

## Comparative Assessment of Female Labour Force Participation between High and Less Developed Districts of Himachal Pradesh.

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### ABSTRACT

The economic analysis of Female Labour Force Participation has attracted noteworthy attention since the groundbreaker work of Mincer (1962). The contribution of woman in economic activities now has become the burning topic of interest among the galaxy of researchers and analysts for the formulation of policies in the developing economies. Within India, the state of Himachal Pradesh has carved out separate niche for itself in development discourse due to its impressive performance over the years. Over the years, Himachal Pradesh has made great strides in reducing extreme poverty within a generation while at the same time sharing the endeavours of the prosperity even with disadvantaged group (i.e. women's) who were historically left behind. It has emerged as one of the state which has achieved remarkable growth, especially in the last two decades, which has been accompanied by best human development outcomes in India. The main objective of the present paper is to examine the comparative scenario of female labour force participation between the high developed and less developed districts of Himachal Pradesh. Firstly, we will give an overview of the labour force participation scenario in Himachal Pradesh from 1983 to until 2011 and after that attempt has been made to through the light on the comparative assessment of female labour force participation between high developed and less developed districts of Himachal Pradesh. For the rationale of appraising the female labour force participation of highly developed and less developed districts, we have engrossed the F-test and T-test for the empirical investigation of data. The findings of the study shows that there was statistical significant mean difference between rural and urban areas of highly developed districts regarding cultivators, and there were no significant mean differences between rural and urban areas of high per capita income regarding total female workers, agricultural labourers, household

industry and other workers. While, there were significant mean differences between rural and urban areas of less per capita income regarding total female workers, cultivators, agricultural labourers, household industry and other workers.

**KEYWORDS:** Female, Employment, Female Labour Force Participation, Himachal Pradesh.

## I. INTRODUCTION

The economic analysis of Female Labour Force Participation has attracted noteworthy attention since the groundbreaker work of Mincer (1962). The contribution of woman in economic activities now has become the burning topic of interest among the galaxy of researchers and analysts for the formulation of policies in the developing economies. Women workforce participation assumes more paramountcy in case of developing countries because of its positive corollary on the level of output and negative corollary on the population growth (Collver and Langlois, 1962). The Female Labour Force Participation has been identified as the most important constituent in the adoption of small family norms and it is also considered as a yardstick for achievement of twin goals of population planning and economic development. It is quite hypnotic to talk about the women's economic participation, seeing that, almost all women work, inside or outside their homes, against or without economic payments, for production or self consumption purposes, and also for reproduction. The traditional academic view however overlooked this reality and chooses to define work in such a manner so as to ward off majority of those activities that are predominantly performed by women. Women's full amalgamation into the economy is desirable for equity and efficiency considerations. The equity standpoint implies that labour market participation of women will improve their relative economic position and it will increase overall economic efficiency and improve development capabilities and potentialities of the country.

One of the most breathtaking social transformations of the latter half of the 20<sup>th</sup> century involved the enormous convergence of women into paid labour force. With foundations in micro-economics (Becker, 1981), one body of research put forward that female involvement in the paid labour force is largely influenced by cost and benefits of wage labour in relation with the domestic work, home production, leisure time and other household pursuits. With the change in outlook, attitude and approach towards living, it has now become obligatory, by and large, for the families with inadequate incomes to supplement their requirements through additional earnings. So women, of course, can fill this gap by breaking the male dominated attitudes of society. In this modern scenario, everywhere the cost of living has increased, so it becomes essential for women to undertake and take part in the

economic activities as well as act as helping hand for their male counterparts in supporting their families and it will be a healthy development for the economy. The proliferating rates of women labour force participation have enabled developed countries to nourish and sustain on the path of higher growth (The Economist, 2006). The increase in female labour force participation rate and attachment to work particularly among married women with young children can be associated to structural changes in the economy and demographic shifts that influenced the demand for and supply of women workers. On the demand side, growth in female monopolized occupations in the post World War II era has led to the rising demand for female workers (England and Farkas, 1986; Oppenheimer, 1970). While on the supply side, increase in education, lower age at marriage, lower fertility, increased consumption and mushrooming preferences among women for non-domestic roles may have worked to increase female labour force participation (England and Farkas, 1986; Goldin 1990). Also, the magnitude of women's involvement is correlative to socio-economic and political conditions prevalent in the country.

The increasing drift towards women's participation in the labour market in both developed and developing countries has evoked both social and academic interest resulting in many insightful studies on gender aspects of labour market issues as well (Ackah, Charles, 2009). Gender equality plays an important role in the economic development and it has been also understood in the ample literature. Various studies have spotlighted that, how lower female labour force participation or weak entrepreneurial activity drags down the economic growth and that empowering women has significant economic benefits in addition to promoting gender equality. World Economic Forum's 2014 Global Gender Gap Report finds a positive correlates between gender equality and per capita GDP, the level of competitiveness and human development indicators. Economic development of the country crucially depends on the participation rates of its females, as they constitute around 50 percent of its labour force (NIPCCD, 2010). The larger proportion of female workers which are directly engaged in economic activities plays a very significant role in economic development. Not only that, the women's labour force participation in the workforce as compared to men is also an important genesis of their social status (Mammen and Paxson, 2000). Naturally magnitude of official female labour supply (or female labour force

participation rate) is quite low in developing countries including India, fluttering around half of the corresponding male figures.

Within India, the state of Himachal Pradesh has carved out separate niche for itself in development discourse due to its impressive performance over the years. Over the years, Himachal Pradesh has made great strides in reducing extreme poverty within a generation while at the same time sharing the endeavours of the prosperity even with disadvantaged group (i.e. women's) who were historically left behind. It has emerged as one of the state which has achieved remarkable growth, especially in the last two decades, which has been accompanied by best human development outcomes in India. The main objective of the present paper is to examine the comparative scenario of female labour force participation between the high developed and less developed districts of Himachal Pradesh. Firstly, we will give an overview of the labour force participation scenario in Himachal Pradesh from 1983 to until 2011 and after that attempt will be made to through the light on the comparative assessment of female labour force participation between high developed and less developed districts of Himachal Pradesh.

## **II. LABOUR FORCE PARTICIPATION SCENARIO IN HIMACHAL PRADESH**

Labour force of a country consists of all those in its working age population, who are employed or seeking employment. In this working age population, the percentage of total female workers to total percentage of total female workers to total female population is female work participation rate. Female labor force participation is mainly driven by the value of women's market wages versus the value of their non-market time. The labour market in Himachal Pradesh has been another arena for inclusive outcomes, when compared to other states in India. Employment rates have been high in Himachal Pradesh ever since it attained statehood. From 1983 up until 2011, the labour force participation rate (LFPR) for men hovered around 87 percent in rural areas and 73 percent in urban areas. In rural Himachal Pradesh, the male LFPR in 2011 was similar to that in neighbouring states, but slightly below the national average, while in urban Himachal Pradesh, it was higher than both other northern states and the national average. But the bigger success story is in women's employment. In 2011–12, about 63 percent of rural women in Himachal Pradesh reported themselves as being employed. This places Himachal Pradesh at the second position in female labour force participation in the country, after Sikkim, and

significantly above the all-India average of 27 percent. In urban areas, the female labour force participation rate in Himachal Pradesh was much lower, at 28 percent in 2011, but nonetheless, much higher than other north Indian states. In fact, urban women's employment in Himachal Pradesh was at exactly the same level as those in urban areas of Kerala and Tamil Nadu. Much of this is driven by the fact that women in rural areas in Himachal Pradesh are more than twice as likely as their male counterparts to report themselves as being self-employed in agriculture. But urban women are also more likely than their counterparts in neighbouring states to have regular salaried jobs. Himachal Pradesh's high rates of labour force participation are driven by two major factors. Firstly, almost half of urban men and one-fifth of urban women in Himachal Pradesh had regular salaried jobs in 2011. Further, among those who were employed in 2011, almost one-third held public sector jobs. In contrast, only 10 percent of all employed Indians work in the public sector. The high wage bill that Himachal Pradesh consequently incurs is reflected in the state's budget numbers. The second reason for Himachal Pradesh's high employment rates is that agriculture is still the mainstay of its largely rural economy, and predominantly agricultural economies tend to have higher labour force participation rates.

Himachal Pradesh outperforms its neighbours and many other Indian states on many human development indicators. Not only does it have the lowest share of individuals who received no education among northern states, but it has made a significant progress in improving educational attainment, particularly among women and excluded groups. More members of the SCs and STs have completed secondary or higher levels of schooling, both in urban and rural areas, compared to other states, including southern states such as Karnataka and Tamil Nadu. Urban Himachal Pradesh recorded huge progress, where the share of residents with post-primary education increased across social groups, especially among STs. Finally, the state's success in increasing female education is also significant, despite the fact that there are continuing disparities between men and women in rural areas. Himachal Pradesh has also done remarkably well in the area of health and sanitation. Himachal Pradesh has the lowest infant, child and under-five mortality rates among northern Indian states and it is first state in northern India that is close to being "Open Defecation Free". So, the committed state (Himachal Pradesh) and its bureaucrats have consistently innovated to ensure:

- Social inclusion and sustainable development,
- The unique historical and cultural context which created a milieu of high local accountability and,
- Positive norms around gender which enabled strong participation of women in development programs.

Now it is fair enough to say that, strong women participation in development programs in Himachal Pradesh highlights the fact that the female seclusion in Himachal Pradesh is not as normative as it is in neighbouring states. Data from the NFHS 2005–06 shows that 65 percent of urban women in Himachal Pradesh and 56 percent of rural women participate in household decisions. When combined with a strong tribal ethos, diverse marriage patterns and the accompanying autonomy for women, it has been easier for Himachal Pradesh to enlist women's participation in programs such as sanitation, immunization, and other health-related campaigns than it has been for neighbouring states. Finally, women in Himachal Pradesh have a strong tradition of protest movements against environmental degradation and male alcoholism. So, therefore it becomes essential to investigate the nature and magnitude of female labour force participation between high developed and less developed districts of Himachal Pradesh.

### **III. HYPOTHESIS**

- The female labour force participation rate differs significantly between the high developed and less developed districts.
- The female labour force participation rate differs significantly between rural and urban areas.

### **IV. METHODOLOGY**

The comparative assessment of female labour force participation between High Developed and Less Developed districts of Himachal Pradesh is principally established on the basis of secondary resources mobilized from reports of Government of India. The principal resources, from where the data is outlined are Census of India, National Sample Survey Organisation (NSSO), Statistical Abstract of Himachal Pradesh and Department of Economics and Statistics Himachal Pradesh. The time

period which has been designed for the study is 2011 census which covers the female demographics of all the twelve districts of Himachal Pradesh.

### DISTRIBUTION OF DISTRICTS INTO HIGHLY DEVELOPED AND LESS DEVELOPED

The splitting up of districts into highly developed and less developed is done on the centre of District Wise Per Capita Income at current prices of the financial year 2011-12 (Planning Department- Himachal Pradesh). During the financial year 2011-12, the Per Capita Income at current prices of Himachal Pradesh is Rs. 74694. So, the districts which are above Himachal Pradesh average are considered as highly developed districts and the districts which are below Himachal Pradesh average are considered as less developed districts. The distribution of districts into highly developed and less developed districts are presented in below table 1.

**Table 1:** Distribution of districts into highly developed and less developed on the centre of Per capita Income of Districts (Planning Department-Himachal Pradesh 2011-12).

S. No.	High Per Capita Income Districts	Per Capita Income (Rs.) (Current Prices)	S. No.	Low Per Capita Income Districts	Per Capita Income (Rs.) (Current Prices)
1	Kinnaur	126923	1	Bilaspur	73659
2	Lahul & Spiti	139254	2	Chamba	69167
3	Shimla	85685	3	Hamirpur	58227
4	Sirmaur	93711	4	Kangra	56767
5	Solan	138475	5	Kullu	70197
			6	Mandi	58194
			7	Una	64867

**Source:** (Planning Department-Himachal Pradesh 2011-12)

There are total of twelve districts of Himachal Pradesh. As we can see from the above Table:1, that there are five districts i.e. Kinnaur, Lahul & Spiti, Shimla, Sirmaur and Solan which are above Himachal Pradesh average and are being considered as highly developed districts. While on the other hand, there are seven districts i.e. Bilaspur, Chamba, Hamirpur, Kangra, Kullu, Mandi and Una which are below Himachal Pradesh average and are being considered as less developed average. For the rationale of appraising the female labour force participation of highly developed and less developed districts, we have engrossed the Growth rates, F-test and T-test along with the descriptive statistics for the empirical investigation of data.

#### **V. FEMALE LABOUR FORCE PARTICIPATION IN HIMACHAL PRADESH**

The information pertaining to the total working population in Himachal Pradesh in 2011 is produced in the Table 1. According to 2011 census, the total population of Himachal Pradesh is 6864602, out of which, specifically, 3481873 (50.72 per cent) are males and 3382729 (49.26 per cent) are females. Focussing on the total working population, we found that, out of 6864602 total populations, 30.05 per cent envelopes the total workers in Himachal Pradesh. While, focussing on the gender wise stratification of workers in Himachal Pradesh, we see that out of 50.72 per cent total male populations, 41.33 per cent envelopes the male working population and that out of 49.26 per cent total female populations, 18.43 per cent envelopes the female working population. The percentage of male working population is higher in comparison to female working population. The male working population was almost 2 times the female working population.

#### **RURAL-URBAN SCENARIO**

Now looking at the rural-urban scenario, we have found that in rural area, total rural population is 6176050, out of which, specifically, 3110345 (50.36 per cent) are males and 3065705 (49.64 per cent) are females. Out of 6176050 total populations in rural area, we have found that, 29.50 per cent envelopes the total working population in Himachal Pradesh. Focussing on the gender wise stratification of workers in rural area, we see that out of 50.36 per cent total male populations, 40.12 per cent envelopes the male working population and that out of 49.64 per cent total female populations, 18.73 per cent envelopes the female working population. On the other hand, in urban area total urban population is 688552, out of which, specifically,

371528 (51.44 per cent) are males and 317024 (46.04 per cent) are females. Out of 688552 total populations in urban area, we have found that, 34.91 per cent envelopes the total working population in Himachal Pradesh. Focussing on the gender wise stratification of workers in urban area, we see that out of 53.96 per cent total male populations, 51.44 per cent envelopes the male working population and that out of 46.04 per cent total female populations, 15.54 per cent envelopes the female working population. Both in rural and urban of Himachal Pradesh, the male working population were high as compared to the female working population. We have also found that, the female working population in rural area (18.73 per cent) is higher as compared to urban area (15.54 per cent).

**Table 1:** Total Workers in Himachal Pradesh- Census 2011

	Population/Workers	Total	Male	Female
<b>Total</b>	Population	6864602	3481873	3382729
			<b>50.72</b>	<b>49.26</b>
	Main + Marginal Workers	2062501	1438989	623512
	<b>Percentage of Workers</b>	<b>30.05</b>	<b>41.33</b>	<b>18.43</b>
<b>Rural</b>	Population	6176050	3110345	3065705
			<b>50.36</b>	<b>49.64</b>
	Main + Marginal Workers	1822109	1247874	574235
	<b>Percentage of Workers</b>	<b>29.50</b>	<b>40.12</b>	<b>18.73</b>
<b>Urban</b>	Population	688552	371528	317024
			<b>53.96</b>	<b>46.04</b>
	Main + Marginal Workers	240392	191115	49277
	<b>Percentage of Workers</b>	<b>34.91</b>	<b>51.44</b>	<b>15.54</b>

**Source:** Census of India-2011

The statistics related to female labour force participation of highly developed districts of Himachal Pradesh according to census 2011 was produced in Table 2. Among the five highly developed districts of Himachal Pradesh, the female labour force participation was highest in Lahul & Spiti with 44.21 per cent. The second position was

attained by Shimla with 39.99 per cent followed by Kinnaur and Sirmaur with 39.82 per cent and 39.51 per cent respectively. The lowest female labour force participation among five highly developed districts was attained by Solan with 36.39 per cent.

**Table 2:** Splitting of female workers of Highly Developed Districts (Census 2011)

S. No.	Districts	Female Workers	Total Workers	Percentage (%)
1	Kinnaur	22410	56273	39.82
2	Lahul & Spiti	8532	19295	44.21
3	Shimla	172298	430926	39.99
4	Sirmaur	110684	280083	39.51
5	Solan	108736	298737	36.39

**Source:** Census of India, 2011

The statistics related to female labour force participation of less developed districts of Himachal Pradesh according to census 2011 was produced in Table 3. Among the seven less developed districts of Himachal Pradesh, the female labour force participation was highest in Hamirpur with 50.92 per cent. The second position was attained by Mandi with 48.06 per cent followed by Chamba, Bilaspur, Kullu and Kangra with 45.99 per cent, 45.82 per cent, 44.69 per cent and 40.19 per cent respectively. The lowest female labour force participation among seven less developed districts was attained by Una with 34.24 per cent. The percentage of female labour force participation has varied considerably across the seven less developed districts of Himachal Pradesh.

**Table 3:** Splitting of female workers of Less Developed Districts (Census 2011)

S. No.	Districts	Female Workers	Total Workers	Percentage (%)
1	Bilaspur	94328	205871	45.82
2	Chamba	135244	294035	45.99
3	Hamirpur	123207	241931	50.92
4	Kangra	271414	675170	40.19
5	Kullu	120255	269084	44.69

6	Mandi	275207	572671	48.06
7	Una	73734	215346	34.24

**Source:** Census of India, 2011

In our analysis, for the empirical testing of the statistical significance of female labour force participation between highly and less developed districts of Himachal Pradesh, we have bestowed the F-test and t-test by taking female workers, total workers and female workers to total workers ratio as predictand variables. The interpreted result of the F-test and t-test was endured in the Table 4 below. The panel A of the Table 4 represents the outcomes of F-test. The null hypothesis we have tested is that the mean difference between female labour force participation does not differ significantly between the high developed and less developed districts. The null hypothesis of no mean difference in female labour force participation and its specific parameters are accepted in all the occurrences as the estimated F-statistics are not statistically significant. So, from these interpretations we can furnish that there was no statistical significant mean differences between highly developed districts and less developed districts of Himachal Pradesh. The panel B of the Table 4 represents the outcomes of t-test.

The null hypothesis we have tested is that the mean difference between female labour force participation does not differ significantly between the high developed and less developed districts. The null hypothesis of no mean difference in female labour force participation and its specific parameters are accepted in all the occurrences as the estimated t-statistics are not statistically significant. So, from these interpretations we can furnish that there was no statistical significant mean differences between highly developed districts and less developed districts of Himachal Pradesh.

**Table: 4** Hypothesis testing differences in distribution of Female Workers between High Developed Districts and Less Developed Districts

Parameter	Female Workers	Total Workers	Female Workers to Total Workers Ratio
Panel A:ANOVA Test			
<b>Ho: the mean difference between female labour force participation does not differ significantly</b>			

between the high developed and less developed districts.

**Ha: the mean difference between female labour force participation differs significantly between the high developed and less developed districts.**

<b>F-statistics</b>	1.46	1.18	3.89
<b>p-value</b>	0.37	0.45	0.10
<b>Inference</b>	H0:Accepted	H0:Accepted	H0:Accepted

Panel B:ANOVA Test

**Ho: the mean difference between female labour force participation does not differ significantly between the high developed and less developed districts.**

**Ha: the mean difference between female labour force participation differs significantly between the high developed and less developed districts.**

<b>t-statistics</b>	1.57	1.27	1.59
<b>p-value</b>	0.07	0.12	0.07
<b>Inference</b>	H0:Accepted	H0:Accepted	H0:Accepted

**Note:** \* Significant at 1% level.

## VI. FEMALE LABOUR FORCE PARTICIPATION IN HIGH PER CAPITA INCOME DISTRICTS

The distribution of female labour force participation in rural area of high per capita income districts of Himachal Pradesh is produced in the Table 7. According to census 2011, among the five high per capita income districts, the total female workers are highest in Lahul & Spiti with 42.21 per cent, followed by Kinnaur, Shimla and Sirmaur with 36.06 per cent, 34.40 per cent and 31.53 per cent respectively. The total female workers are lowest in Solan with 30.68 per cent. Further, for analyzing the trend of female labour force participation in work, the broad categories like cultivators, agricultural labourers, household industry and other workers have been taken into consideration. Among the broad categories of work in rural areas of high per capita income districts, the highest female workers are cultivators with average of 75.02 per cent, followed by other workers and agricultural labourers with average of 20.02 per cent and 3.83 per cent respectively. The lowest female workers are in household industry with average of 75.02 per cent. The female cultivators are highest in Sirmaur

with 80 per cent, followed by Kinnaur, Shimla and Lahul & Spiti with 76.92 per cent, 75.28 per cent and 75.24 per cent respectively. The female cultivators are lowest in Solan with 67.87 per cent. The female other workers are highest in Solan with 27.75 per cent, followed by Lahul & Spiti, Kinnaur and Sirmaur with 22.31 per cent, 18.25 per cent and 16.23 per cent respectively. The female other workers are lowest in Shimla with 15.54 per cent. The female agricultural labourers are highest in Shimla with 7.39 per cent, followed by Kinnaur, Sirmaur and Solan with 3.57 per cent, 3.05 per cent and 3.04 per cent respectively. The female agricultural labourers are lowest in Lahul & Spiti with 1.49 per cent. The female household industry workers are highest in Shimla with 1.79 per cent, followed by Kinnaur, Lahul & Spiti and Solan with 1.26 per cent, 0.96 per cent and 0.75 per cent respectively. The female household industry workers are lowest in Sirmaur with 0.72 per cent. We can conclude that female labour force participation in rural area was confined to primary sectors in five high per capita income districts of Himachal Pradesh, because on an average, 78.89 per cent of female workers were cultivators and agricultural labourers in rural areas.

**Table: 7** Distribution of Female Labour Force in Rural areas of High Per Capita Income Districts (Census 2011)

S. No.	High Per Capita Income Districts	Rural workers to Total Workers Percentage				
		Total Female Workers	Cultivators	Agricultural Labourers	Household Industry	Other Workers
1	Kinnaur	36.06	76.92	3.57	1.26	18.25
2	Lahul & Spiti	42.51	75.24	1.49	0.96	22.31
3	Shimla	34.40	75.28	7.39	1.79	15.54
4	Sirmaur	31.53	80.00	3.05	0.72	16.23
5	Solan	30.68	67.87	3.64	0.75	27.75

The distribution of female labour force participation in urban area of high per capita income districts of Himachal Pradesh is produced in the Table 8. According to census 2011, among the five high per capita income districts, the total female workers are highest in Shimla with 20.39 per cent, followed by Solan and Sirmaur with 16.70 per cent and 0.19 per cent respectively. Two districts namely Lahul-Spiti and Kinnaur had

no urban component. Further, for analyzing the trend of female labour force participation in work, the broad categories like cultivators, agricultural labourers, household industry and other workers have been taken into consideration. Among the broad categories of work in urban areas of high per capita income districts, there are highest female other workers with average of 94.55 per cent, followed by household workers and cultivators with average of 2.71 per cent and 2.01 per cent respectively. The lowest female workers are agricultural labourers with average of 0.73 per cent. The female other workers are highest in Solan with 95.57 per cent, followed by Sirmaur and Shimla with 94.32 and 93.7 per cent respectively. The female workers in household industry are highest in Shimla with 3.37 per cent, followed by Sirmaur and Solan with 2.84 per cent and 1.94 per cent respectively. The female cultivators are highest in Solan with 2.17 per cent, followed by Shimla and Sirmaur with 2.03 per cent, 1.82 per cent respectively. The female agricultural labourers are highest in Sirmaur with 1.02 per cent, followed by Shimla and Solan with 0.85 per cent and 0.32 per cent respectively. We can conclude that female labour force participation in urban area was confined to service sectors in five high per capita income districts of Himachal Pradesh.

**Table: 8** Distribution of Female Labour Force in Urban areas of High Per Capita Income Districts (Census 2011)

S. No.	High Per Capita Income Districts	Urban Workers to Total Workers Percentage				
		Total Female Workers	Cultivators	Agricultural Labourers	Household Industry	Other Workers
1	Kinnaur	NUP	NUP	NUP	NUP	NUP
2	Lahul & Spiti	NUP	NUP	NUP	NUP	NUP
3	Shimla	20.39	2.03	0.85	3.37	93.75
4	Sirmaur	0.19	1.82	1.02	2.84	94.32
5	Solan	16.70	2.17	0.32	1.94	95.57

**NUP:** It indicates no urban population

Now for the empirical testing of the statistical significance of female labour force participation between rural and urban areas of highly developed districts of Himachal Pradesh, we have bestowed the F-test and t-test by taking total female workers, cultivators, agricultural labourers, household industry workers and other workers as predictand variables. The interpreted result of the F-test and t-test was endured in the Table 9 below. The panel A

of the Table 9 represents the outcomes of F-test. The null hypothesis we have tested is that the mean difference between female labour force participation does not differ significantly between the rural and urban areas of highly developed districts. The null hypothesis of no mean difference in female labour force participation and its specific parameters are rejected in case of total female workers as the estimated F-statistics are statistically significant at 1% and 10% levels and accepted in cases of cultivators, agricultural labourers, household industry workers and other workers as calculated f-statistics not statistically significant. So, from these interpretations we can furnish that, there was significant mean difference between rural and urban areas of highly developed districts regarding total female workers, and there were no significant mean differences between rural and urban areas of high per capita income regarding cultivators, agricultural labourers, household industry and other workers. The panel B of the Table 9 represents the outcomes of t-test. The null hypothesis we have tested is that the mean difference between female labour force participation does not differ significantly between rural and urban areas of highly developed districts. The null hypothesis of no mean difference in female labour force participation and its specific parameters are rejected in case of cultivators as the estimated F-statistics are statistically significant at 1% and 10% levels, and accepted in case of total female workers, agricultural labourers, household industry and other workers as the estimated t-statistics are not statistically significant. So, from these interpretations we can furnish that there was statistical significant mean difference between rural and urban areas of highly developed districts regarding cultivators, and there were no significant mean differences between rural and urban areas of high per capita income regarding total female workers, agricultural labourers, household industry and other workers.

**Table: 9** Hypothesis testing differences in distribution of Female workers between rural and urban areas in High Per Capita Income Districts

Parameter	Total Female Workers	Cultivators	Agricultural Labourers	Household Industry	Other Workers
<b>Panel A: ANOVA Test</b>					
<b>Ho: the mean difference between female labour force participation does not differ significantly between the rural and urban areas of highly developed districts.</b>					
<b>Ha: the mean difference between female labour force participation differs significantly between the rural and urban areas of highly developed districts.</b>					
<b>F-statistics</b>	23.48*	31462.34	1921.05	6.82	0.98
<b>p-value</b>	0.00	3.03	8.12	0.04	0.49
<b>Inference</b>	H0: Rejected	H0: Accepted	H0: Accepted	H0: Accepted	H0: Accepted
<b>Panel B: ANOVA Test</b>					
<b>Ho: the mean difference between female labour force participation does not differ significantly between the rural and urban areas of highly developed districts.</b>					
<b>Ha: the mean difference between female labour force participation differs significantly between the rural and urban areas of highly developed districts.</b>					
<b>t-statistics</b>	2.69	3.09*	1.94	1.35	0.89
<b>p-value</b>	0.01	0.00	0.04	0.10	0.19
<b>Inference</b>	H0: Accepted	H0: Rejected	H0: Accepted	H0: Accepted	H0: Accepted

**Note:** \* Significant at 1% level

## VII. FEMALE LABOUR FORCE PARTICIPATION IN LOW PER CAPITA INCOME DISTRICTS

The distribution of female labour force participation in rural area of low per capita income districts of Himachal Pradesh is produced in the Table 10. According to census 2011, among the seven low per capita income districts, the total female workers are highest in Hamirpur with 41.62 per cent, followed by Kullu, Mandi, Bilaspur, Chamba and Kangra with 39.99 per cent, 35.41 per cent, 29.52 per cent, 27.87 per cent and 21.67 per cent respectively. The total female workers are lowest in Una with 21.33 per cent. Further, for analyzing the trend of female labour force participation in work, the broad categories like cultivators, agricultural labourers, household industry and other workers have been taken into consideration. Among the broad categories of work in rural areas of low per capita income districts, the highest female workers are cultivators with average of 64.99 per cent, followed by other workers and agricultural labourers with average of 30.44 per cent and 3.22 per cent respectively. The lowest female workers are in household industry with average of 1.34 per cent. The female cultivators are highest in Kullu with 83.11 per cent, followed by Mandi, Hamirpur, Bilaspur, Chamba and Una with 75.76 per cent, 74.63 per cent, 72.51 per cent, 63.66 per cent and 44.09 per cent respectively. The female cultivators are lowest in Kangra with 41.21 per cent. The female other workers are highest in Kangra with 52.42 per cent, followed by Una, Chamba, Bilaspur, Mandi and Hamirpur with 49.82 per cent, 30.65 per cent, 25.87 per cent, 21.47 per cent and 20.76 per cent respectively. The female other workers are lowest in Kullu with 12.11 per cent. The female agricultural labourers are highest in Una with 4.54 per cent, followed by Kangra, Kullu, Hamirpur, Chamba and Mandi with 4.1 per cent, 4.03 per cent, 3.75 per cent, 3.31 per cent and 1.9 per cent respectively. The female agricultural labourers are lowest in Bilaspur with 0.91 per cent. The female household industry workers are highest in Chamba with 2.38 per cent, followed by Kangra, Una, Mandi, Hamirpur, Mandi and Kullu with 2.27 per cent, 1.55 per cent, 0.88 per cent, 0.85 per cent and 0.74 per cent respectively. The female household industry workers are lowest in Bilaspur with 0.72 per cent. We can conclude that female labour force participation in rural area was confined to primary sectors in seven low per capita income districts of Himachal Pradesh, because on an average, 68.21 per cent of female workers were cultivators and agricultural labourers in rural areas.

**Table: 10** Distribution of Female Labour Force in Rural areas of Low Per Capita Income Districts (Census 2011)

S. No.	Low Per Capita Income Districts	Rural Workers to Total Workers Percentage				
		Total Female Workers	Cultivators	Agricultural Labourers	Household Industry	Other Workers
1	Bilaspur	29.52	72.51	0.91	0.72	25.87
2	Chamba	27.87	63.66	3.31	2.38	30.65
3	Hamirpur	41.62	74.63	3.75	0.85	20.76
4	Kangra	21.67	41.21	4.10	2.27	52.42
5	Kullu	39.99	83.11	4.03	0.74	12.11
6	Mandi	35.41	75.76	1.90	0.88	21.47
7	Una	21.33	44.09	4.54	1.55	49.82

The distribution of female labour force participation in urban area of low per capita income districts of Himachal Pradesh is produced in the Table 11. According to census 2011, among the seven low per capita income districts, the total female workers are highest in Mandi with 25.4 per cent, followed by Bilaspur, Kullu, Hamirpur, Kangra and Una with 23.25 per cent, 22.4 per cent, 21.48 per cent, 22.31 per cent and 20.37 per cent respectively. The total female workers are lowest in Chamba with 19.12 per cent. Further, for analyzing the trend of female labour force participation in work, the broad categories like cultivators, agricultural labourers, household industry and other workers have been taken into consideration. Among the broad categories of work in urban areas of low per capita income districts, the female other workers are highest with average of 92.19 per cent, followed by cultivators and agricultural labourers with average of 5.13 per cent and 1.46 per cent respectively. The lowest female workers are in household industry with average of 1.22 per cent. The female other workers are highest in Chamba with 98.79 per cent, followed by Hamirpur, Mandi, Kangra, Kullu and Bilaspur with 96.38 per cent, 95.21 per cent, 94.29 per cent, 89.44 per cent and 85.94 per cent respectively. The female other workers are lowest in Una with 85.29 per cent. The female cultivators are highest in Bilaspur with 12.98 per cent, followed by Una, Kullu, Mandi, Hamirpur and Kangra with 10.74 per cent, 5.5 per cent, 2.89 per cent, 2.27 per cent and 1.11 per cent respectively. The female cultivators are lowest in

Chamba with 0.45 per cent. The female agricultural labourers are highest in Una with 3.2 per cent, followed by Kangra, Kullu, Hamirpur, Mandi and Bilaspur with 2.78 per cent, 2.75 per cent, 0.49 per cent, 0.46 per cent and 0.31 per cent respectively. The female agricultural labourers are lowest in Chamba with 0.22 per cent. The female household industry workers are highest in Kullu with 2.32 per cent, followed by Kangra, Mandi, Hamirpur, Bilaspur and Una with 1.82 per cent, 1.45 per cent, 0.86 per cent, 0.77 per cent and 0.77 per cent respectively. The female household industry workers are lowest in Chamba with 0.54 per cent. We can conclude that female labour force participation in rural area was confined to services sectors in seven low per capita income districts of Himachal Pradesh.

**Table: 11** Distribution of Female Labour Force in Urban areas of Low Per Capita Income Districts (Census 2011)

S. No.		Low Per Capita Income Districts	Urban Workers to Total Workers Percentage			
		Total Female Workers	Cultivators	Agricultural Labourers	Household Industry	Other Workers
1	Bilaspur	23.25	12.98	0.31	0.77	85.94
2	Chamba	19.12	0.45	0.22	0.54	98.79
3	Hamirpur	21.48	2.27	0.49	0.86	96.38
4	Kangra	22.31	1.11	2.78	1.82	94.29
5	Kullu	22.40	5.50	2.75	2.32	89.44
6	Mandi	25.40	2.89	0.46	1.45	95.21
7	Una	20.37	10.74	3.20	0.77	85.29

Now for the empirical testing of the statistical significance of female labour force participation between rural and urban areas of less developed districts of Himachal Pradesh, we have bestowed the F-test and t-test by taking total female workers, cultivators, agricultural labourers, household industry workers and other workers as predictand variables. The interpreted result of the F-test and t-test was endured in the Table 12 below. The panel A of the Table 12 represents the outcomes of F-test. The null hypothesis we have tested is that the mean difference between female labour force participation does not differ significantly between the rural and urban areas of less developed districts. The null hypothesis of no mean difference in female labour force participation and its specific parameters are rejected in case

of other female workers as the estimated F-statistics are statistically significant at 1% and 10% levels and accepted in cases of cultivators, agricultural labourers, household industry workers and total female workers as calculated f-statistics not statistically significant. So, from these interpretations we can furnish that, there was significant mean difference between rural and urban areas of less developed districts regarding other female workers, and there were no significant mean differences between rural and urban areas of less per capita income regarding cultivators, agricultural labourers, household industry and total female workers. The panel B of the Table 12 represents the outcomes of t-test. The null hypothesis we have tested is that the mean difference between female labour force participation does not differ significantly between rural and urban areas of less developed districts. The null hypothesis of no mean difference in female labour force participation and its specific parameters are rejected in all the cases i.e. of total female workers, cultivators, agricultural labourers, household industry and other workers as the estimated F-statistics are statistically significant at 1% and 10% levels. So, from these interpretations we can furnish that there were significant mean differences between rural and urban areas of less per capita income regarding total female workers, cultivators, agricultural labourers, household industry and other workers.

**Table: 12** Hypothesis testing differences in distribution of Female workers between rural and urban areas in Low per Capita Income Districts.

Parameter	Total Female Workers	Cultivators	Agricultural Labourers	Household Industry	Other Workers
<b>Panel A:ANOVA Test</b>					
<b>Ho: the mean difference between female labour force participation does not differ significantly between the rural and urban areas of less developed districts.</b>					
<b>Ha: the mean difference between female labour force participation differs significantly between rural and urban areas of less developed districts.</b>					
<b>F-statistics</b>	259.27	39952.29	227.79	0.42	35.39*
<b>p-value</b>	5.64	1.57	8.29	0.16	0.00
<b>Inference</b>	Accepted	Accepted	Accepted	Accepted	Rejected
<b>Panel B:ANOVA Test</b>					
<b>Ho: the mean difference between female labour force participation does not differ significantly between rural and urban areas of less developed districts.</b>					
<b>Ha: the mean difference between female labour force participation differs significantly between rural and urban areas of less developed districts.</b>					
<b>t-statistics</b>	4.95*	4.11*	4.58*	3.94*	3.24*
<b>p-value</b>	0.00	0.00	0.00	0.00	0.00
<b>Inference</b>	Rejected	Rejected	Rejected	Rejected	Rejected

**Note:** \* Significant at 1% level

## VIII. CONCLUSION

The Percentage of female workers to total worker has varied considerably across the various districts of Himachal Pradesh. According to census 2011, among the five high per capita income districts, the total female workers are highest in Lahul & Spiti with 42.21 per cent, followed by Kinnaur, Shimla and Sirmaur with 36.06 per cent, 34.40 per cent and 31.53 per cent respectively. The total female workers are lowest in Solan with 30.68 per cent. Further, for analyzing the trend of female labour force participation in work, the broad categories like cultivators, agricultural labourers, household industry and other workers have been taken into consideration. Among the broad categories of work in rural areas of high per capita income districts, the highest female workers are cultivators with average of 75.02 per cent, followed by other workers and agricultural labourers with average of 20.02 per cent and 3.83 per cent respectively. The lowest female workers are in household industry with average of 75.02 per cent. The female cultivators are highest in Sirmaur with 80 per cent, followed by Kinnaur, Shimla and Lahul & Spiti with 76.92 per cent, 75.28 per cent and 75.24 per cent respectively. The female cultivators are lowest in Solan with 67.87 per cent. The female other workers are highest in Solan with 27.75 per cent, followed by Lahul & Spiti, Kinnaur and Sirmaur with 22.31 per cent, 18.25 per cent and 16.23 per cent respectively. The female other workers are lowest in Shimla with 15.54 per cent. The female agricultural labourers are highest in Shimla with 7.39 per cent, followed by Kinnaur, Sirmaur and Solan with 3.57 per cent, 3.05 per cent and 3.04 per cent respectively. The female agricultural labourers are lowest in Lahul & Spiti with 1.49 per cent. The female household industry workers are highest in Shimla with 1.79 per cent, followed by Kinnaur, Lahul & Spiti and Solan with 1.26 per cent, 0.96 per cent and 0.75 per cent respectively. The female household industry workers are lowest in Sirmaur with 0.72 per cent. We can conclude that female labour force participation in rural area was confined to primary sectors in five high per capita income districts of Himachal Pradesh, because on an average, 78.89 per cent of female workers were cultivators and agricultural labourers in rural areas. According to census 2011, among the five high per capita income districts, the total female workers are highest in Shimla with 20.39 per cent, followed by Solan and Sirmaur with 16.70 per cent and 0.19 per cent respectively. Two districts namely Lahul-Spiti and Kinnaur had no urban component. Further, for analyzing the trend of female labour force participation in work, the broad categories

like cultivators, agricultural labourers, household industry and other workers have been taken into consideration. Among the broad categories of work in urban areas of high per capita income districts, there are highest female other workers with average of 94.55 per cent, followed by household workers and cultivators with average of 2.71 per cent and 2.01 per cent respectively. The lowest female workers are agricultural labourers with average of 0.73 per cent. The female other workers are highest in Solan with 95.57 per cent, followed by Sirmaur and Shimla with 94.32 and 93.7 per cent respectively. The female workers in household industry are highest in Shimla with 3.37 per cent, followed by Sirmaur and Solan with 2.84 per cent and 1.94 per cent respectively. The female cultivators are highest in Solan with 2.17 per cent, followed by Shimla and Sirmaur with 2.03 per cent, 1.82 per cent respectively. The female agricultural labourers are highest in Sirmaur with 1.02 per cent, followed by Shimla and Solan with 0.85 per cent and 0.32 per cent respectively. We can conclude that female labour force participation in urban area was confined to service sectors in five high per capita income districts of Himachal Pradesh. There was significant mean difference between rural and urban areas of highly developed districts regarding total female workers, and there were no significant mean differences between rural and urban areas of high per capita income regarding cultivators, agricultural labourers, household industry and other workers. We can furnish that there was statistical significant mean difference between rural and urban areas of highly developed districts regarding cultivators, and there were no significant mean differences between rural and urban areas of high per capita income regarding total female workers, agricultural labourers, household industry and other workers.

According to census 2011, among the seven low per capita income districts, the total female workers are highest in Hamirpur with 41.62 per cent, followed by Kullu, Mandi, Bilaspur, Chamba and Kangra with 39.99 per cent, 35.41 per cent, 29.52 per cent, 27.87 per cent and 21.67 per cent respectively. The total female workers are lowest in Una with 21.33 per cent. Further, for analyzing the trend of female labour force participation in work, the broad categories like cultivators, agricultural labourers, household industry and other workers have been taken into consideration. Among the broad categories of work in rural areas of low per capita income districts, the highest female workers are cultivators with average of 64.99 per cent, followed by other workers and agricultural labourers with average of 30.44 per cent and 3.22 per

cent respectively. The lowest female workers are in household industry with average of 1.34 per cent. The female cultivators are highest in Kullu with 83.11 per cent, followed by Mandi, Hamirpur, Bilaspur, Chamba and Una with 75.76 per cent, 74.63 per cent, 72.51 per cent, 63.66 per cent and 44.09 per cent respectively. The female cultivators are lowest in Kangra with 41.21 per cent. The female other workers are highest in Kangra with 52.42 per cent, followed by Una, Chamba, Bilaspur, Mandi and Hamirpur with 49.82 per cent, 30.65 per cent, 25.87 per cent, 21.47 per cent and 20.76 per cent respectively. The female other workers are lowest in Kullu with 12.11 per cent. The female agricultural labourers are highest in Una with 4.54 per cent, followed by Kangra, Kullu, Hamirpur, Chamba and Mandi with 4.1 per cent, 4.03 per cent, 3.75 per cent, 3.31 per cent and 1.9 per cent respectively. The female agricultural labourers are lowest in Bilaspur with 0.91 per cent. The female household industry workers are highest in Chamba with 2.38 per cent, followed by Kangra, Una, Mandi, Hamirpur, Mandi and Kullu with 2.27 per cent, 1.55 per cent, 0.88 per cent, 0.85 per cent and 0.74 per cent respectively. The female household industry workers are lowest in Bilaspur with 0.72 per cent. We can conclude that female labour force participation in rural area was confined to primary sectors in seven low per capita income districts of Himachal Pradesh, because on an average, 68.21 per cent of female workers were cultivators and agricultural labourers in rural areas. According to census 2011, among the seven low per capita income districts, the total female workers are highest in Mandi with 25.4 per cent, followed by Bilaspur, Kullu, Hamirpur, Kangra and Una with 23.25 per cent, 22.4 per cent, 21.48 per cent, 22.31 per cent and 20.37 per cent respectively. The total female workers are lowest in Chamba with 19.12 per cent. Further, for analyzing the trend of female labour force participation in work, the broad categories like cultivators, agricultural labourers, household industry and other workers have been taken into consideration. Among the broad categories of work in urban areas of low per capita income districts, the female other workers are highest with average of 92.19 per cent, followed by cultivators and agricultural labourers with average of 5.13 per cent and 1.46 per cent respectively. The lowest female workers are in household industry with average of 1.22 per cent. The female other workers are highest in Chamba with 98.79 per cent, followed by Hamirpur, Mandi, Kangra, Kullu and Bilaspur with 96.38 per cent, 95.21 per cent, 94.29 per cent, 89.44 per cent and 85.94 per cent respectively. The female other workers are lowest in Una with 85.29 per cent. The female cultivators are highest in

Bilaspur with 12.98 per cent, followed by Una, Kullu, Mandi, Hamirpur and Kangra with 10.74 per cent, 5.5 per cent, 2.89 per cent, 2.27 per cent and 1.11 per cent respectively. The female cultivators are lowest in Chamba with 0.45 per cent. The female agricultural labourers are highest in Una with 3.2 per cent, followed by Kangra, Kullu, Hamirpur, Mandi and Bilaspur with 2.78 per cent, 2.75 per cent, and 0.49 per cent, 0.46 per cent and 0.31 per cent respectively. The female agricultural labourers are lowest in Chamba with 0.22 per cent. The female household industry workers are highest in Kullu with 2.32 per cent, followed by Kangra, Mandi, Hamirpur, Bilaspur and Una with 1.82 per cent, 1.45 per cent, 0.86 per cent, 0.77 per cent and 0.77 per cent respectively. The female household industry workers are lowest in Chamba with 0.54 per cent. We can conclude that female labour force participation in rural area was confined to services sectors in seven low per capita income districts of Himachal Pradesh. So, from these interpretations we can furnish that, there was significant mean difference between rural and urban areas of less developed districts regarding other female workers, and there were no significant mean differences between rural and urban areas of less per capita income regarding cultivators, agricultural labourers, household industry and total female workers. So, from these interpretations we can furnish that there were significant mean differences between rural and urban areas of less per capita income regarding total female workers, cultivators, agricultural labourers, household industry and other workers.

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