

## Gender Equality and the Educational Achievement Index (EAI) in Northeast India

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### Abstract:

This article examines gender disparities in education and labor force participation across the Northeastern states of India, using the Educational Achievement Index (EAI) as a key indicator of gender equality. While the region has made notable progress in reducing gender gaps, particularly in states like Meghalaya and Mizoram, where female literacy rates and workforce participation often exceed those of men, challenges remain. Rural women in states such as Arunachal Pradesh and Manipur face significant barriers, with lower educational attainment and labor force participation compared to their male counterparts. These disparities highlight the need for targeted policy interventions to improve access to education, skill development, and economic opportunities for women. Despite these challenges, the Northeastern region, with an EAI value of 0.62, surpasses the national average of 0.56, showcasing a more inclusive socio-economic landscape. The article concludes by emphasizing the importance of continued investment in education and empowerment to achieve gender parity and a more equitable future.

**Keywords:** Gender Parity, Educational Achievement Index (EAI), Labor Force Participation and Gender Equality in Education

### 1. Introduction:

The educational empowerment of women in Northeast India has witnessed notable progress over the past decades, yet persistent challenges continue to hinder equitable access to quality education. The region's diverse socio-cultural and economic landscape influences variations in female educational attainment across states. According to the Census of India (2011), the female literacy rate in Northeast India improved significantly from 54.61% in 2001 to 67.27% in 2011, largely due to government interventions and targeted policies promoting girls' education. However, disparities

remain evident, with states such as Mizoram and Tripura reporting female literacy rates exceeding 85%, while Assam and Arunachal Pradesh lag behind, indicating structural and systemic inequities in educational access (Government of India, 2011).

Social structures further shape educational outcomes. For instance, the matrilineal framework of Meghalaya grants women higher social mobility and educational opportunities, yet this advantage does not always translate into economic or political empowerment (Nongbri, 2003). Government initiatives such as Beti Bachao, Beti Padhao have

contributed to increased female enrollment in schools, but rural areas continue to struggle with infrastructural deficiencies, high dropout rates, and limited access to quality educational institutions. These challenges, coupled with economic constraints and ethnic conflicts, disrupt the educational trajectories of girls, particularly in marginalized communities (Saikia, 2018).

Higher education enrollment among women in Northeast India has shown positive trends, yet participation remains below the national average, particularly in technical and STEM fields. Socio-cultural norms, financial barriers, and restricted access to specialized institutions often prevent women from pursuing advanced studies. The underrepresentation of women in educational leadership positions further exacerbates these disparities, impeding systemic reforms that could foster inclusivity and equal opportunities (Devi & Deka, 2020).

Nevertheless, women in Northeast India have historically played critical roles in advocating for gender rights and educational access. Grassroots organizations such as Manipur's *Meira Paibis* and the Naga Mothers' Association have been instrumental in fostering community resilience and promoting female empowerment through education (Sharma, 2019). Sustaining progress requires a multidimensional approach that expands access to quality education in rural areas, addresses socio-cultural barriers to higher education, and encourages female participation in STEM disciplines. Moreover, vocational training aligned with regional industries, such as tourism and organic farming, can provide sustainable economic opportunities for women, reinforcing their educational and financial independence.

### **1.1. Trends in Women's Higher Education Enrollment in Northeast India:**

The trajectory of women's enrollment in higher education across Northeast India reflects both progress and persisting challenges. Increased institutional access and growing societal recognition of gender equality have contributed to higher female participation in tertiary education.

States such as Mizoram, Manipur, and Meghalaya demonstrate significant female representation, particularly in the arts and humanities. However, disparities remain, with STEM fields witnessing lower female enrollment rates, particularly in rural areas where socio-economic barriers are more pronounced (Bordoloi, 2021).

Patriarchal norms, early marriage, and economic constraints continue to limit educational attainment for women in certain regions. Government policies, including scholarships and awareness campaigns, have yielded positive outcomes, yet infrastructural deficits in remote areas hinder sustained progress. Inclusive policies prioritizing marginalized and rural women remain essential in bridging the gender gap in higher education (Lalnunmawia, 2022). Empirical data suggests that while enrollment rates are improving, disparities persist across states and academic disciplines, necessitating targeted interventions.

### **1.2. Status of Women's Educational Empowerment in Northeast India:**

Education serves as a fundamental catalyst for empowerment, equipping individuals with the skills and knowledge necessary for personal, social, political, and economic development. It is a powerful instrument for dismantling structural inequalities and fostering independent decision-making (Sen, 1999). Women's educational empowerment is particularly critical, as it directly influences broader gender equality metrics and socio-economic mobility.

To assess women's educational achievements in Northeast India, key indicators such as literacy rates and the proportion of women with ten or more years of formal education must be examined. Comparative analysis with male counterparts and rural-urban distinctions highlights persisting gender gaps despite decades of governmental interventions. Although significant strides have been made in the past 75 years, substantial inequalities remain, underscoring the need for sustained policy focus and infrastructural improvements (Chakraborty & Ghosh, 2020).

The *Educational Achievement Index (EAI)* provides a composite measure of women's educational empowerment by integrating literacy rates and the percentage of women with at least ten years of schooling. Analysis of EAI across Northeast India reveals considerable heterogeneity in educational attainment, with rural women experiencing pronounced disadvantages compared to their urban counterparts. These findings emphasize the need for comprehensive policy frameworks that address localized challenges and promote equitable educational access across socio-economic strata. While Northeast India has made commendable progress in advancing female education, achieving true educational empowerment requires a multifaceted and context-specific approach. Strengthening rural educational infrastructure, dismantling socio-cultural barriers, and fostering female participation in STEM and leadership roles are imperative. By integrating inclusive policies, targeted scholarships, and vocational training initiatives, the region can build a more equitable educational landscape, ensuring that women across Northeast India have the opportunity to realize their full potential.

Objectives of the study:

- To examine gender equality in education and workforce participation in the Northeastern region, and recommend policy interventions.
- To assess gender disparities in education and labor force participation across the Northeastern states of India using the Educational Achievement Index (EAI).

This study is structured as follows: Section 2 reviews literature on gender equality and the Educational Achievement Index (EAI) in Northeast India, focusing on literacy, workforce participation, and socio-economic factors. Section 3 outlines the data sources and methodology, detailing sample selection and analytical approaches. Section 4 presents results and discussions. Section 5 summarizes key findings and recommends policies for gender-inclusive education and employment. Section 6 provides references.

## 2. Literature Review:

Women's education plays a crucial role in advancing gender equality and socio-economic development, particularly in Northeast India, where socio-cultural dynamics heavily influence educational outcomes. While there have been improvements, significant barriers continue to impede women's access to higher education in the region, emphasizing the need for targeted policy interventions. Banerjee (2021) underscores that women's education is central to their empowerment and economic independence, which in turn strengthens their social standing. However, challenges such as economic constraints, societal norms, and geographical barriers continue to restrict access to higher education for women in Northeast India. Agarwal and Das (2020) further explore these socio-cultural factors, highlighting that traditional gender roles, early marriages, and family responsibilities often prevent women, especially in rural areas, from pursuing higher education. Limited access to educational institutions in these regions exacerbates the issue. Bhattacharya and Rao (2019) identify key socio-economic barriers affecting women's education across India, with a particular focus on the Northeast. Their study emphasizes the role of poverty, inadequate infrastructure, and gender biases in educational institutions, which hinder women's educational attainment. In a similar vein, Chakraborty and Ghosh (2020) provide a socio-economic perspective, noting that while educational access for women has improved, persistent economic disparities, early marriages, and lack of career opportunities perpetuate gender gaps. They also discuss the unique challenges and opportunities posed by matrilineal societies in the Northeast, where women may have more control over property but still face barriers to full educational and employment equality.

Mishra and Sharma (2018) highlight how the intersections of caste, class, and gender create compounded disadvantages for women, further hindering their access to higher education. Addressing these layers of disadvantage is essential to improving educational outcomes for women,

especially in marginalized communities. The socio-cultural and economic contexts of the Northeast, as outlined by Devi and Deka (2020), reveal that while female literacy rates are relatively high in some states, significant urban-rural divides persist in access to higher education. Despite improvements, enrollment and completion rates for women in higher education institutions remain low, especially in rural areas. Lalnunmawia (2022) emphasizes the importance of local context in shaping educational policies and advocates for the inclusion of women in decision-making roles in educational reforms. He notes that societal norms continue to restrict women's participation in leadership roles despite improvements in education. The Kothari Commission report (Khanna et al., 1988) and the National Policy on Education (Ministry of Human Resource Development, 1986) have long emphasized the need for gender-sensitive educational policies that address the barriers women face. These frameworks advocate for eliminating discriminatory practices and improving access to resources for women. In *Development as Freedom*, Sen (1999) argues that empowering women through education not only improves individual well-being but also contributes to the broader development of the nation. This underscores the broader societal importance of addressing barriers to women's education in Northeast India.

In conclusion, while progress has been made, significant socio-cultural, economic, and institutional barriers continue to hinder women's access to higher education in Northeast India. To address these challenges, future policies must focus on eliminating these barriers and ensuring that women have equal opportunities to benefit from higher education. The works reviewed emphasize the importance of sustained efforts to break down these barriers and promote educational equality.

### 3. Data and Methodology:

This study draws on secondary data from the National Family Health Survey (NFHS-5), conducted between 2019 and 2021 by the Ministry of Health and Family Welfare, Government of

India. The NFHS-5 provides a wealth of health, demographic, and socio-economic data, offering a detailed picture of regional disparities across India, with a special focus on the Northeastern Region (NER). In exploring gender disparities in educational attainment and labor force participation, the study leverages the Educational Achievement Index (EAI) alongside other relevant indicators, such as female literacy rates and workforce participation, across various states. The data is presented through both tabular and visual formats, ensuring ease of understanding. Simple statistical methods are applied to facilitate meaningful comparisons, which help identify gender gaps and regional differences in education and employment. This analysis provides valuable insights into the socio-economic challenges faced by women in the region.

To deepen the analysis, the study introduces an Educational Achievement Index (EAI) based on the EAI, which serves as a quantitative measure of gender equality in education and labor force involvement. The EAI is calculated using the formula:

**Component Index =**

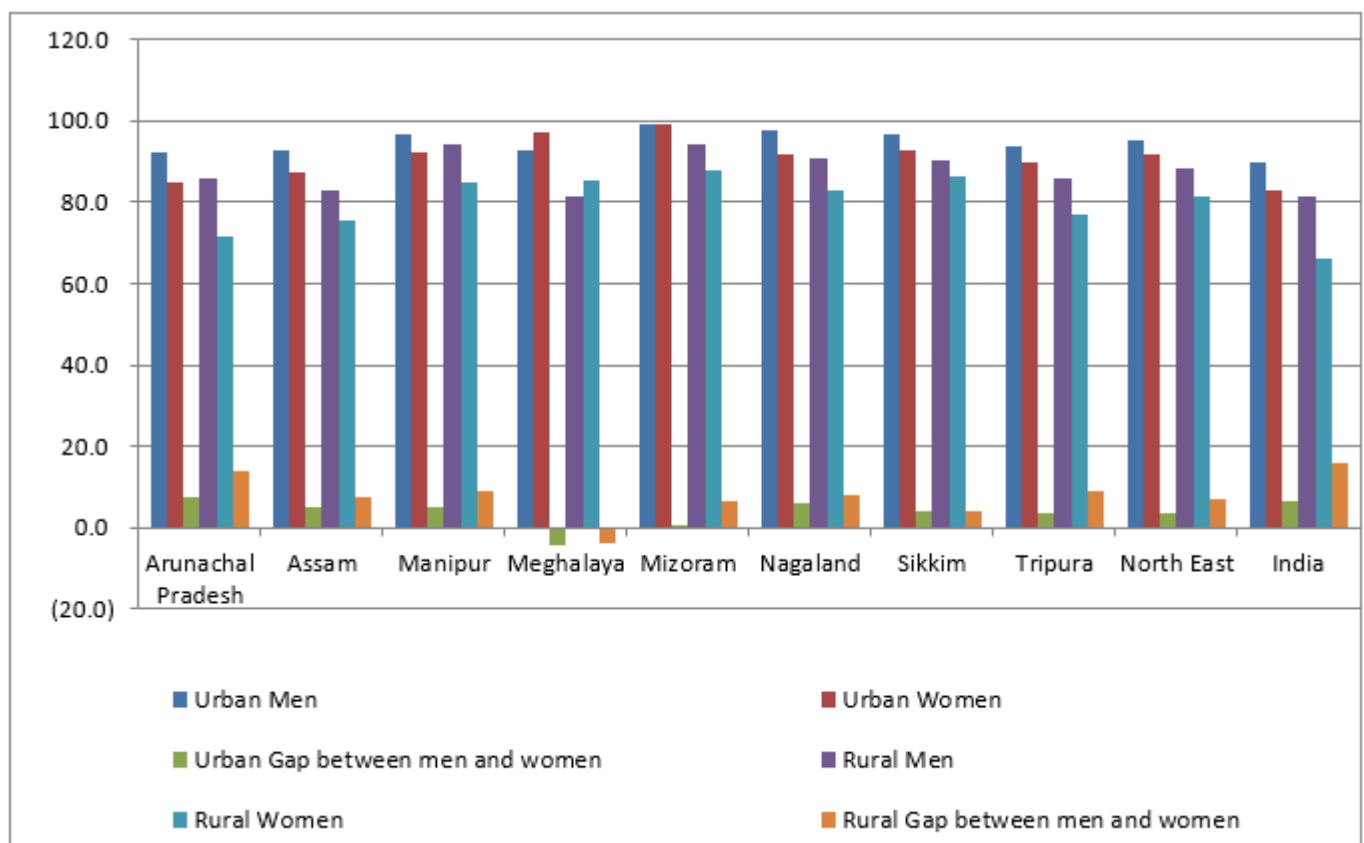
$$\frac{(\text{Actual value of the component} - \text{Minimum value of the component})}{(\text{Maximum value of the component} - \text{Minimum value of the component})}$$

This index allows for a comparative analysis of gender parity across the Northeastern states, highlighting areas that require focused policy interventions. The findings offer a comprehensive approach to addressing gender disparities in education and employment, underscoring the importance of continued investment in women's empowerment and socio-economic development

4. Results and Discussion:

States	Urban			Rural		
	Men	Women	Gap between men and women	Men	Women	Gap between men and women
Arunachal Pradesh	92.1	84.7	7.48	85.6	71.63	13.97
Assam	92.6	87.5	5.15	82.76	75.39	7.37
Manipur	96.9	92.1	4.84	94.03	84.84	9.19
Meghalaya	92.9	97.1	-4.15	81.52	85.53	-4.01
Mizoram	99.2	99.1	0.1	94.22	87.67	6.55
Nagaland	97.7	91.5	6.21	90.7	82.74	7.96
Sikkim	96.9	92.8	4.08	90.34	86.24	4.1
Tripura	93.5	89.9	3.59	86.03	76.88	9.15
North East	95.2	91.8	3.4125	88.15	81.365	6.785
India	89.6	83	6.54	81.54	65.9	15.64

Source: Authors’ own calculation (National family Health Survey -5, 2019-21)



Source: Table- 1(National family Health Survey -5, 2019-21)

The literacy rates for women aged 15–49 in Northeast India reveal both progress and persistent challenges in gender equality. In urban areas, while men generally have higher literacy rates, the gender gap varies across states. Arunachal Pradesh shows

a notable gap of 7.48% (men: 92.1%, women: 84.7%), underscoring barriers to education for women. In contrast, Tripura reflects a more balanced picture with a smaller gap of 3.59%. Meghalaya stands out with a reversal of the norm,

where women (97.1%) surpass men (92.9%) in literacy, highlighting the positive impact of social and educational initiatives. Mizoram, with near-equal literacy rates (men: 99.2%, women: 99.1%), serves as a model of gender parity.

In rural areas, the disparities become more pronounced. Arunachal Pradesh faces the largest gap, with rural men (85.6%) outpacing women (71.63%) by 13.97%, indicating deeper struggles in remote communities. However, Meghalaya

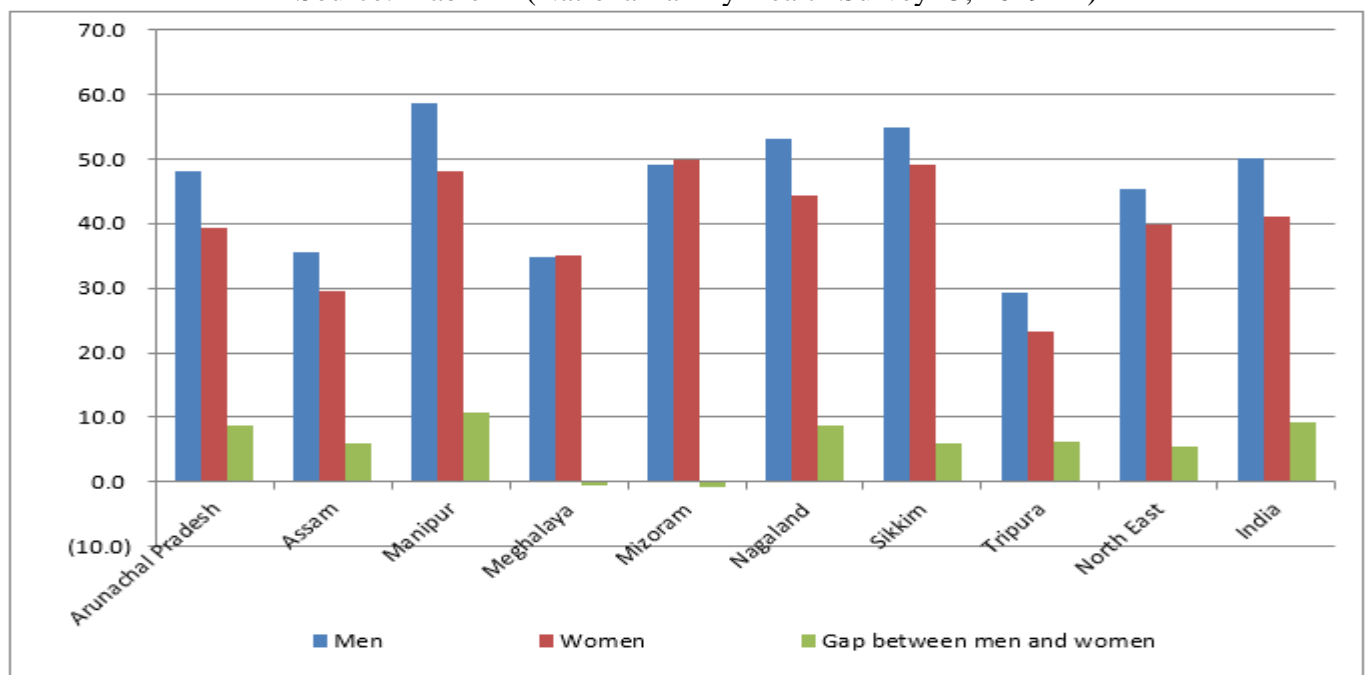
continues its trend of female literacy surpassing male literacy (women: 85.53%, men: 81.52%), reinforcing the region’s commitment to women’s education. Mizoram maintains its strong standing with a modest gap of 6.55%. Compared to national trends, Northeast India shows a relatively smaller gender gap, demonstrating resilience and progress. These figures reflect not just statistics but the ongoing journey of women striving for education and empowerment against societal and structural barriers.

**Table 2: Men and Women (age 15-49) with 10 or more years of schooling (%)**

States	Men	Women	Gap between men and women
Arunachal Pradesh	48.2	39.36	8.82
Assam	35.5	29.57	5.89
Manipur	58.7	48.08	10.66
Meghalaya	34.7	35.13	-0.43
Mizoram	49.1	49.95	-0.9
Nagaland	53.1	44.41	8.65
Sikkim	55	49.01	5.97
Tripura	29.4	23.23	6.14
North East	45.4	39.8425	5.6
India	50.2	41.04	9.17

Source: Authors’ own calculation (National family Health Survey -5, 2019-21)

Source: Table- 2 (National family Health Survey -5, 2019-21)

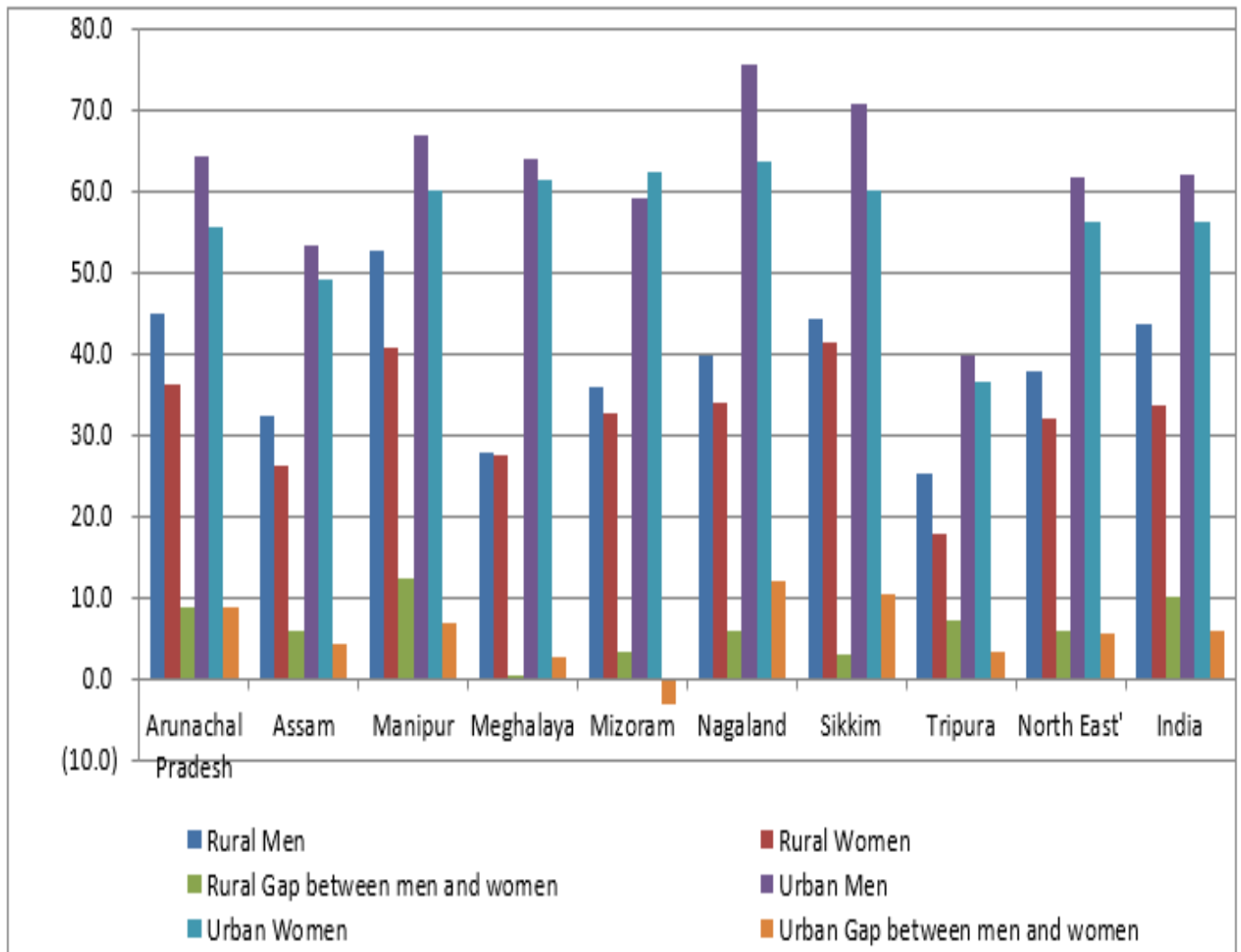


The educational attainment data for Northeast India presents a complex yet evolving narrative of gender disparity. In states like Manipur and Arunachal Pradesh, significant gaps persist, with men attaining substantially more years of schooling—10.66% and 8.82% higher than women, respectively. However, states such as Mizoram and Meghalaya offer a contrasting perspective. In Meghalaya, a remarkable shift is evident, where more women (35.13%) than men (34.7%) have completed 10 or more years of schooling, indicating progress in gender inclusivity. Likewise, Mizoram exhibits near gender parity, with women slightly outperforming men (49.95% vs. 49.1%), reflecting the influence of sociocultural factors that promote female education.

At a broader level, the Northeast fares better than the national average in closing the gender gap in education. While India as a whole records a disparity of 9.17%, the Northeast demonstrates a more balanced gap of 5.6%. Although inequalities persist in states such as Manipur, Arunachal Pradesh, and Nagaland, the overall trend suggests steady progress toward gender parity. States like Sikkim (5.97%) and Assam (5.89%) show moderate differentials, contributing to the region’s gradual advancement. These improvements not only highlight systemic efforts toward equitable education but also signal a transformative shift, where women increasingly gain access to knowledge and opportunities, fostering long-term socio-economic empowerment.

**Table 3: Men and Women (age 15-49) with 10 or more years of schooling (%)**

States	Rural			Urban		
	Men	Women	Gap between men and women	Men	Women	Gap between men and women
Arunachal Pradesh	45	36.19	8.78	64.1	55.4	8.73
Assam	32.2	26.15	6	53.2	49	4.22
Manipur	52.7	40.6	12.14	66.9	60	6.83
Meghalaya	27.7	27.34	0.35	63.9	61.4	2.56
Mizoram	35.9	32.7	3.15	59.1	62.3	-3.25
Nagaland	39.8	34.05	5.79	75.6	63.7	11.91
Sikkim	44.2	41.24	3	70.7	60.2	10.52
Tripura	25.1	17.89	7.17	39.7	36.6	3.16
North East'	37.8	32.02	5.7975	61.7	56.1	5.585
India	43.7	33.7	10.02	62.1	56.3	5.83



Source: Authors' own calculation (National family Health Survey -5, 2019-21)

Source: Table-3 (National family Health Survey -5, 2019-21)

The labor force participation rates (LFPR) across Northeastern India reveal distinct gender dynamics in rural and urban areas. In rural regions, men consistently exhibit higher workforce participation, with Manipur showing the largest gender gap at 12.14%. However, Meghalaya stands out for near-equal participation, with only a 0.35% difference, reflecting greater gender inclusivity. On average, rural male LFPR in the Northeast is 37.8%, while female participation lags at 32.02%, resulting in a 5.80% gender gap. Comparatively, the national rural disparity is wider, with male LFPR at 43.7% and female at 33.7%, marking a 10.02% gap. This suggests that despite socio-economic challenges,

Northeastern states demonstrate a relatively smaller gender divide in rural employment.

In urban areas, the gender gap narrows, though men still lead in workforce participation. Nagaland records the widest urban gap at 11.91%, whereas Mizoram and Meghalaya approach parity. Notably, Mizoram exhibits a reverse trend, with women's participation surpassing men's by 3.25%, signaling progressive workforce integration. With an urban male LFPR of 61.7% and female at 56.1%, the region closely mirrors national trends. These patterns indicate gradual strides toward gender-balanced labor markets, particularly in progressive states like Mizoram and Meghalaya.



**Table-4: Educational Achievement Index (EAI)**

States	Rural	Urban	Over all
Arunachal Pradesh	0.63	0.60	0.56
Assam	0.62	0.56	0.53
Manipur	0.72	0.66	0.67
Meghalaya	0.73	0.62	0.61
Mizoram	0.75	0.65	0.72
Nagaland	0.73	0.62	0.65
Sikkim	0.73	0.67	0.68
Tripura	0.56	0.53	0.51
North East	0.68	0.61	0.62
India	0.61	0.58	0.56

Source: Authors' own calculation

The table presents the Educational Achievement Index (EAI) for different states in the Northeastern Region of India, segmented into rural, urban, and overall categories. In rural areas, states like Mizoram (0.75), Nagaland (0.73), Sikkim (0.73), and Meghalaya (0.73) display relatively higher EAI, reflecting greater gender equality in access to education and opportunities. In contrast, Tripura (0.56) and Assam (0.62) show lower values, indicating more significant gender disparities. In urban areas, Sikkim (0.67) and Manipur (0.66) demonstrate better gender balance, but Tripura (0.53) and Assam (0.56) still face noticeable gaps. Overall, the Northeastern Region (0.62) slightly outperforms the national average (0.56), suggesting a progressive approach towards gender equality in education. Among the states, Mizoram (0.72) and Sikkim (0.68) are leading with better EAI values, while Tripura (0.51) remains the lowest performer. These differences reflect the varying socio-

economic conditions, cultural influences, and policy measures implemented across the region, highlighting the need for targeted interventions to further reduce disparities and promote equality in educational achievement.

### 5. Conclusion:

The analysis of gender disparities in education and labor force participation across the Northeastern states of India reflects both challenges and notable progress. States like Meghalaya and Mizoram, with relatively high Educational Achievement Index (EAI) values, demonstrate significant strides in narrowing gender gaps, where female literacy rates and workforce participation sometimes exceed those of men. This progress is largely influenced by socio-cultural factors, progressive policies, and community-driven initiatives that promote gender equality. However, rural women, especially in states like Arunachal Pradesh and Manipur,

continue to face significant barriers, with lower educational attainment and labor force participation compared to their male counterparts. These disparities highlight the need for focused policy interventions that improve access to education, skill development, and economic opportunities for women.

Despite these ongoing challenges, the Northeastern region (EAI value of 0.62) outperforms the national average (EAI value of 0.56), signaling a more inclusive socio-economic landscape. The region's relatively smaller gender gaps in literacy and labor force participation provide a promising model for gender-inclusive development. Moving forward, continued investment in education, employment opportunities, and social empowerment is crucial to achieving true gender parity. By fostering an environment where both men and women can equally thrive, the Northeast sets the stage for a more equitable and progressive future, further reinforcing its leadership in gender equity across India.

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