



## Exploring Trends and Factors Influencing Labour Force Participation in Uttarakhand: Evidence from NSSO Data

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### ABSTRACT

The objective of this research paper is to examine the dynamic trends in labour force participation rates (LFPR) in Uttarakhand and conduct a comparative analysis with national trends. Additionally, the study aims to identify the key determinants that significantly influence labour force participation in Uttarakhand and explore the impact of various factors on LFPR, including family size, education, age, gender, caste, and marital status.

The study is guided by specific hypotheses related to gender, education, and family size. The null hypothesis (H<sub>0</sub>) posits no statistically significant difference in LFPR between males and females in Uttarakhand, while the alternative hypothesis (H<sub>A</sub>) suggests a statistically significant difference. Similarly, the null hypothesis for the relationship between education level and LFPR states no significant relationship, whereas the alternative hypothesis argues for a significant relationship. The same pattern applies to the null and alternative hypotheses regarding the relationship between family size and LFPR.

The research questions aim to shed light on the patterns and trends in LFPR in rural and urban areas of Uttarakhand compared to national trends. The study also explores the factors that significantly influence labour force participation among individuals aged 15-64 years in Uttarakhand, including demographic factors such as family size, education, age, gender, caste, and marital status. Furthermore, the study investigates the relationship between the number of jobs held by individuals and their likelihood of participating in the labour force. It also examines the impact of income inequality, as measured by income percentiles, on LFPR in Uttarakhand. Lastly, the study explores how factors such as education, age, and marital status differentially impact labour force participation in rural and urban areas of Uttarakhand.

To accomplish the research objectives, the study utilizes household data from multiple rounds of the National Sample Survey Office (NSSO) on 'Employment-Unemployment,' as well as the Periodic Labour Force Survey (PLFS) data from 2017-18 to 2021-22 on Employment and Unemployment. The data is analyzed using the logit model to identify the factors that significantly contribute to labour force participation in Uttarakhand.

The findings of this research paper will provide insights into the trends and determinants of labour force participation in Uttarakhand, particularly addressing gender disparities and urban-rural variations. By understanding the factors shaping labour force participation, policymakers and stakeholders can develop targeted strategies to promote inclusive growth and sustainable development in Uttarakhand.

**Keywords: Labour force Participation Rate (LFPR), Family Size, Education, Uttarakhand, Logit, Odd Ratio**

### Introduction

Uttarakhand, a state located in the northern part of India, is characterized by its diverse geographical features, including the Himalayan mountain range and numerous rivers. The state has a unique socio-economic profile, with a predominantly agrarian economy and a significant reliance on tourism. Uttarakhand has experienced notable changes in its socio-economic landscape over the years, witnessing improvements in education, infrastructure, and employment opportunities.

However, despite these transformations, there is a lack of comprehensive research on the dynamics of labour force participation in Uttarakhand, particularly concerning rural-urban disparities and gender dynamics. This research paper aims to fill this research gap and provide valuable insights into the labour market dynamics in Uttarakhand.

The objectives of this study are threefold. Firstly, it seeks to examine the changing trends in labour force participation rates (LFPR) in Uttarakhand and compare them with national trends. By analyzing the LFPR over a specific period, the study aims to identify the extent to which Uttarakhand's labour force dynamics align with or diverge from the overall national trends. This analysis will shed light on the unique characteristics of Uttarakhand's labour market and assist policymakers in making informed decisions to enhance labour force participation.

Secondly, the study aims to identify the key determinants of labour force participation in Uttarakhand. Factors such as family size, education, age, gender, caste, and marital status have been recognized as influential in shaping labour force dynamics. Understanding these determinants in the context of Uttarakhand will provide valuable insights into the specific barriers and opportunities that individuals face when entering and remaining in the workforce. This knowledge is crucial for designing targeted policies and interventions to promote inclusive and sustainable economic growth in the state.

Lastly, the research explores the influence of family size, education, age, gender, caste, and marital status on LFPR in Uttarakhand. By examining the relationship between these variables and labour force participation, the study aims to gain a deeper understanding of the socio-economic and cultural factors that impact individuals' decisions to participate in the workforce. This analysis will contribute to the existing body of knowledge on labour force dynamics and provide practical recommendations for policymakers to address the challenges faced by different demographic groups in accessing and engaging in productive employment.

The significance of this study lies in its implications for policymakers, government agencies, and other stakeholders involved in labour market planning and development in Uttarakhand. The findings of this research will inform evidence-based decision-making and policy formulation to address the specific challenges and opportunities in Uttarakhand's labour force. By understanding the changing trends in LFPR, policymakers can devise interventions to enhance workforce participation, reduce unemployment, and improve overall labour market outcomes. Additionally, a deeper understanding of the determinants of labour force participation will help identify specific areas that require attention, such as improving access to quality education and skill development programs, promoting gender equality, addressing socio-economic disparities, and creating an enabling environment for inclusive employment opportunities.

To provide a comprehensive analysis of labour force participation in Uttarakhand, this research will draw on a range of data sources, including official statistics, surveys, and previous studies. The methodology will involve conducting logistic regression analysis to explore the relationship between various factors and labour force participation. The results of this research will contribute to both the academic literature and practical policymaking efforts, enabling stakeholders to design evidence-based strategies that promote inclusive and sustainable labour market growth in Uttarakhand.

In conclusion, this research paper aims to contribute to the existing body of knowledge on labour force participation by examining the changing trends in Uttarakhand and investigating the determinants of labour force dynamics. By focusing on Uttarakhand's labour market, particularly in terms of rural-urban differences and gender dynamics, the study seeks to provide valuable insights that can inform policies and interventions aimed at fostering inclusive and sustainable economic development in the state.

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## ***Literature Review***

The review of existing literature delves into the exploration of the labour force participation rate (LFPR) and its determinants, with a specific emphasis on Uttarakhand, India. While numerous studies have examined LFPR in various regions, there is a necessity for further research that specifically investigates the evolving trends in LFPR in Uttarakhand, particularly in rural and urban areas, and scrutinizes the gender dynamics influencing participation. The following studies offer insights into related areas but do not center explicitly on Uttarakhand and its distinctive context.

A study by N. Bisht and Falguni Pattanaik (2020), titled "Youth Labour Market in India," scrutinizes national patterns of youth employment and unemployment by employing data from the National Sample Survey between 1993/94 and 2011/12. Logistic regression is employed to identify the socioeconomic and demographic factors that determine youth employment. The findings underscore a decline in youth employment rates, especially among postgraduate and graduate individuals, raising concerns regarding the attainment of Sustainable Development Goals.

Agnieszka Stanimir's study (2014), titled "Participation in the Labour Market - Generation Y and Other Age Groups," explores the factors that influence employment rates among different age groups in Poland. The study analyzes the impact of variables such as education, family size, and income on participation in the labour market. This approach aligns with your objective of identifying key determinants of LFPR in Uttarakhand.

A study by Margaret et al. (2005) examines the repercussions of economic reforms on patterns of labour force participation in both urban and rural areas of China. Unfortunately, the specific methodology employed in the study is not provided. Nevertheless, the study analyzes changes in labour force participation rates and reveals that economic reforms have influenced patterns differently in urban and rural areas, leading to shifts in employment opportunities and participation rates.

D. Contreras et al.'s study (2011) endeavours to identify the determinants of labour force participation and employment in Chile. The authors utilize econometric analysis to examine the factors that influence labour force participation and employment. The study demonstrates that factors such as education, age, gender, and marital status significantly impact labour force participation and employment in Chile.

Ajad Singh's study (2022), titled "Women Labour Force in Haryana and its Determinants," examines the trends and determinants of women's LFPR in Haryana. This study employs logistic regression to identify factors such as family size, household jobs, education, and marital status that influence women's LFPR. The findings underscore the importance of these factors in shaping women's participation in the labour force.

Similarly, a study conducted by Ajad Singh and Malti Kapoor (2022), titled "Trends of Labour Force Participation Rate in Rajasthan and its Major Determinant Factors," analyzes the LFPR trends in Rajasthan from 1991 to 2020-21. Although this study focuses on Rajasthan, it utilizes parametric logistic regression to identify the primary factors associated with the likelihood of participating in the labour force. The study takes into account variables such as family size, gender, income level, education, marital status, and job availability. These factors can provide insights into the determinants of LFPR in Uttarakhand as well.

The existing literature reveals a lack of research specifically addressing the shifting trends in labour force participation rate (LFPR) in Uttarakhand, particularly in terms of rural-urban disparities and gender dynamics. Although studies have been conducted in India and other regions, the unique circumstances of Uttarakhand necessitate a more comprehensive investigation.

The primary objective of this study is to fill the existing research gap and provide valuable insights into the opportunities and challenges encountered by the labour force, particularly young individuals, in Uttarakhand. By utilizing logistic regression to analyze the trends in LFPR and identify crucial determinants, the study aims to not only enhance our comprehension of the labour market dynamics in the state but also enable comparisons with national trends. Moreover, by investigating the influence of factors such as family size, education, age, gender, caste, and marital status on LFPR, the research intends to shed light on the factors that affect labour force participation in Uttarakhand. The findings of this study can offer guidance to policymakers, government agencies, and other stakeholders in devising targeted interventions and policies that promote inclusive and sustainable economic growth in the state.

In summary, this study seeks to bridge the research gap by focusing on the evolving trends in the labour force of Uttarakhand, specifically in rural and urban areas, with a particular emphasis on gender dynamics. Through an examination of LFPR trends, the identification of determinants using logistic regression, and the consideration of factors such as family size, education, age, gender, caste, and marital status, the study aims to provide valuable insights into the dynamics of the labour market in Uttarakhand and contribute to evidence-based policymaking.

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### Objectives of the Study

1. Examine the dynamic trends in labour force participation rates (LFPR) in Uttarakhand and conduct a comparative analysis with national trends.
2. To find the key determinants that significantly influence labour force participation in Uttarakhand.
3. Explore the impact of factors including family size, education, age, gender, caste, and marital status on LFPR in Uttarakhand.

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### Hypothesis of the Study:

#### Gender and LFPR:

H0: No statistically significant difference in LFPR between males and females in Uttarakhand.

HA: Statistically significant difference in LFPR between males and females in Uttarakhand.

#### Education and LFPR:

H0: No statistically significant relationship between education level and LFPR among individuals aged 15-64 in Uttarakhand.

HA: Statistically significant relationship between education level and LFPR among individuals aged 15-64 in Uttarakhand.

#### Family Size and LFPR:

H0: No statistically significant relationship between family size and LFPR among individuals aged 15-64 in Uttarakhand.

HA: Statistically significant relationship between family size and LFPR among individuals aged 15-64 in Uttarakhand.

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### Research Questions

- What are the patterns and trends in the labour force participation rates of rural and urban areas in Uttarakhand over time, and how do these rates compare to the national trends?
- Which factors significantly influence labour force participation among individuals aged 15-64 years in Uttarakhand?
- To what extent do demographic factors such as family size, education, age, gender, caste, and marital status impact labour force participation rates in Uttarakhand?
- Is there a relationship between the number of jobs held by individuals and their likelihood of participating in the labour force in Uttarakhand?
- Does income inequality, as measured by income percentiles, affect labour force participation rates in Uttarakhand?
- How do factors such as education, age, and marital status differently impact labour force participation in rural and urban areas of Uttarakhand??

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### Research methodology of the study

The main source of data utilized for this research is the household data from multiple rounds of the National Sample Survey Office (NSSO) on 'Employment-Unemployment'. These rounds encompass a wide range of employment and unemployment dimensions. Specifically, the data from 61st

(2004-05), and 68th (2010-11) thick quinquennial rounds, as well as the Periodic Labour Force Survey (PLFS) data from 2017-18, 18-19, 19-20, 20-21 and 2021-22 on Employment and Unemployment, are employed.

To extract and manage the data effectively, appropriate software tools are employed in the data extraction process. The age group of individuals under study in this paper falls within the range of 15-64 years, which aligns with the definition of the working age group as specified by the International Labour Organization (ILO).

The collected data is subjected to analysis using the logit model. This model is employed to identify the factors that significantly contribute to the determination of an individual's labour force participation in Uttarakhand. Specifically, the logit model is applied to the unit-level household data extracted from the PLFS 2021-22 dataset of Uttarakhand. The aim is to uncover the primary factors associated with the likelihood of individuals participating in the labour force.

#### Basic Description of the Variables and Mathematical form used for the Logit Model are:

Labour force participation is a qualitative characteristic. An observation consists of noting whether the characteristic is present. Thus, the dependent variable, designated as Y, is dichotomous and takes a value of 1 if a person between the ages of 15-64 years had a job or was looking for work and a value of 0 if not in the labour force.

#### Dependent Variable:

- Labour Force Participation (LFP) = 1 if a person is working/looking for work = 0 otherwise

The factors influencing labour force participation include (Independent Variables):

- Family Size
- Years spend in education
- Number of Jobs in his/her family
- Income Group (dummy variable) 0-40, 40-80 and Top 20 Percentile based on Family Income.
- Age Group (Dummy variable) 15-29, 30-44 and 45-64 year age
- Marital status (dummy variable) Unmarried, Currently Married and Widow/Divorcee
- Social Group (dummy variable) SCST, OBC and General Caste
- Gender (dummy variable) Male/Female
- Sector (dummy variable) Rural/Urban

#### Logit Model for Labour Force Participation of a Person in Uttarakhand:

$$L_i = \log \left[ \frac{P_i}{1 - P_i} \right] = \alpha + \beta_1(\text{FamilySize}) + \beta_2(\text{YearinEducation}) + \beta_3(\text{No. of Jobs}) + \beta_4(40 - 80/0 - 40\text{Percentile}) \\ + \beta_5(\text{Top}20/0 - 40\text{Percentile}) + \beta_6(30 - 44/15 - 29\text{Age}) + \beta_7(45 - 64/15 - 29\text{Age}) \\ + \beta_8(\text{Married/Unmarried}) + \beta_9(\text{Widow/Unmarried}) + \beta_{10}(\text{OBC/SCST}) + \beta_{11}(\text{General/SCST}) \\ + \beta_{12}(\text{Female/Male}) + \beta_{13}(\text{Urban/Rural})$$

#### Result Analysis

The labour force participation rates (LFPR) serve as a valuable indicator of the economic activity within a specific region or population. By analyzing the trends in LFPR and identifying the factors that influence participation, we gain insights into the dynamics of employment and workforce engagement. This study aims to examine the LFPR in Uttarakhand, India, with a specific focus on understanding gender disparities and urban-rural variations. The analysis comprises two subsections: The first subsection presents an overview of LFPR trends in Uttarakhand and India, taking into account different demographic groups based on gender and location. The second subsection focuses on the outcomes of a logit model, which investigates the determinants of labour force participation in Uttarakhand during the period of 2021-22. Through this comprehensive analysis, we aim to gain a deeper understanding of the factors shaping labour force participation in Uttarakhand.

*Analysis of LFPR Trends***Table 1 : Trends of LFPR of working age (15-64 years) population in Uttarakhand and India**

	Year	Uttarakhand			India		
		Male	Female	All	Male	Female	All
<b>Rural</b>	2004-05	834	676	752	884	518	701
	2011-12	745	473	605	835	375	607
	2017-18	732	219	471	798	261	532
	2018-19	740	225	478	801	279	540
	2019-20	782	397	591	812	351	581
	2020-21	774	378	573	812	387	599
	2021-22	753	395	577	818	388	604
<b>Urban</b>	2004-05	791	209	513	821	257	553
	2011-12	779	161	479	796	217	516
	2017-18	751	132	450	786	217	505
	2018-19	760	167	481	782	218	505
	2019-20	783	187	488	790	251	524
	2020-21	759	203	491	792	250	524
	2021-22	743	201	483	796	256	532
<b>All</b>	2004-05	822	558	688	866	448	660
	2011-12	754	393	571	823	328	579
	2017-18	738	194	465	794	248	524
	2018-19	746	210	479	795	260	529
	2019-20	782	338	562	805	319	563
	2020-21	769	326	548	806	345	577
	2021-22	751	346	553	811	350	583

Table 1 presents the labour force participation rate (LFPR) trends among the working-age population (15-64 years) in Uttarakhand and India, categorized into rural and urban areas. The data spans from 2004-05 to 2021-22 and includes LFPR figures for males, females, and the overall population.

In rural areas of Uttarakhand, the LFPR for males in 2004-05 was 834, which gradually declined to 753 in 2021-22. For females, the LFPR decreased from 676 in 2004-05 to 395 in 2021-22. The LFPR for the overall population in rural Uttarakhand decreased from 752 in 2004-05 to 577 in 2021-22. Comparatively, in rural India, the LFPR for males decreased from 884 in 2004-05 to 818 in 2021-22, for females it decreased from 518 to 388, and for the overall population, it decreased from 701 to 604.

In urban areas of Uttarakhand, the LFPR for males in 2004-05 was 791, which decreased to 743 in 2021-22. For females, the LFPR decreased from 209 in 2004-05 to 201 in 2021-22. The LFPR for the overall population in urban Uttarakhand decreased from 513 in 2004-05 to 483 in 2021-22. Comparatively, in urban India, the LFPR for males decreased from 821 in 2004-05 to 796 in 2021-22, for females it decreased from 257 to 256, and for the overall population, it decreased from 553 to 532.

Considering the LFPR trends for all areas, which include both rural and urban regions, in Uttarakhand, the LFPR for males decreased from 822 in 2004-05 to 751 in 2021-22. For females, the LFPR decreased from 558 to 346, and for the overall population, it decreased from 688 to 553. Similarly, in India, the LFPR for males decreased from 866 in 2004-05 to 811 in 2021-22, for females it decreased from 448 to 350, and for the overall population, it decreased from 660 to 583.

These LFPR trends highlight a concerning decline in labour force participation, particularly among females in Uttarakhand. The lower LFPR for females in Uttarakhand compared to the overall LFPR in India underscores the need for focused efforts to promote women's participation in the labour force. Addressing the barriers and challenges that hinder women's employment and economic empowerment is crucial for achieving inclusive growth and sustainable development in Uttarakhand.

***Determinants of Labour Force Participation in Uttarakhand***

In this section, A logit model used to estimate the factors influencing labour force participation in Uttarakhand during 2021-22. The model analyzes various variables, including demographic, social, economic, and regional factors, to understand their impact on the likelihood of individuals being part of the labour force. By exploring the odds ratios associated with these variables, we can gain insights into the drivers and barriers affecting labour force participation in Uttarakhand.

Table 2: Odd Ratio for a Persons (15-64 Age) during 2021-22 in Uttarakhand: Logit Model

VARIABLES	Rural	Urban	Rural+Urban
LFPR	.	.	.
<b>Family Size</b>	0.626***	0.767***	0.687***
<b>Year in Education</b>	1.050***	1.091***	1.059***
<b>No. of Jobs</b>	4.213***	3.059***	3.546***
<b>40-80/0-40 Percentile</b>	0.870	0.817	0.834*
<b>Top 20/0-40 Percentile</b>	0.785	0.706*	0.738**
<b>30-44/15-29Age</b>	4.549***	4.132***	4.237***
<b>45-64/15-29Age</b>	1.731***	1.655**	1.704***
<b>Married/Unmarried</b>	7.204***	1.901***	3.722***
<b>Widow/Unmarried</b>	10.407***	3.646***	5.834***
<b>OBC/SCST</b>	1.017	0.929	1.013
<b>General/SCST</b>	0.932	0.937	0.964
<b>Female/Male</b>	0.066***	0.048***	0.062***
<b>Urban/Rural</b>			0.674***
Constant	1.017	0.691***	1.175**
Observations	2,699	2,134	4,833
Log Likelihood	-1126	-941.1	-2128
Df	12	12	13
Chi2	1384	1075	2394
Prob>Chi2	0	0	0
Pseudo Rsquare	0.381	0.364	0.360

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Authors' estimation from NSO unit-level data of PLFS 2021-22

Table 2 presents the findings of a logit model examining the factors influencing labour force participation among individuals aged 15-64 in Uttarakhand during 2021-22. The odds ratios indicate the impact of each variable on the likelihood of labour force participation, holding other variables constant.

**Family Size:** A larger family size is associated with lower odds of labour force participation in rural, urban, and combined rural-urban areas. For every additional unit increase in family size, the odds of labour force participation decrease by approximately 37.4% in rural areas, 23.3% in urban areas, and 31.3% in both rural and urban areas combined.

**Year in Education:** The number of years of education has a significant positive effect on labour force participation. For each additional year of education, the odds of labour force participation increase by about 5.0% in rural areas, 9.1% in urban areas, and 5.9% in both rural and urban areas combined.

**Number of Jobs:** Having more jobs within a family positively influences labour force participation. In rural areas, each additional job increases the odds by approximately 321.3%, while in urban areas, the increase is around 205.9%. When considering both rural and urban areas, each additional job leads to an increase of approximately 254.6% in the odds of labour force participation.

**40-80/0-40 Percentile:** Individuals in the 40-80 percentile income range have lower odds of labour force participation compared to the 0-40 percentile group. However, this difference is not statistically significant.

**Top 20/0-40 Percentile:** Individuals in the top 20 percentile income group have significantly lower odds of labour force participation compared to the 0-40 percentile group. In rural areas, the odds decrease by about 26.5%, in urban areas by approximately 26.2%, and in both rural and urban areas combined, the decrease is approximately 26.2%.

**Age Groups:** Both the 30-44 and 45-64 age groups have significantly higher odds of labour force participation compared to the reference group (15-29 years). In rural areas, the odds increase by approximately 354.9% and 73.1%, respectively. In urban areas, the increase is around 313.2% and 65.5%, and when considering both rural and urban areas, the increase is approximately 334.4% and 46.6%, respectively.

**Marital Status:** Being married has a strong positive impact on labour force participation. In rural areas, the odds of labour force participation are about 620.4% higher for married individuals compared to unmarried individuals. In urban areas, the increase is approximately 90.1%. When considering both rural and urban areas, the increase is around 272.2%.

**Widow/Unmarried:** Widowed individuals have significantly higher odds of labour force participation compared to unmarried individuals. In rural areas, the odds increase by about 944.0%, while in urban areas, the increase is approximately 264.6%. When considering both rural and urban areas combined, the increase is around 383.4%.

**OBC/SCST:** There is no significant difference in the odds of labour force participation between individuals from the OBC and SCST castes in rural areas. In urban areas, individuals from the OBC caste have lower odds of labour force participation compared to the SCST caste. When considering both rural and urban areas combined, there is no significant difference in the odds.

**General/SCST:** In rural areas, individuals from the general category have lower odds of labour force participation compared to the SCST category. In urban areas, the odds are even lower for the general category. When considering both rural and urban areas combined, the odds for the general category are still significantly lower compared to the SCST category.

**Female/Male:** Females have significantly lower odds of labour force participation compared to males in all areas. In rural areas, the odds are about 93.8% lower for females, while in urban areas, the decrease is around 95.2%. When considering both rural and urban areas, the odds for females are approximately 93.8% lower compared to males.

**Urban/Rural:** There is a significant difference in the odds of labour force participation between urban and rural areas. Individuals in urban areas have lower odds of labour force participation compared to rural areas. However, when considering both rural and urban areas combined, the difference in odds is not statistically significant.

These findings highlight the factors that influence labour force participation in Uttarakhand. Family size, education, number of jobs, income percentiles, age groups, marital status, and gender disparities all play significant roles. Policymakers should consider these factors when designing interventions to promote labour force participation and address the specific needs of different demographic groups in Uttarakhand.

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## **Main findings of the paper**

The Labour Force Participation Rate (LFPR) in Uttarakhand exhibits distinct patterns across different demographic groups and areas. Here is a summary of the key findings:

- **Rural Men:** The LFPR for rural men in Uttarakhand has consistently remained high.
- **Rural Women:** In contrast, the LFPR for rural women in Uttarakhand is significantly lower than that of men, and it has experienced a decline over the years.
- **Urban Men:** The LFPR for urban men in Uttarakhand has declined over time.
- **Urban Women:** On the other hand, the LFPR for urban women in Uttarakhand has slightly increased in recent period.

### ***Comparison with India:***

- **Rural and Urban Areas:** The LFPRs for both rural and urban areas in Uttarakhand consistently fall below the national average.
- **Lagging Behind:** In terms of labour force participation, Uttarakhand lags behind the rest of the country.
- **Gender Gap:** The gender gap in LFPR is significant in rural areas of Uttarakhand, with women participating less than men.

### ***Determinants of Labour Force Participation in Uttarakhand:***

Several factors influence labour force participation in Uttarakhand. Here are the key determinants:

- **Family Size:** Larger family sizes have a negative impact on labour force participation in both rural and urban areas.
- **Age Groups:** Individuals belonging to the age groups 30-44 and 45-64 have higher odds of participating in the labour force compared to the reference group (15-29 years).
- **Marital Status:** Being married significantly increases the likelihood of labour force participation.
- **Widowhood:** Interestingly, being a widow also significantly increases the odds of labour force participation.
- **Social Category:** In rural and rural+urban areas, individuals from the general category and OBC have almost equal odds of participating in the labour force as SC/STs.
- **Education:** Higher levels of education increase the odds of labour force participation in urban areas.

- Multiple Jobs in Family: Having multiple jobs in family increases the likelihood of labour force participation across all areas.
- Income Group: Individuals in the top 20 percentile income group experience a significant decrease in the odds of labour force participation.
- Gender: Being female significantly decreases the odds of labour force participation across all areas.

In conclusion, these findings shed light on the gender disparities in labour force participation in rural Uttarakhand. They underscore the importance of implementing policies and programs to increase participation, particularly among women. Furthermore, the study highlights the influence of demographic, social, and economic factors on labour force dynamics in Uttarakhand.

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### Policy Recommendations:

- Promote gender equality through targeted programs and initiatives in rural areas, focusing on education, skills training, entrepreneurship, and support for work-life balance.
- Invest in improving the quality of education, with a particular emphasis on girls' education and vocational training aligned with market demand.
- Launch awareness campaigns challenging societal norms and stereotypes that discourage women from participating in the labour force, highlighting successful women role models.
- Introduce social security measures for individuals engaged in informal or low-wage work, including maternity benefits, healthcare coverage, and pension schemes.
- Facilitate access to financial resources such as microfinance and small business loans for women entrepreneurs, along with training and mentorship programs.
- Foster an environment conducive to job creation, attracting investment and promoting sectors with low female participation while incentivizing gender diversity and inclusivity.
- Improve rural infrastructure, including transportation, healthcare facilities, and basic amenities, to reduce barriers faced by rural women in accessing employment opportunities.
- Invest in comprehensive data collection and research to monitor labour force dynamics, track gender-related indicators, and identify barriers to women's participation.
- Foster collaboration among government, civil society, private sector, and international agencies to collectively address challenges and implement effective policies and programs.
- Regularly evaluate and update policies based on monitoring and evaluation mechanisms, ensuring flexibility and adaptation to evolving needs and challenges.

Implementing these recommendations can help Uttarakhand reduce gender disparities in labour force participation and create an inclusive economy that maximizes the potential of its workforce.

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