

# Examining the Relationship Between Female Labour Force Participation and Crime Rates Against Women in India: A Cross-Regional Empirical Analysis

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**Abstract:** *This research explores whether female labour force participation rate (FLFPR) correlates with crime rates against women across Indian states and union territories, and whether regional differences in crime rates exist. Drawing from cross-sectional data for 36 Indian regions during 2021–22, we use bivariate correlation analysis and one-way ANOVA to examine these relationships. Results indicate a weak, statistically non-significant negative correlation between FLFPR and crime rates ( $r = -0.178$ ,  $p = 0.298$ ), and no significant variation in crime rates across six major Indian regions ( $F(5,27) = 1.39$ ,  $p = 0.258$ ). These findings challenge simplistic narratives about the protective effects of economic participation and underscore the importance of multi-dimensional approaches to understanding gender-based crime. The study concludes with a discussion on data limitations and recommendations for future research directions, emphasizing the need for more nuanced, longitudinal, and intersectional approaches.*

**Keywords:** Female Labour Force Participation (FLFPR), Gender-based Violence, Crime Against Women, Women's Empowerment, Economic Participation, Multidimensional Poverty Index (MPI), Regional Disparities, Patriarchy, Empowerment Theory, Backlash Hypothesis, Gender Inequality, Labour Economics, Gender Development

## 1. Introduction

Violence against women is a profound societal issue that transcends cultural, economic, and geographic boundaries. In India, crimes against women have been a persistent concern, with incidents ranging from domestic violence, sexual harassment, and rape to human trafficking and honor killings. Despite legal reforms and growing public awareness, the rate of gender-based violence remains disturbingly high. These crimes not only violate fundamental human rights but also hinder national development by curtailing women's freedom and agency. In efforts to address such violence, scholars and policymakers have increasingly turned to **women's economic empowerment** as a possible avenue for social transformation. One of the most widely used indicators of such empowerment is the **female labour force participation rate (FLFPR)**, typically defined as the proportion of women aged 15 and above who are either employed or actively seeking employment. The underlying hypothesis is rooted in the belief that economic independence can enhance women's autonomy, improve their bargaining power within households, and reduce their vulnerability to exploitation and abuse. From a theoretical standpoint, the relationship between FLFPR and violence against women can be examined through multiple lenses. One influential perspective is the **resources theory**, proposed by sociologist William Goode (1971), which posits that individuals who lack access to resources are more likely to use violence to exert control. In this framework, when women gain economic resources through labour participation, they may reduce their dependency on male partners, thereby threatening traditional gender hierarchies. Consequently, men who perceive a loss of control may respond with violence as a compensatory mechanism—an idea also supported by the **backlash hypothesis**.

Contrastingly, **empowerment theory** offers a more optimistic outlook. It suggests that as women engage in the labour market, they acquire not only financial independence but also social capital, exposure to new ideas, and access to networks that can help reduce isolation and vulnerability. According to this view, FLFPR contributes positively to women's well-being by enhancing their ability to make informed choices and seek support when needed. It also implies that employed women are better positioned to resist or escape abusive situations. Yet, empirical studies reveal a more nuanced reality. In societies marked by rigid gender norms and unequal power relations—as is the case in many parts of India—women's entry into the workforce can produce contradictory outcomes. For instance, while work may increase mobility and public presence, it can simultaneously expose women to greater risks in public spaces, including workplace harassment, commuting-related assaults, and other forms of gendered violence. Furthermore, in areas where women's employment is not socially accepted, economic participation may lead to social stigma, familial tension, or increased scrutiny, thereby exacerbating the risks rather than mitigating them.

Adding complexity to this issue is the nature and quality of employment. **Not all labour force participation is empowering.** Women employed in informal, low-wage, or exploitative sectors often face precarious conditions that may offer little protection or autonomy. In such cases, FLFPR may fail to produce the emancipatory effects typically associated with economic empowerment. Instead, it may reinforce dependency or expose women to additional layers of vulnerability.

In the Indian context, these dynamics are further complicated by regional disparities in culture, governance, and socio-

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economic development. India's states and union territories exhibit vast differences in education levels, poverty rates, gender norms, and institutional responsiveness, all of which can influence both FLFPR and the prevalence of crimes against women. This heterogeneity raises important questions about whether general assumptions about the protective role of economic participation hold true across regions or whether the relationship is mediated by broader contextual variables.

Against this backdrop, the present study seeks to empirically investigate whether there exists a significant association between female labour force participation and crime rates against women across Indian states. It also explores whether average crime rates vary significantly by region, thereby shedding light on how geography and socio-economic context interact with gender-based outcomes. By integrating theoretical insights with state-level data, this research aims to provide a more grounded understanding of the socio-economic correlates of violence against women in India.

## 2. Literature Review

The relationship between female labour force participation (FLFPR) and violence against women has been widely explored across disciplines such as sociology, economics, gender studies, criminology and criminal geography. Theoretical perspectives diverge, and empirical findings are often mixed, depending on the region, methodology, and context under analysis.

### 2.1 Economic Empowerment and Gender-Based Violence: A Double-Edged Sword

A dominant theoretical framework posits that increased female labour participation leads to economic empowerment, thereby reducing women's dependence on men and enhancing their bargaining power within households and society. Pioneering work by Amartya Sen (1999) emphasized the role of economic independence in expanding women's substantive freedoms. Similarly, Kabeer (2005) framed empowerment as the expansion of choice and agency, with employment being a key dimension.

However, other scholars have noted a paradoxical trend. Heise (1998, 2011) and others in public health literature argue that in highly patriarchal societies, economic empowerment may provoke a "backlash" from men who perceive their dominance as being threatened. This can result in increased intimate partner violence or public harassment as a means of reasserting control. This phenomenon is particularly noted in developing countries where patriarchal values are deeply entrenched, and social transitions are uneven.

### 2.2 Social Norms and Contextual Moderators

Social norms and community-level gender ideologies play a crucial role in shaping how female employment is perceived and whether it leads to empowerment or risk. Eswaran and Malhotra (2011) found that in rural India, women's employment in informal or subsistence sectors did not always lead to greater household autonomy and could, in some instances, increase their exposure to domestic violence. In

contrast, formal sector employment in urban areas showed more protective effects.

Furthermore, the nature of employment matters. Chaudhuri (2018) notes that precarious, poorly paid, or stigmatized forms of work may offer little real empowerment and may in fact reinforce women's subordination. Employment that is exploitative or reinforces dependency through low wages and poor working conditions may not shift intra-household dynamics meaningfully.

Moreover, studies by Panda and Agarwal (2005) reveal that even when women contribute economically, their decision-making authority may remain limited unless accompanied by changes in societal attitudes and education levels. This suggests that FLFPR is a necessary but not sufficient condition for reducing women's vulnerability to violence.

### 2.3 Empirical Evidence: Global and Indian Contexts

Globally, the evidence on the FLFPR-violence link is heterogeneous. For instance, in Latin America and Sub-Saharan Africa, several studies (e.g., Vyas & Watts, 2009) report that economic participation tends to reduce domestic violence, particularly when combined with legal protections and social services. However, in parts of South Asia, the pattern is less clear.

In India, Desai and Andrist (2010) found that working women are not necessarily less likely to experience intimate partner violence. The relationship is often mediated by education, household structure, and whether the woman retains control over her earnings. National Family Health Survey (NFHS) data has repeatedly shown that employment status alone does not correlate strongly with reduced domestic abuse.

In urban India, a study by Krishnan et al. (2010) found that employment may even increase exposure to harassment and abuse in certain environments, particularly when public infrastructure (e.g., transport, lighting, police responsiveness) is weak. Women who commute long distances or work in male-dominated industries may be especially vulnerable.

At the state level, literature is sparse, but some regional case studies (e.g., in Kerala and Haryana) have highlighted how cultural attitudes toward women's work shape both crime reporting and actual risk. For instance, states with higher gender development indices and stronger women's movements tend to have higher reported crime rates—possibly due to better reporting mechanisms rather than higher incidence.

### 2.4 Regional Disparities and Institutional Factors

Another key moderator is state capacity and institutional responsiveness. Bhalotra, Brulé, and Roy (2021) argue that variations in law enforcement, judicial efficiency, and political representation of women across Indian states significantly shape outcomes for gender-based violence. Therefore, two states with similar FLFPRs may show vastly different crime rates due to institutional factors.

The multidimensional nature of empowerment is emphasized by Chakraborty and Mukherjee (2016), who advocate for composite indices that integrate education, health, economic participation, and political agency to understand vulnerability to violence. This aligns with the growing use of the Multidimensional Poverty Index (MPI) as a contextual variable in gender research.

### 3. Methodology

#### Data Sources

This study utilizes publicly available, state-level data for 36 Indian states and union territories. The primary variables include:

- **Crime rate against women** per lakh (100,000) female population, sourced from the National Crime Records Bureau (NCRB) for 2022.
- **Female Labour Force Participation Rate (FLFPR)** from the Periodic Labour Force Survey (PLFS), 2021–22.
- **Multidimensional Poverty Index (MPI)** data for 2019–21 from the NITI Aayog.

The states were grouped into six regions for comparative analysis: North, South, East, West, Central, and Northeast.

#### Analytical Methods

To explore **RQ1**, a Pearson correlation test was conducted to assess the strength and direction of the relationship between FLFPR and crime rate. A scatterplot with a fitted regression line visually represented this bivariate relationship.

For **RQ2**, a one-way Analysis of Variance (ANOVA) was performed to examine whether average crime rates differed significantly across the six defined regions. Descriptive statistics and boxplots complemented the inferential analysis.

### 4. Result and Discussion

**Table 1:** State wise crime rate against women, FLFPR and MPI

State/UTs	crime rate per lakh female population, 2022	female labour force participation, 2021-2022	MPI Head count ratio 2019-21
Andaman & Nicobar	100.16	45.7	2.3
Andhra Pradesh	60.52	43.3	6.06
Arunachal Pradesh	50.01	31.2	13.76
Assam	92.68	28.2	19.35
Bihar	40.59	10.2	33.76
Chandigarh	68.45	16.8	3.52
Chhattisgarh	68.27	51.6	16.37
Dadra & Nagar Have	84.03	43	9.21
Delhi	182.64	12.2	3.43

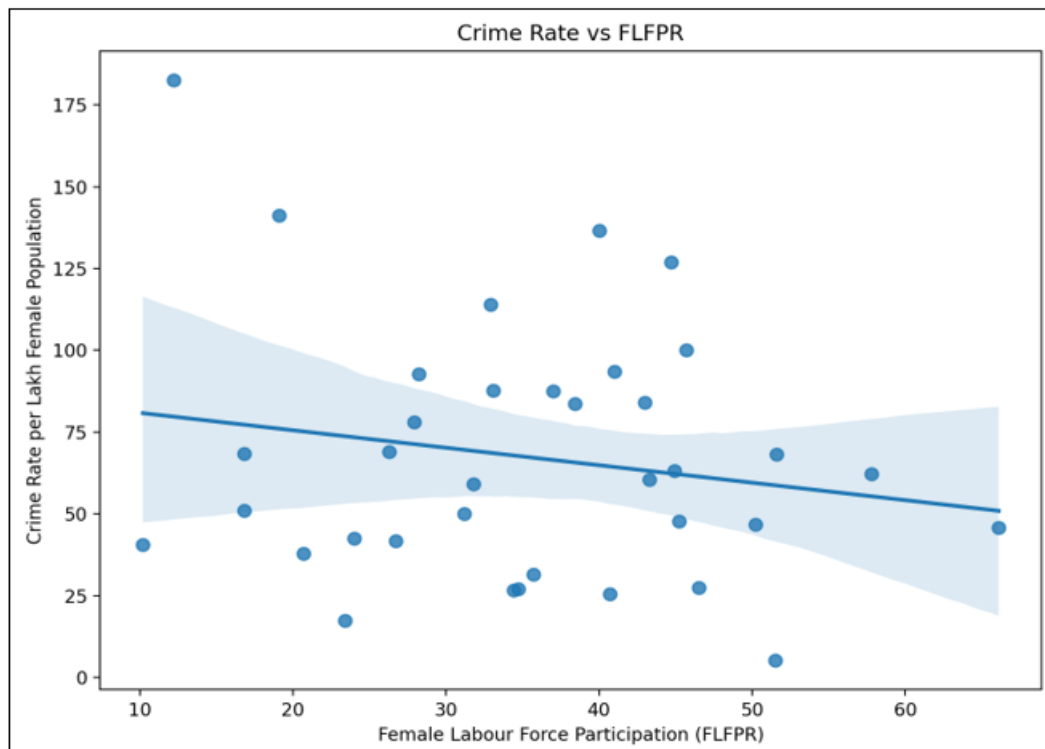
Goa	37.95	20.7	0.84
Gujarat	26.71	34.4	11.66
Haryana	141.21	19.1	7.07
Himachal Pradesh	45.85	66.1	4.93
Jammu & Kashmir	63.23	44.9	4.8
Jharkhand	47.81	45.2	28.81
Karnataka	59.12	31.8	7.58
Kerala	87.54	37	0.55
Ladakh	27.51	46.5	3.53
Lakshadweep	50.99	16.8	1.11
Madhya Pradesh	93.58	41	20.63
Maharashtra	83.74	38.4	7.81
Manipur	17.5	23.4	8.1
Meghalaya	46.78	50.2	27.79
Mizoram	27.13	34.7	5.3
Nagaland	5.14	51.5	15.43
Odisha	113.9	32.9	15.68
Puducherry	31.47	35.7	0.85
Punjab	42.52	24	4.75
Rajasthan	136.55	40	15.31
Sikkim	62.26	57.8	2.6
Tamil Nadu	25.57	40.7	2.2
Telangana	126.87	44.7	5.88
Tripura	41.79	26.7	13.11
Uttar Pradesh	68.96	26.3	22.93
Uttarakhand	87.64	33.1	9.67
West Bengal	78.12	27.9	11.89

Source: NCRB 2022, NITI Aayog and PLFS 2021-2022.

- We regressed crime rate (per lakh female population) on female labour force participation (FLFPR) and multidimensional poverty index (MPI).
- The R-squared is very low ( $\sim 0.03$ ), meaning these two predictors explain only about 3 % of the variation in crime rates across states.
- Neither FLFPR nor MPI coefficients are statistically significant (their P-values are well above 0.05), so there's no strong evidence in this data that higher female labour participation or poverty levels predict changes in crime rate.
- The constant term ( $\sim 88.5$ ) represents the baseline crime rate when both FLFPR and MPI are zero—but since those values aren't realistic in this context, interpret the intercept with caution.

#### FLFPR and Crime Rate Relationship

The Pearson correlation coefficient between FLFPR and crime rate is  $-0.178$ , with a p-value of 0.298. This weak, negative association suggests that higher female labour participation might correlate with slightly lower crime rates, but the result is not statistically significant. The scatterplot visually confirms this weak trend, displaying a diffuse cloud of data points with no clear pattern.



**Figure 1:** A scatterplot with fitted regression line illustrates the bivariate trend

### Descriptive Regional Summaries

Average FLFPR and crime rates were computed for each of the six regions. While some variations in mean values were observed, these did not translate into statistically significant patterns. For instance:

- The North region showed relatively higher crime rates but varied FLFPR.
- The South exhibited moderately high FLFPR and middling crime rates.
- The Northeast had the highest FLFPR but did not have the lowest crime rates.

These summaries suggest the need to consider factors beyond just economic participation when evaluating crime patterns.

### Regional Differences in Crime Rates (ANOVA)

- Central and North regions exhibit the highest average crime rates (~81).
- The East has moderate crime (~70) but the lowest female labour participation (~29 %).
- The Northeast and West both show lower crime rates (~43 and ~49) with mid-range FLFPR (~38 % and ~31 %).

- South clocks in around ~68 for crime and ~37 % for FLFPR.

These patterns suggest notable regional variation: for example, the Central and North stand out for higher crime despite differing FLFPR, while the East's low participation doesn't translate into unusually high crime. We could explore statistical tests (ANOVA) to assess whether these regional differences are significant

The one-way ANOVA produced the following results:

- $F(5,27) = 1.39, p = 0.258$

Given the p-value exceeds the standard 0.05 threshold, we fail to reject the null hypothesis. This indicates no statistically significant difference in mean crime rates against women across the six Indian regions. A boxplot illustrating these distributions shows overlapping ranges and considerable within-region variance, further reinforcing the finding of non-significance.

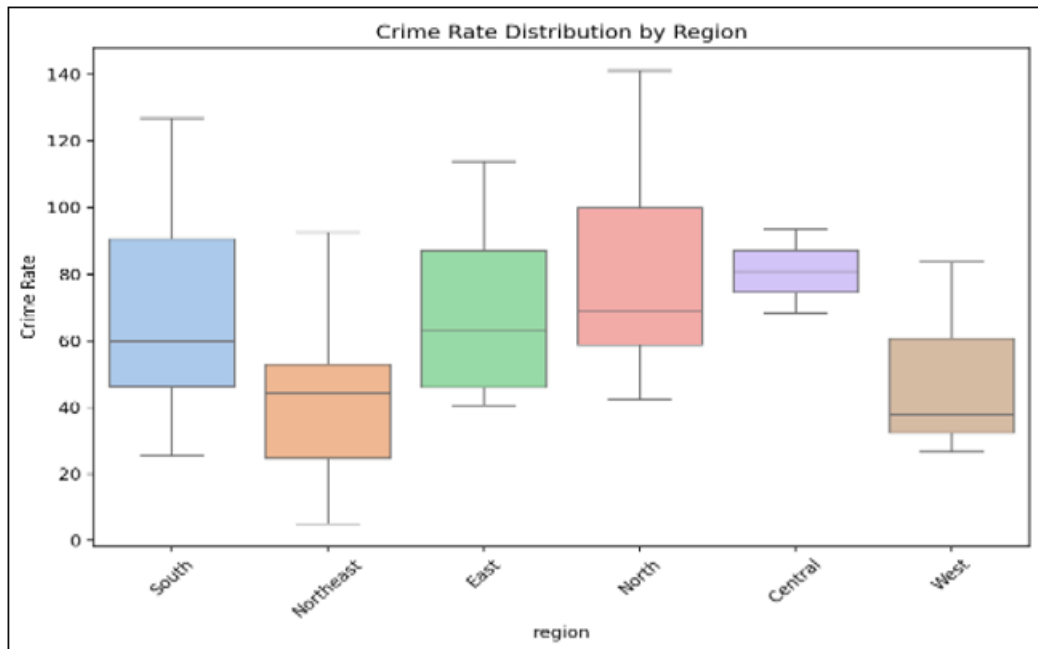


Figure 2: A boxplot distribution

## 5. Discussion

### Interpreting the Weak FLFPR-Crime Correlation

Despite theoretical expectations, the data does not support a statistically significant negative relationship between FLFPR and crime rates against women. Several explanations may account for this:

- **Lag Effects:** Economic participation changes may require time to influence social attitudes or protective institutions.
- **Reporting Bias:** Increased awareness and reporting mechanisms in regions with high FLFPR might inflate crime figures.
- **Heterogeneity in Participation:** Not all forms of labour participation are equal. Informal, unpaid, or vulnerable employment may not empower women meaningfully.
- **Contextual Variability:** Cultural norms, legal systems, and policing efficacy vary widely across states and are not controlled for in this analysis.

### Regional Homogeneity in Crime Rates

The absence of significant regional differences suggests that geographic classifications may not meaningfully capture the socio-political drivers of crime against women. States within the same region can have vastly different governance, law enforcement, and cultural dynamics. For instance, Kerala and Tamil Nadu (both in the South) have contrasting indicators on women's education, health, and political representation.

### Policy Implications

- **Multifaceted Approaches Needed:** Addressing crimes against women requires interventions beyond economic inclusion, including judicial reforms, police training, public awareness campaigns, and gender-sensitive education.
- **Data Disaggregation:** State-level data may conceal district-level patterns. Policies should be tailored based on granular, context-specific insights.
- **Empowerment Beyond Employment:** Emphasis should be placed on quality of employment, legal literacy, and social

capital, which may offer better protection than labour participation alone.

### Limitations

- **Cross-Sectional Design:** Limits causal inference. Temporal dynamics between participation and crime remain unexplored.
- **Omitted Variables:** Factors such as alcohol use, urbanization, caste dynamics, and police strength are excluded.
- **Aggregated State-Level Data:** Hides micro-level disparities.
- **Reporting Variability:** States differ in how crimes are recorded, influencing comparability.

## 6. Conclusion

This study set out to explore two core research questions: first, whether female labour force participation (FLFPR) correlates with crime rates against women across Indian states; and second, whether these crime rates differ meaningfully across India's six major geographic regions. Based on cross-sectional data from 36 states and union territories for 2021–22, the findings reveal a weak, negative, but statistically insignificant association between FLFPR and the rate of crimes committed against women ( $r = -0.178$ ,  $p = 0.298$ ). Additionally, no significant differences in average crime rates were found across the regions ( $F(5,27) = 1.39$ ,  $p = 0.258$ ), indicating a lack of strong geographic patterning.

These results contribute to a nuanced understanding of gender-based violence in India. While it might be intuitively appealing to assume that higher female employment directly leads to enhanced safety and lower crime rates, the evidence does not support this assumption unequivocally. The absence of a significant correlation highlights the complexity of gender-based violence and points to the limitations of relying on single-variable explanations for multi-dimensional social problems. FLFPR, while an important marker of economic



activity and autonomy, does not operate in isolation from other contextual and structural forces.

One key implication of the findings is the importance of moving beyond economic indicators alone when designing interventions to address gender-based violence. Women's safety cannot be guaranteed simply by increasing employment figures if broader cultural, institutional, and legal barriers remain unaddressed. Empowerment must be multidimensional—encompassing not just economic autonomy but also educational attainment, legal literacy, access to justice, and shifts in social norms.

The study also draws attention to the limitations of using broad regional categories when analyzing crime patterns. The lack of significant regional variation may be attributed to high levels of within-region heterogeneity. States within the same geographic region often differ dramatically in terms of governance, gender norms, infrastructure, and law enforcement capacity. As such, national or regional averages may mask important state- or district-level disparities. A more granular approach—possibly using district-level or city-level data—may be required to uncover meaningful spatial patterns in the incidence of violence against women.

Furthermore, the results underscore the need to consider non-economic dimensions of women's empowerment. For instance, the quality of employment (e.g., formal vs. informal sector), the ability to control income, and exposure to rights-based education may play more decisive roles than mere labour force participation. It is possible that women working in insecure or stigmatized jobs do not experience the kind of empowerment that leads to greater safety or social mobility. Similarly, societal backlash against working women, particularly in conservative or rural regions, may offset the potential protective benefits of employment.

The study's limitations—particularly its reliance on cross-sectional and aggregate state-level data—should also be acknowledged. Without longitudinal data, it is difficult to assess causality or the temporal dynamics between FLFPR and crime. The use of aggregate data may obscure intra-state variations and fails to capture localized factors such as community policing, gender-based policy implementation, or media influence. Additionally, reporting bias in crime statistics—whereby states with better reporting mechanisms may appear more unsafe—can distort the interpretation of results.

Nonetheless, this research opens up important avenues for future inquiry. More refined, longitudinal, and multi-variable studies are needed to disentangle the complex interplay between women's economic roles and their safety. Future analyses should incorporate other potential predictors such as educational attainment, political representation, urbanization levels, caste and religious composition, and access to justice. Moreover, mixed-method approaches—combining statistical analysis with qualitative fieldwork—can yield deeper insights into how women perceive safety and how they navigate structural constraints in their everyday lives.

In conclusion, while economic participation remains an important component of women's empowerment, it is not a

panacea for gender-based violence. Policymakers must adopt comprehensive, intersectional, and context-sensitive strategies to combat violence against women. This includes strengthening legal protections, reforming policing and judicial systems, investing in public infrastructure (e.g., transport, lighting), and fostering cultural change through education and media. Only by addressing the problem at multiple levels can India hope to create a society where women can participate freely and safely in both public and private life.

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