

Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2022.vol9.no6.0151

Gender Wage Gap in Rural Labour Markets: An Empirical Study of North East India

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Received: March 10, 2022 Revised: May 21, 2022 Accepted: May 30, 2022

Abstract

Even after three decades of economic reforms, India's labor market is characterized by stark inter-gender differences in terms of both participation rate and working time. Identification of the causes is necessary to remove the disparity and unequal sharing of economic opportunities to make way for women's empowerment. This research attempts in that direction, examining the prevalence of these inequities in rural areas of North-East Indian states using unit-level data from the 2017–18 Periodic Labour Force Survey (PLFS). The methodology for the estimation here is based on Blinder- Oaxaca decomposition method after correcting for sample bias forwarded by Heckman. The analysis shows that in both labor force participation and the wage gap, the females in the region lag behind their male counterparts by a huge margin. Further, the analysis shows that one of the main factors leading to the difference is the disparities in human capital assets. On top of female educational enrollment being low, there is also a huge lack of higher educational attainment, while males have accomplished much better in both the parameters. Moreover, the presence of social stigma against women working and discrimination put the female labor outcomes in a gloomy state.

Keywords: North East States, India, Labour Supply, Social Stigma, Gender Disparities, Human Capital

JEL Classification Code: E24, J21, J31, J82

1. Introduction

The World Economic Forum's Global Gender Gap Report (hereafter GGGR) 2021 makes the somber prediction that the current human generation will not see gender parity. According to the statistics, closing the global gender gap to zero will take at least 135.6 years. The first of the four characteristics on which the report is based, Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment, has the greatest stretched span to cover the gap of 267.6 years. (World Economic Forum, 2021).

Although it was one of the Millennium Development Goals' top priorities and remains so in the Sustainable Development Goals, closing the gender gap in economic participation and opportunity remains the greatest obstacle. More sustainable economies could be accomplished if women were given equal access to education, health care, decent work, and increased political and economic decision-making power (Khurshid et al., 2021).

One of the most visible characteristics of inter-gender difference in India is the gender gap in the labor market. According to the GGGR, India ranks 140th out of 156 nations in terms of the economic gender gap in 2021. Throughout the country's economic history, the female labor force participation rate (henceforth LFPR) has been persistently low. Not only is the female involvement rate lower than that of male citizens, but it is also lower by any worldwide standard, and it is one of the lowest in South Asia, after Pakistan and Afghanistan. In India, the gender gap in the labor market is one of the most prominent manifestations of inter-gender disparity. The female labor force participation rate has consistently been low throughout the country's economic history.

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This research seeks to investigate factors that caused labor market discrepancies between male and female workers in rural North East Indian states from the turn of the century to the present. Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura make up North East India (henceforth NEI). In comparison to other parts of the country, the region is noted for having a higher female status (Mahanta & Nayak, 2013). In this area, social indices such as female literacy rates and infant mortality rates, which are directly related to female ability, have a great track record. In general, the region outperforms the rest of the country on a variety of social metrics. Despite these facts, the picture of females in the labor market remains bleak in comparison to males, with the disparity being particularly obvious in rural areas. The authors of this paper want to look into the nature and scope of this problem in rural areas of India's North East.

2. Literature Review

In India, the labor market situation has remained unfavorable to women in terms of both demand and supply (Mukhopadhyay & Tendulkar, 2006). From a demand standpoint, India's experience of jobless economic growth (Nepram et al., 2021) and the availability of excess male labor supply has made it difficult for women to fit into the labor market. On the supply side, females' lack of human capital makes it difficult for them to compete in the labor market with their male counterparts. In addition to these difficulties, the presence of social stigma towards women who work outside the home (Goldin, 1995; Mammen & Paxson, 2000) is a significant factor that has pushed female economic participation even lower.

Working women face a lot of shame and discrimination in South Asian countries, to the point where their family's standing is lowered if they have to work outside the home, making women's behavior the most important indicator of a family's prestige (Eswaran et al., 2013). Furthermore, one of the issues for low female labor force participation is the urge to distinguish "*from the lifestyle and occupation of those considered to be lower status and to copy publicly those followed higher-status groups,*" as Bardhan (1985) puts it.

Many notable thinkers have proposed female discrimination in the labor sector as a factor in the gap. According to Becker's (1971) discrimination theory, employers' preferences for discriminating against women may lead to the exclusion of women from specific jobs, denying them opportunities. Females are squeezed into lower-paying strands of employment as a result of the restrictions on their opportunities (Bergman, 1974). As a result, the taste of discrimination may lead to females receiving lower wages for the same labor.

Scholars such as Eckel and Grossman (2001), Croson and Gneezy (2009), and Azmat and Petrongolo (2014) believe that gender differences in the labor market are primarily due to psychological traits. They believe that women's work options are less diverse than men's and that they are risk-averse. As a result, individuals are more likely to take employment with low chances of getting fired. In general, such employment is associated with low pay and little variation. However, in a community like the Khasi tribe of Meghalaya, where family structure is largely matrilineal, such a generalized approach is erroneous (Gneezy et al., 2009).

The female LFPR, as well as the workforce participation rate (henceforth WFPR) in the NEI, has been dropping over time, indicating the marginalization of women's position in the region's overall economy. Many states in the region's rural areas have demonstrated a variable and diversified tendency, with many states experiencing a decline in female LFPR (Samantroy, 2017).

In a study of the factors impacting women's economic involvement in the NEI, Sarma (2020) discovered that the female LFPR has been falling over time. However, it differed significantly between states in the region. The majority of females in the region work in agriculture, and the wage disparity between the sexes has been identified as an exaggerating factor leading to the decline in female LFPR.

Kaur (2016) used an OLS regression model to investigate the determinants influencing female LFPR in the region and found that it was higher than the rest of the country due to the region's tribal dominant nature. According to the study, creating education-based occupations and eliminating wage discrimination against women will increase women's economic engagement.

Malakar (2017) discovered that there are inter-state variances in the region in terms of female WFPR and literacy rate in research on the status of women in the labor force participation in the NEI. In comparison to the urban areas, the female WFPR is higher in the rural areas of the region. The study revealed that socioeconomic factors unique to the region are responsible for women's elevated WFPR.

3. Methodology

The paper explores the causes of the gender wage gap in rural labor markets of NEI using various rounds of the National Sample Survey Organisation's (henceforth NSSO) "Employment and Unemployment Survey" (EUS), starting from 2004–05 and National Statistical Office's (henceforth NSO) "Periodic Labour Force Survey" (henceforth PLFS), 2017–18. The methodology for estimating the gender wage gap is based on Blinder-Oaxaca (B-O) decomposition method with the correction for sample selection bias forwarded by Heckman (1979). Since the wage in the sample is observed

only for individuals who are engaged in the workforce, the application of least squared, which the B-O model is basically based on, would suffer from sample selection bias. To overcome this problem, Heckman’s two-step method or Heck is introduced in the B-O model. Heck, it takes account of labor force participation decision of individual with the application of probit model, as given in equation (1) and then generates a variable known as inverse Mills ratio which is to be added in B-O decomposition model given in equation (2) to estimate the gender wage gap.

$$L_i = Z_i\beta + u_i; \quad i = 1, 2, 3 \quad (1)$$

L_i is the bivariate dependent variable of the i^{th} individual which has the values of 0 and 1, where 0 represents as not in the labor force and 1 as otherwise. Z_i is the matrix of independent variables of i^{th} individual, among which the bivariate element of gender is included, where 0 represents males and 1 represents females. The description of variables in the model is relegated to the appendix.

$$E(\ln \text{wage}_{\text{male}}) - E(\ln \text{wage}_{\text{female}}) = (X_{\text{male}} - X_{\text{female}})' \beta_{\text{female}} + X'_{\text{male}}(\beta_{\text{male}} - \beta_{\text{female}}) + (X_{\text{male}} - X_{\text{female}})'(\beta_{\text{male}} - \beta_{\text{female}}) \quad (2)$$

Adopting the Mincer (1962) wage model, X the dependent variables in our model are age, age squared, and education.

Age is taken as a proxy for experience, and education is another aspect of human capital. The first term on the right-hand side shows the wage difference that arises due to the difference in endowments of human capital, the second term represents the unexplained part which is also known as the discrimination part and the third term represents the interaction between the first and second term.

3.1. The Variables

3.1.1. Gender Wise Labour Force Participation Rate

When it comes to gender discrepancy in the labor market, North East India is no different than the rest of India. Despite the fact that the area is quite different in terms of caste, culture, and religion, the gender difference in LFPR is found to be persistent, albeit to varying degrees, in all eight states. Table 1 shows the gender-specific LFPR by usual status main status in rural areas of India’s North East. The magnitude of the difference varies by state, with states like Meghalaya and Sikkim having smaller gaps than others, and the gap is growing.

The table shows that there is a significant difference in LFPR between males and females. The table also reveals that in all states, both male and female participation rates are declining. While the male rate of decline appears to be stable, the female rate is on the decline, falling from 28 percent in 2004–05 to 18 percent in 2017–18. As a result,

Table 1: Gender Wise LFPR for Age 15–59 Years by Usual Status (Principal Status) in Rural Areas of North East States of India

States	61 st Round 2004–05		66 th Round		68 th Round		PFLS	
	2004–05		2009–10		2011–12		2017–18	
	Male	Female	Male	Female	Male	Female	Male	Female
Arunachal Pradesh	81	64	75	44	74	42	71	16
Assam	88	20	87	21	85	13	84	13
Manipur	79	45	79	27	77	23	76	24
Meghalaya	90	75	82	50	80	60	79	54
Mizoram	87	61	90	55	90	54	82	29
Nagaland	77	56	72	31	81	34	69	17
Sikkim	82	50	82	45	83	70	81	52
Tripura	88	17	88	19	87	26	81	12
North East	87	28	86	25	84	20	82	18
Gap	59		61		64		64	

Source: Authors’ Calculation from NSSO’s EUS Rounds and PFLS.

the gender disparity in LFPR widens even more. The biggest declines in female participation rates are found to be in the states of Arunachal Pradesh, Nagaland, and Mizoram. The female participation rate is consistently low in Assam and Tripura. The high rate of female LFPR in Meghalaya may arise due to the fact that the state is largely a matrilineal society. Sikkim is another state which is experiencing a high female participation rate. Even though the disparity persists.

Male and female LFPRs by age are shown in Figure 1. The separation of male and female trend lines becomes more obvious by the age of 20 years and continues until the end of our chosen age limit of 59 years, as shown in the graph. Unsurprisingly, by the age of 20, the percentage of females getting married has increased dramatically. On the contrary, peer male involvement rates begin to rise, and by the age group of 25–29 years, the rate has nearly reached 100%. The findings point to the probability of stigma against married women working in the North-Eastern Indian states on average.

3.1.2. Occupational Status

Table 2 shows the normal position of men and women by major activity as classified by the NSSO. Worker Population Ratio (WPR) is defined as individuals with status 11 to 51, and LFPR is calculated by adding individuals with status 81, which reflects the unemployment rate, to WFPR.

During the 2017–18 fiscal year, males in rural NEI were heavily involved in self-employment, but more than 65 percent of female counterparts were involved in domestic responsibilities and cost-cutting household activities. Male and female workers account for 75.6 percent and 15.50 percent of the rural workforce, respectively. Some researchers believe that the NSSO labor data underreport female LFPR because it ignores the type of work that women do in their

Table 2: Activity Status

Status	Male	Female
11	40.74	3.26
12	0.83	0.02
21	5.35	3.56
31	14.97	6.32
41	0.22	0.13
51	13.64	2.21
81	6.31	2.02
91	15.26	12.50
92	0.47	52.57
93	0.32	16.05
94	0.41	0.55
95	0.62	0.32
97	0.84	0.50
WPR	75.76	15.50
Unemployment rate	6.31	2.02
LFPR	82.07	17.52

Status Description: Worked in the household(h.h.) enterprise (self-employed): own account worker –11, employer–12, worked as a helper in h.h. enterprise (unpaid family worker) –21, worked as regular salaried/ wage employee –31, worked as casual wage labor: in public works –41, in other types of work –51, did not work but was seeking and/or available for work –81, attended educational institution –91, attended domestic duties only –92, attended domestic duties and was also engaged in free collection of goods (vegetables, roots, firewood, cattle feed, etc.), sewing, tailoring, weaving, etc. for household use –93, rentiers, pensioners, remittance recipients, etc. –94, not able to work due to disability –95, others (including begging, prostitution, etc.) –97.

Source: Authors' Estimation from PFLS, 2017–18.

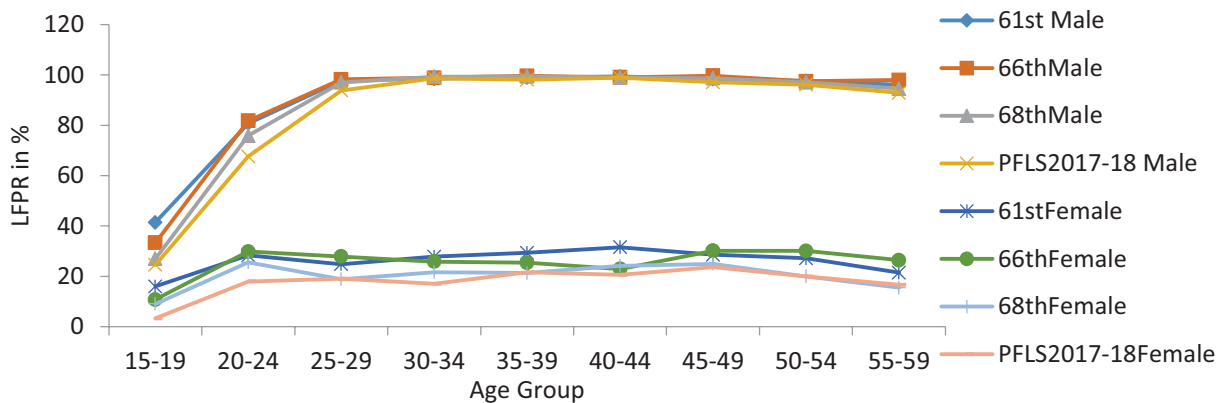


Figure 1: Age-Specific LFPR of 15–59 Years by Usual Status (Principal Status)

Source: NSSO's EUS Rounds and PFLS

households simply because they are not paid. Even if status 93 is considered an extended labor force, female participation rates are still much lower than male participation rates.

When it comes to attending educational institutions, males have a somewhat larger percentage than girls. The government initiatives of the Right to Education Act, 2014, which strives to provide compulsory education to the public, can be credited for this nearly equal share in educational achievement.

3.1.3. Educational Attainment and Labour Force Participation Rate

Figure 2 shows the educational attainment of men and women, as well as their LFPR. The number of illiterates or those from lower social classes is higher among women. Males began to outnumber females once they reached the middle-class level of schooling. Males have more than double the amount of higher education degrees as females. According to the PFLS, a total of 3.32 million men and 1.67 million women in the region received higher education in 2017–18. Research led by human capital theorists asserted that higher education is an important component of women’s empowerment and their ability to obtain formal employment. It is also found that women working in formal white-collar jobs are free from the socio-cultural stigma which is normally attached to manual labor jobs (Goldin, 1995). Figure 2 shows the LFPR gap between males and females tends to decrease as the educational level increases thereby attaining the lowest gap point at the highest educational status.

3.1.4. Wage Differentials

Wage disparities between men and women are also common in NEI’s rural areas. Males get an average of Rs. 19,100 a month in status wage/ salary in 2017–18, compared to Rs. 10,228 for women. The fundamental explanation for this is that female workers are concentrated in lower-income deciles. Females make up roughly 60% of the working population in the lower three deciles, whereas males make up around 20%. Male and female workers in the top two deciles, on the other hand, account for 23.6 percent and 7.2 percent, respectively. Females are more concentrated in low-wage jobs than males, and as a result, their average earnings are significantly lower than males’ average earnings. According to the National Occupational Classification (NCO), 2004, more than half of the female workers in the sample are concentrated in only two occupations: Market Gardeners and Crop Growing (611) and Agriculture Fishery and Related Labourers (920). These two occupations pay the least, with 90 percent of total earnings falling into the bottom three deciles. In this regard, males have a little advantage. This indicates that females have less occupational diversity than their male counterparts. It’s worth noting that in many countries, gender stereotypes classify certain jobs or occupations as more suited and proper for men and others as more suitable and appropriate for women (Do & Tran, 2020). In the top tenth deciles of the income distribution, males’ occupations are distributed across 35 fields, while females’ occupations are distributed across nine fields.

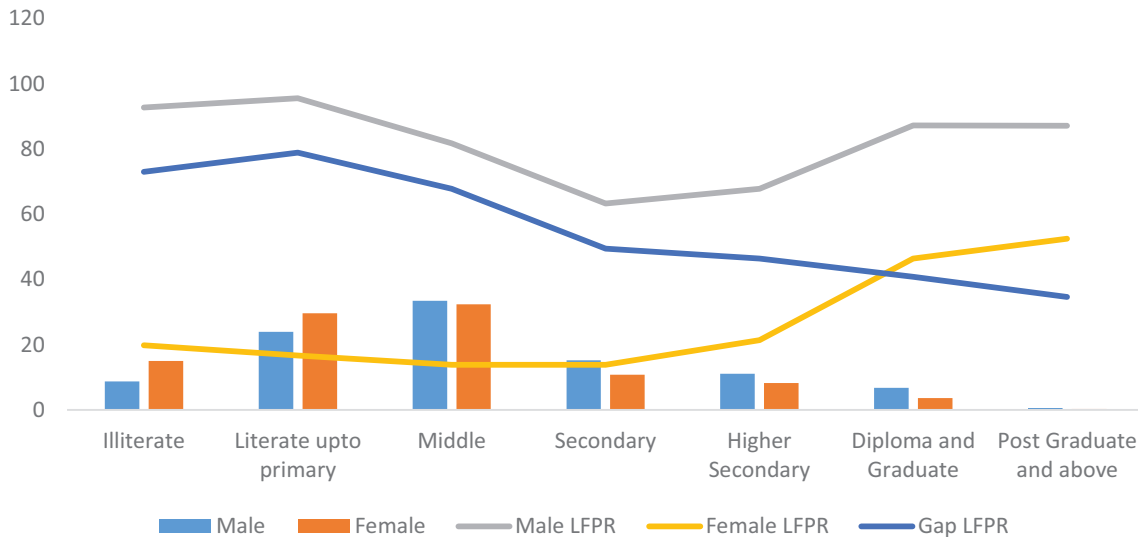


Figure 2: Gender Wise Educational Attainment and LFPR (usual status by principal activity) in Percentage
 Source: Authors’ Estimation from PFLS 2017–18

3.1.5. Income and Labour Force Participation Rate

The relationship between gender-specific LFPR and monthly per capita expenditure (henceforth MPCE) per deciles class has long been a source of debate. When using MPCE as a surrogate for income, it can be seen that as income rises, male LFPR falls significantly. Female LFPR, on the other hand, maintains rather constant across deciles, with a tiny reduction in the third decile and then a reversion after the fourth decile. It demonstrates that income has just a minor impact on women's economic involvement decisions.

4. Results and Discussion

We used the NSO's PLFS, 2017–18, for estimation purposes. The data collection includes 25,702 observations from people aged 15 to 59 in rural areas of NEI, with 13,340 males and 12,362 females.

In the NEI states, Table 3 gives probit estimates of labor force participation. Except for backward class and Mizoram, all of the variables are highly significant, albeit the variable that represents Assam is also significant at the 10% level of significance. Females have a lower probability of joining the labor force than males, as seen in the table, and the probability drops even further for married females. The married variable, on the other hand, being positively significant suggests that married males' participation rates increased in comparison to single/widower/divorcee males. These findings suggest that married women face a high risk of social stigma in the labor market and that husbands' efforts to safeguard the family status by keeping the wife away from work are also present in rural sections of NEI.

The female and education interaction variable, on the other hand, reveals that female economic participation rises as their education level rises. Geographic variables are used to capture some of the regional distinctions across states. Females from Tripura are the benchmark, and it is discovered that females from Assam are the only ones who have a lower chance of joining the labor force, although females from Sikkim and Meghalaya are more likely to be in the labor force than rural females from other states. The negative intercept indicates that rural women in the North Eastern India are less likely to enter the labor market.

Table 4 shows the B-O decomposition. Female counterparts earn around 83 paise for every rupee earned by male counterparts in the whole workforce. In the ordinary wage and salaried group, the wage disparity is quite large. However, in terms of the discriminating effect, this group has the lowest percentage. The discriminatory effect accounts for 78.59 percent of the average salary differentials of 0.398, while the effect owing to differences in human capital endowments accounts for around 13 percent. The interaction effect accounts for 8.37 percent of the remaining gap. Endowments and discrimination

Table 3: Probit Estimates of Labour Force Participation

Variable	Co-Efficient	Robust Standard Error
age	0.359	0.008*
age2	-0.004	0.000*
educ	-0.091	0.014*
x_mpce	-0.049	0.004*
hh_size	0.048	0.007*
married	0.994	0.050*
bc	-0.070	0.048
female	-2.216	0.119*
educ_fem	0.239	0.018*
bc_fem	0.220	0.065*
marri_fem	-2.206	0.057*
arunachal	-0.220	0.058*
assam	0.105	0.058***
manipur	-0.257	0.062*
meghalaya	-0.168	0.064**
mizoram	0.098	0.076
nagaland	-0.279	0.074*
sikkim	-0.221	0.091**
arunachal_fem	0.355	0.086*
assam_fem	-0.234	0.079*
manipur_fem	0.559	0.085*
meghalaya_fem	1.318	0.086*
mizoram_fem	0.365	0.103*
nagaland_fem	0.295	0.101*
sikkim_fem	1.178	0.117*
Intercept	-5.217	0.131*
Number of observations	25,702	
wald χ^2	6,671.66	
Pseudo R^2	0.5240	

Note: *, ** and *** denote the statistical significance level at 1%, 5% and 10% respectively.

Source: Authors' Estimation from PFLS 2017–18.

account for 19.07 percent and 82.97 percent of the pay gap in self-employment, respectively. The results demonstrate that the discrimination factor accounts for a large amount of the difference.

5. Conclusion

This article looks at gender differences in the labor market in NEI's rural areas from two perspectives:

Table 4: B-O Decompositions

	Total Worker	Regular	Self-Employed
Male	9.255	1.652	1.528
	(0.007)*	(0.013)*	(0.009)*
Female	9.091	1.253	1.186
	(0.0550)*	(0.095)*	(0.074)*
Difference	0.164	0.398	0.342
	(0.556)*	(0.096)*	(0.745)*
Endowments	0.02	0.076	0.030
	(0.008)*	(0.018)*	(0.011)*
Coefficients	0.129	0.330	0.297
	(0.055)*	(0.095)*	(0.075)*
Interaction	0.014	-0.008	0.015
	(0.007)*	(0.013)	(0.012)
No. of observations	8,885	2,859	6,026
No. of males	7,413	2,152	5,261
No. of females	1,472	707	765

Note: *, ** and *** denote the statistical significance level at 1%, 5% and 10% respectively. Source: Same as Table 3.

labor force participation and the wage gap. Females are well behind males in both of these areas, according to the research. As we have discovered, one of the key explanations for the discrepancy is a high rate of inequality in human capital assets. Although female educational attendance is in par with boys, there remains a huge disparity in higher educational attainment among females. Other factors, such as the discriminatory effect on women and the presence of social stigma, are thought to exacerbate the disparity.

Recently, there has been an increase in enrolment as a result of government initiatives on education programs, and so the discrepancy in this regard has narrowed. It will be interesting to examine how the increase in female educational enrolment affects the current gender imbalances in the labor market in the coming years. Experimental economists can also provide recommendations to policymakers. In this regard, the Jensen (2010) experiment was adopted, in which placing mentors in girls' schools to assist them in job recruitment improved the opportunities for females' employment, and as a result, capital investment in females in that sector increased. In another study by Beaman et al. (2012), it was discovered that having a female leader in a community raises the aspirations of female parents, increasing investment in female children.

Deliberation about closing the wage gap between men and women by increasing female labor is not only rational from an equity standpoint, but it can also promote economic growth. According to the relocation model, if women participated in the economy as much as males, India's economy would increase by 1.4 percent every year.

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Appendix:

Description of Variables in Table 3:

- In wage → Log of monthly wage or salary
 age → Age of the individuals
 age2 → Age squared of the individuals
 educ → Educational level, 1-illiterate, 2- upto primary, 3-middle, 4- secondary, 5- higher secondary, 6- diploma and graduate, and 7- postgraduate and above
 x_mpce → Decile classes for monthly per capita expenditure
 hh_size → Household size
 married → Dummy variable for married = 1 and 0 – otherwise
 bc → Dummy variable for social class, backward classes = 1 and 0 – otherwise
 female → Gender dummy female = 1 and 0 otherwise
 educ_fem → Interaction dummy variable between female and educational level
 bc_fem → Interaction dummy variable between female and backward class
 marri_fem → Interaction dummy variable between female and married
 Arunachal → Arunachal Pradesh regional dummy with reference state as Tripura
 Assam → Assam
 Manipur → Manipur
 Meghalaya → Meghalaya
 Mizoram → Mizoram
 Nagaland → Nagaland
 Sikkim → Sikkim
 arunachal_fem → Interaction dummy variable between female and Arunachal Pradesh
 assam_fem → Interaction dummy variable between female and Assam
 manipur_fem → Interaction dummy variable between female and Manipur
 meghalaya_fem → Interaction dummy variable between female and Meghalaya
 mizoram_fem → Interaction dummy variable between female and Mizoram
 nagaland_fem → Interaction dummy variable between female and Nagaland
 sikkim_fem → Interaction dummy variable between female and Sikkim