

RESEARCH ARTICLE

LABOR AND WORK PARTICIPATION IN INDIA: A GENDER-SPECIFIC ANALYSIS OF TRENDS AND INFLUENCING FACTORSAjay Sood¹, Poonam Kumari¹, Ritesh Singh^{1*}¹Department of Economics, Himachal Pradesh University, Shimla, Himachal Pradesh, India.

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Abstract: The study delves into multifaceted dimension of female labor force participation and its intricate interplay with workforce dynamics in India. It is analyzed that the role of female labor and work participation is changing advantageously in comparison to male labor force participation and male workforce participation. The female labor participation is high in rural areas with 4.32 per cent CAGR and female workforce participation is also high in urban areas with 4.94 per cent CAGR from 2011-12 to 2022-23. The correlation identifies that labor force participation of female is positively correlated with labor force participation of total persons, work force participation of total person and with crime against the women. Study also shows the negative correlation of female in rural and urban areas with unemployment rate. This study suggests strategies to address various issues of female labor force to overcome barrier and to promote gender equality and create a more inclusive and supportive environment for women in the workforce.

Keywords: Female, labor force, Work force, Participation, Correlation, Growth.

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INTRODUCTION

The role of females in labor force participation and workforce engagement is pivotal in shaping economies and societies worldwide. Traditionally, women have been primary caregivers and homemakers, often underrepresented or excluded from formal employment sectors. However, in recent decades, there has been a notable shift towards greater female participation in the labor force and workforce, driven by various socio-economic factors and changing cultural norms. As more women enter the labor force and workforce, they bring diverse skill sets, perspectives, and contributions, enriching workplaces and fostering innovation.

Female participation not only strengthens economies by expanding the available talent pool but also promotes gender equality and social inclusion. Empowering women to participate in the labor force and workforce has far-reaching benefits, including improved household incomes, enhanced family well-being, and greater economic resilience. Moreover, increased female representation in the workforce promotes gender equity, challenging stereotypes and biases while paving the way for future generations of

women to pursue their aspirations and ambitions.

Education is the key indicator that contributes significantly to increasing work force of women in the economy. There is a linkage between education and labor force participation of women in order to promote women empowerment in India. Empowerment through education is essential for gender equality and the overall growth of the society.

Women empowerment can be ensured through significant increase in gross enrolment rates of women in different levels of education and increase in government expenditure on education (Ghosh & Mehta 2018). Education is a major step which enhances the status of women empowerment. Education gives way to employment which enhances their status within family and society. Additionally, education and employment help women in achieving equal status to that of men. Economic empowerment helps women to take their own decisions independently (Kumar & Jain, 2022).

Despite increase in the education, female labor force participation has fallen over the years. Various social and cultural dimensions are also a part of the adverse working conditions of women. Lack of education, lack of skill and training, lack of job-oriented opportunity or courses and gender-based discrimination at the workplace are major deterrent faced by women workers at the work place.(Banerjee,2019).

The trend of Female Labor Force Participation rate has been found declining from 2007 to 2016, various measures can be adopted to stimulate female labor force participation rate in India like childcare subsidy for working mothers, maternity leave, improvement in the working conditions of women at workplace, change in legislation and social cultural norms, enhanced the skill development programs and job creations, enhanced financial and political inclusion of women and improvement in rural employment programs in India (Roy, 2017).

Women in India have more opportunities at workplace but still they are lacking in terms of wages and access to high status jobs and occupation. Work and family responsibility may impact more on mental health of women as compared to men. This has resulted in huge gap in labor force participation of male and female. The low labor force participation of women in India is consequent to caste, religion and other sociocultural norms (Mishra & Singh, 2017). Marriage is serving as constraints for women participation in labor force activities.

The situation is different in different provinces of Pakistan. Women living in the joint family system, non- migrated trained women are actively participating in the labor force. Urban women are less likely take part in the labor force activities as compared to rural women. There is a need to create more training opportunities and skill development programs for less educated women so they can actively participate in labor force activities. It is necessary to create new job opportunities for women who are residing in urban areas(Andlib& Khan,2018).

Cultural and traditional beliefs are predominant factor affecting the rural women workforce participation in Nigeria.Marital status of women, religion, poverty rate and per capita income are significant

determinants in the rural sector whereas age and literacy rate are significant determinants in the urban sector that affect women workforce participation(Helen *et.al.*,2015). Crime against women is deterring factor in female labor force participation as compared to men. In fact crime is major factors responsible for worsening of gender gap in labor force participation rates. Increasing gender gap in labor force participation enlarge gender inequality in India it is also a deterring factor in economic development (Mishra *et.al.*, 2021).

In India employment pattern and labor force participation changed due to shift in the nature of work from agriculture to non-agricultural sector. Increases in qualification of women, improved their career choices. Gradual increases in the share of regular employment of women worker is resulting in decline in casual workers. For enhancing women capacities there is great need to investing in education and existing jobs should be gender equalizer. If the jobs that women engaged are low paid and poor working conditions, then there is a great need to improve these aspects (Rustagi,2013).

Manufacturing and service sector create more job opportunities for female workers in India but it has been limiting the opportunity for those women who are less educated and unskilled. Various social cultural constraints are also affecting women workers negatively(Mehrotra&Paridha, 2017).

Research Questions

- What is the trend in the Labor Force Participation Rate (LFPR) and Work Participation Rate (WPR) in India?
- What is the status of women in LFPR and WPR?
- What is the correlation between different variables which affect the Female LFPR and Female WPR in India?

DATA AND METHODOLOGY

The nature of the study is explorative .We have taken data from Employment and Unemployment Survey (2011-16), Periodical Labor Force Survey (2017-23), National Crime Records Bureau Report (2011-20), RBI Handbook and different existing research paper about the study. In this study, we utilized a combination of mathematical models, including linear, log-linear, and

exponential power functions, to calculate Compound Annual Growth Rate (CAGR) (Sood &Singh, 2023). Additionally, we employed the Pearson correlation method to analyze the relationship between variables.
 Statistical design:

- Change in LFPR (Labor Force Participation Rate) and WFPR (Workforce Participation Rate) $c = x - y$(1)

Here, C = Change
 X= Final Value
 Y = Initial Value

Compound Annual Growth Rate (CAGR):
 $\ln y_t = \alpha_t + \beta_t + u_t$ (2)

{Here, y_t = Value of time, t = Time element, α_t = Intercept, β_t =Regression coefficient, u_t = Random error} Compound Annual Growth Rate (CAGR)=

$[(\text{Antilog } \beta_t - 1) * 100]$ (3)

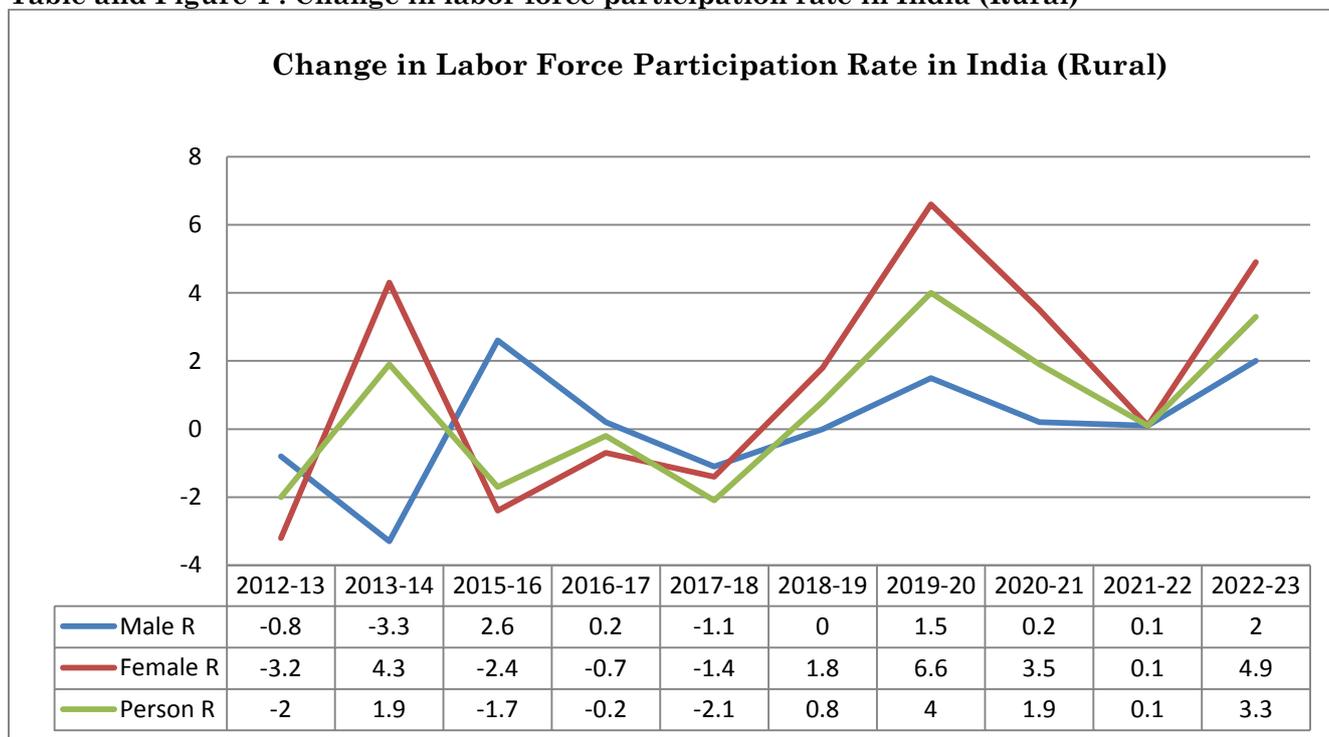
- Karl Person Correlation Coefficient:

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2} \sqrt{\sum (y - \bar{y})^2}}$$

RESULTS AND DISCUSSION

Understanding the dynamics of female labor force participation and workforce engagement is crucial for policymakers, businesses, and society at large. By recognizing and addressing barriers to female participation, such as unequal access to education, limited employment opportunities, and entrenched gender norms, we can foster an environment where all individuals, regardless of gender, can thrive and contribute meaningfully to economic growth and social progress. Therefore change in labor force participation rate of rural areas in India has been measured in the following Table and Graph.

Table and Figure 1 : Change in labor force participation rate in India (Rural)



Source: Authors' own calculations.

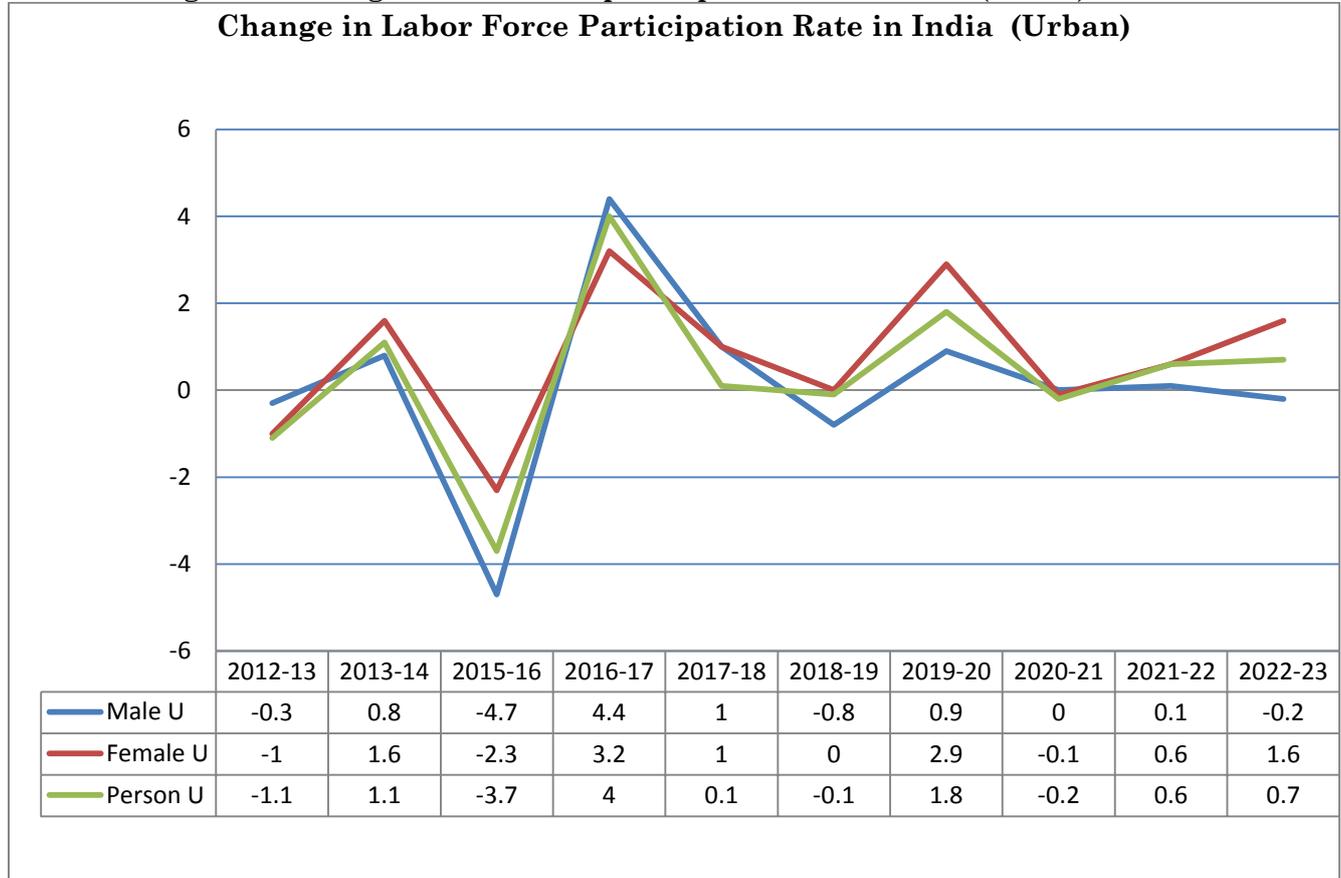
Table and Figure illustrate the trends in labor force participation in rural India, providing insights into the changes observed from 2011-12 to 2022-23. In 2012-13, there were negative changes in labor force participation rates for rural males, females, and total persons, with decreases of -0.8 percent, -3.2 percent, and -2 percent respectively. A similar trend continued

in 2013-14, with a negative change only for rural male LFPR (-3.3 percent). Notably, the figure depicts fluctuations in labor force participation both for rural male and female from 2012-13 to 2017-18, with both positive and negative changes. However, in 2018-19, while there was no change in male LFPR in rural areas but female LFPR and total LFPR experienced positive changes. Particularly

noteworthy is the substantial positive change in female LFPR, increased to 6.6 percent in 2019-20. Interestingly the impact of COVID-19 on LFPR in rural areas appears to be less pronounced for females as compared to males and total persons. In 2021-22, there was an equal change observed in male, female, and total persons' LFPR. However, in 2022-23, while female LFPR experienced a notable

positive change of 4.9 percent, male and total persons LFPR saw changes of 2 percent and 3.3 percent respectively. Overall, Table and Figure 1 underscore the resilience of rural LFPR trends amidst various economic and social shifts, with notable fluctuations and some resilience to the effects of the COVID-19 pandemic.

Table and Figure 2 : Change in labor force participation rate in India (Urban)



Source: Authors' own calculations.

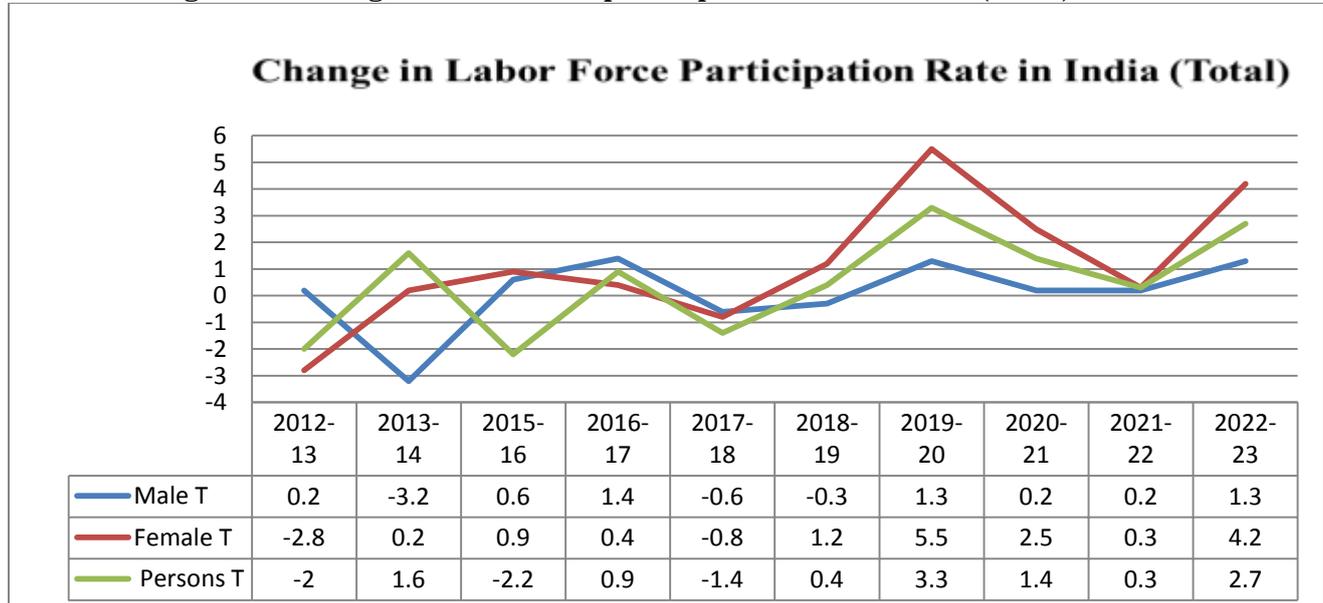
In Table and Figure 2, the labor force participation in India in usual status (Principal Status (ps)+Subsidiary Status(ss)) for individuals aged 15 years and above is depicted. The data reveals notable fluctuations in the trends of male, female, and total labor force participation in urban areas. In 2012-13, there was a negative change observed in male labor force participation by -0.3 percent, while female labor force participation experienced a negative change of -1 per cent, and the overall LFPR decreased by -1.1 percent in urban areas.

Subsequently, a slight positive change was observed in male, female, and total labor force participation rates, with increases of 0.8 percent for males, 1.6 percent for females, and 1.1 percent for total participation.

However, In 2015-16, a negative change was observed in male, female, and total LFPRs. This trend reversed in 2016-17, with positive changes observed across all categories. Notably, in 2017-18, there was a perfect positive change of one percent in male and female LFPRs, while the change in total participation was more modest.

These fluctuations persisted, exacerbated by the onset of the COVID-19 pandemic. In 2020-21 impact was more on female and total participation which however improved partially in the subsequent years but male participation in urban areas experienced a negative trend in 2022-23. Other than COVID-19 Pandemic, socio-economic and cultural factors kept affecting labor force participation rates in India.

Table and Figure 3 : Change in labor force participation rate in India (Total)

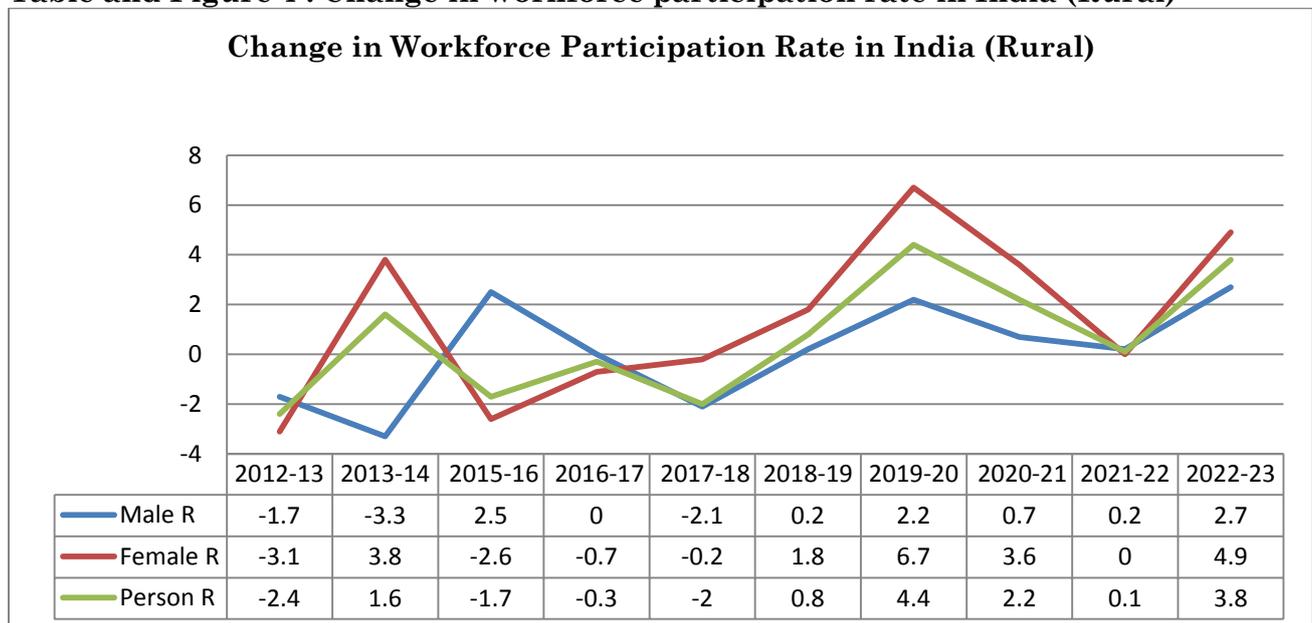


Source: Authors' own calculations.

In Table and Figure 3, the labor force participation of total persons in India is depicted based on the usual status (ps+ss) of employment and unemployment surveys, as well as periodical labor force surveys. The data reveals various changes in the LFPR across different years. In 2012-13 there was a 0.2 percent change observed in male LFPR, while female and total persons' LFPR experienced negative changes of 2.8 percent and 2 percent, respectively. Similarly, in 2013-14, there was a notable negative change of -3.2 percent in male LFPR, while female and total persons' participation rates saw positive changes of 0.2 percent and 1.6 percent, respectively. Throughout the period, fluctuations in labor force participation rates

were evident, with slight positive changes observed in 2016-17 for male, female, and total persons. Notably, significant changes were observed in 2018-19, altering the trends of female LFPR. Subsequently, from 2019-20 to 2022-23, there was a positive shift in labor force participation rates for male, female, and total persons. From 2018-19 female labor force participation has not only increased but has exceeded the male participation rate in India. Overall, Table and Figure 3 highlights the dynamic nature of labor force participation trends in India over the specified period, reflecting changes influenced by various economic, social, and cultural factors.

Table and Figure 4 : Change in workforce participation rate in India (Rural)

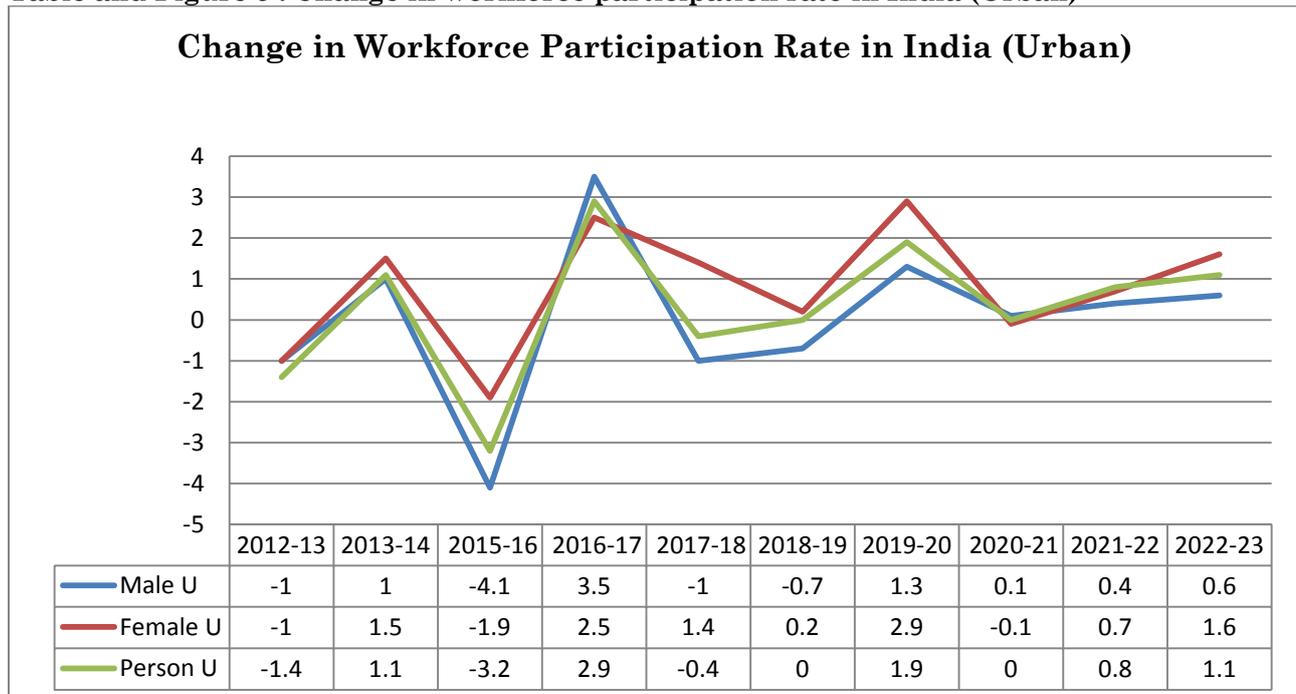


Source: Authors' own calculations.

The above table and figure reflects that in 2012-13, there were negative changes in WPR for rural males, females, and total persons, with decreases of -1.7 percent, -3.1 percent, and -2.4 percent respectively. Similarly, in 2013-14, there was a negative change observed only in male WPR (-3.3 percent), while female and total persons' WPR saw positive changes. However, in 2015-16, while male WPR experienced a positive change of 2.5 percent, female and total persons' WPR decreased by -2.6 percent and -1.7 percent respectively. Interestingly, in 2016-17, there was no change observed in male WPR in rural areas but female and total WPR experienced

a negative change. From 2018-19 to 2022-23, there were positive changes in the WPR for rural males, females and total persons. Notably, in 2019-20, the female WPR reached its highest point, recording a substantial increase of 6.7 percent. However, in 2021-22, there was no change observed in female WPR. Nevertheless, in 2022-23, the female WPR saw a significant increase of 4.9 percent, surpassing the WPR of males and total persons in rural India. Overall, Table and Figure-4 showcases the changing dynamics of workforce participation rates in rural areas, with fluctuations and notable increases in female participation rates in certain years.

Table and Figure 5 : Change in workforce participation rate in India (Urban)



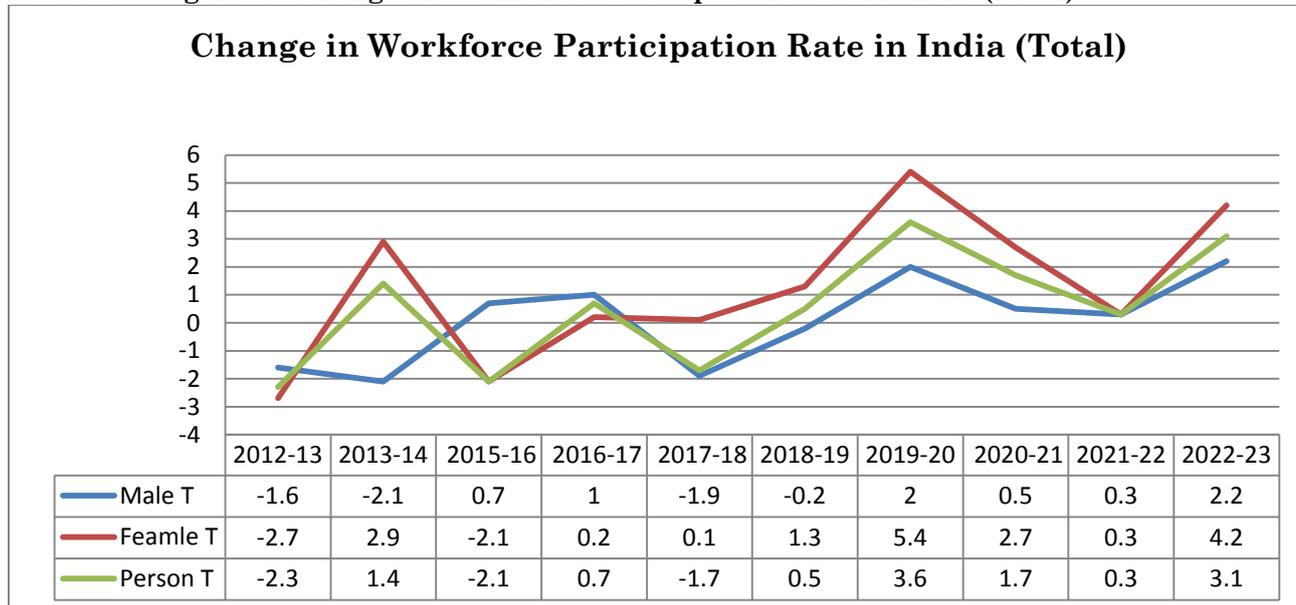
Source: Authors' own calculations.

Table and Figure 5 present the work participation rate (WPR) in urban areas, depicting changes observed over the specified period. In 2012-13, there was a negative change in WPR for urban males and females, with decreases of -1 percent, while the total persons' WPR decreased by -1.4 percent.

However, in 2013-14, there was a slight positive change observed across all categories, with increases of 1 percent for males, 1.5 percent for females, and 1.1 percent for total persons. The trend reversed in 2015-16, with significant negative changes in WPR for urban males, females, and total persons, to the effect of -4.1 percent, -1.9 percent, and -3.2 percent respectively. Subsequently, in 2016-17, positive improvements were noted in

WPR for all categories. From 2017-18 to 2020-21, both positive and negative changes were observed in WPR. Notably, in 2018-19 and 2020-21, there was no change observed in the WPR of total persons. During the COVID-19 period (2020-21), the female WPR experienced a slight negative change of -0.1 percent.

However, from 2021-22 to 2022-23, there were positive changes in the WPR for urban males, females, and total persons, indicating a recovery or improvement in work participation rates. Overall, Table and Figure 5 illustrates the dynamic nature of work participation rates in urban areas, reflecting fluctuations influenced by various economic, social, and environmental factors, including the impact of the COVID-19 pandemic.

Table and Figure 6 : Change in Workforce Participation Rate in India (Total)

Source: Authors' own calculations.

Table and Figure 6 illustrate the work participation rate (WPR) of the total population in India, highlighting changes observed over the specified period. In 2012-13, there were negative changes in WPR for male, female, and total persons, with decreases of -1.6 percent, -2.7 percent, and -2.3 percent respectively. Subsequently, in 2013-14, a negative change was observed only in male WPR (-2.1 percent). In 2015-16, while male WPR experienced a slight positive change of 0.7 percent, female and total persons' WPR decreased by -2.1 percent each. However, from 2019-20 to 2022-23, there were positive changes in the WPR for male, female,

and total persons. Notably, the increase in female WPR exceeded that of male and total persons' WPR during this period. Specifically, in 2021-22, the WPR of male, female, and total persons changed by 0.3 percent each. In 2022-23, while there was a marginal change of 0.2 percent in male WPR, female WPR saw a substantial increase of 4.2 percent, and total persons' WPR increased by 3.1 percent. Overall, Table and Figure 6 demonstrates the shifting dynamics of work participation rates in India, with notable improvements in female participation rates surpassing those of males and the total population in recent years.

Table 7: Compound annual growth rate of labour force participation rate (LFPR) and work participation rate (WPR) in India

| Variables | CAGR | Variables | CAGR |
|--------------------|--------------------|-------------------|--------------------|
| LFPR _{rm} | 0.21 (0.001) | WPR _{rm} | 0.21 (0.002) |
| LFPR _{rf} | 4.32*** (0.011) | WPR _{rf} | 4.91** (0.01) |
| LFPR _{rt} | 0.97 (0.004) | WPR _{rt} | 1.31* (0.005) |
| LFPR _{um} | 0.32 (0.001) | WPR _{um} | 0.05 (0.001) |
| LFPR _{uf} | 4.24*** (0.05) | WPR _{uf} | 4.94*** (0.006) |
| LFPR _{ut} | 0.91*** (0.002) | WPR _{ut} | 0.77** (0.002) |
| LFPR _{tm} | 0.17 (0.001) | WPR _{tm} | 0.14 (0.002) |
| LFPR _{tf} | 4.57*** (0.009) | WPR _{tf} | 4.85*** (0.01) |
| LFPR _{tp} | 0.92** (0.003) | WPR _{tp} | 0.99** (0.05) |

Note: *** 1% level of significance, ** 5% level of significance, * 10% level of significance
Value in parenthesis is Standard Error.

(**LFPRrm**: Labor Force Participation Rate of Rural Male, **LFPRrf**: Labor Force Participation Rate of Rural Female, **LFPRrt**: Labor Force Participation Rate of Total Rural Population, **LFPRum**: Labor Force Participation Rate of Urban Male, **LFPRuf**: Labor Force Participation Rate of Urban Female **LFPRut**: Labor Force Participation Rate of Total Urban, **LFPRtm**: Labor Force Participation Rate of Total Population, **LFPRtf**: Labor Force Participation Rate of Total Female, **LFPRtp**: Labour Force Participation Rate of Total Population, **WPRrm**: Work Participation Rate of Rural Male, **WPRrf**: Work Participation Rate of Rural Female, **WPRrt**: Work Participation Rate of Total Rural Population, **WPRum**: Work Participation Rate of Urban Male, **WPRuf**: Work Participation Rate of Urban Female **WPRut**: Work Participation Rate of Urban Total, **WPRtm**: Work Participation Rate of Total Male, **WPRtf**: Work Participation Rates of Total Female, **WPRtp**: Work Participation Rate of Total Population)

The Table-7 highlights that females have exhibited a higher and statistically significant CAGR in both rural and urban, as well as in the combined rural and urban areas. Specifically, the CAGR for female LFPR stands at 4.32 per cent in rural areas, 4.24 per cent in urban areas, and 4.57 per cent in both rural and urban areas combined. This indicates a consistent and notable increase in female participation in the labor force during the specified period. Moreover, the CAGR of female WPR, reflecting participation in the workforce, is even higher, with rates of 4.91 per cent in rural areas, 4.94 per cent in urban areas, and 4.85 per cent in both rural and urban areas combined.

These figures underscore a substantial and accelerating trend towards greater female engagement in the workforce, outpacing the growth rates of male participation in many cases. Overall, the data from Table 7 presents a positive narrative of increasing female participation in both labor force and workforce activities. This trend signals progress towards gender equality and female empowerment within Indian society, reflecting enhanced opportunities for female education, employment, and economic independence.

Table-8 illustrates the relationship between the labor force participation of total females and various variables. To determine this relationship, Karl Pearson correlation method was employed, analyzing variables such as labor force participation rate of the total population, workforce participation rate, crime against women, infant mortality rate, expenditure on education, total fertility rate, life expectancy, gross enrollment ratio, and unemployment rate.

The results indicate that the labor force participation rate of total females exhibits a perfect positive and statistically significant (.877) relationship with the labor force participation rate of the total population. Similarly, a perfect positive and significant (.853) relationship was found between the

labor force participation rate of total females and the workforce participation rate of the total population. Additionally, the labor force participation rate of total females shows a perfect positive significant (.976) relationship with the workforce participation rate of total females.

Further analysis reveals that the labor force participation rate of total females is perfectly positively correlated with the labor force participation rate of urban females (.860), while showing a significant but not perfect positive correlation with rural females (.952). Conversely, it is perfectly positively correlated with workforce participation rate of urban females (.876) significantly correlated with rural females (.965).

Regarding other variables, the labor force participation rate of total females exhibits a moderately perfect positive but statistically insignificant (.443) correlation with crime against women and a significant negative correlation with infant mortality rate (-.761). Expenditure on education shows a perfect negative but statistically insignificant (.239) relationship with the labor force participation rate of total females, while total fertility rate exhibits a perfect negative and significant (-.852) correlation.

Moreover, the labor force participation rate of total females displays a moderately perfect positive and statistically significant (.791) correlation with life expectancy and a moderate positive statistically significant (.749) correlation with the gross enrollment ratio. However, it is perfectly negative correlated with rural unemployment rate (-.867) and urban unemployment rate (-.925).

Overall, these results shed light on the intricate relationship between labor force participation of total females and various socio-economic indicators, providing valuable insights into the dynamics of female participation in the workforce.

Table8: Correlation analysis

| | LFPrtp | WFPRtp | LFPrtf | WFPtf | LFPRrf | LFPRuf | WFPRrf | WFPuf | CAW | IMR | EOedu | TFR | LEtf | LErf | LEuf | GEF | UR rf | UR uf |
|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------|---------|---------|---------|---------|---------|---------|---------|
| LFPrtp | 1 | .995** | .877** | .911** | .944** | .675* | .930** | .679* | .173 | -.451 | -.024 | -.652* | .595 | .434 | .399 | .419 | -.806** | -.741* |
| | .000 | .000 | .001 | .000 | .000 | .032 | .000 | .031 | .633 | .191 | .947 | .041 | .069 | .210 | .253 | .229 | .005 | .014 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| WFPRtp | .995** | 1 | .853** | .880** | .922** | .610 | .904** | .616 | .103 | -.381 | -.054 | -.600 | .549 | .365 | .328 | .352 | -.760* | -.693* |
| | .000 | .000 | .002 | .001 | .000 | .061 | .000 | .058 | .778 | .277 | .883 | .066 | .100 | .300 | .355 | .319 | .011 | .026 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| LFPrtf | .877** | .853** | 1 | .976** | .952** | .860** | .965** | .876** | .443 | -.761* | .239 | -.852** | .791** | .730* | .686* | .749* | -.867** | -.925** |
| | .001 | .002 | .000 | .000 | .000 | .001 | .000 | .001 | .200 | .011 | .506 | .002 | .006 | .017 | .029 | .013 | .001 | .000 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| WFPtf | .911** | .880** | .976** | 1 | .985** | .873** | .996** | .888** | .476 | -.759* | .163 | -.871** | .788** | .730* | .693* | .727* | -.938** | -.943** |
| | .000 | .001 | .000 | .000 | .000 | .001 | .000 | .001 | .164 | .011 | .654 | .001 | .007 | .016 | .026 | .017 | .000 | .000 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| LFPRrf | .944** | .922** | .952** | .985** | 1 | .790** | .995** | .806** | .442 | -.673* | .041 | -.832** | .774** | .666* | .636* | .652* | -.896** | -.899** |
| | .000 | .000 | .000 | .000 | .000 | .007 | .000 | .005 | .201 | .033 | .911 | .003 | .009 | .036 | .048 | .041 | .000 | .000 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| LFPRuf | .675* | .610 | .860** | .873** | .790** | 1 | .829** | .997** | .598 | -.905** | .409 | -.857** | .766** | .852** | .817** | .864** | -.886** | -.910** |
| | .032 | .061 | .001 | .001 | .007 | .000 | .003 | .000 | .068 | .000 | .240 | .002 | .010 | .002 | .004 | .001 | .001 | .000 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| WFPRrf | .930** | .904** | .965** | .996** | .995** | .829** | 1 | .846** | .452 | -.712* | .090 | -.848** | .774** | .690* | .655* | .681* | -.928** | -.923** |
| | .000 | .000 | .000 | .000 | .000 | .003 | .000 | .002 | .190 | .021 | .805 | .002 | .009 | .027 | .040 | .030 | .000 | .000 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| WFPuf | .679* | .616 | .876** | .888** | .806** | .997** | .846** | 1 | .608 | -.915** | .407 | -.875** | .778** | .861** | .824** | .874** | -.902** | -.932** |
| | .031 | .058 | .001 | .001 | .005 | .000 | .002 | .000 | .062 | .000 | .244 | .001 | .008 | .001 | .003 | .001 | .000 | .000 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| CAW | .173 | .103 | .443 | .476 | .442 | .598 | .452 | .608 | 1 | -.837** | .164 | -.769** | .782** | .905** | .927** | .866** | -.505 | -.652* |
| | .633 | .778 | .200 | .164 | .201 | .068 | .190 | .062 | .003 | .651 | .009 | .008 | .000 | .000 | .001 | .137 | .041 | |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| IMR | -.451 | -.381 | -.761* | -.759* | -.673* | -.905** | -.712* | -.915** | -.837** | 1 | -.483 | .929** | -.842** | -.984** | -.968** | -.987** | .771** | .896** |
| | .191 | .277 | .011 | .011 | .033 | .000 | .021 | .000 | .003 | .157 | .000 | .002 | .000 | .000 | .000 | .000 | .009 | .000 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| EOedu | -.024 | -.054 | .239 | .163 | .041 | .409 | .090 | .407 | .164 | -.483 | 1 | -.408 | .205 | .404 | .386 | .448 | -.156 | -.329 |
| | .947 | .883 | .506 | .654 | .911 | .240 | .805 | .244 | .651 | .157 | .242 | .570 | .247 | .270 | .195 | .668 | .353 | |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| TFR | -.652* | -.600 | -.852** | -.871** | -.832** | -.857** | -.848** | -.875** | -.769** | .929** | -.408 | 1 | -.911** | -.929** | -.919** | -.915** | .835** | .958** |
| | .041 | .066 | .002 | .001 | .003 | .002 | .002 | .001 | .009 | .000 | .242 | .000 | .000 | .000 | .000 | .000 | .003 | .000 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| LEtf | .595 | .549 | .791** | .788** | .774** | .766** | .774** | .778** | .782** | -.842** | .205 | -.911** | 1 | .872** | .878** | .879** | -.708* | -.874** |
| | .069 | .100 | .006 | .007 | .009 | .010 | .009 | .008 | .008 | .002 | .570 | .000 | .001 | .001 | .001 | .001 | .022 | .001 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| LErf | .434 | .365 | .730* | .730* | .666* | .852** | .690* | .861** | .905** | -.984** | .404 | -.929** | .872** | 1 | .995** | .990** | -.716* | -.865** |
| | .210 | .300 | .017 | .016 | .036 | .002 | .027 | .001 | .000 | .000 | .247 | .000 | .001 | .000 | .000 | .000 | .020 | .001 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| LEuf | .399 | .328 | .686* | .693* | .636* | .817** | .655* | .824** | .927** | -.968** | .386 | -.919** | .878** | .995** | 1 | .980** | -.676* | -.836** |
| | .253 | .355 | .029 | .026 | .048 | .004 | .040 | .003 | .000 | .000 | .270 | .000 | .001 | .000 | .000 | .000 | .032 | .003 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| GEF | .419 | .352 | .749* | .727* | .652* | .864** | .681* | .874** | .866** | -.987** | .448 | -.915** | .879** | .990** | .980** | 1 | -.699* | -.869** |
| | .229 | .319 | .013 | .017 | .041 | .001 | .030 | .001 | .001 | .000 | .195 | .000 | .001 | .000 | .000 | .000 | .025 | .001 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| UR rf | -.806** | -.760* | -.867** | -.938** | -.896** | -.886** | -.928** | -.902** | -.505 | .771** | -.156 | .835** | -.708* | -.716* | -.676* | -.699* | 1 | .917** |
| | .005 | .011 | .001 | .000 | .000 | .001 | .000 | .000 | .137 | .009 | .668 | .003 | .022 | .020 | .032 | .025 | .000 | |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | |
| UR uf | -.741* | -.693* | -.925** | -.943** | -.899** | -.910** | -.923** | -.932** | -.652* | .896** | -.329 | .958** | -.874** | -.865** | -.836** | -.869** | .917** | 1 |
| | .014 | .026 | .000 | .000 | .000 | .000 | .000 | .000 | .041 | .000 | .353 | .000 | .001 | .001 | .003 | .001 | .000 | |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | |
| UR tf | -.884** | -.854** | -.916** | -.972** | -.956** | -.828** | -.974** | -.849** | -.456 | .719* | -.128 | .851** | -.735* | -.679* | -.640* | -.661* | .976** | .926** |
| | .001 | .002 | .000 | .000 | .000 | .003 | .000 | .002 | .186 | .019 | .724 | .002 | .015 | .031 | .046 | .037 | .000 | .000 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

(LFPrtp: Labour Force Participation of Total Population, WFPRtp: Work Force Participation Rate of Total Population, LFPrtf: Labour Force Participation Rate of Total Female, WFPRtf: Work Force Participation Rate of Total Female, LFPRrf: Labour Force Participation Rate of Rural Female, LFPRuf: Labour Force Participation Rate of Urban Female, WFPRrf: Work Force Participation Rate of Rural Female, WFPuf: Work Force Participation Rate of Urban Female, CAW: Crime Against Women, IMR: Infant Mortality Rate, EOedu: Expenditure on Education, TFR: Total Fertility Rate, LEtf: Life Expectancy of Total Female, LErf: Life Expectancy of Rural Female, LEuf: Life Expectancy of Urban Female, GER: Gross Enrolment Ratio, URrf: Unemployment Rate of Rural Female, URuf: Unemployment Rate of Urban Female)

CONCLUSION AND POLICY IMPLICATIONS

Study provides a comprehensive overview of labor force participation and workforce dynamics in India. Substantial positive change is observed in female LFPR in rural areas in India. The dynamic nature of labor force participation trends in India have been observed reflecting changes influenced by various economic, social and cultural factors.

The trends reveal a complex interplay of socio-economic factors influencing participation rates, with notable fluctuations observed over time. The impact of Covid-19 on LFPR trends in rural areas appears to be less pronounced as compared to urban areas. Particularly striking is the increasing trend of female participation in the labor force and workforce, surpassing those of males participation and total population in recent years is signaling progress towards enhanced opportunities for females, gender equality and empowerment.

However some challenges are still there, including the impact of the COVID-19 pandemic and persistent disparities across regions and demographic groups. Women empowerment can be ensured through significant increase in gross enrolment rates of women in different levels of education and increase in government expenditure on education and sharpening skills of women. Policies should be made to reduce gender-based discrimination and to eliminate crime against women at the work place. Policy makers should make efforts to change in

Legislation and social cultural norms. These findings underscore the importance of targeted policies and interventions aimed at fostering inclusive growth and socio-economic development. By understanding the dynamics of labor force participation and addressing underlying barriers, policymakers can work towards creating a more equitable and prosperous future for all segments of society in India.

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