

## **A STATE LEVEL ANALYSIS OF GENDER OCCUPATIONAL SEGREGATION IN INDIA**

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### **ABSTRACT**

Using census data for year 2001 and 2011, this paper analyses Gender occupational segregation in India separately for Main and marginal workers in rural and urban sectors. The level of segregation in this paper is measured using Dissimilarity (ID), Karmel and MacLachlan (IP) and Moir and Selby-Smith (WE) indices. The states and union territories are ranked according to the values of indices. Our findings indicate that occupational segregation in India has decreased marginally during 2001 to 2011 among main workers but has increased among marginal workers in both rural and urban sector. However, segregation among main workers is higher in Urban sector as compared to rural sector. ID and IP indices show that segregation is higher among marginal workers than main workers.

**Keywords:** Occupational segregation, Index of Dissimilarity, Main workers and Urban sector

### **1. INTRODUCTION**

Right from the sixth five-year plan in 1980 employment has always been an area of concern in India. Recently, it became a burning issue in the light of high unemployment rates and the widely circulated hypothesis of jobless growth. It is believed that economic growth creates more jobs for women. However, in India despite the decade of 2000s, observing unprecedented rapid GDP growth, no growth could be seen in female employment. In fact, total female employment actually declined at an annual rate of 1.72 percent between 2004-05 and 2009-10, and female labour force participation fell to 24 percent from 31 percent (NSSO; 2011). This decline led to extensive research on different aspects of female employment. The gender occupational segregation is also one of the important aspect for analysing female's employment.

Gender occupational segregation deals with the tendency of women and men to work in different occupations (Anker;1998). It can take two main forms: horizontal and vertical segregation. In horizontal segregation employment share of women in certain occupations is higher than their share in others. Whereas vertical segregation occurs when men and women work in the same occupation, but men get better pay and higher status, not due to their skills or experience but

only because of their gender. In India, females constitute 48 %<sup>1</sup> of the population (Census India; 2011) but the Labour Force Participation Rate for females is only 27%. Total female employed as a Percentage of female employment is 56.9 % in agriculture, 17.7 % in industry and 25.4 % in services (The World Bank; 2016). This over-representation of women in housework and agricultural occupations and under-representation in services with concentration particularly in nursing, anganwadi, preschool and domestic help makes the situation even worse, given that women's work participation are quite low in India compared to most other parts of developing worlds.

This paper attempts to analyse Gender Occupational Segregation in India at both Aggregate and disaggregate level. The paper is divided into five sections. Section 2 gives a brief review of literature. Section 3 discusses methodology. Section 4 examines the trend and extent of Gender Occupational Segregation in India and the final section concludes the paper.

## **2. REVIEW OF LITERATURE**

Gender occupational segregation is omnipresent. However, the highest level of segregation exists in Middle East, North Africa; average in OECD countries, and the lowest level is found in Asia pacific countries (Anker; 1998). In India, level of segregation is lower in comparison to other countries (Richard Anker; 1998 and Uppal; 2008). It is lower among educated persons and the permanent workers (Chattopadhyay et al; 2013) and higher in urban sectors as compared to rural sectors (Agarwal and Agarwal; 2015). As far as Segregation among castes is concerned it is higher among scheduled caste and scheduled tribes (Agarwal; 2016).

Various alternative approaches have appeared in literature for segregation which include neoclassical theories of "statistical discrimination" (Arrow;1973), "taste for discrimination" (Becker; 1971), 'gender differential investments in human capital endowments' (Polachek ;1981), feminist theory of "discriminatory practices inherited from the past as well as by the bargaining power exercised in the present" (Bergmann;1974, Treiman and Hartmann;1981, Figart; 2005), Pollution hypothesis (Goldin; 2002) and the dual labour market hypotheses ( Barron and Norris; 1976) . The reasons for segregation put forth are requirement for special abilities (England et al.;1982), sex-stereotypes (Reskin and Bielby; 2005,) women's own preference for certain jobs (Rosen; 1986), prejudices of employers (Becker; 1957) and formal and legal barriers for women (Rubery, 1978; Hartman, 1979). In general, when women do work, they tend to be engaged in low paid and low productivity jobs (ILO 2011). The efforts to integrate occupations have never yielded desired results and inequality in wage and working conditions is persistent. (Crompton and Sanderson; 1990).

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<sup>1</sup> To be precise women constitute 48.53 % of population.

### 3. METHODOLOGY

In this paper to study the occupational segregation in India at state and sectoral level we have used Census of India<sup>2</sup> data for the year 2001 and 2011. The National Classification of Occupations (NCO) 2004 is used to classify Occupations. NCO 2004 categorises occupations in 10 divisions which include (1) Legislators, Senior Officials and Managers, (2) Professionals, (3) Technicians and Associate Professionals, (4) Clerks, (5) Service Workers and Shop & Market Sales Workers, (6) Skilled Agricultural and Fishery Workers, (7) Craft and Related Trades Workers, (8) Plant and Machine Operators and Assemblers, (9) Elementary Occupations and (x) Workers Not Classified by Occupations. Using Census data based on NCO 2004 for India we have calculated following Indices of Segregation.

#### 3.1 Duncan's Index of Dissimilarity (ID)

The ID measures the sum of the absolute difference in women's and men's distribution over occupations. It can be written as:

$$ID = \frac{1}{2} \sum \left| \frac{F_i}{F} - \frac{M_i}{M} \right|$$

Where  $F_i$  and  $M_i$  are the number of females and males respectively, in the  $i^{\text{th}}$  occupation and  $F$  and  $M$  are the total number of females and males, respectively, in the workforce. ID-index equals 0 in case of complete equality (where women's employment is distributed similarly to men's across occupations) and 1 in the case of complete dissimilarity (where women and men are in totally different occupational groups).

#### 3.2 Karmel and MacLachlan Index (IP)

The KM index usually referred as IP index is defined as

$$IP = \frac{1}{T} \sum |(1-a) M_i - a F_i|$$

where  $T$  represents total employment,  $F_i$  and  $M_i$  are defined as female and male employment in the  $i^{\text{th}}$  occupation, respectively; and  $a$  is The proportion of males in overall workforce.

The IP-index can be interpreted as the proportion of the workforce which would need to change jobs in order to remove segregation - considering the female and male shares of occupations. The IP-index equals 0 in case of complete equality, and twice the male share multiplied by the female

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<sup>2</sup> Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India

share of employment ( $2 \cdot M/N \cdot F/N$ ) in the case of complete dissimilarity. As the function  $M/N \cdot F/N$  (which equals  $(1 - F/N) \cdot F/N$ ) has its maximum for  $M/N = F/N = 1/2$ , the maximum for the IP-index is  $1/2$ .

### 3.3 The Moir and Selby-Smith segregation indicator (MSS) or WE<sup>3</sup> Index

The MSS-index measures the sum of the absolute difference of the proportion of women and the proportion of employed over occupations. The MSS-index equals 0 in case of complete equality, and twice the male share of employment ( $2 \cdot M/N$ ) in the case of complete dissimilarity

$$WE = \sum \left| \frac{F_i}{F} - \frac{N_i}{N} \right|$$

Where  $F_i$  and  $N_i$  are defined as female and total person in employment in the  $i^{\text{th}}$  occupation and  $F$  and  $N$  are the total number of females and persons, respectively, in the workforce.

## 4. TREND AND EXTENT OF OCCUPATIONAL SEGREGATION IN INDIA

To show how segregation has developed in India and different states during 2001 to 2011, we have calculated ID, WE and IP indices for both Main workers and Marginal Workers working in both rural and urban sector. The results are presented in Table -1 to Table-6.

Table-1 shows indices of segregation for main workers in India and states for combined (rural +urban) sector along with their ranks.

**Table 1: Occupational Segregation among Main Workers in India: Aggregate Level**

State / Union Territory	2001						2011					
	ID	Rank	WE	Rank	IP	Rank	ID	Rank	WE	Rank	IP	Rank
Andaman & Nicobar islands	30.92	21	53.12	23	7.48	18	31.13	26	51.04	27	9.19	24
Andhra Pradesh	24.20	11	37.95	9	8.19	23	23.45	10	35.79	11	8.48	17
Arunachal Pradesh	27.08	16	44.39	14	8.00	22	23.15	9	35.08	10	8.50	18
Assam	32.50	25	52.47	22	10.11	29	32.32	30	50.52	26	11.04	33
Bihar	27.65	17	49.12	19	5.49	4	42.26	35	68.70	35	12.86	35
Chandigarh	31.71	24	53.41	24	8.43	24	26.03	16	42.78	17	7.62	13
Chhattisgarh	16.47	1	27.30	2	4.68	1	18.55	2	29.57	2	6.00	5
Dadra & Nagar Haveli	26.73	15	47.91	17	4.96	2	32.33	31	57.03	31	6.73	9
Daman & Diu	34.07	28	60.16	30	7.05	13	31.46	27	56.70	30	5.61	1
Goa	32.95	27	51.82	20	11.07	30	31.11	25	47.31	20	11.34	34

<sup>33</sup> WE stands for Women and Employment. This Index was introduced in a OECD report published in 1980 under this title

Gujarat	44.85	34	75.08	34	12.24	33	35.74	33	60.91	34	9.00	22
Haryana	44.10	33	73.19	33	12.46	34	31.69	28	53.47	28	8.36	16
Himachal Pradesh	31.04	22	54.03	26	7.00	12	29.51	22	48.23	21	8.81	21
Jammu & KASHMIR	38.36	32	66.17	32	9.10	27	28.47	19	49.77	22	6.27	7
Jharkhand	23.41	8	40.84	11	5.22	3	20.60	5	34.10	8	5.88	3
Karnataka	22.24	4	34.43	6	7.78	21	20.24	4	30.32	3	7.61	12
Kerala	22.64	6	35.76	7	7.52	19	27.83	17	43.05	18	9.75	25
Lakshadweep	27.87	18	48.97	18	5.95	6	34.93	32	59.09	32	9.12	23
Madhya Pradesh	23.77	10	39.71	10	6.55	9	23.57	11	37.77	12	7.50	11
Maharashtra	26.58	14	44.91	15	6.97	11	25.85	15	41.33	15	8.29	15
Manipur	23.42	9	33.03	5	9.74	28	23.93	12	32.12	6	10.57	31
Meghalaya	22.44	5	32.32	4	9.05	26	22.62	7	30.96	4	9.78	26
Mizoram	21.27	3	30.24	3	8.75	25	24.42	13	32.76	7	10.79	32
Nagaland	35.05	30	55.55	28	11.53	32	25.75	14	38.21	14	9.86	27
NCT of Delhi	31.10	23	54.74	27	6.57	10	29.19	20	50.21	24	7.03	10
Orissa	24.43	12	41.39	12	6.32	7	21.03	6	34.63	9	6.12	6
Pondicherry	23.32	7	37.56	8	7.31	17	29.43	21	45.84	19	10.14	29
Punjab	48.28	35	75.72	35	16.34	35	35.93	34	59.74	33	10.07	28
Rajasthan	32.84	26	57.36	29	7.27	16	32.13	29	54.12	29	8.54	19
Sikkim	34.23	29	53.84	25	11.49	31	27.91	18	42.04	16	10.38	30
Tamil Nadu	17.74	2	27.18	1	6.36	8	15.88	1	23.82	1	5.95	4
Tripura	28.04	19	47.10	16	7.55	20	23.00	8	38.12	13	6.53	8
Uttar Pradesh	29.26	20	51.91	21	5.86	5	30.33	24	50.00	23	8.79	20
Uttaranchal	35.66	31	63.16	31	7.22	15	30.01	23	50.50	25	8.01	14
West Bengal	25.51	13	42.39	13	7.18	14	19.59	3	32.10	5	5.79	2
<b>INDIA</b>	<b>22.42</b>		<b>37.15</b>		<b>6.37</b>		<b>19.72</b>		<b>31.67</b>		<b>6.24</b>	

Source: Author's calculations based on census data

It is clear from the table that occupational segregation among main workers at all India level has decreased between 2001 and 2011. However, there has been increase in segregation in Andaman and Nicobar Islands, Bihar, Kerala, Lakshadweep, Meghalaya, Mizoram and Pondicherry. The ranking of states according to value of different indices shows that there have been only slight changes in the position of top and bottom states. In 2001, Punjab Gujrat and Haryana had highest values for all the three segregation indices whereas Tamil Nadu, Chhattisgarh and Mizoram had lowest value according to ID and We Index and Chhattisgarh, Dadra and Nagar Haveli and Jharkhand had lowest value according to IP index. In 2011 the states with highest Gender occupational segregation were Bihar, Punjab, Gujrat and Haryana.

When we look at the values of indices in rural sector (Table-2) we find that segregation has declined among main workers in rural sector. The lowest segregation in 2001 is witnessed in Chhattisgarh and Tamil Nadu and the highest segregation in Punjab, Gujrat and Haryana. The situation slightly changed in 2011 where, Tamil Nadu had lowest value and Gujrat had the highest of all the three indices.

**Table 2: Occupational Segregation among Rural Main Workers in India**

State /	2001						2011					
	ID	Rank	WE	Rank	KM	Rank	ID	Rank	WE	Rank	IP	Rank
Andaman & Nicobar islands	25.98	16	44.96	19	6.06	9	29.43	21	49.12	23	8.12	14
Andhra Pradesh	24.57	11	36.25	9	9.51	26	24.87	9	36.16	9	9.87	21
Arunachal Pradesh	25.66	14	42.11	13	7.55	18	20.93	5	31.25	4	7.92	11
Assam	28.57	22	44.79	18	9.68	28	31.38	26	47.65	19	11.48	30
Bihar	27.94	21	48.96	23	6.06	8	43.45	34	68.20	32	14.68	34
Chandigarh	31.76	25	58.22	28	4.87	2	28.70	18	50.81	25	5.83	2
Chhattisgarh	12.39	1	20.23	1	3.71	1	20.36	3	31.74	5	7.00	7
Dadra & Nagar Haveli	24.94	12	44.21	17	5.03	4	28.61	17	48.75	21	7.22	8
Daman & Diu	33.60	29	61.80	29	4.97	3	34.36	30	58.99	30	8.35	16
Goa	27.94	20	43.77	16	9.48	25	30.17	23	46.57	18	10.63	25
Gujarat	51.96	33	77.00	33	19.95	34	45.37	35	70.92	35	15.49	35
Haryana	52.03	34	81.63	35	17.60	33	40.89	32	68.57	33	11.07	28
Himachal Pradesh	30.58	24	53.75	26	6.52	14	31.95	27	52.57	27	9.32	18
Jammu & Kashmir	38.00	31	63.65	30	10.34	29	30.41	24	53.15	28	6.71	6
Jharkhand	25.95	15	43.65	15	6.94	15	23.78	8	37.29	10	8.05	13
Karnataka	19.71	4	28.79	3	7.77	20	20.50	4	29.47	3	8.29	15
Kerala	21.17	7	33.24	6	7.15	17	25.94	13	39.69	13	9.32	19
Lakshadweep	27.26	19	48.21	22	5.59	6	29.09	19	49.10	22	7.66	9
Madhya Pradesh	23.43	10	37.34	10	7.59	19	26.54	15	40.04	14	9.84	20
Maharashtra	21.79	8	35.84	8	6.37	12	31.26	25	48.58	20	10.83	26
Manipur	28.88	23	42.35	14	11.30	32	27.43	16	37.62	11	11.82	31
Meghalaya	20.02	5	29.07	4	7.96	23	26.30	14	35.91	8	11.39	29
Mizoram	19.31	3	30.78	5	6.25	11	19.36	2	28.03	2	7.74	10
Nagaland	31.93	26	50.05	24	10.82	31	25.61	11	37.86	12	9.88	23
NCT of Delhi	26.92	18	48.13	21	5.10	5	29.18	20	51.27	26	6.22	4
Orissa	23.14	9	38.45	11	6.50	13	21.97	7	35.70	7	6.70	5
Pondicherry	20.58	6	33.50	7	6.23	10	25.61	12	40.64	15	8.40	17
Punjab	55.75	35	77.27	34	23.72	35	42.69	33	68.94	34	13.27	33

Rajasthan	37.89	30	64.63	31	9.51	27	40.06	31	65.70	31	11.83	32
Sikkim	32.63	27	51.84	25	10.66	30	29.44	22	45.00	17	10.60	24
Tamil Nadu	14.37	2	20.82	2	5.74	7	14.62	1	21.22	1	5.82	1
Tripura	26.69	17	45.16	20	6.95	16	21.26	6	35.11	6	6.12	3
Uttar Pradesh	33.11	28	57.19	27	7.79	21	32.23	28	50.41	24	10.99	27
Uttaranchal	38.38	32	67.13	32	8.42	24	33.53	29	55.03	29	9.87	22
West Bengal	25.16	13	40.44	12	7.94	22	25.38	10	40.83	16	7.98	12
<b>India</b>	<b>22.10</b>		<b>35.20</b>		<b>7.17</b>		<b>22.03</b>		<b>34.20</b>		<b>7.66</b>	

Source: Author's calculations based on census data

Table-3 presents Gender Occupational segregation among main workers in urban sector of India. The segregation in urban sector is higher than the rural sector according to ID and WE indices. These indices show that in 2001 lowest segregation was in Manipur, Tamilnadu, Mizoram and Karnataka and highest was in Jammu Kashmir, Nagaland and Assam. According to IP index in 2001 segregation in urban sector was lowest s in Bihar, Uttar Pradesh and Jharkhand and highest Sikkim, Nagaland and Goa.

In 2011, The lowest segregation is seen in West Bengal, Tamil Nadu and Jharkhand and highest is seen in Bihar, Dadra & Nagar Haveli and Lakshadweep. Though in urban sector also there has been decline in the value of indices at all India level Bihar Chhattisgarh, Kerala, Lakshadweep, Maharashtra and Manipur have experienced increase in the values of indices.

**Table 3: Occupational Segregation among Urban Main Workers in India**

State / district	2001						2011					
	ID	Rank	WE	Rank	KM	Rank	ID	Rank	WE	Rank	IP	Rank
Andaman & Nicobar islands	36.83	30	62.66	30	9.35	29	32.08	31	51.59	27	10.10	28
Andhra Pradesh	23.96	5	40.01	6	6.61	11	22.36	7	35.26	9	7.46	15
Arunachal Pradesh	29.34	15	48.02	13	8.72	23	25.62	10	39.51	10	9.04	24
Assam	38.81	32	67.44	34	8.84	24	34.47	32	57.73	32	9.39	25
Bihar	26.38	10	48.25	14	4.12	1	34.51	33	59.89	33	7.93	19
Chandigarh	31.92	20	53.16	19	8.89	25	25.92	11	42.51	15	7.65	17
Chhattisgarh	27.54	12	46.21	11	7.44	19	28.67	22	46.32	21	8.91	23
Dadra & Nagar Haveli	35.54	28	65.05	32	5.52	5	35.39	34	63.60	35	6.46	7
Daman & Diu	33.02	25	52.46	16	10.78	31	31.36	27	57.07	31	5.13	3
Goa	37.29	31	58.80	27	12.44	33	31.41	28	47.44	24	11.61	34
Gujarat	35.68	29	64.02	31	6.59	10	31.02	26	54.56	29	6.58	8
Haryana	32.39	24	56.86	24	6.95	15	26.61	15	45.09	17	6.89	11
Himachal Pradesh	35.35	27	59.67	28	9.31	28	26.17	13	41.75	13	8.45	21

<b>Jammu &amp; Kashmir</b>	40.57	33	72.43	35	7.78	21	31.63	29	55.29	30	6.96	12
<b>Jharkhand</b>	31.25	17	56.65	23	5.30	3	20.06	3	34.82	7	4.60	1
<b>Karnataka</b>	22.74	3	36.63	4	7.13	16	21.29	6	32.64	4	7.62	16
<b>Kerala</b>	28.38	13	45.41	10	9.09	26	29.63	24	46.27	20	10.14	29
<b>Lakshadweep</b>	32.25	23	56.30	22	7.16	17	36.68	35	62.07	34	9.55	27
<b>Madhya Pradesh</b>	25.27	7	43.40	9	6.13	8	21.26	5	35.03	8	6.17	5
<b>Maharashtra</b>	30.98	16	52.88	17	7.75	20	27.05	16	43.61	16	8.45	22
<b>Manipur</b>	15.22	1	20.21	1	6.79	13	20.84	4	27.24	1	9.44	26
<b>Meghalaya</b>	26.69	11	38.02	5	10.94	32	24.57	9	33.70	5	10.59	30
<b>Mizoram</b>	23.60	4	32.38	3	10.16	30	26.13	12	34.39	6	11.76	35
<b>Nagaland</b>	41.69	35	67.18	33	13.05	34	28.36	21	42.22	14	10.79	32
<b>NCT of Delhi</b>	31.58	18	55.53	21	6.71	12	29.23	23	50.26	26	7.06	13
<b>Orissa</b>	31.63	19	55.48	20	6.82	14	27.58	18	46.35	22	7.41	14
<b>Pondicherry</b>	25.58	8	41.08	7	8.09	22	30.52	25	47.29	23	10.65	31
<b>Punjab</b>	33.11	26	57.85	26	7.31	18	31.89	30	54.14	28	8.18	20
<b>Rajasthan</b>	28.54	14	51.13	15	5.33	4	23.08	8	39.88	11	5.42	4
<b>Sikkim</b>	40.70	34	61.72	29	14.92	35	28.22	20	41.61	12	10.93	33
<b>Tamil Nadu</b>	19.63	2	31.00	2	6.53	9	18.26	2	27.83	2	6.62	9
<b>Tripura</b>	32.05	22	52.99	18	9.18	27	27.55	17	45.85	19	7.69	18
<b>Uttar Pradesh</b>	26.03	9	47.41	12	4.24	2	28.14	19	48.61	25	6.63	10
<b>Uttaranchal</b>	31.96	21	57.33	25	5.92	6	26.41	14	45.41	18	6.37	6
<b>West Bengal</b>	25.06	6	43.06	8	6.06	7	18.20	1	30.25	3	5.11	2
<b>India</b>	<b>23.70</b>		<b>40.57</b>		<b>5.84</b>		<b>22.08</b>		<b>36.25</b>		<b>6.50</b>	

Source: Author's calculations based on census data

Table-4 reveals that among marginal workers Delhi and Pondicherry (IP index), Meghalaya and Sikkim (WE index) and Pondicherry and Maharashtra (ID) had lowest segregation in 2001 but were replaced by Nagaland, Arunachal Pradesh and Lakshadweep in 2011. At the combined level (rural + urban) Segregation has declined among marginal workers at all India level. However, this decline is not significant.

**Table 4: Occupational Segregation among Marginal Workers in India: Aggregate Level**

State / district	2001						2011					
	ID	Rank	WE	Rank	KM	Rank	ID	Rank	WE	Rank	IP	Rank
Andaman & Nicobar islands	25.30	16	29.24	23	12.34	17	27.52	20	36.79	23	12.20	13
Andhra Pradesh	20.03	10	21.42	10	9.97	10	21.46	4	23.40	7	10.64	6
Arunachal Pradesh	20.77	12	21.77	12	10.36	12	18.30	2	18.84	2	9.14	3
Assam	27.70	18	25.18	19	13.73	20	30.16	24	29.04	14	15.06	25
Bihar	32.35	24	35.89	29	15.98	25	38.64	29	47.32	31	18.35	29
Chandigarh	23.77	14	30.84	25	10.83	14	24.16	8	29.36	15	11.52	9
Chhattisgarh	24.20	15	24.41	16	12.10	16	20.42	3	22.97	6	10.05	4
Dadra & Nagar Haveli	21.36	13	18.36	4	10.47	13	38.40	28	46.70	30	18.30	28
Daman & Diu	38.67	31	35.53	28	19.21	34	41.53	32	55.31	35	18.48	30
Goa	18.60	8	22.35	14	8.92	6	28.00	21	36.03	21	12.85	18
Gujarat	41.19	34	25.10	18	17.45	31	42.39	33	39.07	26	21.06	34
Haryana	46.61	35	44.72	32	23.27	35	43.08	34	53.95	34	20.17	33
Himachal Pradesh	40.22	33	52.09	33	18.36	33	34.12	26	42.91	28	15.93	26
Jammu & Kashmir	27.39	17	21.73	11	13.11	19	45.27	35	50.27	33	22.36	35
Jharkhand	32.18	23	39.04	30	15.36	24	26.26	17	34.40	20	11.87	11
Karnataka	18.77	9	18.81	6	9.38	9	23.08	6	25.80	9	11.38	8
Kerala	16.98	5	22.14	13	7.70	3	26.35	18	28.79	13	13.06	21
Lakshadweep	36.95	30	59.13	35	11.81	15	25.24	11	39.25	27	8.73	2
Madhya Pradesh	34.31	27	34.13	26	17.16	30	26.08	16	29.46	16	12.82	17
Maharashtra	16.43	2	19.38	7	7.95	4	28.65	22	34.25	19	13.78	22
Manipur	31.32	22	18.21	3	12.92	18	25.55	13	18.94	3	11.92	12
Meghalaya	18.53	7	16.46	1	9.15	8	25.25	12	25.43	8	12.62	16
Mizoram	28.92	19	22.99	15	13.85	21	39.70	31	37.07	24	19.76	32
Nagaland	20.53	11	20.32	8	10.26	11	15.67	1	14.56	1	7.80	1
NCT of Delhi	16.80	4	24.88	17	6.46	1	25.61	14	36.53	22	10.48	5
Orissa	30.06	20	27.13	21	14.89	23	25.93	15	28.28	12	12.86	19
Pondicherry	16.43	1	20.80	9	7.63	2	27.39	19	33.92	18	12.91	20
Punjab	35.47	28	27.90	22	16.93	28	39.36	30	45.98	29	19.12	31
Rajasthan	35.91	29	34.50	27	17.93	32	25.05	10	22.73	5	12.42	15
Sikkim	18.06	6	18.21	2	9.03	7	24.91	9	27.09	11	12.36	14
Tamil Nadu	16.48	3	18.59	5	8.10	5	23.96	7	26.84	10	11.81	10
Tripura	33.05	25	30.69	24	16.44	26	22.65	5	19.30	4	11.08	7
Uttar Pradesh	34.29	26	40.27	31	16.63	27	31.66	25	38.92	25	15.00	24

Uttaranchal	39.71	32	54.83	34	16.98	29	37.05	27	48.00	32	16.90	27
West Bengal	30.11	21	25.62	20	14.72	22	29.91	23	30.69	17	14.95	23
<b>India</b>	<b>28.08</b>		<b>28.98</b>		<b>14.02</b>		<b>25.29</b>		<b>28.47</b>		<b>12.45</b>	

Source: Author's calculations based on census data

**Table 5: Occupational Segregation among Rural Marginal Workers in India**

State / district	2001						2011					
	ID	Rank	WE	Rank	KM	Rank	ID	Rank	WE	Rank	IP	Rank
Andaman & Nicobar islands	24.21	15	26.17	23	12.02	17	29.09	21	38.63	25	12.98	16
Andhra Pradesh	20.56	11	19.43	11	10.25	12	18.59	3	19.01	4	9.29	3
Arunachal Pradesh	21.27	12	21.91	17	10.63	13	13.91	1	14.27	2	6.95	1
Assam	28.15	18	24.42	21	13.83	21	30.06	23	27.98	14	14.96	24
Bihar	30.43	22	31.67	26	15.19	25	37.96	29	45.10	31	18.31	30
Chandigarh	34.31	26	47.56	32	14.59	23	32.08	26	29.93	17	15.97	27
Chhattisgarh	24.65	16	21.83	16	12.16	18	21.65	6	22.97	9	10.79	7
Dadra & Nagar Haveli	21.83	13	18.34	8	10.63	14	27.97	16	35.45	23	12.98	17
Daman & Diu	44.33	34	47.30	31	22.06	34	40.09	31	39.51	27	20.04	31
Goa	16.70	6	19.20	10	8.16	5	25.13	11	33.06	20	11.32	9
Gujarat	43.73	33	20.68	13	15.79	26	49.07	35	34.53	21	22.38	33
Haryana	49.43	35	41.80	30	24.13	35	48.94	34	57.78	35	23.67	34
Himachal Pradesh	42.20	31	54.33	33	19.35	33	33.73	28	42.42	28	15.75	26
Jammu & Kashmir	23.03	14	16.93	6	10.71	15	48.04	33	52.57	34	23.81	35
Jharkhand	32.67	23	35.90	28	16.17	28	28.05	17	35.43	22	13.05	18
Karnataka	18.23	9	15.76	5	8.95	9	22.36	7	23.01	10	11.17	8
Kerala	18.03	8	23.20	18	8.27	7	26.71	13	28.02	15	13.32	20
Lakshadweep	41.47	30	69.58	35	11.20	16	28.53	20	44.86	30	9.59	5
Madhya Pradesh	29.05	19	23.42	19	13.98	22	24.25	9	24.80	12	12.12	11
Maharashtra	20.00	10	20.79	14	9.99	10	28.37	19	31.47	19	14.02	23
Manipur	33.40	25	19.12	9	13.65	19	27.26	15	19.74	5	12.59	15
Meghalaya	17.84	7	15.09	4	8.71	8	24.83	10	24.34	11	12.41	13
Mizoram	4.92	1	3.82	1	2.34	1	29.49	22	22.76	8	13.98	22
Nagaland	15.64	3	14.15	2	7.75	3	14.29	2	13.36	1	7.11	2
NCT of Delhi	24.65	17	34.95	27	10.17	11	30.56	24	44.32	29	12.18	12
Orissa	30.28	21	25.65	22	14.79	24	27.16	14	28.82	16	13.53	21
Pondicherry	16.31	4	19.84	12	7.77	4	28.36	18	36.13	24	13.12	19
Punjab	36.00	28	24.23	20	16.08	27	42.03	32	47.24	32	20.69	32
Rajasthan	37.23	29	31.19	25	18.12	31	25.70	12	21.09	6	12.44	14

Sikkim	15.25	2	14.22	3	7.59	2	21.28	5	21.85	7	10.63	6
Tamil Nadu	16.48	5	17.15	7	8.23	6	24.25	8	26.02	13	12.06	10
Tripura	33.19	24	29.45	24	16.38	29	19.58	4	15.82	3	9.43	4
Uttar Pradesh	35.26	27	37.68	29	17.55	30	33.39	27	39.26	26	16.18	28
Uttaranchal	42.61	32	56.11	34	19.17	32	38.39	30	48.35	33	17.90	29
West Bengal	29.52	20	21.43	15	13.65	20	30.95	25	30.12	18	15.46	25
<b>India</b>	<b>28.16</b>		<b>25.85</b>		<b>13.99</b>		<b>24.87</b>		<b>26.45</b>		<b>12.39</b>	

Source: Author's calculations based on census data

In rural sector segregation has declined according to IP and ID indices but has increased according to WE index. The Table-5 reveals that in 2001 Mizoram, Nagaland and Sikkim had lowest values and Haryana and Daman & Diu had highest value of ID and IP indices and Uttaranchal and Lakshadweep had highest value of WE index. In 2011 Arunachal Pradesh, Nagaland, Andhra Pradesh and Tripura had lowest value whereas Jammu Kashmir, Gujrat and Haryana had highest segregation.

In urban sector there has been considerable increase in the values of all the indices during 2001 to 2011. This increase is mainly due to the increase in part time work of women. In 2001 Maharashtra and Kerala had lowest and Jammu Kashmir and Daman & Diu had highest segregation according to ID and IP indices whereas, according to WE index Maharashtra and Manipur had lowest segregation and Uttar Pradesh and Lakshadweep had highest Segregation. In 2011 lowest segregation is seen in Chhattisgarh and Orissa (ID), Nagaland and Manipur (WE) and Lakshadweep and Chhattisgarh had lowest values of different indices.

**Table 6: Occupational Segregation among Urban Marginal Workers in India**

State / district	2001						2011					
	ID	Rank	WE	Rank	KM	Rank	ID	Rank	WE	Rank	IP	Rank
Andaman & Nicobar islands	26.16	22	42.13	30	8.21	8	37.73	29	51.69	32	16.28	27
Andhra Pradesh	17.20	6	21.93	8	7.95	7	26.56	14	30.41	11	13.00	14
Arunachal Pradesh	24.64	18	26.86	17	12.22	23	27.34	16	28.32	5	13.65	19
Assam	24.06	17	31.45	22	10.89	19	35.28	27	40.82	24	17.21	31
Bihar	31.78	30	46.15	33	12.65	27	39.15	32	54.61	33	16.52	28
Chandigarh	22.14	14	28.38	19	10.19	16	24.60	6	30.13	9	11.68	9
Chhattisgarh	17.72	8	22.02	9	8.33	9	19.99	1	24.89	3	9.39	2
Dadra & Nagar Haveli	24.66	19	23.01	10	12.28	24	49.93	35	57.38	34	24.41	35
Daman & Diu	35.77	34	24.56	13	16.13	33	42.05	34	61.22	35	16.66	29
Goa	23.71	16	30.08	21	11.00	20	29.80	22	37.75	22	13.84	20
Gujarat	21.19	13	20.70	7	10.59	18	26.27	13	31.09	13	12.69	13

Haryana	30.61	28	39.45	28	14.02	30	33.68	25	46.11	29	14.55	23
Himachal Pradesh	23.41	15	31.79	23	10.21	17	39.06	31	49.10	31	18.24	32
Jammu & Kashmir	40.15	35	42.98	31	19.97	35	37.74	30	43.56	26	18.42	33
Jharkhand	17.44	7	26.81	16	6.20	4	24.62	7	35.87	19	9.74	3
Karnataka	16.45	5	20.01	6	7.84	6	24.67	8	29.96	8	11.77	10
Kerala	13.86	2	18.81	4	6.04	2	25.78	12	29.57	7	12.61	12
Lakshadweep	32.94	31	49.20	34	12.46	26	23.73	4	36.73	21	8.31	1
Madhya Pradesh	26.94	24	34.34	25	12.45	25	24.90	9	32.17	15	11.39	7
Maharashtra	12.18	1	15.93	1	5.51	1	28.56	19	35.67	18	13.40	17
Manipur	26.74	23	16.05	2	11.23	21	25.62	11	19.72	2	12.13	11
Meghalaya	19.33	10	19.90	5	9.66	13	28.61	20	32.40	16	14.05	21
Mizoram	34.21	32	27.33	18	16.41	34	41.09	33	40.11	23	20.53	34
Nagaland	28.77	27	36.12	27	13.44	28	20.89	3	19.20	1	10.37	5
NCT of Delhi	16.19	4	24.07	11	6.18	3	25.48	10	36.32	20	10.43	6
Orissa	19.58	11	24.59	14	9.15	11	20.74	2	25.68	4	9.78	4
Pondicherry	20.00	12	25.70	15	9.19	12	28.07	18	34.25	17	13.36	15
Punjab	28.73	26	33.83	24	13.91	29	36.02	28	44.68	28	16.97	30
Rajasthan	30.95	29	39.79	29	14.21	32	24.57	5	30.32	10	11.61	8
Sikkim	24.73	20	35.83	26	9.87	15	33.42	24	42.93	25	15.35	26
Tamil Nadu	15.11	3	18.35	3	7.21	5	27.58	17	32.02	14	13.43	18
Tripura	24.84	21	29.45	20	11.99	22	29.46	21	29.15	6	14.73	25
Uttar Pradesh	34.94	33	50.43	35	14.04	31	32.54	23	43.91	27	14.28	22
Uttaranchal	28.37	25	44.28	32	9.73	14	34.06	26	46.71	30	14.69	24
West Bengal	19.32	9	24.09	12	9.07	10	27.19	15	30.64	12	13.38	16
<b>India</b>	<b>19.86</b>		<b>25.68</b>		<b>9.07</b>		<b>25.52</b>		<b>31.57</b>		<b>12.04</b>	

Source: Author's calculations based on census data

## 5. CONCLUSION

We have analysed occupational segregation in India using NCO classification. We have used three indices ID, WE and IP. There is diversity in results obtained from different indices. For main workers the ranking of states and union territories according to level of segregation differs between ID and WE indices on one side and IP index on the other side. For marginal workers ID and IP index show similar rankings whereas WE index gives different ranks to state and union territories. But a common finding is that Occupational segregation is higher among main workers than marginal workers and is higher in urban sector as compared to rural sector.

The high value of segregation in the economically developed states of states of Haryana, Punjab and Gujrat rejects the widely held belief that economic growth lowers Gender occupational

segregation. Our analysis does not include agriculture sector. The inclusion of agriculture usually lowers occupational segregation because agriculture is one sector where only a few defined occupational categories. However, in India agriculture is a male dominated sector and considering agriculture may further increase the segregation.

The high level of segregation in India calls for immediate policy intervention. The high level of segregation can only be reduced by bringing women into male dominated occupations. Though recently, scenario has started changing with women entering hitherto male dominated occupations but still a lot more needs to be done. It is true that segregation cannot be eliminated completely but, it can be reduced to a considerable extent if suitable measures are taken.

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