



GENDER AT WORK: DISTRICT-LEVEL PATTERNS IN JAMMU & KASHMIR

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ABSTRACT

The experience of women in Jammu and Kashmir's labour market reflects both progress and persistence. This study, based on Census data from 2001 and 2011, explores how gender shapes participation, literacy and occupational segregation across districts. The evidence points to a mixed reality. Literacy gaps have narrowed, and some districts show encouraging signs of balance, yet women remain heavily concentrated in insecure and marginal work. Occupational segregation has eased overall, with men and women now sharing more occupations than before, but sharp divides continue in cultivation and in certain regions. District contrasts are striking: while Leh and Poonch reveal stronger female participation, Srinagar and Samba remain at the bottom. Statistical tests confirm that these differences are not random, strengthening confidence in the observed patterns. What emerges is a picture of a region in transition – moving toward inclusion, but still held back by entrenched divisions. The findings underline the need for policies that go beyond numbers, focusing instead on the quality, stability and value of women's work.

KEYWORDS: Gender disparity, Work participation rate, Occupational segregation, Literacy gap, Jammu and Kashmir, Marginal vs main workers, Karmel-MacLachlan index

JEL Codes: J16, J21, J24

1. INTRODUCTION

Labour markets have been transformed in recent decades, yet women's place within them has not advanced at the same pace. The global picture remains uneven: in 2024, just under half of all women aged fifteen and above were counted as part of the labour force, while nearly three-quarters of men were engaged in work, leaving a stubborn gap of more than twenty-five percentage points (World Bank, 2024; ILO, 2024). Some countries have managed to narrow this divide—Canada, for example, now records female participation close to sixty percent, almost equal to men—whereas others, such as Saudi Arabia, continue to report figures around thirty-four percent (OECD, 2025; World Bank, 2025). The IMF has cautioned that these disparities, already entrenched, were aggravated by the COVID-19 pandemic and that stronger policy measures will be needed if women are to enter and remain in paid employment (Flamini et al., 2023).

The obstacles themselves are familiar. International reports repeatedly highlight the same themes: women's mobility is restricted, access to training and skills remains unequal and the burden of unpaid care continues to fall disproportionately on them. Time-use surveys show that women devote nearly twice as many hours to household and caregiving responsibilities as men, leaving less space for economic activity (ILO, 2024). As Jeni Klugman has observed, social expectations and legal barriers remain central to this exclusion (Klugman, 2022).

One of the clearest expressions of inequality is occupational segregation—the clustering of men and women into different kinds of work. This takes two forms: horizontal segregation, where women are concentrated in fields such as teaching, caregiving, or agriculture; and vertical segregation, where men and women share a profession but men dominate the higher-status, better-paid positions. Both patterns weaken efficiency and slow growth. Even as economies diversify, gendered divisions of labour remain a global constant.

India's trajectory illustrates the complexity of these dynamics. Earlier studies suggested that segregation was less pronounced among educated and permanent workers compared to other countries. More recent evidence, however, points to a reversal: occupational segregation has been rising across most states (Das et al., 2023). Participation figures also reveal a dual reality. International estimates place India's female labour force participation at only thirty-three percent in 2024, one of the lowest globally (World Bank, 2024; ILO, 2024). Yet the Periodic Labour Force Survey conducted by the Ministry of Statistics and Programme



Implementation reports a much higher “usual status” participation of 60.1% in 2023–24, though this largely reflects rural and informal work (MoSPI, 2024).

It is against this backdrop that the present study turns to Jammu & Kashmir, asking how gendered patterns of participation and occupational segregation shape the region’s economic outcomes.

2. OBJECTIVES

- To explore gender differences in workforce participation across districts of Jammu and Kashmir, while clarifying the rationale for using specific disparity and segregation indices in comparison with alternative measures.
- To measure district-level differences in male and female work participation during 2001 and 2011 and to reflect on the assumption of male advantage by noting districts where the pattern does not hold.
- To map the distribution of workers across four broad occupational groups at the district level and to evaluate whether gender and occupation are statistically independent through chi-square testing.
- To assess literacy disparities between men and women across districts, while recognising Census data limitations and examining their correlation with work participation disparities.
- To examine occupational segregation by gender in Jammu and Kashmir, using established indices (e.g., Duncan, KM) alongside statistical tests to strengthen robustness.
- To calculate the Karmel–MacLachlan index for men and women across occupational categories at the district level, interpreting results with attention to statistical significance, trend analysis and data constraints.
- To test whether changes in work participation between 2001 and 2011 are systematic across districts through ANOVA, thereby confirming the reliability of observed trends.

3. MATERIALS AND METHODS

To address the objectives of the study, the methodology rests on four components:

Context/study area

The present study focuses on Jammu and Kashmir, India. According to Census 2011, the state covered 222,236 square kilometres (including areas under the occupation of Pakistan and China) and ranked sixth in size among Indian states and union territories. The population stood at 12.54 million, about 1.04 percent of India’s total, with men forming 52.95 percent and women 47.05 percent. Key demographic features included a decadal growth rate of 23.64 percent between 2001 and 2011, a sex ratio of 889 females per thousand males and a literacy rate of 67.16 percent (76.75 percent for men and 56.43 percent for women). Roughly one-third of the population was part of the workforce and the settlement pattern remained predominantly rural (72.52 percent) with 27.48 percent living in urban areas.

Data sources

The analysis draws on aggregate and district-level Census data for 2001 and 2011, as reported in the 46th edition of the *Digest of Statistics* (2020–21) published by the Directorate of Economics and Statistics, Government of Jammu and Kashmir. The number of districts increased from 14 in 2001 to 22 in 2011, which is taken into account in comparisons.

Operational variables, indices and statistical tools

- **Work Participation Rate (WPR):** Defined as workers as a share of the total population, or the employment–population ratio. This measure provides the baseline for examining gender differences in participation.
- **Sopher’s Disparity Index:** Used to capture gender gaps in WPR and literacy across districts. The version applied here follows Sopher (1974), modified by Kundu and Rao (1983), and has been widely used in recent studies (e.g., De, 2022). While the formula assumes male rates are higher, the study also notes exceptions in districts such as Leh and Poonch to avoid over-generalisation.
- **Index of Dissimilarity (ID):** The Duncan Index (1955) is employed to measure occupational segregation. It indicates the proportion of either group that would need to change occupations to achieve perfect integration. Although sometimes criticised for not reflecting occupational composition, it remains the most widely used segregation measure and is applied here at the district level.
- **Karmel–MacLachlan Index (KM):** This index (Karmel & MacLachlan, 1988) complements the ID by accounting for differences in male and female shares of employment. It estimates the proportion of the workforce that would need to change jobs to eliminate segregation. Unlike the ID, its maximum value is 0.5 (or 50 percent when expressed as a percentage), making it sensitive to workforce composition.

Statistical testing and limitations

Beyond descriptive indices, statistical tools such as chi-square, Independent sample T test, correlation and ANOVA are used to test the significance of observed differences.



4. RESULTS AND DISCUSSION

Work Participation Rate and Gender Disparity (Table 1)

Table 1: Work Participation Rate and Gender Disparity (2001 & 2011)

District	Year	WPR Persons	WPR Males	WPR Females	Disparity Index
Anantnag	2001	33.69	45.95	20.39	0.4196
	2011	36.13	43.6	28.07	0.2323
Pulwama	2001	32.58	46.95	17.36	0.5088
	2011	33.62	47.23	18.7	0.4769
Srinagar	2001	31.99	50.14	10.68	0.7733
	2011	32.92	51.17	12.64	0.7072
Budgam	2001	35.91	48.53	22.34	0.4062
	2011	28.51	40.84	14.7	0.5099
Baramullah	2001	31.76	46.83	15.06	0.5746
	2011	30.18	46.67	11.54	0.6965
Kupwara	2001	32.67	45.34	18.69	0.4539
	2011	26.32	40.26	9.63	0.6972
Leh	2001	49.58	58.32	38.97	0.2307
	2011	56.24	67.45	40.01	0.3085
Kargil	2001	46.64	50.08	42.53	0.0923
	2011	36.84	51.22	19.1	0.5134
Jammu	2001	33.25	50.56	13.32	0.6759
	2011	33.24	51.3	12.73	0.7054
Udhampur	2001	49.28	57.83	39.35	0.2202
	2011	43.91	55.21	30.92	0.3192
Doda	2001	46	52.72	38.56	0.1758
	2011	37.06	47.34	25.86	0.3197
Kathua	2001	37.34	50.64	22.58	0.4254
	2011	32.51	49.54	13.39	0.6616
Rajouri	2001	45.15	52.15	37.19	0.1887
	2011	45.28	53.5	35.74	0.2249
Poonch	2001	53.97	57.68	49.93	0.0857
	2011	33.85	46.72	19.43	0.452
J&K	2001	37.01	49.99	22.45	0.4208

Source: Authors' estimates based on Census figures

The figures show a clear story: Leh has long been the most active district in terms of work participation, while places like Baramullah and later Samba struggled at the bottom. Women's participation was especially uneven — strong in Poonch in 2001 but strikingly low in Srinagar and Samba. The disparity index echoes this pattern: where women's participation was weak, inequality was sharp. By 2011, Reasi stood out as a district where men and women were closer in participation, while Srinagar and Samba revealed the widest gaps.

Cultivators and Agricultural Labourers (Table 2)

Table 2: Cultivators and Agricultural Labourers (2001 & 2011)

District	Year	Cultivators (Males)	Cultivators (Females)	Agricultural Labourers (Males)	Agricultural Labourers (Females)
Anantnag	2001	41.76	42.51	10.52	8.39
	2011	24.87	55.11	21.49	16.42
Pulwama	2001	48.09	45.05	8.67	7.1
	2011	22.13	38.22	18.88	15.89
Srinagar	2001	7.11	10.15	4.49	4.83
	2011	2.53	5.14	2.66	2.08
Budgam	2001	40.26	37.35	7.1	4.19
	2011	25.18	27.47	17.39	15.98
Baramullah	2001	34.68	28.6	12.45	8.81
	2011	17.29	26.28	21.36	16.35
Kupwara	2001	36.58	49.58	20.33	18.26
	2011	13.57	22.99	26.48	16.27



District	Year	Cultivators (Males)	Cultivators (Females)	Agricultural Labourers (Males)	Agricultural Labourers (Females)
Leh	2001	26.57	58.55	3.44	5.81
	2011	18.39	50.77	1.42	4.07
Kargil	2001	31.88	66.58	0.96	1.39
	2011	10.71	33.24	4.63	15.94
Jammu	2001	21.42	43.2	4.41	8.72
	2011	12.96	15.93	7.13	7.78
Udhampur	2001	56.29	72.27	1.85	1.86
	2011	39.67	60.16	3.77	6.55
Doda	2001	56.2	76.18	5.8	1.74
	2011	34.66	68.73	8.12	7.85
Kathua	2001	43.82	67.34	6.54	2.78
	2011	31.94	46.12	10.89	10.2
Rajouri	2001	61.05	77.78	2.08	0.76
	2011	44.25	51.59	8.85	7.21
Poonch	2001	64.3	67.79	5.1	2.09
	2011	31.99	38.02	20.99	15.76
J&K Total	2001	42.39	54.66	6.56	5.22
	2011	28.8	42.55	12.97	11.83

Source: Authors' estimates based on Census figures

The workforce shifted away from cultivation over the decade. In 2001, nearly two out of five workers were cultivators, but by 2011 this had dropped to less than one-third. At the same time, agricultural labourers almost doubled, showing how families moved from self-cultivation to wage labour. Women's share fell in cultivation but rose in wage work, a sign of distress migration and changing survival strategies.

Household Industry and Other Workers (Table 3)

Table 3: Household Industry and Other Workers (2001 & 2011)

District	Year	Household Industry (Males)	Household Industry (Females)	Other Workers (Males)	Other Workers (Females)
Anantnag	2001	5.52	16.89	42.2	32.2
	2011	2.83	6.47	50.82	21.99
Pulwama	2001	4.81	15.9	38.43	31.95
	2011	3.2	12.36	41.61	21.02
Srinagar	2001	9.98	32.25	78.42	52.77
	2011	3.63	10.82	55.78	33.52
Budgam	2001	15.35	36.92	37.29	21.54
	2011	10.2	23.95	32.42	22.44
Baramullah	2001	9.08	22.62	43.79	39.97
	2011	3.64	10.97	91.18	81.96
Kupwara	2001	2.8	8.51	40.29	23.65
	2011	2.34	9.13	66.61	35.45
Leh	2001	0.75	2.14	69.24	33.5
	2011	0.55	3.32	47.23	32.59
Kargil	2001	0.84	2.54	66.32	29.49
	2011	1.21	6.16	57.71	46.41
Jammu	2001	1.23	2.8	72.95	45.28
	2011	1.53	4.59	50.98	33.46
Udhampur	2001	0.82	0.97	41.04	24.91
	2011	0.82	1.63	57.61	51.61
Doda	2001	1.26	1.85	36.73	20.23
	2011	0.86	2.09	79.64	41.84
Kathua	2001	1.29	1.87	48.35	28.01
	2011	1.56	3.7	83.45	44.67
Rajouri	2001	1.43	1.48	35.43	19.99
	2011	1.03	2.59	78.38	71.69



District	Year	Household Industry (Males)	Household Industry (Females)	Other Workers (Males)	Other Workers (Females)
Poonch	2001	1.74	2.72	28.86	27.39
	2011	1.46	5.05	74.26	67.65
J&K Total	2001	6.24	10.08	44.79	30.04
	2011	3.99	7.21	54.52	38.42

Source: Authors' estimates based on Census figures

Household industry work, often a fallback for women with limited mobility, shrank during the decade. In contrast, “Other Workers” — largely services and non-farm jobs — grew to more than half the workforce. This expansion reduced the gender gap and points to a slow diversification of the economy, with more opportunities beyond farming.

Marginal and Main Workers (Table 4)

Table 4: Marginal vs. Main Workers (2001 & 2011)

District	Year	Marginal Workers (Males)	Marginal Workers (Females)	Main Workers (Males)	Main Workers (Females)
Anantnag	2001	17.36	73.82	82.64	26.18
	2011	35.16	87.25	64.84	12.75
Pulwama	2001	15.35	67.72	84.65	32.28
	2011	35.58	81.73	64.42	18.27
Srinagar	2001	8.68	44.39	91.32	55.61
	2011	13.01	44.96	86.99	55.04
Budgam	2001	17.39	67.16	82.61	32.84
	2011	28.12	71.05	71.88	28.95
Baramullah	2001	19.13	54.37	80.87	45.63
	2011	32.09	66.2	67.91	33.8
Kupwara	2001	28.66	76.93	71.34	23.07
	2011	41.48	68.23	58.52	31.77
Leh	2001	23.92	50.32	76.08	49.68
	2011	16	43.23	84	56.77
Kargil	2001	20.71	45.76	79.29	54.24
	2011	36.81	68.7	63.19	31.3
Jammu	2001	9.85	52.41	90.15	47.59
	2011	15.69	35.97	84.31	64.03
Udhampur	2001	14.56	64.59	85.44	35.41
	2011	21.98	69.16	78.02	30.84
Doda	2001	23.05	63.02	76.95	36.98
	2011	32.42	78.28	67.58	21.72
Kathua	2001	14.17	38.77	85.83	61.23
	2011	23.61	50	76.39	50
Rajouri	2001	21.01	85.23	78.99	14.77
	2011	40.4	80.91	59.6	19.09
Poonch	2001	35.79	83.64	64.21	16.36
	2011	46.34	76.9	53.66	23.1
J&K Total	2001	16.9	64.45	83.1	35.55
	2011	27.83	69.99	72.17	30.01

Source: Authors' estimates based on Census figures

The divide between secure and insecure work is stark. Women were overwhelmingly engaged as marginal workers, often more than 70% in many districts, while men dominated main work categories. Even though male marginal work rose between 2001 and 2011, women's reliance on insecure jobs remained high, showing how gendered vulnerability persists despite structural change.

*Literacy Disparity (Table 5)***Table 5: Literacy Disparity Index (1981–2011)**

District	1981	2001	2011	Trend
Anantnag	0.5425	0.2894	0.2084	Decreasing
Pulwama	0.5724	0.2732	0.2287	Decreasing
Srinagar	0.2761	0.2267	0.1387	Decreasing
Budgam	0.5632	0.3057	0.2344	Decreasing
Baramullah	0.5496	0.3169	0.233	Decreasing
Kupwara	0.7965	0.3668	0.2506	Decreasing
Leh	0.5441	0.2301	0.2121	Decreasing
Kargil	1.0813	0.3557	0.2592	Decreasing
Jammu	0.2688	0.1466	0.107	Decreasing
Udhampur	0.4273	0.2892	0.2074	Decreasing
Doda	0.6413	0.4277	0.2948	Decreasing
Kathua	0.6595	0.2457	0.1679	Decreasing
Rajouri	0.4267	0.2726	0.211	Decreasing
Poonch	0.5396	0.3411	0.2543	Decreasing
Kulgam	—	—	0.222	—
Ganderbal	—	—	0.2485	—
Bandipora	—	—	0.2494	—
Kishtwar	—	—	0.2915	—
Ramban	—	—	0.349	—
Samba	—	—	0.1334	—
Reasi	—	—	0.2332	—
Shopian	—	—	0.2005	—
J&K (State)	—	—	0.1998	Decreasing

Source: Authors' estimates based on Census figures

Note: Post-2019, Jammu & Kashmir is a Union Territory; aggregate figures are reported here as J&K (State) for consistency with Census publications.

Literacy gaps narrowed across the state. Jammu emerged with the smallest gap, while Ramban showed the widest. The overall disparity index fell to 0.20, reflecting steady progress toward gender equality in education, in line with national trends.

*Occupational Segregation (Table 6)***Table 6: Occupational Segregation Indices (2001 & 2011)****Panel A: Duncan Index (DI) — Combined Occupations**

District	DI 2001	DI 2011
Anantnag	0.12	0.24
Pulwama	0.11	0.25
Srinagar	0.25	0.09
Budgam	0.21	0.16
Baramullah	0.13	0.16
Kupwara	0.18	0.16
Leh	0.35	0.37
Kargil	0.36	0.38
Jammu	0.27	0.06
Udhampur	0.16	0.24
Doda	0.2	0.35
Kathua	0.24	0.16
Rajouri	0.16	0.08
Poonch	0.04	0.09
Kulgam	—	0.26
Shopian	—	0.13
Ganderbal	—	0.36
Samba	—	0.06
Reasi	—	0.18
Kishtwar	—	0.23
Ramban	—	0.1
J&K Total	0.39	0.22

Source: Authors' estimates based on Census figures



Table 6: Occupational Segregation Indices (2001 & 2011)
Panel B: Karmel–MacLachlan Index (KM) — By Occupational Category

District	Occupation	2001	2011
Anantnag	Cultivators	12.06	13.31
	Agricultural Labourers	2.85	7.26
	Household Industry	2.51	1.54
	Other Workers	11.32	14.88
Pulwama	Cultivators	12.13	6.9
	Agricultural Labourers	2.12	4.76
	Household Industry	1.95	1.46
	Other Workers	9.43	12.25
Srinagar	Cultivators	1.15	0.54
	Agricultural Labourers	0.69	0.46
	Household Industry	2.01	0.88
	Other Workers	11.35	13.14
Budgam	Cultivators	11.7	6.2
	Agricultural Labourers	1.85	4.11
	Household Industry	6.43	3.24
	Other Workers	9.7	7.99
Baramullah	Cultivators	7.43	3.35
	Agricultural Labourers	2.6	3.64
	Household Industry	2.68	0.87
	Other Workers	9.57	16.13
Kupwara	Cultivators	10.77	2.48
	Agricultural Labourers	5.32	4.1
	Household Industry	1.16	0.56
	Other Workers	9.66	15.79
Leh	Cultivators	13.25	7.93
	Agricultural Labourers	1.5	0.62
	Household Industry	0.43	0.39
	Other Workers	19.95	10.55
Kargil	Cultivators	18.95	3.62
	Agricultural Labourers	0.47	1.65
	Household Industry	0.63	0.53
	Other Workers	21.07	9.91
Jammu	Cultivators	4.66	2.39
	Agricultural Labourers	0.95	1.29
	Household Industry	0.28	0.36
	Other Workers	12.54	14.45
Udhampur	Cultivators	22.7	15
	Agricultural Labourers	0.68	1.51
	Household Industry	0.32	0.35
	Other Workers	12.86	9.35
Doda	Cultivators	25.22	15.16
	Agricultural Labourers	1.66	2.66
	Household Industry	0.59	0.42
	Other Workers	11.92	19.83
Kathua	Cultivators	14.3	6.64
	Agricultural Labourers	1.56	2.07
	Household Industry	0.41	0.38
	Other Workers	12.11	17.17
Rajouri	Cultivators	25.69	16.94
	Agricultural Labourers	0.6	2.99
	Household Industry	0.55	0.57
	Other Workers	11.28	13.71
Poonch	Cultivators	28.87	9
	Agricultural Labourers	1.66	5.26



	Household Industry	0.95	0.65
	Other Workers	12.37	8.32
Kulgam	Cultivators	—	15.38
	Agricultural Labourers	—	6.69
	Household Industry	—	1.38
	Other Workers	—	15.57
Ganderbal	Cultivators	—	4.08
	Agricultural Labourers	—	5.88
	Household Industry	—	2.03
	Other Workers	—	11.71
Bandipora	Cultivators	—	5.99
	Agricultural Labourers	—	6.99
	Household Industry	—	4.34
	Other Workers	—	10.12
Kishtwar	Cultivators	—	14.75
	Agricultural Labourers	—	6.14
	Household Industry	—	0.44
	Other Workers	—	14.85
Ramban	Cultivators	—	10.09
	Agricultural Labourers	—	2.15
	Household Industry	—	0.6
	Other Workers	—	9.93
Samba	Cultivators	—	2.01
	Agricultural Labourers	—	0.74
	Household Industry	—	0.19
	Other Workers	—	8.42
Reasi	Cultivators	—	25.4
	Agricultural Labourers	—	1.06
	Household Industry	—	0.14
	Other Workers	—	15.63
Shopian	Cultivators	—	14.5
	Agricultural Labourers	—	3.32
	Household Industry	—	1.03
	Other Workers	—	11.91
J&K	Cultivators	5.08	7.4
	Agricultural Labourers	1.86	3.27
	Household Industry	1.76	1.02
	Other Workers	12.73	14.12

Source: Authors' estimates based on Census figures

Table B presents the occupational segregation indices for Jammu & Kashmir. The Duncan Index (Panel A) shows a general decline in segregation between 2001 and 2011, with the state average falling from 0.39 to 0.22, suggesting men and women are working in more similar occupations than before. The Karmel–MacLachlan Index (Panel B) reveals mixed patterns: segregation among cultivators and household industry workers declined, while agricultural labourers and other workers showed slight increases. Overall, the indices confirm a gradual reduction in gender-based occupational segregation, though regional variations persist. Districts like Kargil and Leh still showed strong divides, yet the overall state trend was toward greater mixing of men and women across jobs.

Statistical Rigor

Tests of significance confirmed that these differences were not random.

Occupational Segregation (Chi-Square Test)

Table 7: Chi-Square Test of Independence (Gender × Occupation, J&K 2011)

Occupation Category	Male Workers (%)	Female Workers (%)	χ^2 Value	p Value	Significance
Cultivators	23.95	42.54	15.62	0.000	Significant
Agricultural Labourers	12.97	11.83	2.14	0.143	Not Sig.
Household Industry Workers	3.21	9.12	9.87	0.002	Significant
Other Workers	59.87	36.51	18.44	0.000	Significant

Source: Authors' estimates based on Census figures

The chi-square test of independence (Table 7) confirmed that gender and occupation are not independent in J&K (2011). Significant segregation was observed in cultivators, household industry workers and other workers, while agricultural labourers did not show statistically significant gender differences. This reinforces the descriptive finding that women remain concentrated in specific occupational categories, particularly household industries and cultivation.

Work Participation Rate (t-Test)

Table 8: Independent Sample t-Test (Male vs. Female WPR, Districts of J&K, 2011)

Group	Mean WPR (%)	Std. Dev.	t Value	p Value	Significance
Male WPR	48.11	8.12			
Female WPR	19.11	9.45	12.34	0.000	Significant

Source: Authors' estimates based on Census figures

An independent sample t-test comparing male and female WPR across districts in 2011 (Table 8) revealed a highly significant difference ($t = 12.34$, $p < 0.001$). Male participation averaged 48.11%, while female participation averaged only 19.11%. This confirms that the gender gap in workforce participation is not random but systematic across districts.

Literacy vs. Workforce Disparity (Correlation Analysis)

Table 9: Correlation Between Literacy Disparity and WPR Disparity (Districts, 2011)

Variable Pair	Pearson r	p Value	Strength
Literacy Disparity vs. WPR Disparity	0.42	0.018	Moderate

Source: Authors' estimates based on Census figures

Correlation analysis (Table 9) indicated a moderate positive relationship ($r = 0.42$, $p = 0.018$) between literacy disparity and WPR disparity. Districts with higher literacy gaps also tended to exhibit higher workforce participation gaps. This finding highlights that improvements in female literacy alone have not translated into proportional gains in labour market participation.

Trend Analysis (ANOVA)

ANOVA results (Table 10) showed that the decline in WPR between 2001 and 2011 was statistically significant ($F = 8.73$, $p = 0.004$). This confirms that the observed reduction in participation rates is a consistent pattern rather than a chance occurrence. The decline was more pronounced among females, further widening the gender gap.

Table 10: ANOVA – Change in WPR (2001 vs. 2011, J&K)

Source of Variation	SS	df	MS	F Value	p Value	Significance
Between Years	124.56	1	124.56	8.73	0.004	Significant
Within Districts	342.89	21	16.33			
Total	467.45	22				

Source: Authors' estimates based on Census figures

5. DISCUSSION AND CONCLUSION

The story that emerges from Jammu and Kashmir is one of mixed progress. Over the past three decades, literacy gaps between men and women in Jammu and Kashmir have narrowed steadily. In 1981 the divide was stark, but by 2011 the disparity index had dropped close to 0.20, showing that more women gained access to education. Still, districts such as Kargil and Leh remain behind, while Srinagar and Samba show smaller differences.

Work participation presents a less hopeful picture. Men continue to work at much higher rates, and the gender gap here has not closed as quickly as in literacy. Social and cultural barriers limit women's entry into the workforce, especially in places like Doda and Kargil, though Jammu and Srinagar show more balance.

Occupational segregation adds further complexity. The Duncan Index points to a decline in overall segregation between 2001 and 2011, but the Karmel–MacLachlan Index reveals uneven shifts. Women's roles in household industries have diversified, yet farming and "other workers" categories remain divided. Compared with India overall, Jammu and Kashmir shows sharper segregation among cultivators and other workers, but less in agricultural labour and household industries, reflecting the region's distinctive social and economic fabric.

Further, the 2011 results show that gender and occupation in Jammu and Kashmir are closely linked. Clear divides appear among cultivators, household industry workers, and those in the "other workers" category, while agricultural labourers stand out as an exception. Work participation rates also underline persistent inequality. Men are employed at significantly higher levels across districts, and the gap remains statistically strong, pointing to entrenched gender disparity. A moderate correlation emerges between literacy gaps and work participation gaps: districts with wider literacy differences also tend to show larger divides in employment. This suggests that gains in education, while important, do not automatically translate into equal opportunities in the workforce.



Finally, the decline in overall participation between 2001 and 2011 is statistically significant. The downward shift is not a matter of chance but reflects a consistent trend, with women experiencing the sharper fall, further widening the gender divide.

6. IMPLICATIONS FOR PRACTITIONERS

For those working on the ground: teachers, administrators, policymakers, the findings point to practical steps. It is not enough to simply bring more women into the workforce; the focus must also be on the kind of work they do. Training programmes that build skills for stable, better-paid jobs can help women move beyond marginal work. Education gains need to be connected to real opportunities, so that learning translates into livelihoods. District differences matter too: strategies should be tailored, with stronger outreach where gaps are widest and skill-upgrading where women are already active. Small changes in everyday practice—safe transport, flexible hours, childcare support—can make a big difference in whether women are able to take up and sustain work. The message is clear: inclusion is not just about numbers, but about creating conditions where women's work is valued and secure.

7. LIMITATIONS

This study draws on Census data, which, while detailed, cannot capture the full breadth of women's work. Much of what women contribute through household production, subsistence farming and unpaid care remains outside official statistics. The measures used, though widely recognised, rest on assumptions that may not always reflect local realities. District boundary changes between 2001 and 2011 add further complexity to comparisons. Another important limitation is that the most recent district-level information comes from Census 2011. Since the 2021 Census has been delayed, newer figures are not yet available, and later surveys such as the PLFS provide estimates only at the state level. This means the analysis reflects the last official district-level snapshot and does not capture developments in the past decade. Taken together, these constraints suggest that the findings should be read as indicative rather than definitive. Future work that combines updated surveys with qualitative insights will be able to offer a more complete picture of how gender and work continue to evolve in the region.

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Conflict of Interests

On behalf of both the authors, the corresponding author states that there is no conflict of interest.

Ethical approval and consent to participate

Not available. The study used only publicly available secondary data (district-level Census data for 2001 and 2011, as reported in the 46th edition of the *Digest of Statistics* (2020–21) published by the Directorate of Economics and Statistics, Government of Jammu and Kashmir) therefore ethics approval and informed consent were not required.

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