DISABILITY DIVIDES AND EMPLOYMENT CONDITIONS: A COMPARATIVE ANALYSIS OF INDIA AND BIHAR

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ABSTRACT

This paper makes an effort to quantify and compare various dimensions of disability in India and Bihar using Census data. The findings of the paper suggest that there is socio-economic and regional divide in the prevalence of disability. The decadal growth and incidence of disability are higher among the vulnerable sections of the society. The outcomes of the linear regression model suggest that prevalence of disability is affected by a number of socio-economic and demographic factors. Further, the paper highlights that the proportion of employment for persons with disabilities (PWDs) in Bihar is more than that of India and of general employment in Bihar. However, there is much lower work participation rate among the disabled women in Bihar. There is evidence of increasing informalisation in the disability sector as well. The paper recommends that providing access to basic capabilities to persons with disabilities may be strategically important for reducing the challenges for the disabled communities.

Keywords: Disability, Employment Status, District Level Analysis OLS Regression

JEL Classifications: J11 J14 J18 J21 J71

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1. Introduction

Disability cuts across class, caste, gender, race, religion, ethnicity, and nationality, but mostly differently-able persons' first identity among their other identities is their disability. World Bank (2007) reveals that disabled people are among the most excluded in Indian society, facing widespread social stigma, income poverty, and limited access to education and jobs. Undeniably, disability brings in a socio-economic burden and the dynamics of life undergoes a major change as disability sets in. The Social Development Report (2016) points out that "the disproportionate disadvantage, exclusion and stigmatization suffered by persons with disabilities are caused by cultural, social and physical barriers that obstruct their effective participation in social and political life".

Disability policy experts are of the view that people with disabilities are the largest minority group in the world. It has been reported by many experts of the disability studies that intensity of disability is more among the marginalized groups and vulnerable sections of the society. In this context, Mehrotra (2013) mentions that "the intensity of discrimination, deprivation and exclusion experienced by persons with disabilities belonging to lower castes is more when compared to others". In the context of disability estimates in India, Reddy and Sree (2015) using 2011 Census data suggest that PWDs are scattered in every part of the country. In addition, incidence of disability falls disproportionately across different geographic regions and socio-economic groups. Further, Saikia et al. (2016) points out that there is wide socio-economic and regional divide in prevalence of disability in India.

Of late, globally, and in India a number of legislations have been framed to improve the lives of the persons with disabilities. Among the countries with comparatively similar income standards, India has legislated one of the most progressive disability policy frameworks. However, it is evident that persons with disabilities are subjected to multiple disadvantages. Therefore, it is pertinent that, we move beyond charity-based approach, medical model and patronizing attitude to social model, as disability is a vital development issue and poses challenges to the state of development in the neo-liberal paradigm. Therefore, neglecting this sector will have serious implications in the context of human development.

Available literature suggests that due to functional limitations, a person with disability is more likely to remain out of labour force and hence seeks work, in majority cases. Even when the degrees of disability and education levels are same, their scope and employment prospects differ depending upon socio-economic settings of the household, sex and sector. Erb & Harris-White (2001) point out that disability limits a person's ability to earn income and it also limits his/her capabilities to use available resources. Understanding the employment experiences of PWDs in India is particularly important because India is one of

the few developing countries that have legislation as well as various government programmes targeted at promoting the employment of PWDs. Individuals with disabilities have different employment outcomes depending on their disability types, gender and social compositions, levels of literacy, and whether they live in rural or urban regions. There are obvious welfare and policy implications, but labour market experiences of persons with disabilities are not widely known.

In this backdrop, the present study makes an effort to quantify the prevalence of disability by gender, regions (rural and urban), social groups, and by type of disability at all-India level and with special reference to Bihar. A comparative analysis is undertaken in section 2 to understand the prevalence of disability between India and Bihar using 2001 and 2011 Census data. Further, the study examines the association between disability prevalence and the major socio-economic-demographic characteristics of the districts of Bihar using 2011 Census data in section 3. In section 4, the study discusses the nature and extent of employment among PWDs in India and Bihar. The last section of the paper examines in detail the nature and extent of employment among the persons with disabilities vis-à-vis overall population at all-India level and in Bihar.

1.1. Data and Methods

Government of India's Census 2001 provided data on five types of disability categories whereas Census 2011 collected data on eight types of disabilities as mentioned in the PWD Act of 1995. The present paper has included all types of PWDs available in the Census and has examined holistically temporal and spatial variations in the prevalence of disability and employment conditions across gender, regions and social groups. In addition, socio-economic and demographic correlates of disability are specified and estimated in the context of Bihar.

Geographically, the investigations are carried out at all-India level and with special reference to Bihar using 2001 and 2011 Census data. The paper makes a comparative study and examines decadal growth in the prevalence of disability in India and Bihar. It examines the association between social groups and types of disabilities. In addition to the comparative analysis across the states of India, the analysis is drilled down to the districts of Bihar. Further, nature and extent of employment for the persons with disabilities is shown with the help of descriptive statistics. A comparative study is also carried out between the total employment of India and its total disabled-population employment with special reference to Bihar.

1.1.1. Explanation of the Variables and Building of the Disability Determinant Model

Ordinary Least Squares (OLS) regression analysis is carried out to understand the association between disability prevalence and socio-economic-demographic characteristics at the district level using Census 2011 data of Bihar. To understand the district profiles which are relevant to our study, descriptive statistics is presented.

Outcome Variable: The dependent variable in the regression model is total persons with disabilities. The data were collected for all the 38 districts of Bihar. The prevalence of disability was defined as the proportion (percentage) of total PWDs out of the total population of that particular district.

Explanatory Variables: There are numbers of socio-economic-demographic factors that affect the prevalence and incidence of disability. Justification of these variables is self-explanatory in general. However, justification for inclusion of these variables has been provided wherever needed. After examining the available literature on the subject related to health and disability in India, the selected district level contextual variables are listed as follows: (1) The proportion of population who are females (as nutritional outcome among women is poor); (2) The proportion of the population whose age are over 60 years (elder people tend to have more illnesses and bodily difficulties); (3) The literacy rates among females; (4) The proportion of the population who are members of SCs; (5) The proportion of the population belonging to ST communities. The Constitution of India recognizes the facts that scheduled castes and scheduled tribes are disadvantaged communities. Therefore, these groups also have poor health outcomes than the general population. The Census of India does not have data related to income or expenditure of these population groups used in the present study. Hence, a few alternative variables were used as proxies for these indicators: (6) The proportion of the population living in urban areas; (7) The proportion of the population who are main workers (working for six months or more with regard to the reference period). Average living conditions of the households were examined under the following heads; (8) The proportion of the population having access to safe drinking water (i.e., access to water from Tap + Hand Pump + Tube Well); (9) The proportion of households who did not have access to latrine facilities within the premises (lack of toilet facilities are often associated with a number of communicable and non-communicable diseases, which can directly or indirectly lead to disabilities or can exacerbate the incidence of disabilities; (10) The proportion of households who used clean fuel for cooking (arrived at by adding Kerosene + LPG/PNG + Electricity + Biogas). Unavailability of clean fuel for cooking is often linked to a number of disabilities; (11) The proportion of households accessing banking services, better banking facility or financial inclusion which is associated with better access to finance when in need and access to government welfare schemes.

2. Temporal and Spatial Analysis of Disability Prevalence in India and Bihar

It is reflected in Table 1 that out of the total 121.10 crore population of India in 2011 Census, 2.70 crore persons have been enumerated as disabled, which was 2.20 crore in the year 2001, showing a decadal growth of 22.4 per cent during 2001 and 2011. As per 2011 Census data, on an average, one out of each tenth family includes a disabled member. The decadal growth among the PWDs is higher in urban areas than in rural areas. The PWDs belonging to the vulnerable section of society (SCs and STs) have registered much higher increase in the decadal growth. In urban areas, there is a drastic increase in the decadal growth among the PWDs belonging to the ST communities (81.75%); it could be the result of urbanization, displacement and migration. As far as gender analysis is concerned, female PWDs have recorded higher decadal growth than their male counterparts. Again, it is higher in urban areas than in rural areas. The decadal growth among female PWDs is maximum belonging to STs, followed by SCs and the overall. In a nutshell, it is important to note that overall decadal growth in the prevalence of disability is the highest among SCs followed by STs. However, in urban areas STs recorded significantly higher growth rates than SCs and the total. The same pattern can be observed among the female STs.

Table 1: Absolute Number of Persons with Disabilities by Residence, Gender and Social Groups in India (2001 and 2011)

	Census 2001			Census 2011			Decadal Growth		
	Person	Male	Female	Person	Male	Female	Person	Male	Female
Total	21906769	12605635	9301134	26814994	14988593	11826401	22.41	18.90	27.15
SC	3711110	2127877	1583233	4927433	2770592	2156841	32.78	30.20	36.23
ST	1618166	903899	714267	2140763	1144627	996136	32.30	26.63	39.46
Rural									
Total	16388382	9410185	6978197	18636358	10410559	8225799	13.72	10.63	17.88
SC	3036356	1738176	1298180	3798625	2136872	1661753	25.10	22.94	28.01
ST	1500725	835854	664871	1927319	1028040	899279	28.43	22.99	35.26
Urban									
Total	5518387	3195450	2322937	8178636	4578034	3600602	48.21	43.27	55.00
SC	674754	389701	285053	1128808	633720	495088	67.29	62.62	73.68
ST	117441	68045	49396	213444	116587	96857	81.75	71.34	96.08

Source: Calculated from Census of India, 2001 and 2011

Table 2 presents the decadal growth among PWDs in Bihar. The total number of PWDs was 1.9 lakh in 2001 which increased to 2.4 lakh in 2011 showing a 23.5 per cent decadal growth. Therefore, decadal growth of PWDs in Bihar is almost one percent higher than that in India. The disability prevalence gap in terms of decadal growth is narrow as compared to all-India; however, it is still

higher in the urban areas. The same pattern can be observed among SC and ST communities in Bihar. The highest incidence of disability is recorded for SCs, followed by STs and overall. In Bihar the proportion of ST communities out of the total population is very less but the trend shows that decadal growth of PWDs among STs is very significant. The gender composition shows that the decadal growth is more pronounced among females than males. Besides, female PWDs' growth is higher than that of India. Among the female PWDs belonging to SC communities, the decadal growth in Bihar is 51.81 per cent as against 36.23 per cent for all India.

Table 2: Absolute Number of Persons with Disabilities by Residence, Gender and Social Groups in Bihar (2001 and 2011)

	Census 2001			Census 2011			Decadal Growth		
	Person	Male	Female	Person	Male	Female	Person	Male	Female
Total	1887611	1131526	756085	2331009	1343100	987909	23.49	18.70	30.66
SC	285838	168813	117025	417552	239895	177657	46.08	42.11	51.81
ST	16879	9514	7365	27383	15041	12342	62.23	58.09	67.58
Rural									
Total	1692454	1013699	678755	2046351	1180813	865538	20.91	16.49	27.52
SC	266400	157284	109116	385439	221375	164064	44.68	40.75	50.36
ST	16039	8993	7046	25668	14136	11532	60.03	57.19	63.67
Urban									
Total	195157	117827	77330	284658	162287	122371	45.86	37.73	58.25
SC	19438	11529	7909	32113	18520	13593	65.21	60.64	71.87
ST	840	521	319	1715	905	810	104.17	73.70	153.92

Source: Calculated from Census of India, 2001 and 2011

Table 3 shows that, the percentage of persons with disabilities in India was 2.12 in 2001, which increased to 2.21 per cent in 2011. The highest proportion of individuals with disabilities can be seen among the SC communities (2.45% in 2011), and least among the ST communities (2.05%). However, it is important to highlight that decadal growth among the SCs is much higher than the total and almost equivalent to STs. Proportion of persons with disability is lower in urban areas (2.17%) as against (2.24%) in rural areas. However, decadal growth is much higher in urban areas. It means higher rate of urbanization is linked to higher prevalence of disability. The gender analysis of females with disabilities suggests that there is an increase in the proportion of female PWDs in 2011 relative to 2001. The proportion is higher in rural areas than in urban areas. It is the highest among SCs who are female PWDs and living in rural areas (2.22%). However, the proportion in 2011 Census has declined among males and it has increased among females relative to 2001 Census figure.

Table 3: Proportion of Population with Disability in their Respective Social Groups, Genders and Regions in India (2001 and 2011)

	Census 2001			Census 2011		
	Person	**Male**	**Female**	**Person**	**Male**	**Female**
Total	2.12	2.37	1.87	2.21	2.40	2.01
SC	2.23	2.47	1.97	2.45	2.68	2.20
ST	1.92	2.12	1.71	2.05	2.18	1.92
Rural						
Total	2.21	2.47	1.93	2.24	2.43	2.03
SC	2.28	2.53	2.02	2.47	2.70	2.22
ST	1.94	2.14	1.74	2.05	2.18	1.92
Urban						
Total	1.93	2.12	1.71	2.17	2.34	1.98
SC	2.01	2.23	1.77	2.38	2.60	2.14
ST	1.68	1.89	1.46	2.04	2.21	1.87

Source: Calculated from Census of India, 2001 and 2011

Table 4 shows the proportion of persons with disabilities in Bihar in absolute numbers and in percentage terms across residence, social groups and genders. The table is self-explanatory. It ca be seen that the proportion of population with disability is 2.24 per cent in Bihar showing slightly higher proportion than that in India. It is higher in rural areas of Bihar than in urban areas, however, opposite is the case in the context of India. The highest proportion of persons with disability is observed in the SC communities, followed by overall and STs. Gender composition in Bihar shows that, it is higher among males in Bihar than females. However, the proportion in 2011 Census has declined among males and it has increased among females relative to 2001 Census figure. Female PWDs who are STs and live in urban areas scored highest incidence of disability prevalence in Bihar (2.55%).

Table 4: Proportion of Population with Disability in their Respective Social Groups, Genders and Regions in Bihar 2001 and 2011

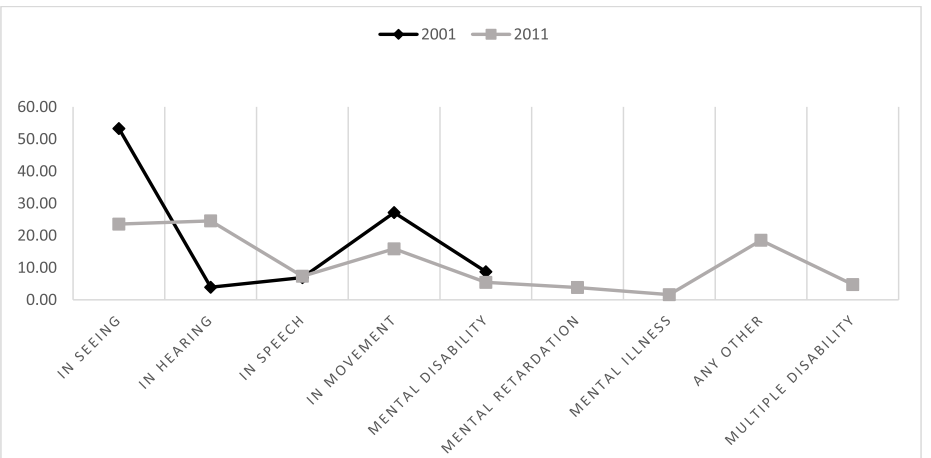
	Census 2001			Census 2011		
	Person	**Male**	**Female**	**Person**	**Male**	**Female**
Total	2.27	2.62	1.90	2.24	2.47	1.98
SC	2.19	2.49	1.87	2.52	2.79	2.23
ST	2.23	2.42	2.02	2.05	2.20	1.89
Rural						
Total	2.28	2.63	1.90	2.22	2.46	1.96
SC	2.19	2.49	1.86	2.51	2.78	2.22
ST	2.23	2.42	2.03	2.02	2.18	1.85
Urban						
Total	2.25	2.53	1.92	2.42	2.62	2.20
SC	2.23	2.49	1.95	2.63	2.89	2.34
ST	2.07	2.36	1.72	2.61	2.66	2.55

Source: Calculated from Census of India, 2001 and 2011

In Census 2001, data on five types of disabilities were collected, namely, persons with seeing, hearing, speech, movement, and mental disability. On the other hand, Census 2011 collected data on eight types of disabilities, four types as mentioned in 2001, namely, persons with seeing, hearing, speech, and movement disability. Mental disability data of 2001 have been bifurcated into mental retardation and mental illness in 2011. Further, two important new additions are "any-other" and "multiple disabilities". Any-other disability has emerged as the fourth largest type of disability. In our study we have merged 2011 Census data of mental retardation and mental illness to carry out a comparison with mental disability data of Census 2001.

It can be seen in Figure 1 that the highest proportion of disability in 2001 is observed among the persons with seeing disability (53.27%), followed by movement disability (27.14%), mental disability (8.76%), speech (6.91%) and hearing disability (3.92%). On the other hand, as per 2011 Census data, persons with seeing disability observed drastic decline (23.56%). The highest incidence of disability is scored by persons with hearing disability (24.55%), followed by 'any-other' disability (18.52%), movement disability (15.85%), Speech disability (7.33%), multiple disability (4.76%), mental disability combined (5.44%), mental retardation (3.83%), mental illness (1.61%).

Figure 1: Decadal Variation in Total Population of PWDs in Bihar (in percentage)



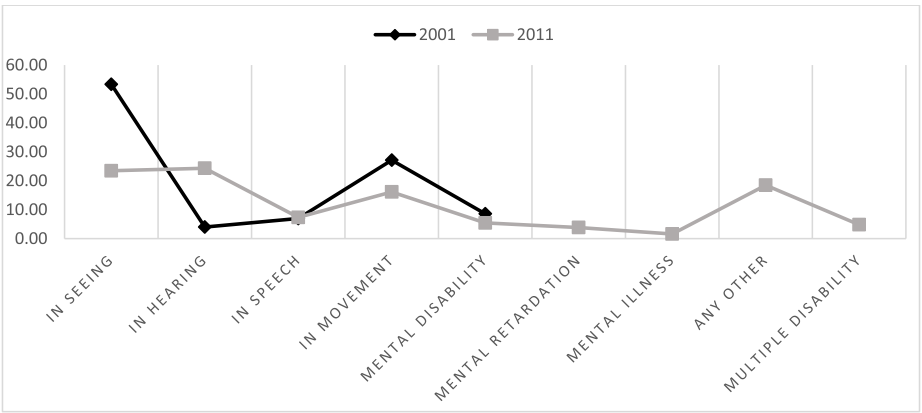
Source: Census of India, 2001 and 2011

Significant increase in the "any-other" category of disability reflects lacunae in the enumeration process of the Census. It also shows lack of training and awareness among the enumerators themselves. In addition, high number of "multiple disabilities" also poses challenges before the development policy practitioners. Improvement in the enumeration process for each type of disability will better target the disability sector and lead to enhanced state welfare measures.

Therefore, the decadal growth for PWDs is the lowest among persons with seeing disability and it is the highest among persons with hearing disability – also the gap is very wide. This finding is very similar to all-India figures on PWDs. In addition, even after combining mental illness and mental retardation in 2011, the values are close to half than that of 2001 disability figures. Probably, all these could be attributed to error in enumeration process and change in definitions in 2011 Census as two new types of disabilities were added and both of them have significantly high values.

In terms of place of residence in 2011, almost 88 per cent of the PWDs live in rural areas while rest of them live in urban areas, as depicted in Figure 2. If we compare to Census 2001 data, it is found that there is a slight decline of 2 per cent (90% to 88%) in the number of individuals living in rural areas. It may be attributed to the increase in the rate of urbanization and addition of some new towns in Census 2011. Decadal variation in the incidence of disability in rural areas is close to zero for persons with speech and mental disability.

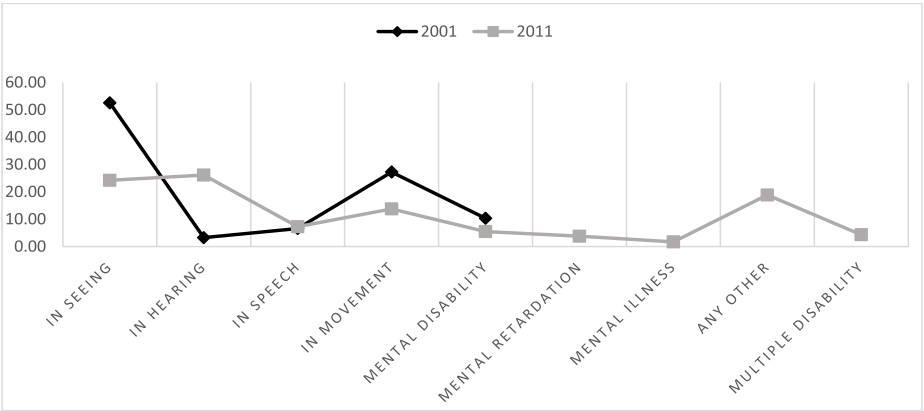
Figure 2: Decadal Variation in Rural Population of PWDs in Bihar (in percentage)



Source: Census of India, 2001 and 2011

Figure 3 shows decadal variation in the proportion of population who are PWDs and living in urban regions of Bihar. There is an increase in the proportion of PWD population living in urban areas. The highest growth among the urban PWDs is recorded for persons with hearing disability (increased from 8.59% to 13%). Around 13 per cent of persons belonging to "any-other" category of disability resides in urban areas.

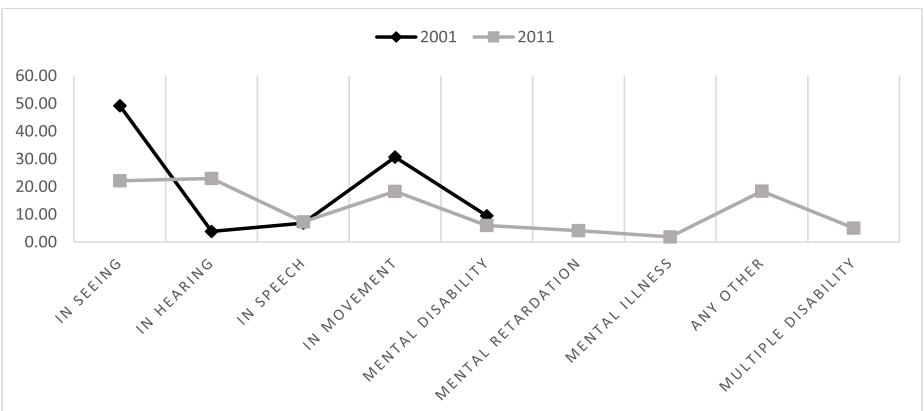
Figure 3: Decadal Variation in Urban Population of PWDs in Bihar (in percentage)



Source: Census of India, 2001 and 2011

As shown in Figure 4, in 2001, the highest proportion of males with disabilities was observed among males with seeing disability (almost 50%), followed by males with disability in movement (30.65%), mental (9.50%), speech (6.82%) and hearing disability (3.84%). On the other hand, Census 2011 data show that there is a drastic decline in the seeing disability among males (22.12%), in addition to a drastic increase in the decadal growth – the highest proportion of male disability was observed among the males with hearing disability (22.94%), followed by "any-other" disability (18.35%), movement disability (18.28%), mental disability combined (5.97%) and multiple disability (5.05%)

Figure 4: Decadal Variation in Male Population of PWDs in Bihar (in percentage)

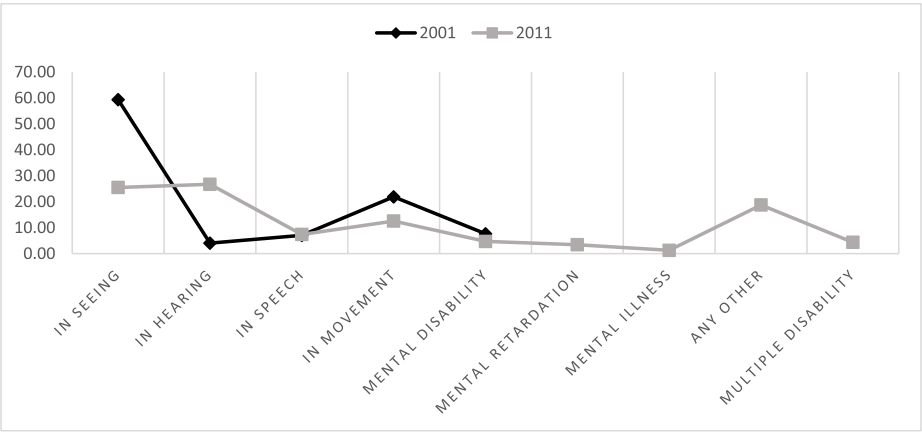


Source: Census of India, 2001 and 2011

Figure 5 illustrates the decadal variations across different types of disabilities among females in Bihar. It is important to highlight that, in 2011, the proportion

of seeing and hearing disability among females is significantly higher than that of males. However, it is considerably lower in the case of females with movement disabilities. As per Census 2001, the highest proportion of females with disabilities was observed among females with seeing disability (about 60%), followed by females with disability in movement (22%), mental (7.65%), speech (7.05%) and hearing (4.04%). On the other hand, Census 2011 reveals that there is a drastic decline in the seeing disability among females (25%). Further, in addition to a drastic increase in the decadal growth, the highest proportion of female disability was observed in hearing disability (about 27%), followed by "any-other" disability (19%), movement disability (13%), mental disability (4.71%) and multiple disability (4.35%). After combining mental illness and mental retardation in 2011, the mental disability among females went down and it was also recorded as lower than that of males with mental disability.

Figure 5: Decadal Variation in Female Population of PWDs in Bihar (in percentage)



Source: Census of India, 2001 and 2011

It has been reported by many experts of the disability studies that intensity of disability is more among marginalized groups and vulnerable sections of the society like the SCs and STs. In general, persons born with disabilities in the SC and ST categories face the double brunt of caste-based discriminations on the one hand and deprivation of opportunities on the other hand. In this context, Pal (2010) views that these communities are more likely to be afflicted with the trauma of disability and caste identity. Therefore, such intertwined problems may cause multiple disadvantages which are emotionally very traumatic and can lead to permanent psychological damage. Further, Mehrotra (2013) mentions, "the intensity of discrimination, deprivation and exclusion experienced by persons with disabilities belonging to lower castes is more when compared to others".

As per Census 2011, there were 2.68 crore PWDs in India, out of which, 0.5 crore are members of SCs (18.38%) and almost 0.2 crore (7.97%) belong to ST communities. The proportion of PWDs populations who belong to SC and ST communities are about 2.45 per cent and 2.05 per cent respectively. Table 5 provides the share of PWDs in India for different categories and across different social groups in 2001 and 2011. In 2001 close to half of the PWDs had "seeing" disability "in seeing" as compared to 18.77 per cent in 2011. Again, SCs had the highest share in 2001, but in 2011, STs had the highest share. In 2011 the persons who had seeing impairment experienced a drastic decline. It may be because of estimation error. The number of speech disability has also slightly declined in 2011 from 7.49 per cent to 7.45 per cent. There is a very high increase in "hearing" disability from 5.76 per cent to 18.92 per cent. STs have the highest increase in hearing disability at 19.36 per cent. It is interesting to note that movement disability has significantly declined from 27.87 per cent to 20.28 per cent in 2011. Out of the total PWDs, there were 10.33 per cent mentally disabled people in 2011, which slightly declined to 8.31 per cent in 2011. There were 5.62 per cent mentally retarded people and 2.70 per cent mentally ill persons in 2011. Multiple disabled persons constitute 7.89 per cent of the total PWDs and the highest multiple disabilities is observed for STs. It is important to highlight that "any other" category of PWDs has a very high share of the total PWDs (18.38%). SCs are the highest in "any other" PWDs category.

Table 5: Proportion of Disabled Persons by Type of Disability and Social Groups in India in Census 2001 and 2011

	Census 2001			**Census 2011**		
Type of Disability	**Total (%)**	**SC (%)**	**ST (%)**	**Total (%)**	**SC (%)**	**ST (%)**
In Seeing	48.55	48.60	48.38	18.77	19.11	20.00
In Speech	7.49	7.30	7.50	7.45	5.19	5.27
In Hearing	5.76	5.75	7.72	18.92	17.45	19.36
In Movement	27.87	29.13	27.95	20.28	20.50	22.42
Mental Disability	10.33	9.22	8.45	8.31	7.49	7.55
Mental Retardation	---	---	---	5.62	5.11	4.92
Mental Illness	---	---	---	2.70	2.38	2.63
Multiple	---	---	---	7.89	7.31	8.93
Any Other	---	---	---	18.38	22.94	16.47

Source: Calculated from Census of India, 2001 and 2011

As far as analysis of different types of PWDs across different social groups in Bihar is concerned, as presented in Table 6, there are significant variations in terms of incidence and prevalence of disability. Census 2011 data of Bihar

shows that out of the 23.32 lakh PWDs, about 4.2 lakh (17.91%) belong to SCs and around 27 thousand (1.17%) are members of ST communities. The percentage of SC PWDs is almost 2.52 per cent and that of ST PWDs is 2.05 per cent of the total population respectively. Analysis of different categories of PWDs across social groups suggests that a large number of SC and ST PWDs (24.77% and 24.82% respectively) are reported to be suffering from visual disability. These figures are marginally higher than the total PWDs. In the "any-other" category of PWDs the highest prevalence of disability is observed among the SCs (24.84%). Except for "seeing" and 'any-other' category of PWDs, SC communities have lower incidence of disability as compared to the total PWDs. ST communities in the hearing category of PWDs have significantly higher prevalence rates (26.72%). Movement disability is the lowest among the STs (13.98%).

Census 2001 data suggest that the highest prevalence of disability was observed among the STs in the "seeing" category of PWDs. Movement disability is very high overall but it is lowest in the ST communities and highest among the SCs. Unlike all-India figures, prevalence of movement disability has observed a significant decline in all social categories of PWDs in Bihar.

Table 6: Percentage of PWDs by Type of Disability and Social Groups in Bihar (2001 and 2011)

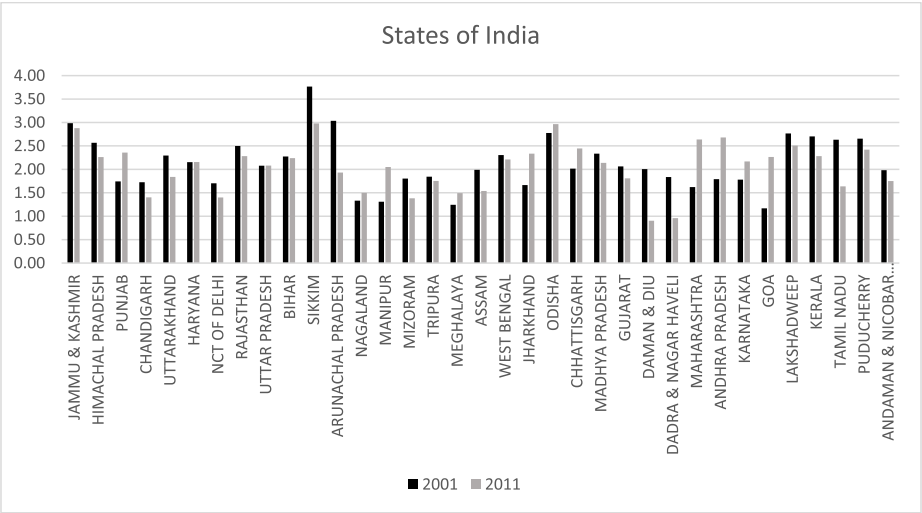
	Census 2001			Census 2011		
Disability by Type	**Total (%)**	**SC (%)**	**ST (%)**	**Total (%)**	**SC (%)**	**ST (%)**
In Seeing	53.27	53.71	62.36	23.56	24.77	24.82
In Hearing	3.92	3.82	3.67	24.55	22.07	26.72
In Speech	6.91	6.25	6.64	7.33	4.52	5.86
In Movement	27.14	28.94	19.76	15.85	15.59	13.98
Mental Disability	8.76	7.29	7.57	5.44	4.35	5.26
Mental Retardation	---	---	---	3.83	3.15	4.08
Mental Illness	---	---	---	1.61	1.21	1.17
Any Other	---	---	---	18.52	24.84	18.59
Multiple Disability	---	---	---	4.76	3.86	4.76

Source: Calculated from Census of India, 2001 and 2011

With regard to decadal growth in the prevalence of disability across states the highest growth is observed in Goa with 110 per cent, followed by Manipur (91%) and Maharashtra (89%). A drastically slow growth is observed in Daman & Diu (32%), followed by Tamil Nadu (28%) and Arunachal Pradesh (20%). A cursory glance at the state level distribution of humans with disabilities

shows that PWDs are dispersed across every corner of India, as illustrated in Figure 6. Among the states and UTs with least population, such as Puducherry, Lakshadweep, Sikkim, Jammu & Kashmir and Goa, the proportion of persons with disabilities is considerably high (more than 2%). Sikkim has the highest proportion of PWDs (almost 3%). Among the bigger states in terms of population, such as Andhra Pradesh, Maharashtra and Odisha reported higher incidence rates, varying between 2.5% to 3%. Uttar Pradesh is the most populous state and 15.5 per cent of the PWDs of the country reside here, which is roughly 42 lakh, followed by Maharashtra with 30 lakh (11.10%), Bihar with 24 lakh (8.70%) and Andhra Pradesh (8.50%) with almost 23 lakh of PWDs. Some smaller states and UTs, such as Dadra & Nagar Haveli (0.01%), Daman & Diu (0.01%) and Mizoram (0.06%) observed lowest proportion and also least numbers of PWDs in the country.

Figure 6: Proportion of Persons with Disability to the Corresponding Population across States of India (2001 and 2011)



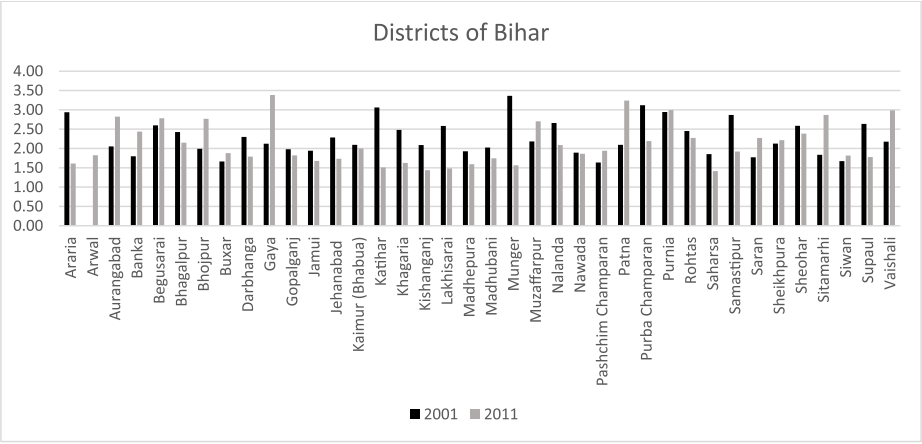
Source: Census of India, 2001 and 2011

A cursory glance across the districts of Bihar, as shown in Figure 7, provides that disability prevalence has slightly gone up for most districts of Bihar in 2011 relative to 2001 Census data. The highest decadal growth is observed in the districts, namely, Gaya, Patna, Sitamarhi, Vaishali, Aurangabad and Bhojpur. The decremental decadal growth in the incidence of disability is recorded in the districts of Saharsa, kishanganj, Lakhisarai, Katihar and Munger.

As per 2011 Census data, in Patna, Magadh and Tirhut administrative divisions of Bihar, there are higher prevalence of disabilities relative to other districts. It can also be observed that the neighbouring or adjacent districts of Patna have comparatively higher incidence of disabilities. The highest prevalence rates of disabilities is scored by Gaya (3.38%), followed by Patna (3.24%), Purnia

(2.99%), Vaishali (2.99%) and Sitamarhi (2.87%). The lowest proportions of population with disabilities were recorded in the districts of Saharsa (1.41%), Kishanganj (1.44%), Lakhisarai (1.49%), Katihar (1.51%) and Munger (1.56%). It is important to highlight that the disability prevalence rates have slightly declined in almost 20 districts of Bihar out of 38 districts. But overall, incidence of disability in Bihar has increased a bit in 2011 relative to 2001 Census.

Figure 7: Proportion of People with Disability to the Corresponding Population across Districts of Bihar in Census 2001 and 2011



Source: Census of India, 2001 and 2011

3. Socio-economic and Demographic Correlates of Disability Prevalence in Bihar

There are important studies which suggest that socio-economic inequalities and prevalence of disabilities are correlates (Braithwaite and Mont, 2009; Yeo and Moore, 2003 and Elwan, 1999). Coppin et al. (2006) find that higher prevalence of disabilities is associated with decreasing socio-economic status. In addition, incidence and prevalence of disabilities is more concentrated among the vulnerable sections of the society. Gannon and Munley (2009) examine that people in older age suffer from multiple disabilities. It means that people tend to be more disabled while they start ageing.

Table 7 shows descriptive statistics for the outcome and exposure variables for all the 38 districts as per Census 2011. All of these socio-economic and demographic characteristics examined in the present study vary significantly across the districts of Bihar. For example, the average value of the percentage of persons with disabilities is 2.12 per cent, and the values vary between 1.74 per cent (minimum) and 3.38 per cent (maximum). The proportion of the population who belong to SC communities ranges from a minimum of 6.69 per cent to a maximum of 30.39 per cent; the proportion of population who are members of STs ranges from 0.04 per cent to 6.35 per cent. The district level female literacy

rate is around 42 per cent on an average, it varies from 33.05 per cent to 52.11 per cent. The proportion of the workers who are main workers constitutes about 61 per cent and it ranges from 48 per cent to 72.87 per cent. If we analyse the demographic profile we find that the proportion of females on an average is around 48 per cent across districts, it ranges from 46.70 per cent to 50.52 per cent. Further, the proportion of elderly persons (60 plus) is on an average about 8.0 per cent and it ranges between 5.65 per cent and 10.29 per cent. As far as profile of the average living conditions of the households is concerned, 93 per cent households have access to safe drinking water. However, the condition of households is worse in accessing clean fuel for cooking, for which the mean value is only about 8 per cent. This may have a considerably negative health impact on these households. Around 78 per cent households did not have toilet facilities within the premises. Finally, about 45 per cent households have access to banking services, which is very low. It varies from about 20 per cent to 75 per cent across the districts of Bihar.

Table 7: Descriptive Statistics for Explanatory Variables across 38 Districts of Bihar in 2011 (in %)

Variables	Districts	Mean	Std. Dev.	Min	Max
Persons with Disabilities (PWDs)	**38**	**2.12**	**0.54**	**1.41**	**3.38**
Socio-economic					
Proportion of SC	38	16.09	4.77	6.69	30.39
Proportion of ST	38	1.34	1.80	0.04	6.35
Proportion of Female Literacy	38	41.85	5.77	33.05	52.11
Proportion of Urban Population	38	10.59	7.55	3.47	43.07
Proportion of Main Workers	38	61.12	6.55	48.52	72.87
Proportion of Households with Safe Drinking Water	38	92.86	8.55	57.25	100.60
Proportion of Households with Clean Fuel for Cooking	38	8.09	5.45	3.07	34.41
Proportion of Households Accessing Banking Services	38	44.98	12.74	20.16	75.15
Proportion of Households with no Toilet Facility within the Premises	38	77.39	8.46	46.11	89.57
Demographic					
Proportion of Females	38	47.86	0.72	46.70	50.52
Proportion of Persons aged 60 plus	38	7.73	0.97	5.65	10.29

Source: Calculated from Census of India, 2011

Table 8 provides the outcome of the linear regression model which assesses the relationships between the important socio-economic and demographic

characteristics across the districts of Bihar and disability prevalence rates at the district level. There is a strong correlation between males' disability and females' disability, therefore, total persons with disabilities are chosen as the left-hand-side (dependent variable). The outcome of demographic characteristics across districts suggests that the proportion of population who are 60 years or above (elderly population) is significantly associated with disability prevalence at 1 per cent level of significance. A one per cent increase in the number of persons who are above 60 years of age is associated with 0.68 per cent increase in the prevalence of disability. However, the increase in proportion of females does not show any association with disability prevalence rates. The findings of the socio-economic determinants of disability prevalence are as follows: The district where a large proportion of population belongs to SCs and STs is not significantly linked to higher incidence of disability. Further, additional change in female literacy and main workers also do not appear to impact disability prevalence rates significantly across districts. Higher level of urbanization indicates the higher level of incidence of disability.

Table 8: Socio-economic and Demographic Correlates of Disability Prevalence: Variations across Districts of Bihar

Variables	Coefficients	P-Values
Socio-economic		
Proportion of SC	-0.001	0.977
Proportion of ST	-0.009	0.864
Proportion of Female Literacy	0.008	0.749
Proportion of Urban Population	0.089	0.009
Proportion of Main Workers	-0.006	0.651
Proportion of Households with Safe Drinking Water	0.020	0.043
Proportion of Households with Clean Fuel for Cooking	-0.009	0.803
Proportion of Households Accessing Banking Services	-0.025	0.084
Proportion of Households with no Toilet Facility within the Premises	0.056	0.067
Demographic		
Proportion of Females	-0.175	0.214
Proportion of Persons aged 60 plus	0.685	0.000
R-Squared	0.633	
Adjusted R-Squared	0.478	

Source: Estimated from Census of India, 2011

As far as the average living condition of households is concerned, the study finds no statistically significant association between disability prevalence

and the proportion of households accessing clean fuel for cooking. There is a positive association between the proportion of households with safe drinking water and incidence of disability, however, this result seems to be irrelevant and theoretically inconsistent. It is probably attributed to better reporting of disability among the households who have access to safe drinking water. The proportion of households accessing banking services is significantly linked to reduction in the incidence of disability. Therefore, banking penetration and inclusive finance can have a positive impact on the disability sector in the societies of Bihar. Further, the proportion of households with no toilet facility within the premises is positively associated with increase in the disability prevalence rates. R-Squared of 0.63 shows that, the included explanatory variables could explain about 63 per cent of the total variations in the prevalence of disability.

4. Nature and Extent of Employment among PWDs of India and Bihar

In the context of disability employment, Elwan (1999) reviews vast literature on the subject and summarizes that there is higher incidence of disability rates in developing countries which is associated with higher burden of unemployment. Further, it is mentioned in a study by Mitra and Sambamoorthi (2006) that a higher reservation wage (the lowest wage rate at which the PWD is willing to work) and a lower market wage lead to lower probability of employment among PWDs. Available literature also suggests that there are lower employment outcomes for PWDs in India.

As shown in Table 9, employment data of India in Census 2001 and 2011 suggest that the work participation rates (WPRs) have slightly increased from about 39.10 per cent to 39.80 per cent. The increase in WPR is higher among males than females. The increase is attributed mainly to the increase in the number of main workers. However, if we compare these figures to that of Bihar, it can be observed that the WPR in Bihar is lower than that of India. In fact, the WPR of Bihar has slightly declined. In addition, there is a perceptible decline in the proportion of main workers and significant increase in the proportion of marginal workers, which indicates a rise in informalization in Bihar. Besides, female labour force participation is also significantly lower in Bihar.

Table 9: Proportion of Employment across Gender and by Type of Workers in India and Bihar as per Census 2001 and 2011

		Person	Male	Female	Main Worker	Marginal Worker	Non-Worker
India	**2001**	34.49	44.81	20.51	26.73	7.76	65.51
	2011	39.10	51.68	25.63	30.43	8.67	60.9
Bihar	**2001**	33.70	47.37	18.84	25.37	8.34	66.3
	2011	33.36	46.47	19.07	20.52	12.84	66.64

Source: Calculated from Census of India, 2001 and 2011

As per 2011 Census data of Bihar, the proportion of PWD employment is 37.12 per cent as against 36.34 per cent of India (Table 10). It is important to highlight that the proportion of PWD employment in Bihar is more than that of India and of the total employment of Bihar. In an economically poor state like Bihar, higher proportion of PWD employment as compared to general population also reflects the struggle for existence and little support from family/relatives or the from the state. Among SCs and STs also, the same trend can be observed. The highest WPR can be seen among the STs, followed by the SCs and total PWDs. Gender analysis suggests that the female workforce participation rate (FWPR) is much lower (21.39%). FWPR is highest in the ST communities, followed by the SCs.

Table 10: Proportion of Employment among PWDs in Bihar and in India in 2011 (in percentage)

	Bihar 2011			India 2011		
	Total	**SC**	**ST**	**Total**	**SC**	**ST**
Persons	37.12	41.67	42.57	36.34	38.25	42.11
Males	48.70	51.89	51.10	47.19	48.35	48.5
Females	21.39	27.87	32.17	22.59	25.29	34.76

Source: Calculated from Census of India, 2001 and 2011

Table 11 suggests that the proportion of PWD employment has increased from 33.62 per cent in 2001 to 37.12 per cent in 2011. It is interesting to note that this

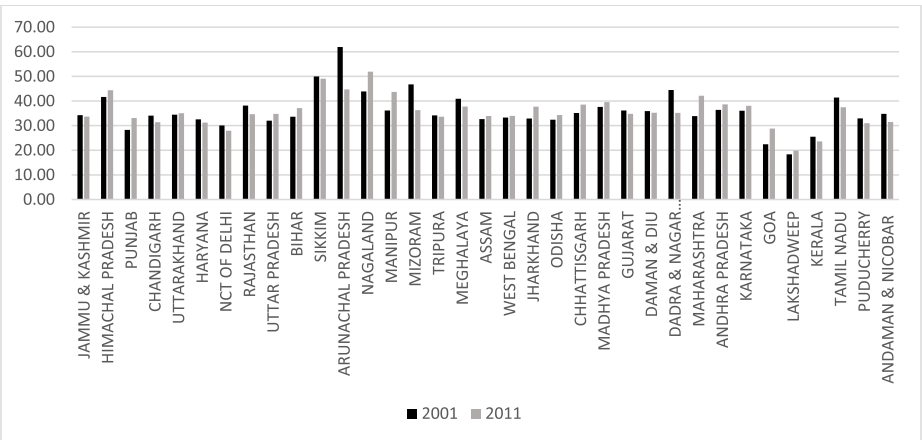
Table 11: Proportion of PWD Employment in Bihar by Type of Disability and Gender Groups in 2001 and 2011 (in percentage)

	Census 2001			Census 2011		
Disability by Type	**Persons**	**Males**	**Females**	**Persons**	**Males**	**Females**
Total	33.62	45.03	16.55	37.12	48.70	21.39
In Seeing	36.34	51.14	17.99	36.61	50.40	20.35
In Hearing	32.55	42.35	18.36	38.72	51.74	23.54
In Speech	42.03	56.60	21.30	38.03	49.99	21.99
In Movement	28.24	36.25	11.47	38.08	48.25	17.94
Mental Disability	30.86	38.96	15.82	28.68	35.39	17.12
Mental Retardation	---	---	---	29.53	36.71	17.82
Mental Illness	---	---	---	26.67	32.46	15.23
Any Other	---			40.62	52.72	24.54
Multiple Disability	---	---	---	22.87	28.32	14.28

Source: Calculated from Census of India, 2001 and 2011

increase in the growth of work participation rate among the disabled is much higher than that of general population of Bihar and India. The female workforce participation rate (FWPR) is much lower but has increased from about 16 per cent to 21 per cent. Employment status has recorded significant increase in the categories of movement disability (from about 28% to 38%) and hearing disability (about 32% to 38%). A slight increase is observed among the "seeing" PWDs. There is a little decline in the work status of persons with mental disability. The WPR among the persons with speech disability has recorded a considerable decline (from about 42% in 2001 to 38% in 2011). For female PWDs, the employment status has improved in all categories of disability. The highest WPR can be seen in the "any-other" category (about 40%) of disability in 2011.

Figure 9: Proportion of PWD Employment across States in 2001 and 2011



Source: Census of India, 2001 and 2011

Figure 9 illustrates the employment status of PWDs in 2001 and 2011. As per 2011 Census data, the north-eastern states observed the highest proportion of work participation rates. The maximum WPR was in the state of Nagaland (51.92%), followed by Sikkim (49.04%), Arunachal Pradesh (44.69), Himachal Pradesh (44.37%), and Manipur (43.69%). Among the larger states, Madhya Pradesh observed the highest score (39.56%), followed by Andhra Pradesh (38.61%), Karnataka (38.05%), and Tamil Nadu (37.46%). Kerala is an economically prosperous state but it has the lowest proportion of PWD workers among all the states of India. Bihar and Uttar Pradesh were in the middle range in terms of PWDs' employment. Union territories experienced the lowest WPR among the PWDs. It is also noticeable that many north-eastern states have very high prevalence of disability and also high work participation rate, for example, Sikkim.

A comparative study between these two periods of time suggests that overall work participation rates have slightly increased in 2011 relative to

2001 data. The highest decadal growth in the WPR is perceptible in the states of Goa, Maharashtra, Manipur, Nagaland, Punjab, Jharkhand and Bihar. In 2001 the range of WPR in these states varied between 22 per cent and 33 per cent. In 2011 the range shifted upwards and the WPR values varied between 28 per cent and 38 per cent. The lowest and decremental decadal growth is observed in the states of Arunachal Pradesh, Mizoram, Tamil Nadu and Rajasthan. In these states, the WPR values ranged from 38 per cent to 62 per cent in 2001. It drastically declined in 2011, the shifted range varying between 34 per cent and 44 per cent. Kerala also registered a slight decline from the WPR of 25 per cent in 2001 to 23 per cent in 2011.

5. Conclusion and Implications

One out of each tenth family includes a disabled member in India as per 2011 Census data of the government of India. A cursory glance at the state and district level distribution of humans with disabilities shows that PWDs are dispersed across every corner of India. Incidence of disability falls disproportionately across different geographic regions and socio-economic groups. In addition, there is wide socio-economic and regional divide in prevalence of disability in India. To a great extent, similar conclusions can be drawn in the context of Bihar. Analysis of decadal growth of disability prevalence in Bihar shows that it is almost one per cent higher than that of India. The female PWDs who belong to Dalit communities of Bihar registered very high decadal growth. Decadal growth is more pronounced among the underprivileged, vulnerable and marginal sections of the society. It is also evident that elderly people are more likely to develop disabilities and longer life has not translated into healthier lives, these are the matters of grave concerns and pose serious challenges in the era of neo-liberalism when budgetary allocations to the disability sector are not encouraging. It calls for urgent disability care needs and rehabilitation policies in addition to the restructuring of disability policies and practices, while dealing with these sections of the disabled population. In a state like Bihar, proper implementation of central and state welfare schemes, particularly mandated reservation policies, should be critically reviewed and taken into consideration. Further, the outcomes of the linear regression model suggest that prevalence of disability in Bihar is affected by a number of socio-economic and demographic factors. Improvement in average household conditions can transform the lives of the PWDs. Therefore, providing access to basic capabilities to persons with disabilities may be strategically important to reduce the challenges for the disabled people in India.

In the context of employment status of the people with disabilities in Bihar, it is pertinent to mention that the proportion of PWDs employment in Bihar is more than that of PWD employment in India and total employment of Bihar. In an economically poor state like Bihar, higher proportion of PWD employment

as compared to general population also reflects struggle for existence and little support from family/relatives or the state. Gender analysis suggests that the female workforce participation rate is much lower than the national figures. FWPR is highest among the ST communities, followed by SCs. The PWD employment rates among the main workers significantly declined in different types of disability in 2011 relative to 2001. This decline is compensated by the rise in marginal workers in the disability sector. Therefore, there is also increasing informalization in the employment status of different types of PWDs which is a matter of concern.

The upcoming round of Census enumeration to be conducted in 2021 has gained momentum in India. It is evident from the body of literature that there is "underreporting" in the disability estimates of India. It is observed that there is a significant increase in the "any-other" category of disability which reflects lacunae in the enumeration process of the Census. It also shows lack of training and awareness among the enumerators themselves. In addition, high number of "multiple disabilities" also poses challenges before the development policy practitioners. Reddy and Sree (2015) with regard to disability statistics and its relevance suggest that "data sensitization would definitely help the policy makers in formulating programmes and allocations of budgets for PWDs in general and different categories of PWDs in particular". In this context, various related pertinent issues have been highlighted in the present study, which if taken into consideration, may lead to robustness in the validity and reliability of India's disability estimates in the coming Census survey under the broader ambit and commitment for the 2030 Agenda for Sustainable Development Goals (SDGs).

To conclude, understanding the temporal and spatial variations in the prevalence of disability and its association with socio-economic and demographic indicators is vital for designing public health policies. With regard to employment scenario for the persons with disabilities, it is learnt that understanding the economic experiences of PWDs is critical for the advocates of disability and the policy-makers. Therefore, for the empowerment of disabled persons, higher participation in economic activities is extremely important. The problems faced by the persons with disabilities are multifaceted and require coordinated efforts to tackle them at all the levels – social, economic and political. The results provided in the present study could be helpful in policy formulation, particularly in the context of local idiosyncrasies.

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