)
Control variables	No	Yes
Constant	7.480*** (0.015)	6.239*** (0.053)

Notes: Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A2: Estimates for Impact of Non-Employment Activity Engagement on Time Allocation (in Hours) of Hindu SC, Hindu UC, and Muslim in India, 2019-24

Independent Variables	Hindu SC	Hindu UC	Muslim
	Coef. (SE)	Coef. (SE)	Coef. (SE)
Survey year (Ref: 2019)			
2024	0.053 (0.096)	-0.223** (0.090)	-0.100 (0.127)
Food production	-1.807*** (0.043)	-2.102*** (0.043)	-2.461*** (0.056)
Unpaid domestic services	-1.522*** (0.030)	-1.753*** (0.027)	-1.739*** (0.037)
Unpaid caregiving	-0.504*** (0.038)	-0.723*** (0.037)	-0.528*** (0.044)
Learning	-4.593*** (0.097)	-3.979*** (0.074)	-4.141*** (0.117)
Socialisation	-1.005*** (0.054)	-1.131*** (0.045)	-1.143*** (0.078)
Leisure	-1.112*** (0.039)	-1.462*** (0.041)	-1.042*** (0.046)
Survey year × Activity participation			
2024 × Food production	0.781*** (0.058)	0.802*** (0.062)	1.384*** (0.081)
2024 × Unpaid domestic services	-0.031 (0.041)	0.112*** (0.039)	-0.172*** (0.050)
2024 × Unpaid caregiving	-0.096 (0.049)	0.080 (0.048)	-0.063 (0.057)
2024 × Learning	1.242*** (0.164)	0.945*** (0.121)	0.832*** (0.200)
2024 × Socialisation	-0.246** (0.078)	-0.052 (0.066)	-0.103 (0.109)
2024 × Leisure	0.271*** (0.062)	0.437*** (0.068)	0.268*** (0.074)
Control variables	Yes	Yes	Yes
Constant	Yes	Yes	Yes

Note: Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A3: Minor Industry Division of Labour Market Participation (%) across Socio-Religious Groups in India, 2019-24

	2019			2024		
	Hindu SC	Hindu UC	Muslim	Hindu SC	Hindu UC	Muslim
Agriculture, Forestry and Fishing	34.76	28.88	21.73	33.36	27.22	20.57
Mining and Quarrying	0.58	0.59	0.36	0.38	0.22	0.22
Manufacturing	10.96	14.39	19.69	12.69	14.47	20.33
Electricity, Gas, Steam and Air Conditioning Supply	0.43	0.57	0.35	0.36	0.55	0.22
Water Supply; Sewerage, Waste Management and Remediation Activities	0.56	0.41	0.48	0.79	0.37	0.54

	2019			2024		
	Hindu SC	**Hindu UC**	**Muslim**	**Hindu SC**	**Hindu UC**	**Muslim**
Construction	24.93	8.28	19.74	22.5	7.42	18.72
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	7.32	13.18	15.29	8.41	14.97	17.62
Transportation and Storage	4.82	4.99	7.64	5.14	5.68	7.98
Accommodation and Food Service Activities	1.52	2.42	1.86	1.92	2.84	2.37
Information and Communication	0.93	3.39	0.98	0.98	4.49	0.99
Financial and Insurance Activities	0.8	2.78	0.57	0.93	2.89	0.52
Real Estate Activities	0.09	0.34	0.11	0.09	0.45	0.18
Professional, Scientific and Technical Activities	0.64	2.04	0.57	0.49	2.15	0.56
Administrative and Support Service Activities	2.19	3.81	1.9	2.07	2.87	1.46
Public Administration and Defence; Compulsory Social Security	1.72	2.11	0.7	1.53	1.84	0.82
Education	2.53	5.83	2.61	2.52	5.63	2.46
Human Health and Social Work Activities	1.36	2.32	1.19	1.75	2.28	1.08
Arts, Entertainment and Recreation	0.36	0.42	0.3	0.29	0.34	0.19
Other Service Activities	2.16	2.46	2.99	2.49	2.64	2.63
Activities of Households as Employers; Undifferentiated Goods- and Services-Producing Activities of Households for Own Use	1.33	0.78	0.94	1.27	0.68	0.56
Activities of Extraterritorial Organizations and Bodies	0.02	0.02	0	0.01	0	0

Table A4: Time Allocation (in Hours) across Minor Industry and Socio-Religious Groups, 2019-24

Industry	2019			2024		
	Hindu SC	Hindu UC	Muslim	Hindu SC	Hindu UC	Muslim
Agriculture, Forestry and Fishing	6.7	6.3	6.4	6.5	6.4	6.1
Mining and Quarrying	7.5	8.3	7.5	8.5	9.1	8.7
Manufacturing	8.3	8.6	7.9	8.1	8.5	7.4
Electricity, Gas, Steam and Air Conditioning Supply	8.7	8.1	8.3	9.1	8.6	7.9
Water Supply; Sewerage, Waste Management and Remediation Activities	7.6	8.3	8.4	7.6	7.7	7.6
Construction	8.2	8.4	8.2	8.2	8.3	8.1
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	8.7	8.8	8.4	8.5	8.8	8.5
Transportation and Storage	9.0	8.9	8.9	8.7	9.0	8.5
Accommodation and Food Service Activities	9.0	8.9	8.8	8.7	9.1	8.7
Information and Communication	8.8	9.1	8.5	8.4	8.5	8.6
Financial and Insurance Activities	8.0	8.6	8.9	8.0	8.3	7.9
Real Estate Activities	7.7	8.0	6.7	7.8	7.9	6.9
Professional, Scientific and Technical Activities	8.3	8.4	7.9	7.8	8.3	8.0
Administrative and Support Service Activities	8.4	8.9	8.4	8.4	8.8	8.1
Public Administration and Defence; Compulsory Social Security	8.1	8.2	8.0	8.2	8.7	7.8
Education	6.5	6.6	6.4	6.6	6.5	6.2
Human Health and Social Work Activities	7.8	7.9	7.6	8.2	8.1	8.1
Arts, Entertainment and Recreation	7.9	7.8	7.8	7.9	8.2	8.5
Other Service Activities	7.6	7.6	7.3	7.4	7.6	7.8
Activities of Households as Employers; Undifferentiated Goods- and Services-Producing Activities of Households for Own Use	6.9	7.5	6.0	6.5	7.0	6.3
Activities of Extraterritorial Organizations and Bodies	7.8	8.7	7.3	8.3	NA	NA