"Determinants Of Women's Workforce Participation In Haryana: An Empirical Analysis Using PLFS Data"

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Abstract
This paper examines the factors influencing women work force participation in Haryana, India, by utilising unit-level data from the Periodic Labour Force Survey (PLFS). By applying logistic regression analysis, we assess how the socio-economic variables shape women's workforce participation in both rural and urban contexts. The findings reveal that age, social group, and marital status have a significant impact on the participation of women in the rural workforce. The study reveals a U-shaped relationship between education and FLFP, where women with the least and most education exhibit higher participation rates, while those with moderate education engage less in the workforce. Rural women, especially from Scheduled Castes (SCs), are more likely to participate in low-paying agricultural jobs due to economic necessity, whereas urban women are concentrated in formal sectors like education and manufacturing. Significant urban-rural disparities are evident in employment patterns: rural women are largely engaged in self-employment and casual labour, while urban women have better access to regular, salaried jobs. However, both rural and urban women face high levels of job insecurity, with limited access to social security benefits, paid leave, or formal contracts. The findings highlight the pressing need for labour market reforms to ensure gender equality in employment opportunities and protections. This paper contributes to understanding the structural barriers limiting women's workforce participation and offers insights for policymakers aiming to enhance women's labour market outcomes in Haryana.

Keywords: Women workforce, Haryana, Socio-economic variables

Introduction
India, one of the fastest-growing economies globally, has achieved remarkable progress in multiple sectors, boasting a GDP growth rate of 7.2 per cent in 2022. However, this growth has not fully translated into equitable workforce participation, particularly for women. The Female Labour Force Participation Rate (FLFPR) has been declining in India since 1993–94 and particularly since 2004–05 (Chattopadhyay & Chowdhury 2022). Female labour force participation remains a critical challenge, with the country witnessing a declining trend in women's workforce participation rates (WPR). According to the Periodic Labour Force Survey (PLFS) 2021-2022, rural female WPR in India fell from 27.1 per cent to 26.6 per cent, signalling growing concerns about the inclusion of women in the labour market despite economic growth.
Haryana, one of India's leading states in economic development, contributing significantly to the nation's GDP through agriculture, manufacturing, and services, also reflects this worrisome trend. Despite its economic advances, Haryana has seen a consistent decline in female workforce participation. The state's female WPR stands at a mere 21.4 per cent, indicating a persistent gender gap in employment. Across India, female WPR ranges from 61.6 per cent in Sikkim to as low as 11 per cent in Bihar, showing stark regional disparities, with Haryana falling behind many of its peers.
Research on women's workforce participation has shown that education, gender, age, marital status, caste, and type of employment are critical factors influencing women's involvement in the labour market (Singh & Singh 2023; Gupta 2023; Mamgain & Khan 2022; Roy & Barua 2022), particular in context of haryana studies have been conducted emphasis that the gender based inequality, sex ratio and lack of participation in decision making determines the participation of womens in work force (Mahata et al. 2017; Sindhu 2016; Narayan 2016; Rani & Akshu 2023). Rural women, in particular, face greater barriers, including limited mobility, fewer employment opportunities, and the continued dominance of informal and agricultural labour (Neff et al. 2012; Narayan 2016) On the other hand, urban women, though enjoying relatively more freedom, are still bound by gendered occupational segregation and wage gaps (Ara 2021).
The relationship between female labour force participation and socio-economic variables, including education and income, reveals complex dynamics. Studies suggest a U-shaped relationship between education and participation, where women with either low or high levels of education are more likely to engage in the workforce (Goldin 1994; Tam 2011; Sanghi et al., 2015). However, Chattopadhyay & Chowdhury (2022) argues that women from higher income groups are more likely to attain graduate-level education, which should theoretically increase their likelihood of joining the labour force. Despite this, the lower labour force participation rates among women in the higher income deciles indicate that the income effect outweighs the benefits of education. Notably, the female labour force participation rate (FLFPR) declines over time, regardless of income or educational attainment. Furthermore, there is a negative relationship between participation and income, as indicated by monthly per capita expenditure (MPCE), suggesting that as household income

rises, the probability of women entering the labour market decreases. These trends highlight a persistent gender gap in employment, despite improvements in education and living standards, underscoring the need for deeper analysis into the factors that influence female labour force participation.

Using unit-level data from the Periodic Labour Force Survey (PLFS), this study aims to explore the key determinants of women's workforce participation in Haryana, applying logistic regression analysis to uncover patterns that highlight the distinct dynamics between rural and urban areas. The analysis also incorporates basic tables to visually represent the demographic and socio-economic factors at play.

This research seeks to address the following questions: What are the key determinants of women's workforce participation in rural and urban Haryana? How do socio-demographic factors such as age, education, caste, and marital status influence women's labour force participation across these regions? Finally, what implications do these findings have for policies aimed at increasing women's workforce involvement in Haryana? By answering these questions, this paper aims to contribute to the broader discourse on gender, labour markets, and economic development in India.

The paper is organised as follows: Section 2 reviews the relevant literature and theoretical frameworks. Section 3 describes the data and methodology used in the study. Section 4 presents the results of the descriptive and econometric analyses. Section 5 discusses the findings in relation to existing literature and offers policy recommendations. Finally, Section 6 concludes with a summary of the study's contributions and suggestions for future research.

Literature Review

The status of women's employment is a critical indicator of their economic independence, social autonomy, and decision-making power. Scholars like Sen (1999) and Nussbaum (2000) highlight that workforce participation is central to enhancing women's agency and social status, ultimately contributing to holistic and sustainable development.
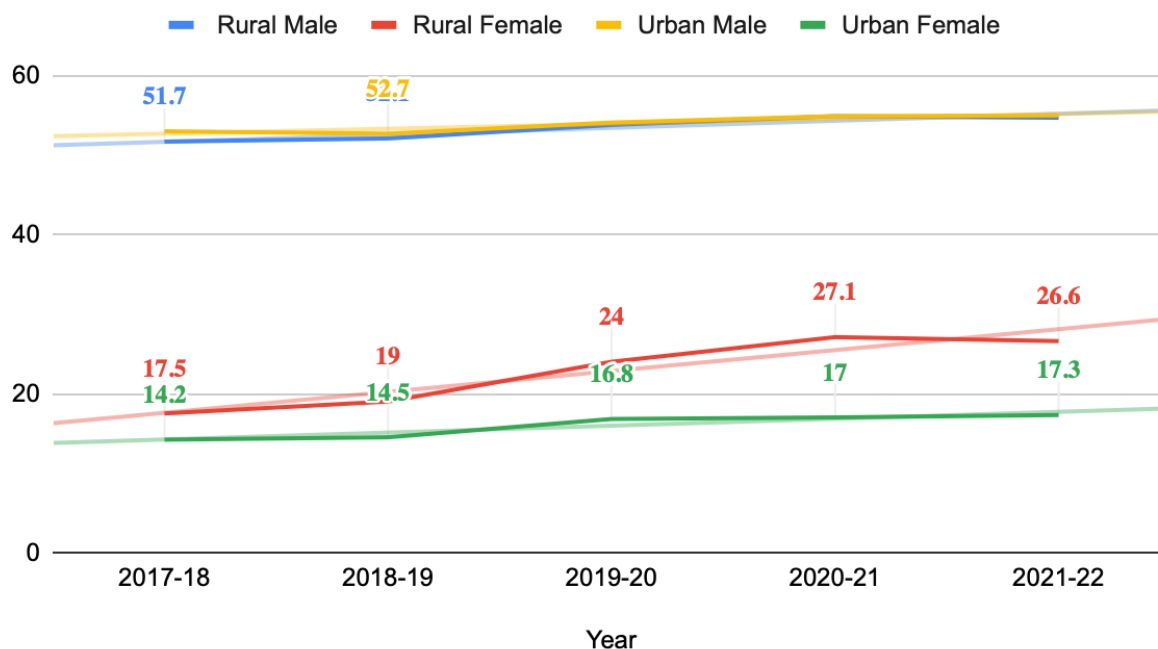
In India, women's workforce participation has been a subject of concern, particularly given its declining trend from 2004-05 to 2017-18 (Roy & Barua 2022). Furthermore, as described in the PLFS 2021-22 round, there was a continuous increasing trend in the female Workforce Participation Rates (WPR) from 2017-18 to 2020-21 (PLFS 2021-22). National-level studies reveal that factors such as education, household income, and marital status significantly influence women's labour force participation. Additionally, cultural factors and regional disparities play a crucial role, with women in certain states and communities facing greater barriers to employment. Recent studies have also highlighted the importance of access to employment opportunities and the quality of available jobs, which can either encourage or dissuade women from joining the workforce. Education consistently emerges as a central determinant of women's labour force participation (FLFP). Roy & Barua (2022) found that in Assam, higher education, particularly at the graduate level, significantly increased women's likelihood of being employed, regardless of urban or rural residency. This aligns with Gupta (2023) who attributes up to 51 per cent of the variation in FLFP in urban India to educational attainment. However, while education fosters employment opportunities, its impact alone is not always sufficient to guarantee participation. Chattopadhyay & Chowdhury (2022) discuss the U-shaped hypothesis, which posits that while education initially lowers FLFP due to social norms, higher education eventually leads to greater workforce entry. Despite this, demand-side constraints, such as limited job opportunities matching women's qualifications, hinder highly educated women from fully benefiting from their educational achievements. Age and marital status are also critical factors in determining FLFP. According to Roy & Barua (2022), women aged 25-54 are more likely to engage in the workforce, particularly in rural areas, while younger women (15-24 years) prioritise education over employment. Similarly, Gupta (2023) highlights that both age and education significantly influence women's participation in the labour market across urban and rural India. Married women, in particular, face additional challenges, as family responsibilities, such as childcare, frequently result in lower participation rates. Roy & Barua (2022) and Mamgain & Khan (2022) both emphasise the negative effect of marital status on rural women's workforce participation, underscoring the need for policies that provide better work-life balance, including childcare support. Social groups also play a defining role in women's labour participation. Roy & Barua (2022) note that in Assam, OBC women predominantly participate in rural employment, particularly in sectors like tea, while ST women dominate urban employment. Nationally, Gupta (2023) finds that SC and ST women have higher participation rates, often driven by economic necessity. These patterns suggest that socio-economic disadvantages within these groups may push women into the labour market, even under less favourable conditions. This aligns with Mamgain & Khan (2022) findings, which reveal a regional decline in FLFP in states like Haryana, Punjab, and Gujarat, where rural women have faced dwindling job opportunities due to the contraction of agriculture and casual wage sectors. The relationship between household income and FLFP is nuanced, with the "income effect" being a key factor. As household income rises, women from higher-income families often withdraw from the workforce, particularly when job opportunities are low-quality or informal (Mamgain & Khan 2022; Gupta 2023). In contrast, Roy & Barua (2022) argue that rural women in Assam continue to work even in old age due to the lack of social security, highlighting the vulnerability of women in informal employment. These findings underscore the importance of social security systems and decent job opportunities to support women across different income groups. Several studies advocate for comprehensive policy interventions to address both supply- and demand-side constraints on FLFP. Chattopadhyay & Chowdhury (2022) stress that promoting education alone is insufficient; policies must also create decent job opportunities and address social norms that limit women's employment. Mamgain & Khan (2022) argue for large-scale rural livelihood programs to reduce caste and gender disparities. These suggestions are particularly relevant in regions like Haryana, where socio-cultural barriers and limited job opportunities

continue to suppress FLFP. In Uttar Pradesh, Singh & Singh (2023) examine FLFP using PLFS data, finding that factors such as family size, age, and social group significantly impact women's participation in both rural and urban areas. The decline in rural FLFP, as noted by Sanghi et al. (2015), is attributed to India's structural shift from agriculture to service-based sectors. Mehrotra & Parida (2017) further explain that rising real wages in rural areas and increasing educational attainment have led to a negative income effect, wherein women from higher-income households are less likely to engage in the labour force. Their study underscores the need for targeted government interventions, such as increased access to vocational training and skilled jobs, to counteract these trends and boost FLFP.

The literature on women's workforce participation in Haryana reveals persistent gender inequalities driven by entrenched patriarchal norms, socio-economic barriers, and regional disparities. Despite economic growth, research shows that women's status in the state remains disproportionately low, especially in rural areas. Mahata et al. (2017) highlight that deeply ingrained patriarchal values restrict women's autonomy, as reflected in the state's low sex ratio and limited workforce participation. Education, while crucial for improving labour market engagement, does not fully overcome societal constraints that push women into traditional, lower-paying sectors like teaching and healthcare. Narayan (2016) further emphasises the rural-urban divide, noting that while rural women participate more in the workforce, their roles are often confined to informal, low-paying sectors such as agriculture. The decline in female labour force participation, particularly in rural areas, illustrates the influence of socio-cultural barriers, with a persistent wage gap exacerbating gender disparities in employment. In agriculture, Rani & Akshu (2023) note that although women contribute significantly, they are often excluded from major financial decision-making, which remains male-dominated. The dual burden of household responsibilities further limits their economic empowerment. Improving access to resources like credit and technology is crucial for enhancing women's decision-making power in this sector. Sindhu (2016) highlights the systemic nature of gender inequality in Haryana, where women face entrenched biases in education, employment, and decision-making. These barriers are particularly pronounced in rural areas, where traditional norms are more rigidly enforced. To address these challenges, comprehensive policy interventions are needed to tackle both socio-cultural and economic factors limiting women's workforce participation.

Descriptive Analysis

Trends in Workforce participation Rates in India (in per cent)

In India, the total workforce participation was higher among urban and rural males compared to their female counterparts, both in urban and rural areas. As shown in Graph 1, the trend indicates that the female WPR continued to increase from 2017-18 to 2021-22, with the exception of rural females during the COVID-19 period. Furthermore, during the epidemic, women were more involved in the workforce in both rural and urban areas. It also indicates that women across all age groups have seen increased workforce participation since 2017-18, with most involved in agricultural activities in rural areas and regular wage-earning jobs in urban areas.

Table 1: Female workforce participation rates in Haryana by age group

Age-group	Rural	Urban	Total
15-29	12.5	15.6	13.5
15-59	21	21.9	21.4
15 above	18.7	19.7	19.1
all age	14.3	15.3	14.6

The data indicates that younger women (aged 15-29) have a relatively lower participation rate, with 12.5 per cent in rural areas and 15.6 per cent in urban areas. As women age, their participation increases, reaching 21 per cent for the 15-59 age group in rural areas and 21.9 per cent in urban areas. When considering women aged 15 and above, the overall participation rates are 18.7 per cent in rural areas and 19.7 per cent in urban areas. The total participation rate across all age groups stands at 14.6 per cent.

This age-wise variation suggests that younger women, particularly those in rural areas, face challenges in workforce entry, possibly due to societal norms, early marriage, or limited job opportunities. However, women in the middle age group (15-59) show higher participation, likely balancing household responsibilities with employment opportunities. The slight urban-rural difference in each age group points to varying access to employment, with urban women likely having better job opportunities and resources.

Table 2: Female Workforce Participation Rate (in per cent) in Haryana in Different Levels of Education.

Education Level	Rural	Urban	Total
Not literate	21.3	17.9	20.5
Up to primary	24.3	22.9	23.9
Up to middle	13.7	13.9	13.7
Up to secondary	8.7	11.4	9.6
Up to Higher secondary	17.5	10.5	14.6
Up to graduate	20.4	23.7	22.2
Post graduate & above	41.3	46.1	44.8

In Table 2, we observe a clear U-shaped relationship between female education and the workforce participation rate (FLFPR) in Haryana. This relationship is well-documented in literature, suggesting that women with the least education tend to participate more in the workforce, as economic necessity drives them. Meanwhile, women with moderate education, such as secondary-level qualifications, show the lowest participation rates, likely due to social constraints, limited job opportunities, and household responsibilities. However, women with higher education levels, such as graduates and postgraduates, experience a significant increase in participation, likely because the higher wages in white-collar jobs make it economically beneficial for them to enter the labour market (Chattopadhyay & Chowdhury 2022).

In rural areas, 21.3 per cent of illiterate women participate in the workforce, but this percentage drops sharply to 8.7 per cent for women with up to secondary-level education. Interestingly, participation rises again to 41.3 per cent for postgraduates and above. Urban areas show a similar trend, with the lowest participation rate (10.5 per cent) among women with higher secondary education and the highest (46.1 per cent) among those with postgraduate degrees. This pattern reflects several supply-side factors, as highlighted by Stephan Klasen and Janneke Pieters, including rising household incomes, husbands' education, societal stigmas against educated women in lower-status jobs, and reduced selectivity among highly educated women. On the demand side, employment opportunities in sectors suitable for educated women have not kept pace with the growing supply of educated workers, resulting in many women withdrawing from the labour force.

This U-shape is significant as it highlights how women's labour force decisions are influenced by both economic need and the potential returns on education. Women with low education are more likely to engage in informal, low-paid work out of necessity, while women with high education levels participate for the higher returns in formal sectors. This phenomenon aligns with studies, including Goldin (1994) U-hypothesis, and Tam (2011)which describes how women's labour force participation decreases with intermediate education but rises with higher education.

Table 3: Distribution of Female Workforce by Industrial Classification in Haryana (in per cent)

Broad Industry Division	Rural	Urban	Rural + Urban
Agriculture, forestry and fishing	65.75	6.79	44.62
Mining and quarrying	0	0	0
Manufacturing	12.13	22.24	15.75
Electricity, gas, steam and air conditioning supply	0	0	0
Water supply; sewerage, waste management and remediation activities	0.04	0.31	0.14
Construction	5.35	5.06	5.25
Wholesale and retail trade; repair of motor vehicles and motorcycles	3.53	12.49	6.74
Transportation and storage	0.59	0.4	0.52
Accommodation and Food service activities	0.05	0.73	0.29
Information and communication	0	3.09	1.11
Financial and insurance activities	0	2.7	0.97
Real estate activities	0.06	0	0.04
Professional, scientific and technical activities	0	0.56	0.2
Administrative and support service activities	0	0.5	0.18
Public administration and defence; compulsory social security	0	2.09	0.75
Education	8.49	21.04	12.99
Human health and social work activities	1.7	7.67	3.84
Arts, entertainment and recreation	0.13	0	0.08
Other service activities	2.1	8.86	4.53
Activities of households as employers; undifferentiated goods and services producing activities of households for own use	0.09	5.46	2.02

In rural Haryana, a vast majority of women (65.75 per cent) are employed in agriculture, forestry, and fishing, emphasising the region's agrarian economy and women's strong presence in informal agricultural work. In contrast, only 6.79 per cent of urban women are employed in this sector, reflecting the industrial shift in urban settings. Urban women are more engaged in sectors like manufacturing (22.24 per cent), education (21.04 per cent), and wholesale and retail trade (12.49 per cent), where opportunities for formal employment are greater.

The absence of women in sectors like mining, quarrying, electricity, gas, and air conditioning supply, and real estate is notable across both rural and urban areas, indicating traditional gender segregation in these industries. The data also shows that the presence of women in industries like water supply and construction is minimal in both rural and urban areas, but higher in urban contexts.

Education is a key sector for female employment, especially in urban areas, where 21.04 per cent of women are employed, compared to 8.49 per cent in rural areas. This reflects the growing demand for educated female workers in urban settings. Other services such as health and social work also show higher participation in urban areas (7.67 per cent) than in rural areas (1.7 per cent).

The significant contrast in employment patterns between rural and urban women underscores the structural differences in job availability and industrial development. Rural women are largely confined to agriculture, while urban women have access to a broader range of sectors, especially formal and service-based industries. This trend is consistent with studies on labour market segmentation by Kapsos et al. (2014), which emphasise the limited diversification of employment opportunities for rural women in India.

Table 4: Distribution of Female Workforce by Status of Employment in Haryana (in per cent)

Status of Employment	Rural	Urban	Rural + Urban
own account worker	32.5	18.1	27.3
employer helper in household enterprise	23.4	6.4	17.3
all self employed	55.9	24.6	44.7
Regular wage/ salary	14.5	59.9	30.8
casual labour	29.6	15.5	24.6

In rural areas, a significant proportion of women are self-employed (55.9 per cent), with 32.5 per cent as own-account workers and 23.4 per cent as helpers in household enterprises. This reflects the predominance of informal work in rural regions, where women often engage in small-scale agricultural or household-based activities. In contrast, only 24.6 percent of urban women are self-employed, with 18.1 per cent working on their own and 6.4 per cent as helpers.

Urban areas show a much higher concentration of women in regular wage or salaried jobs (59.9 per cent), compared to just 14.5 per cent in rural areas. This indicates better access to formal employment opportunities in urban settings, such as education, healthcare, and administrative jobs. The large gap underscores the urban-rural disparity in stable job opportunities for women.

Casual labour is also more prevalent in rural areas (29.6 per cent) than in urban ones (15.5 per cent), suggesting that a significant number of rural women rely on irregular, often low-paid work, likely in agriculture or construction.

Overall, the table shows that while urban women benefit from more formal employment, rural women are largely concentrated in self-employment and casual labour. This distribution aligns with broader trends observed in studies like those by Himanshu (2011), which highlight the precarious nature of rural employment for women, and the need for targeted interventions to increase formal job opportunities, especially in rural areas.

Table 5: Percentage of Women Employed as Regular/Salaried Not Receiving any Social Security Benefit in Haryana

Particular	Rural	Urban	Rural + Urban
with no written job contract	60.7	70.9	68.1
not eligible for paid leave	57	54.9	55.5
without any social security benefit*	84.8	56.5	64.1

A significant proportion of women, particularly in rural areas, work without a written job contract (60.7 per cent), a figure that rises to 70.9 per cent in urban areas. This suggests that even in formal sectors, women's employment is often informal in nature, lacking basic job security. The absence of written contracts highlights the vulnerability of women in both regions, leaving them with limited legal protections.

When it comes to paid leave eligibility, the situation is slightly more balanced, with 57 per cent of rural women and 54.9 per cent of urban women not eligible. This indicates that a majority of women, whether in rural or urban areas, are denied this crucial benefit.

The most concerning statistic is the lack of social security benefits. In rural areas, a staggering 84.8 per cent of women employed in regular/salaried positions receive no social security benefits, such as health insurance or retirement savings. While urban women fare slightly better, with 56.5 per cent lacking these benefits, the overall rural-urban combined figure stands at 64.1 per cent. This reflects the widespread informality and lack of protective measures in the labour market, especially for women.

This data underscores the need for labour market reforms that ensure women in both rural and urban areas are provided with basic social protections, such as written contracts, paid leave, and access to social security. The findings align with studies such as by Neetha (2014), which emphasise the gendered nature of informal employment in India, and point to the structural inequalities that need to be addressed to improve the quality of women's employment across the state.

Data and Methodology

The secondary data source for this study is the Periodic Labour Force Survey (PLFS), conducted by the National Sample Survey Office (NSSO) of India, covering the period from July 2021 to June 2022. The PLFS is the most comprehensive dataset available on labour market dynamics in India, providing detailed information on employment, unemployment, and labour force participation across various demographic groups. The survey collects data at the unit level, enabling a granular analysis of women's workforce participation in Haryana. Due to the second wave of COVID-19, fieldwork for this round was suspended, and the survey was completed using telephone interviews. The fieldwork for the third quarter was finalised in July 2022.

Unit-level data from the PLFS allows for the examination of individual and household characteristics that may influence women's workforce participation. This includes information on age, education, marital status, social and religious groups, household income, urban/rural residence, and employment status. The dataset is well-suited for logistic regression analysis, given its binary nature regarding workforce participation whether participating or not.

The primary outcome of interest in this study is women's workforce participation, which is coded as a binary variable (1 = included in Workforce Participation Rate (WPR), 0 = not included in WPR). Several independent variables are used to examine the determinants of workforce participation. Age is categorised into sub-groups: Level 1 (15-24 years), Level 2 (25-34 years), Level 3 (35-44 years), Level 4 (45-54 years), Level 5 (55-60 years), and Others (below 15 years and above 60 years). Education is classified based on the level attained, including illiterate (no formal education), literate without formal education, primary education (up to primary school), secondary education (up to secondary level), and higher education (up to higher secondary, which is the reference category), with additional categories for diploma or certificate holders and those with graduation or higher qualifications. Marital status is coded as never married, currently married (the reference category), widowed, or divorced/separated. Social groups are represented as a categorical variable, including Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC), and Others (the reference category). The log of Monthly Per Capita Consumption Expenditure (MPCE) is used to account for household economic status, measured in Indian Rupees. Lastly, household type is categorised as self-employed (the reference category), regular wage earners, casual labourers, and others (any other kind). These variables help analyse the various factors that may influence women's participation in the workforce.

A logistic regression model is employed to analyse the determinants of women's workforce participation. The choice of logistic regression is appropriate given the binary nature of the dependent variable. The model estimates the odds of a woman participating in the workforce as a function of the independent variables.

The logistic regression model can be specified as follows:

$$\log \left(\frac{1}{1-Pi}\right) = \beta_0 + \beta_1 X_i + \beta_2 t_i + \beta_3 z_i + \beta_4 s_i + \beta_5 \log(y_i) + \beta_5 m_i + \epsilon_i \quad \underline{\hspace{3cm}} 1.1$$

Here (equation 1.1), X_i is showing the age category from level 1 to level 6. Furthermore, to represent the different levels of education. zi showed the different categories of social groups. si is the series of marital status. Yi represents the monthly per capita expenditure by a household in rupees. mi is the series for different types of households. Pi is the probability of workforce participation for individual women i, and ϵ_i is the error term.

5. Results

Regression Analysis

As shown in Table 1, the odds ratio suggests that the general age group from 25 to 55 years is two to three times more likely to be in the workforce than the age group 15–24 years. This is possibly due to the increased enrolment in higher education from 1998 to 2019 Li (2022). On the other hand, women aged 55–60 are only 19 percent more likely to participate in the workforce than the reference category, although there is no strong evidence that this age group significantly affects the reference category. This indicates that, in rural areas of Haryana, the participation of women in tertiary education has been consistently increasing since 2016. Women above 60 years of age are less likely to participate in the workforce, possibly due to retirement.

In terms of social groups, Scheduled Castes (SCs) have a significant impact on work participation rates compared to Other Backward Classes (OBCs), with only 23 percent less likely to participate in the workforce in rural Haryana. It might be the case that the SC group has low income, so they are more likely to be engaged in low-paying jobs and daily agricultural wage work. The National Family Health Survey is a large-scale survey that reveals the health conditions of women and children. In the 2019-20 NFHS, the fifth round showed that there was no single household ownership by the SC group.

As for marital status, unmarried rural women are significantly (around 56 per cent) less likely to be part of the workforce compared to married women, who are mostly involved in domestic household work. When accounting for the variable monthly per capita consumption expenditure (MPCE), it has an insignificant impact on the workforce participation rate (WPR) of rural women in Haryana.

In urban areas (Table 2), age has a significant impact on the likelihood of women participating in the workforce, except for the 55–60 age group. Similarly, women aged 60 and above are less likely to be part of the workforce, with an odds ratio of 8 per cent higher than the reference category.

Furthermore, women with up to primary school education are 2.01 times more likely to participate in the workforce compared to those with higher education in urban area. At the graduation level, women are 3.1 times more likely to be involved in the workforce compared to the higher education reference category.

In comparison to household types in urban areas, casual wage earners are 65 per cent more likely to be involved in the workforce in urban areas than households engaged in self-employed activities. Regular wage earners show a 70 per cent higher likelihood of workforce participation. Scheduled Tribes (STs) have a 4.1 times higher chance of being part of the workforce than OBCs. Additionally, 70 per cent of SC women are involved in the workforce.

Regarding marital status in urban areas, divorced and widowed women show a higher likelihood of participating in the workforce compared to married women, who may be more involved in domestic work. Income proxies do not seem to impact female workforce participation, which is unexpected. Women in urban areas are more likely to be involved in

casual wage earning. Additionally, the manufacturing sector sees greater female participation. However, due to domestic responsibilities, married women find it difficult to pursue employment in urban areas while unmarried women do not.

Conclusion:

The findings of this research on female labour force participation in Haryana reveal a complex interplay of demographic, social, and economic factors that shape workforce engagement among women. A significant age-related trend was observed, with women aged 25 to 54 years age group showing a higher likelihood of participation compared to younger women (15–24 years), suggesting that family responsibilities or social norms may limit early workforce entry. Social group analysis showed that Scheduled Castes (SCs) exhibit a higher tendency to engage in labour, likely due to economic necessity and their engagement in low-paying jobs and agricultural wage work. Unmarried women were found to be less likely to work, reflecting societal pressures on young women to prioritise household roles over employment. Urban areas presented more favourable conditions where women are concentrated in formal sectors like education and manufacturing. One of the most significant insights from the study is the U-shaped relationship between education and female labour force participation rate (FLFPR). Women with the least education tend to participate more, driven by economic necessity, while those with secondary-level education exhibit lower participation rates due to limited job opportunities and social constraints. However, participation rises significantly for women with postgraduate degrees, particularly in urban areas where employment opportunities in formal sectors such as education and health are more accessible. This points to the role of education in determining both the type and availability of employment for women.

The contrast between rural and urban employment patterns is stark. Rural women are largely concentrated in agriculture, with over half self-employed, while urban women have better access to regular salaried jobs, particularly in manufacturing, education, and retail. However, the informal nature of employment for women across both areas is concerning, with a majority working without written contracts, social security benefits, or paid leave, leaving them vulnerable to exploitation. Based on these findings, several policy recommendations are necessary. First, there is a need to enhance access to formal education and vocational training for women, particularly in rural areas, to facilitate their entry into non-agricultural sectors. Social and cultural barriers to workforce participation for younger and unmarried women must be addressed through targeted community engagement and awareness campaigns. Additionally, labour market reforms should focus on improving job security for women by mandating written contracts, expanding social security benefits, and ensuring access to paid leave. Finally, government and private sector initiatives should aim to create more formal employment opportunities in rural areas, reducing the reliance on low-paying, informal work, and promoting equitable growth across both rural and urban regions.

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7. Appendices

Table 1 : Regression result for Rural Area in Haryana (2021-22, PLFS)

	Coefficient	Std Error	p Value	Odds Ratio
(Intercept)	-0.294	1.599	0.854	0.745
Age group Level 1 (reference category)				
Age group Level 2	0.828	0.261	0.002**	2.289
Age group Level 3	1.252	0.271	0.000***	3.497
Age group Level 4	1.056	0.297	0.000***	2.874
Age group Level 5	0.175	0.351	0.619	1.191
Age group Others	-2.104	0.372	0.000***	0.122
Education up to higher education (reference category)				
Education (No education)	0.333	0.281	0.235	1.396
Education (up to Primary level)	0.336	0.282	0.234	1.399
Education (up to second level)	-9.331	277.867	0.973	0.000
Education (up to secondary)	-0.178	0.270	0.510	0.837
Education (others)	0.332	0.356	0.352	1.393
Type of household (casual-labour)	-0.273	0.174	0.117	0.761
Type of household (Others)	-0.051	0.181	0.777	0.950
Type of household (regular-wage)	-0.093	0.191	0.628	0.911
Social group OBC (reference category)				
Social group Others	0.099	0.162	0.540	1.104
Social group SC	0.575	0.154	0.000***	1.778
Social group ST	0.570	1.233	0.644	1.768
Marital status Married (reference category)				
Divorced	1.442	0.904	0.111	4.228
Never Married	-0.815	0.295	0.006***	0.443
Widowed	0.445	0.196	0.023**	1.561
Log of MPCE	-0.234	0.165	0.157	0.791

Table 2 : Regression result for Urban Area in Haryana (2021-22, PLFS)

	Coefficient	Std Error	p Value	Odds Ratio
(Intercept)	-5.523	1.646	0.001	0.004
Age group Level 1 (reference category)				
Age group Level 2	1.151	0.289	0.000***	3.160
Age group Level 3	1.578	0.310	0.000***	4.843
Age group Level 4	0.902	0.341	0.008***	2.464
Age group Level 5	0.076	0.482	0.874	1.079

Age group Others	-2.507	0.482	0.000***	0.082
Education up to higher education (reference category)				
Education (No education)	0.332	0.302	0.271	1.394
Education (up to Primary level)	0.699	0.313	0.026**	2.013
Education (up to second level)	-13.284	2216.18	0.995	0.000
Education (up to secondary)	0.161	0.279	0.564	1.174
Education (others)	1.132	0.271	0.000***	3.103
Type of household (casual-labour)	0.855	0.251	0.001***	2.351
Type of household (Others)	-16.499	423.838	0.969	0.000
Type of household (regular-wage)	0.347	0.149	0.020**	1.414
Social group OBC (reference category)				
Social group Others	0.249	0.169	0.141	1.283
Social group SC	0.535	0.195	0.006***	1.708
Social group ST	1.432	0.546	0.009***	4.188
Marital status Married (reference category)				
Divorced	1.709	0.765	0.026**	5.525
Never Married	0.182	0.255	0.476	1.199
Widowed	1.540	0.262	0.000***	4.663
Log of MPCE	0.194	0.168	0.247	1.214

P-value less than 0.05= *
P-value less than 0.01= **
P-value less than 0.001= ***