

## Assessment and Mapping of Disability Prevalence in India: A District-Level Analysis

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**Abstract:** The paper carries out a comprehensive analysis of temporal and spatial variations in the disability prevalence of India at the district level. However, the prime focus is the mapping of prevalence of each type of disability at the district level. The findings of the study suggest that about two-third of persons with disabilities (PWDs) reside in rural areas. However, the growth rate of disabled population is more in urban areas and among urban females. Besides, the absolute number of male with disabilities is greater than the absolute number of female with disabilities. Further, the maximum proportion of disability is observed among the persons with movement disability, however, considerably higher numbers of the PWDs under “any-other” category raise concern about the enumeration process in 2011 Census. The study further shows that there are geographical disparities in the prevalence of disability across India. In addition, burden of disability is disproportionately concentrated in certain disadvantaged regions and districts. Further, a cursory glance across the district level distribution of persons with disabilities suggests that they are scattered across every nook and corner in India with significant temporal and spatial variations. It is also evident that majority of the southern states reported higher number of persons with disabilities than the northern counterparts despite better performance on socio-economic indicators. The study suggests balanced regional development taking cognizance of specific rights and needs of each type of disability. Active support from the state, civil societies and disability advocate groups is extremely crucial along with mass sensitisation and awareness among the masses about the disabled communities. Also, the paper recommends for enhanced social securities and inclusive disability development policies.

**Keywords:** Disability, Demography, Gender, Regions, Census of India, GIS Mapping.

### Introduction

According to the World Report on Disability (2011), prepared by the World Health Organisation and World Bank “Disability is part of the human condition. Almost everyone will be temporarily or permanently impaired at some point in life, and those who survive to old age will experience increasing difficulties in functioning” (p. 3). The report highlights that over a billion people, about 15% of the world’s population, have some form of disability. Disability cuts across class, caste, gender, race, religion, ethnicity, and nationality, but mostly a differently abled person’s first identity among their other identities is their disability (Jha, 2016). In India, there are primarily two data sources (Census and NSS) which follow their own definitions to define disability. The NSS (2002) considered disability as “any restriction or lack of abilities to perform an activity in the manner or within the range considered normal for human being”. It excludes illness /injury of recent origin (morbidity) resulting into temporary loss of ability to see, hear, speak or move. On the other hand, population Census does not define disability; it identifies the disabled which is self-explanatory. The Census 2001 asks the respondents whether any-one in the household suffers from a disability, without first comprehensively defining disability. Official estimates of disability prevalence in India are low at 2.1% in the Census (2001). It is 1.8% in the National Sample Survey (2002). However, the disability questions in both sources have been reported to have major limitations (Mitra and

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Sambamoorthi, 2006). Thus, it is also not advisable to make a comparison between Census and NSS data.

It is worth mentioning that the government does not regularly or timely conduct NSS data on disability. The NSS conducted the first comprehensive survey on disability in 2002 (58<sup>th</sup> round). After that the NSS conducted 76<sup>th</sup> round of data on disability in the second half of 2018. Ironically, the disability prevalence has remained almost the same between Census (2011) and NSS (2018) at 2.2%. Alternative estimates based on better disability measures suggest a higher prevalence of disability in India in the range of 4–8% (Action on Disability and Development 2006). During Eleventh Plan (2007-12), the erstwhile Planning Commission suggested that the disability figure was 5-6 percent of the total population, which is much higher than the official estimates because of under-estimation. There is consensus among the experts about the underreporting and underestimation of disability prevalence in India. It is partly attributed to perceived stigma among the women, discrimination and marginalisation. Besides, narrow definition of disability, faulty enumeration process, and lack of robust methodologies further lead to their exclusion. Given this backdrop, the paper attempts to investigate temporal and spatial variations in the prevalence of each type of disability across genders and regions of India using several rounds of Census and NSS data. Further, the paper analyses prevalence of each type of disability across districts of India in 2011 with the help of geographic information system (GIS) mapping methods.

### **Nature and Extent of Disability Prevalence in India: Evidence from Census and NSS**

Five types of disability data were collected in 2001 Census of government of India, namely, persons with seeing, hearing, speech, movement and mental disability. The list expanded to 8 types of PWD categories in Census 2011. In 2001, data was collected only for mental disability, however, it was bifurcated into two groups, mental retardation (R) and mental illness (I), while collecting data in Census 2011. In addition, data on two new categories multiple disability and any other disability was collected for the first time in 2011 Census. Multiple disability covers as many as three types of disabilities.

Any-other category has emerged as the fourth largest (one-fifth of total PWDs) category of disability in Census 2011. This category was included in the Census to overcome the problem of estimation or counting the numbers of persons with disabilities. In other words, those PWDs who are not listed in the Census question, the informants were required to report in this category. Very high number of any other disability also shows lacunae in the enumeration process of the Census. It may be possible that the enumerators may not have properly explained the definition of any other disability to the informants. Inaccurate numbers pose challenged to the development policy framing. Thus, precise comparison between the two-time periods cannot be made. Both rounds of Census data used different methodology to define disability and collect data. Nevertheless, presenting pictures of both the periods will help to understand the demographic composition and help framing specific public policies for each type of disability.

Table 1 presents share of PWDs for different categories as per 2001 and 2011 Census data of India. It is noticeable that the decadal growth is negative for persons with seeing, movement and mental disability. However, these declines are offset by drastic rise in the decadal growth of individuals with hearing and speech disability. A number of factors can be attributed to these empirical inconsistencies which mainly emanate from the change in methods and definition of disability data collection in 2011 Census. Most importantly, in 2001, close to

half of the PWDs had “in seeing” disability as compared to 18.77% in 2011. The persons who had seeing impairment experienced drastic decline in 2011. It can be attributed to the change in the definition of disability. One eyed individuals were considered as disabled in Census 2001, whereas, as per the Census 2011 such persons have not been treated as disabled in seeing. In addition, in the Census 2011 enumerators were asked to apply a simple test to ascertain blurred vision. In Census 2001 no such instructions were given and was mostly based on self-reporting.

**Table 1: Proportion of Disabled Persons and Decadal Growth by Type of Disability in India, 2001-11**

Type of PWDs	Census 2001		Census 2011		Decadal Growth
	Total PWDs	Share (%)	Total PWDs	Share (%)	
Total PWDs	21906769	2.12	26814994	2.21	22.41
Seeing	10634881	48.55	5033431	18.77	-52.67
Speech	1640868	7.49	1998692	7.45	21.81
Hearing	1261722	5.76	5072914	18.92	302.06
Movement	6105477	27.87	5436826	20.28	-10.95
Mental	2263821	10.33	2228844	8.31	-1.55
Mental Retardation	-----	-----	1505964	5.62	-----
Mental Illness	-----	-----	722880	2.70	-----
Multiple	-----	-----	2116698	7.89	-----
Any Other	-----	-----	4927589	18.38	-----

Source: Calculated from Census of India, 2001 and 2011

The number for speech disability has also slightly declined in 2011 from 7.49% to 7.45%. A person was recognized as having “speech disability”, if he/she is dumb or whose speech is not understood by a listener of normal comprehension and hearing. Definition was made clearer in Census 2011 to record persons with speech disability. For instance, “persons who speak in single words and are not able to speak in sentences” was specifically mentioned to be treated as disabled. There is very high increase in “hearing” disability from 5.76% to 18.92%. Persons using hearing aid have been treated as disabled at Census 2011. They were not treated as disabled at the Census 2001. Further, persons having problem in hearing through one ear although the other ear is functioning normally was considered having hearing disability in Census 2001. But in Census 2011, such persons were not considered as disabled. It is also pertinent to mention that movement disability has significantly declined from 27.87% to 20.28%. There was also major revision in the category of movement disability. Highest number of persons are rerecorded in the category of movement disability.

Further, out of total PWDs, there were 10.33% mentally disabled people in 2001, which has slightly declined to 8.31% in 2011. There were 5.62% mentally retarded people and 2.70% mentally ill persons in 2011. Thus, even after combining both types of mental disabilities in 2011, Census 2001 depict higher proportion of individuals with mental disability. It is important to highlight that “any other” category of PWD has a very high share of the total PWDs (18.38%) and Multiple disabled persons constitute 7.89% of the total PWDs.

Table 2 provides the percentage of persons with only one broad types of disability as per 76<sup>th</sup> round of data on disability conducted in 2018. It is evident that the maximum burden of disability across genders is observed among individuals with movement disability (1.2%). It is quite interesting to highlight that except for locomotor disability, rest of the different types of disabilities depict perfectly equal numerical values across genders. Movement disability is

comparatively easy to identify, and its severity can be detected, it is one of the reasons in both Census and NSS data, the proportion of this particular disability is higher.

Table 2: Percentage of Persons with Only One Broad Type of Disability in NSS (2018)

Type of Disability	Person	Male	Female
Locomotor Disability	1.2	1.4	1.1
Visual Disability	0.2	0.2	0.2
Hearing Disability	0.2	0.2	0.2
Speech and Language Disability	0.1	0.1	0.1
Intellectual Disability	0.1	0.1	0.1
Mental Illness	0.1	0.1	0.1
Other Type of Disability*	0.0	0.0	0.0
Multiple Disability	0.2	0.2	0.2
Any Disability	2.2	2.4	1.9

Source: NSS 76th Round, Persons with Disabilities in India, Report No. 583

Note: \*: Sample number of persons is greater than zero but estimates in per cent when rounded to one place of the decimal is 0.0.

### Disability Prevalence across the States of India: Evidence from Census and NSS

A cursory glance at the state-wise distribution of persons with disabilities suggests that PWDs are scattered across every nook and corner in India. However, at the same time, India's disabled population is unevenly distributed as certain states have a higher concentration of the disabled population.

Table 3 presents share of PWD males and females out of the total population in the corresponding states and make a comparative study between 2001 and 2011 Census data. The table is self-explanatory; however, an attempt is made to explain in brief. According to the 2001 Census, Sikkim experienced the highest prevalence of disability at 3.77%, followed by Arunachal Pradesh, Jammu and Kashmir and Odisha. It is important to mention that southernmost states, Kerala, Puducherry, and Tamil Nadu, which are economically better off as compared to most states, had higher disability prevalence. Karnataka and Andhra Pradesh have a lower incidence of disability. Also, both of them have almost the same prevalence of disability, around 1.80%. Some north-eastern states like Nagaland, Manipur and Meghalaya have the least prevalence of disability. Goa had a minimum disability (1.17%). Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan, West Bengal and Gujarat are adjacent in terms of disability prevalence; it ranged from 2% to 2.5%. Among the bigger states, Maharashtra had the least number of PWDs.

It can be observed from 2011 Census data that many states have reduced the incidence of disability significantly, some have worsened, and some are on the same ladder. Disability prevalence in the state of Sikkim declined but still the highest in 2011, followed by Odisha and Jammu and Kashmir. Disability prevalence declined in some of the southern states. However, disability condition worsened for Andhra Pradesh and Maharashtra. Except for Sikkim, Lakshadweep and Puducherry, disability condition has improved and are among the lowest for most of the north-eastern states and union territories. Thus, it is evident that the southern states reported more number of persons with disabilities than their northern counterparts. In this context, Reddy and Sree (2015) pointed out that "Southern states have been in the forefront in delivering state welfare measures to the disabled by means of monthly pension, reservations in educational institutions, jobs which motivate household members to report. The very absence

of such visible affirmative policies and emphasis on disabled in the Northern states might have caused underreporting of the disabled” (p. 73).

Table 3: Share of Disabled in the State’s Population, Census 2001 and 2011

States	Census 2001			Census 2011		
	Persons	Males	Females	Persons	Males	Females
Jammu & Kashmir	2.98	3.20	2.74	2.88	3.08	2.65
Himachal Pradesh	2.57	2.93	2.19	2.26	2.48	2.04
Punjab	1.74	1.95	1.51	2.36	2.59	2.09
Chandigarh	1.73	1.88	1.52	1.40	1.51	1.27
Uttarakhand	2.29	2.62	1.96	1.84	2.00	1.67
Haryana	2.15	2.41	1.85	2.16	2.34	1.95
NCT of Delhi	1.70	1.90	1.46	1.40	1.54	1.24
Rajasthan	2.50	2.86	2.11	2.28	2.39	2.17
Uttar Pradesh	2.08	2.37	1.75	2.08	2.26	1.88
Bihar	2.27	2.62	1.90	2.24	2.47	1.98
Sikkim	3.77	3.95	3.55	2.98	3.03	2.92
Arunachal Pradesh	3.03	3.82	2.15	1.93	2.00	1.86
Nagaland	1.33	1.39	1.27	1.50	1.58	1.41
Manipur	1.31	1.41	1.21	2.05	2.17	1.93
Mizoram	1.80	1.91	1.69	1.38	1.48	1.28
Tripura	1.84	2.04	1.64	1.75	1.89	1.60
Meghalaya	1.24	1.30	1.18	1.49	1.56	1.42
Assam	1.99	2.16	1.81	1.54	1.61	1.46
West Bengal	2.30	2.55	2.04	2.21	2.41	2.00
Jharkhand	1.66	1.90	1.41	2.33	2.52	2.14
Odisha	2.78	3.05	2.49	2.96	3.18	2.74
Chhattisgarh	2.02	2.21	1.82	2.45	2.60	2.29
Madhya Pradesh	2.33	2.62	2.02	2.14	2.36	1.89
Gujarat	2.06	2.29	1.81	1.81	1.95	1.66
Daman & Diu	2.00	1.92	2.12	0.90	0.86	0.96
Dadra & Nagar H.	1.84	1.91	1.74	0.96	0.98	0.93
Maharashtra	1.62	1.85	1.37	2.64	2.91	2.35
Andhra Pradesh	1.79	2.01	1.57	2.68	2.89	2.47
Karnataka	1.78	2.00	1.55	2.17	2.35	1.98
Goa	1.17	1.29	1.04	2.26	2.30	2.22
Lakshadweep	2.77	2.89	2.63	2.50	2.53	2.48
Kerala	2.70	2.96	2.46	2.28	2.46	2.11
Tamil Nadu	2.63	2.52	2.74	1.64	1.82	1.45
Puducherry	2.65	3.03	2.28	2.42	2.67	2.17
Andaman & Nicobar	1.98	2.19	1.73	1.75	1.90	1.58

Source: Calculated from Census of India, 2001 and 2011

It is evident from Table 4 that maximum prevalence of Disability was observed in the state of Kerala (3.20%) and Odisha (3.20%). These states were followed by Andhra Pradesh, Haryana, Punjab, Karnataka, Uttar Pradesh, Maharashtra and Rajasthan, the prevalence rates varying between two to three per cent. Majority of the southern states depict higher incidence of disability which is very similar to Census figures. Despite better socioeconomic indicators, Kerala has comparatively higher disability prevalence mainly due to better disability estimates and mass awareness. There is also better data sensitisation as the state has started conducting its own disability surveys using improved methods. Most of the union territories and north-eastern states have lower disability prevalence rates. Jammu and Kashmir appear to have significantly reduced the disability rates, as it depicted higher disability rates in the 2011 Census. The incidence of disability in the states of Madhya Pradesh, West Bengal, Telangana, Tamil Nadu, Bihar and Gujarat fall in the mid-range. As far as gender analysis is concerned,

in all the states, the proportion of male with a disability is higher than that of the female with disability. In the state of Punjab, both male and female have an equal percentage of disabled.

Table 4: Percentage of Persons with Disability for Each State/UT in NSS (2018)

STATE/UT	Rural			Urban			Total		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
Andhra P.	3.4	3.0	3.2	2.6	2.3	2.4	3.1	2.8	3.0
Arunachal P.	2.2	1.9	2.1	0.9	0.9	0.9	1.9	1.8	1.8
Assam	1.9	1.6	1.7	2.1	2.3	2.1	1.9	1.7	1.8
Bihar	1.9	1.3	1.7	1.9	1.3	1.6	1.9	1.3	1.7
Chhattisgarh	2.7	1.8	2.2	2.1	1.6	1.9	2.6	1.8	2.2
Delhi	1.5	1.0	1.3	1.4	1.1	1.3	1.4	1.1	1.3
Goa	1.6	1.6	1.6	1.2	1.2	1.2	1.4	1.3	1.3
Gujrat	1.8	1.4	1.6	1.6	1.3	1.5	1.7	1.3	1.5
Haryana	2.9	2.6	2.8	2.2	3.0	2.6	2.7	2.7	2.7
Himachal P.	2.6	1.9	2.2	1.7	1.4	1.6	2.5	1.9	2.2
J & K	1.5	1.3	1.4	1.7	1.6	1.6	1.6	1.4	1.5
Jharkhand	2.6	1.8	2.2	2.3	1.9	2.1	2.6	1.8	2.2
Karnataka	3.0	2.4	2.7	2.0	1.8	1.9	2.6	2.2	2.4
Kerala	3.3	2.8	3.0	3.6	3.0	3.3	3.4	2.9	3.2
Madhya P.	2.4	1.7	2.1	2.4	2.0	2.2	2.4	1.8	2.1
Maharashtra	3.0	2.1	2.5	1.9	1.7	1.8	2.5	2.0	2.2
Manipur	0.9	0.7	0.8	0.9	0.7	0.8	0.9	0.7	0.8
Meghalaya	1.0	1.0	1.0	1.1	0.8	0.9	1.0	0.9	1.0
Mizoram	1.2	0.8	1.0	1.2	1.2	1.2	1.2	1.0	1.1
Nagaland	1.0	1.0	1.1	0.9	1.1	1.0	1.0	1.1	1.0
Odisha	3.7	3.0	3.3	2.8	2.8	2.8	3.5	3.0	3.2
Punjab	3.1	3.1	3.1	1.8	2.3	2.0	2.6	2.8	2.7
Rajasthan	2.6	1.8	2.2	2.5	2.0	2.3	2.6	1.9	2.2
Sikkim	2.7	2.4	2.6	1.5	1.0	1.3	2.4	2.1	2.2
Tamil Nadu	2.3	1.9	2.1	1.7	1.8	1.8	2.0	1.9	1.9
Telangana	2.5	2.2	2.4	2.0	1.3	1.7	2.3	1.8	2.0
Tripura	1.3	1.2	1.3	1.4	1.0	1.2	1.3	1.1	1.2
Uttarakhand	1.8	1.6	1.7	1.4	1.5	1.4	1.7	1.5	1.6
Uttar Pradesh	2.8	2.1	2.5	2.3	1.6	2.0	2.7	2.0	2.4
West Bengal	2.6	1.8	2.2	2.2	1.7	2.0	2.5	1.8	2.1
A & N Island	2.5	1.8	2.2	1.3	0.8	1.1	1.8	1.2	1.5
Chandigarh	1.4	0.7	1.0	1.1	1.1	1.1	1.1	1.0	1.1
D & N Haveli	1.3	1.5	1.4	0.8	0.6	0.7	1.1	1.0	1.1
Daman & Diu	1.7	1.8	1.7	1.1	0.5	0.9	1.2	0.7	1.0
Lakshadweep	1.9	1.6	1.8	2.4	1.7	2.0	2.3	1.7	2.0
Puducherry	3.7	2.7	3.2	2.3	2.3	2.3	2.8	2.5	2.6
All-India	2.6	2.0	2.3	2.1	1.8	2.0	2.4	1.9	2.2

Source: NSS 76th Round, Persons with Disabilities in India, Report No. 583 As per 76<sup>th</sup> Round of NSS data  
 Note: P. in this research article denotes "Pradesh".

In most of the states, the proportion of persons with disabilities residing in rural areas is higher than those living in urban areas. In most of the north-eastern states, there is a very little divergence in the prevalence. In Delhi and Manipur, the proportion of PWDs living in rural and urban areas is equal. Further, in the States/UTs of Jammu and Kashmir, Kerala, Madhya Pradesh, Mizoram, Rajasthan, Chandigarh and Lakshadweep, the percentage of individuals with disabilities residing in urban areas is higher than that of rural areas.

**Prevalence of Different Types of Disabilities across Gender and Regions: A comparative Study across the States of India**

Table 5 shows the proportion of persons with a particular disability for each State/UT as per 2011 Census. The percentage of persons with a visual disability is maximum in the southern states of India except Tamil Nadu. Bihar, Bengal, Odisha and Rajasthan have also observed the highest burden of seeing-disability. However, it is the least among the most Union territories and the north-eastern states except Manipur and Sikkim. As far as hearing disability is concerned, the maximum proportion is recorded in Sikkim followed by Jammu and Kashmir, Arunachal Pradesh, Odisha, Bihar, Punjab and Uttar Pradesh. Further, the highest proportion of speech disability is observed by Maharashtra, Goa, Andhra Pradesh, Sikkim, Bihar, Odisha and West Bengal. Among the bigger states in terms of population, the highest burden of movement disability is observed in the states of Andhra Pradesh, Rajasthan, Odisha, Madhya Pradesh and Maharashtra.

Table 5: Percentage of Persons with Broad Type of Disability for Each State/UT, 2011

States/UTs	Seeing	Hearing	Speech	Movement	Mental R	Mental I	Any Other	Multiple
Jammu & Kashmir	0.53	0.59	0.15	0.46	0.13	0.12	0.53	0.35
Himachal P.	0.38	0.39	0.12	0.47	0.13	0.08	0.42	0.27
Punjab	0.30	0.53	0.09	0.47	0.16	0.08	0.60	0.14
Chandigarh	0.17	0.23	0.09	0.36	0.10	0.07	0.24	0.13
Uttarakhand	0.29	0.37	0.12	0.37	0.11	0.06	0.30	0.20
Haryana	0.33	0.46	0.09	0.46	0.12	0.06	0.46	0.19
NCT of Delhi	0.18	0.21	0.09	0.40	0.10	0.06	0.22	0.15
Rajasthan	0.46	0.32	0.10	0.62	0.12	0.06	0.29	0.31
Uttar P.	0.38	0.51	0.13	0.34	0.09	0.04	0.47	0.11
Bihar	0.53	0.55	0.16	0.36	0.09	0.04	0.41	0.11
Sikkim	0.45	0.88	0.26	0.34	0.08	0.08	0.40	0.48
Arunachal P.	0.41	0.59	0.11	0.23	0.09	0.05	0.28	0.17
Nagaland	0.21	0.45	0.12	0.19	0.06	0.05	0.24	0.17
Manipur	0.67	0.45	0.09	0.19	0.17	0.05	0.30	0.12
Mizoram	0.19	0.31	0.11	0.18	0.14	0.10	0.17	0.19
Tripura	0.29	0.32	0.12	0.32	0.12	0.08	0.32	0.18
Meghalaya	0.24	0.42	0.09	0.18	0.08	0.08	0.29	0.12
Assam	0.26	0.33	0.13	0.24	0.08	0.06	0.28	0.16
West Bengal	0.47	0.35	0.16	0.35	0.15	0.08	0.44	0.22
Jharkhand	0.55	0.50	0.14	0.45	0.11	0.06	0.34	0.18
Odisha	0.63	0.57	0.16	0.62	0.17	0.10	0.41	0.30
Chhattisgarh	0.44	0.36	0.11	0.75	0.13	0.08	0.30	0.28
Madhya P.	0.37	0.37	0.10	0.56	0.11	0.05	0.41	0.18
Gujarat	0.35	0.32	0.10	0.41	0.11	0.07	0.33	0.12
Daman & Diu	0.16	0.13	0.06	0.25	0.07	0.04	0.11	0.09
Dadra & Nagar Haveli	0.12	0.21	0.06	0.20	0.05	0.03	0.14	0.14
Maharashtra	0.51	0.42	0.42	0.49	0.14	0.05	0.45	0.15
Andhra P.	0.47	0.40	0.26	0.64	0.16	0.05	0.48	0.23
Karnataka	0.43	0.39	0.15	0.45	0.15	0.03	0.40	0.16
Goa	0.34	0.37	0.36	0.38	0.12	0.11	0.40	0.18
Lakshadweep	0.52	0.35	0.11	0.56	0.17	0.15	0.28	0.36
Kerala	0.35	0.32	0.12	0.51	0.20	0.20	0.29	0.30
Tamil Nadu	0.18	0.31	0.11	0.40	0.14	0.05	0.33	0.13
Puducherry	0.29	0.49	0.15	0.73	0.19	0.07	0.33	0.18
Andaman & Nicobar	0.28	0.32	0.14	0.42	0.08	0.10	0.22	0.19

Source: Calculated from Census of India, 2011

It is interesting to note that mental retardation is higher among the southern states and the economically prosperous regions. Kerala has recorded the highest proportion of mental

retardation as well as mental illness. Any-other disability is maximum in the states of Punjab, Jammu and Kashmir, Andhra Pradesh, Uttar Pradesh, Haryana, Maharashtra, and West Bengal. It is the least among the majority of the north-eastern states and UTs. As far as multiple disability is concerned, the highest proportion of population with multiple disability is observed in Sikkim which is followed by Lakshadweep, Jammu and Kashmir, Rajasthan, Odisha and Kerala. The southern states are in the middle range. The lowest scorers are Bihar and Uttar Pradesh.

Table 6: Percentage of Persons with Broad Type of Disability for Each State/UT, 2018

States/UTs	Locomotor Disability	Visual Disability	Hearing Disability	Speech Disability	Mental Retardation	Mental Illness	Other Type	Any Disability
Andhra P.	1.9	0.3	0.5	0.3	0.2	0.1	0.1	3.0
Arunachal P.	0.4	0.4	0.4	0.3	0.1	0.2	0.2	1.8
Assam	0.9	0.3	0.3	0.2	0.1	0.1	0.0	1.8
Bihar	1.0	0.2	0.2	0.2	0.1	0.1	0.0	1.7
Chhattisgarh	1.3	0.2	0.3	0.2	0.2	0.1	0.1	2.2
Delhi	0.8	0.1	0.1	0.1	0.1	0.1	0.0	1.3
Goa	0.7	0.1	0.3	0.1	0.1	0.1	0.0	1.3
Gujrat	0.9	0.1	0.2	0.2	0.2	0.1	0.1	1.5
Haryana	1.8	0.2	0.3	0.2	0.2	0.1	0.0	2.7
Himachal P.	1.3	0.2	0.3	0.2	0.2	0.2	0.0	2.2
J & K	0.8	0.2	0.2	0.2	0.1	0.1	0.0	1.5
Jharkhand	1.3	0.2	0.3	0.3	0.1	0.2	0.1	2.2
Karnataka	1.4	0.4	0.4	0.2	0.2	0.1	0.0	2.4
Kerala	1.9	0.4	0.5	0.3	0.3	0.4	0.2	3.2
Madhya P.	1.3	0.3	0.3	0.2	0.2	0.1	0.0	2.1
Maharashtra	1.5	0.2	0.3	0.2	0.2	0.1	0.1	2.2
Manipur	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.8
Meghalaya	0.4	0.2	0.2	0.2	0.1	0.0	0.0	1.0
Mizoram	0.2	0.1	0.2	0.3	0.2	0.1	0.0	1.1
Nagaland	0.3	0.2	0.1	0.2	0.1	0.1	0.1	1.0
Odisha	1.8	0.4	0.6	0.3	0.2	0.2	0.1	3.2
Punjab	2.0	0.2	0.2	0.2	0.2	0.1	0.0	2.7
Rajasthan	1.4	0.3	0.3	0.2	0.1	0.1	0.0	2.2
Sikkim	0.5	0.5	0.8	0.5	0.1	0.1	0.0	2.2
Tamil Nadu	1.1	0.2	0.3	0.2	0.2	0.1	0.1	1.9
Telangana	1.3	0.2	0.2	0.2	0.1	0.1	0.0	2.0
Tripura	0.6	0.1	0.2	0.2	0.1	0.1	0.1	1.2
Uttarakhand	0.8	0.3	0.3	0.2	0.1	0.1	0.0	1.6
Uttar P.	1.6	0.2	0.3	0.2	0.1	0.1	0.0	2.4
West Bengal	1.2	0.2	0.3	0.3	0.2	0.2	0.1	2.1
A & N Island	0.9	0.1	0.1	0.2	0.1	0.1	0.1	1.5
Chandigarh	0.7	0.1	0.2	0.2	0.1	0.0	0.0	1.1
D & N Haveli	0.5	0.1	0.2	0.1	0.1	0.1	0.1	1.1
Daman & D.	0.6	0.0	0.1	0.2	0.1	0.0	0.0	1.0
Lakshadweep	1.3	0.2	0.2	0.1	0.2	0.1	0.0	2.0
Puducherry	1.4	0.3	0.5	0.2	0.2	0.2	0.0	2.6
All-India	1.4	0.2	0.3	0.2	0.2	0.1	0.1	2.2

Source: NSS 76th Round, Persons with Disabilities in India, Report No. 583

Table 6 presents the percentage of persons with a broad type of disability for each State/UT as per NSS 76<sup>th</sup> round of data on disability. It is evident that the highest number of individuals suffered from a locomotor disability, as it is the most commonly visible form of disability in both Census and NSS. The highest prevalence of locomotor disability is observed in the states of Punjab, Andhra Pradesh Kerala, Haryana, Odisha, Uttar Pradesh, Maharashtra, Karnataka and Rajasthan, the rates ranging from 2 per cent to 1.4 per cent in descending order.



Again, the lowest prevalence rates of disability are observed in most of the north-eastern states and union territories. Persons with hearing disabilities recorded the next highest proportion. Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh and Delhi witnessed the highest proportion of persons with hearing disabilities. Most of the southern states were placed in the middle range. In case of the proportion of persons with visual disabilities, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh and Delhi topped the list. Interestingly, these figures are very similar to those of persons with hearing disabilities. Among bigger states, Uttar Pradesh and West Bengal have the least number of individuals with visual disabilities.

When it comes to persons with a speech disability, Sikkim observed the highest proportion. It is followed by Andhra Pradesh, Arunachal Pradesh, Jharkhand, Kerala, Mizoram, Odisha and West Bengal, interestingly the incidence rate for all these states is 0.30 per cent. Persons with mental retardation is almost twice the number of persons with mental illness. In the case of mental retardation, half of the states recorded values of 0.20% whereas others scored 0.10%, Kerala being an exception (0.30%). On the other hand, all the states observed the incidence of mental illness between 0 per cent to 0.20 per cent. It is important to highlight that Kerala is an outlier, it has observed a higher value of incidence of mental illness, that is 0.40 per cent. Probably, robust estimates of mental illness in the state can be attributed to it. “Other disabilities” have been introduced for the first time in NSS disability estimates. About 0.10% of individuals suffer from “other type” of disabilities. It may be noted that “other type of disability” constitute chronic neurological conditions: multiple sclerosis, Parkinson’s disease, thalassemia, sickle cell disease etc. The states of Arunachal Pradesh and Kerala have the highest numbers of concentration of “other type” of disability, it is 0.20 per cent. Bigger states like Andhra Pradesh, Gujarat, Maharashtra, Tamil Nadu and West Bengal followed next. For the majority of the states, the rate of disability prevalence was zero per cent. For many states, “other disabilities” is zero, but, it is important to take into consideration that sample number of persons is greater than zero but estimates in per cent when rounded to one place of a decimal is 0.0.

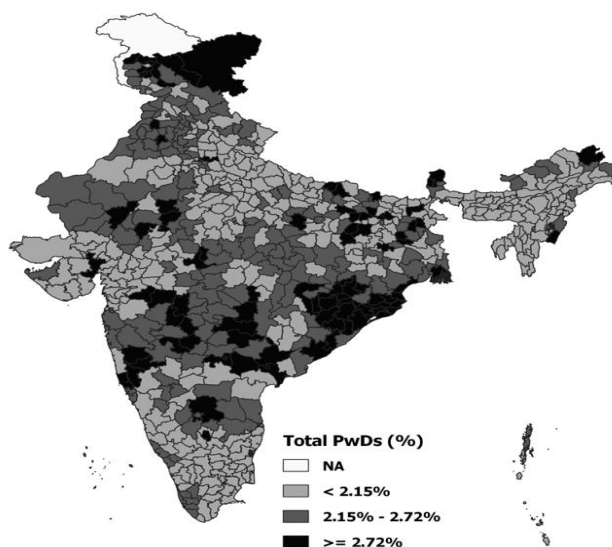
### **Prevalence of Disability across Districts of India in 2011: Evidence from GIS Mapping**

This section illustrates disability prevalence across diverse regions of India with the help of Geographical Information System (GIS Mapping). The paper makes use of district-level Census data of 2011. The district-level analysis is undertaken for different types of PWD categories mentioned in the Census of India.

Figure 1 presents the spatial image of the total disability prevalence in India at the regional level. The prevalence rates are calculated as a proportion of persons with disability out of the total population in that particular district. Disability is well spread across most regions of India. However, there are some clusters where there is a very higher concentration of incidence of disability. Besides, there are some zones where there is a continuous spread of prevalence of disability (beyond the territorial boundary of the states). The regions which have witnessed very high disability prevalence are the states of Jammu and Kashmir, Odisha, some parts of Maharashtra, and Arunachal Pradesh, followed by Rajasthan, Punjab, Haryana, Karnataka, Andhra Pradesh and Chhattisgarh. Comparatively lower incidence of disability can be observed in the states of Tamil Nadu, some parts of Kerala, Uttar Pradesh and Bihar. It is worth mentioning that although, disability prevalence is lower among the STs, nonetheless, there is an intense concentration of disability in many of the ST dominated districts of India. Interestingly, many of these districts are also part of “Naxal Arc of East India”. Inadequate

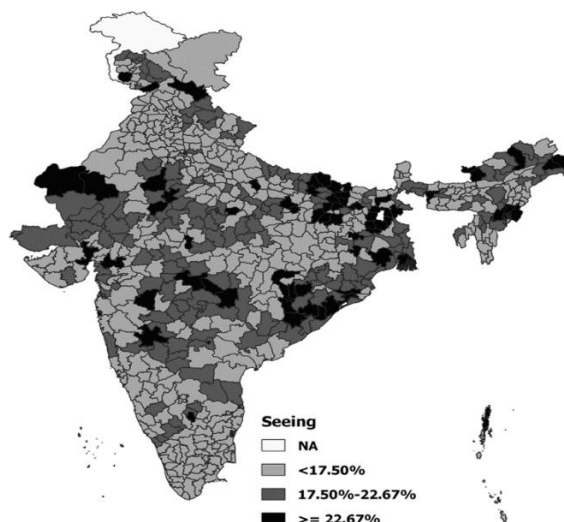
infrastructure and health facilities, as well as the absence of various services and lack of proper implementations of government schemes, may have contributed to a higher burden of disability in the regions. The high concentration of disability in central India is clearly noticeable. Further, the difference among BIMARU<sup>2</sup> states are also striking. There are lower disability prevalence rates in Uttar Pradesh, but higher in Rajasthan, Madhya Pradesh, Orissa, Telangana, Jharkhand, Chhattisgarh, and Southern Maharashtra.

Figure 1: Prevalence of Disability across Districts of India in 2011



Source: Based on the Census of India 2011

Figure 2: Prevalence of “Seeing” Disability across Districts of India in 2011



Source: Based on the Census of India 2011

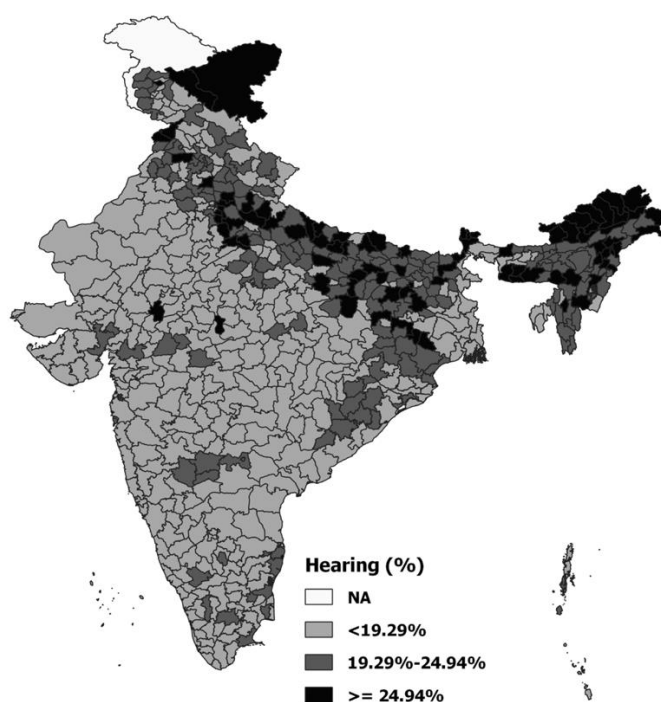
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<sup>2</sup>. BIMARU is an acronym which is formed out of the first words of the name of four states; Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh. The abbreviation was used to refer to the poor economic conditions within those states.

Figure 2 illustrates the prevalence of persons with visual disabilities across the districts of India. The prevalence rates are calculated as a proportion of persons with seeing disability out of total persons with disability in that particular district. The highest percentage of persons with seeing disability is observed in the districts of South-Western Rajasthan, Gujarat, some parts of Madhya Pradesh, Eastern Odisha and Maharashtra, and the north-eastern states of Arunachal Pradesh and Manipur. The lowest prevalence rates are recorded in the southernmost states followed by Punjab, Haryana, Uttar Pradesh and Bihar.

Prevalence of hearing disability across districts of India is depicted in Figure 3. It is interesting to note that the maximum concentration of hearing disability is continuously clustered in the regions ranging from North-Western (around Jammu and Kashmir) to the most parts of north-eastern regions, that is the areas between the Himalayas and the great north Indian plains. Some parts of Odisha have also recorded a higher incidence. Therefore, the maximum prevalence of hearing disability has been observed in the districts of Jammu and Kashmir, Himachal Pradesh, Uttar Pradesh, Bihar, Odisha and most parts of north-eastern states. In most other parts of the country, the concentration is not clustered and are only intermittent in different regions.

Figure 3: Prevalence of Hearing Disability across Districts of India in 2011

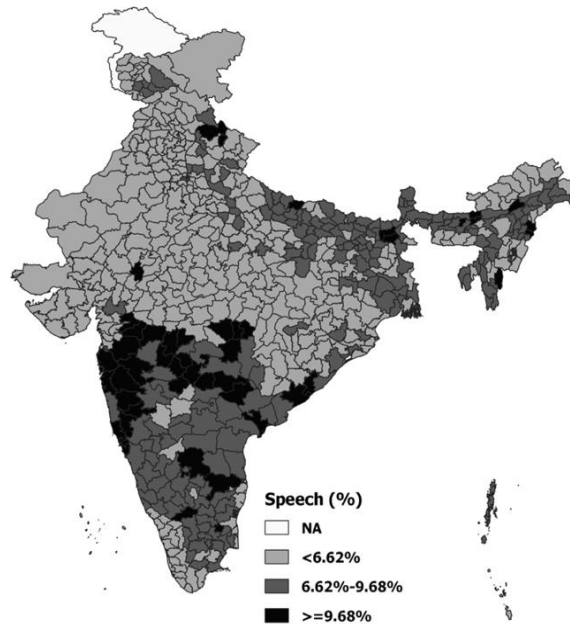


Source: Based on the Census of India 2011

WHO has suggested that half of the cases of deafness can be prevented, about 30% cannot be prevented, but treatment is possible, or these can be very well managed by assistive devices. Thus, overall, 80% of all the cases related to deafness can be avoidable. Therefore, hearing disability is highly concentrated in the regions of Jammu and Kashmir, Uttar Pradesh, Bihar, Jharkhand and North-East. Lack of awareness about hearing disability, inadequate health facilities and lower financial status might have been obstacles to prevent deafness in these regions. Further, it is well recognised that deafness is common among children. Lack of early detection, prevention and cure in the first few years of childbirth may lead to a significant

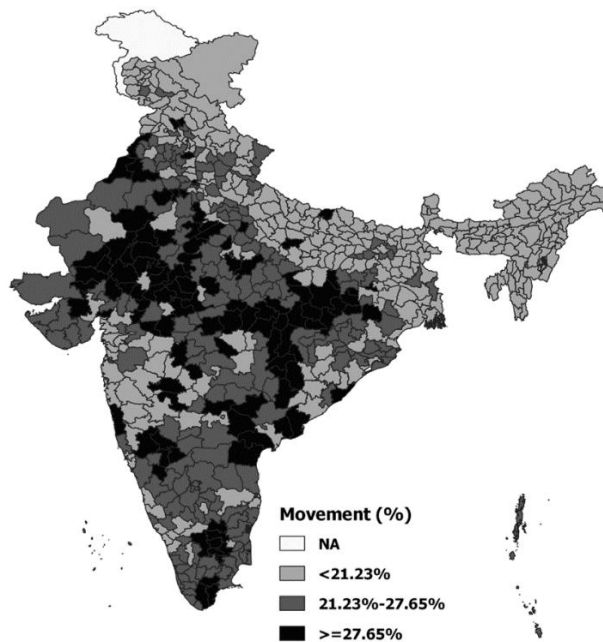
loss in hearing, which may be the case among the northern regions. Besides, these are the states where there is a higher total fertility rate (TFR) and a higher proportion of the younger population compared to the southern states.

Figure 4: Prevalence of Speech Disability across Districts of India in 2011



Source: Based on the Census of India 2011

Figure 5: Prevalence of Movement Disability across Districts of India in 2011



Source: Based on the Census of India 2011

Distribution of speech disability across districts of India is shown in Figure 4. Out of total PWDs, about 9% constitute individuals with a speech disability. The incidence of speech disability is more concentrated in the southern parts of India. A continuous range can also be observed in the states of Some parts of eastern Uttar Pradesh, Bihar, West Bengal, Tripura, Sikkim, Nagaland and lower parts of Arunachal Pradesh. The most severe concentration can be seen across the districts of Maharashtra and some parts of Karnataka and Andhra Pradesh.

This pattern of concentration of speech disability in the south is very different from the northern states. It appears speech disability is better reported in southern India. The studies show that intellectual disability also affects speech disability (Marrus and Hall 2017). Mental retardation is very high in south India; thus, speech disability is even higher in these regions. However, it is a strange finding that the proportion of persons with hearing disability is more elevated in northern states compared to the southern states and vice-versa in case of speech disability.

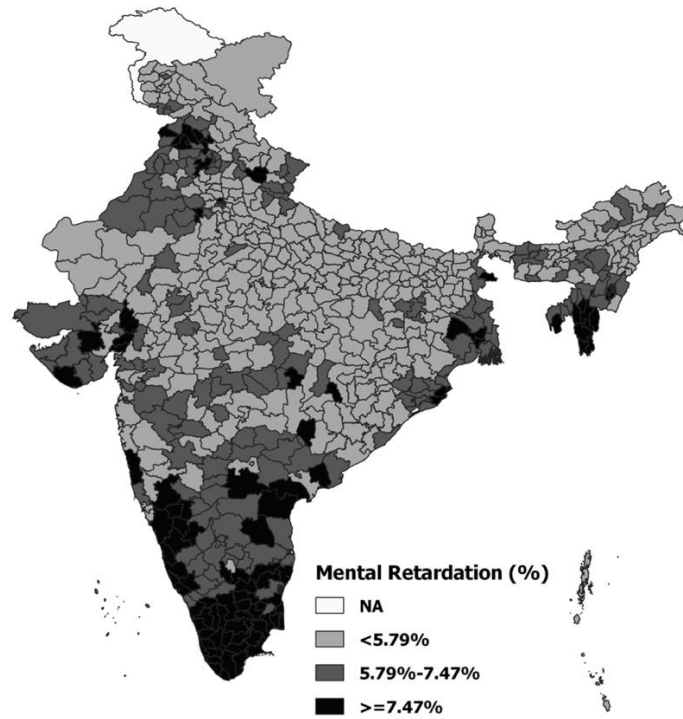
It is also interesting to highlight that the districts where there is a higher prevalence of hearing disability observed a lower incidence of movement disability. It is one of the most common forms of disability, as shown in Figure 5. The prevalence of movement disability is well distributed across the districts of India. The highest cluster of movement disability is recorded across the districts of eastern Rajasthan, Madhya Pradesh, Jharkhand and Chhattisgarh. Some concentration can also be seen in the central part of Tamil Nadu. Movement disability is much more dispersed compared to other disability types. There is better reporting when it comes to Movement disability because it is visible and easily identified. However, it is shallow in the state of Uttar Pradesh because of poor reporting. Thus, poor self-reporting by respondents who just do not even know that they are disabled. Besides, there is under-estimation under women disabled due to social attitudes and stigma. Polio is one of the most critical factors causing movement disability. Higher incidence of movement disability in these districts may be attributed to the higher burden of polio disease.

Mental retardation is more among the states which are doing better on socioeconomic indicators. As shown in Figure 6, the retardation is predominant among the states of Punjab, Kerala, Tamil Nadu followed by eastern parts of Gujarat. Comparatively moderate levels of mental retardation are observed across the southern districts of Andhra Pradesh and Karnataka and some parts of Maharashtra. Among the north-eastern states, Tripura and Mizoram recorded higher prevalence.

Data on Mental retardation also appear to be reported and captured in a better way in the southern states. Lancet Psychiatry (2020) found that different types of mental disability are adversely affecting South Indian states more than their north Indian counterparts. The study further reported that the higher burden of anxiety disorders and depression in the South Indian States could be because of the higher and growing level of modernisation and urbanisation in these states.

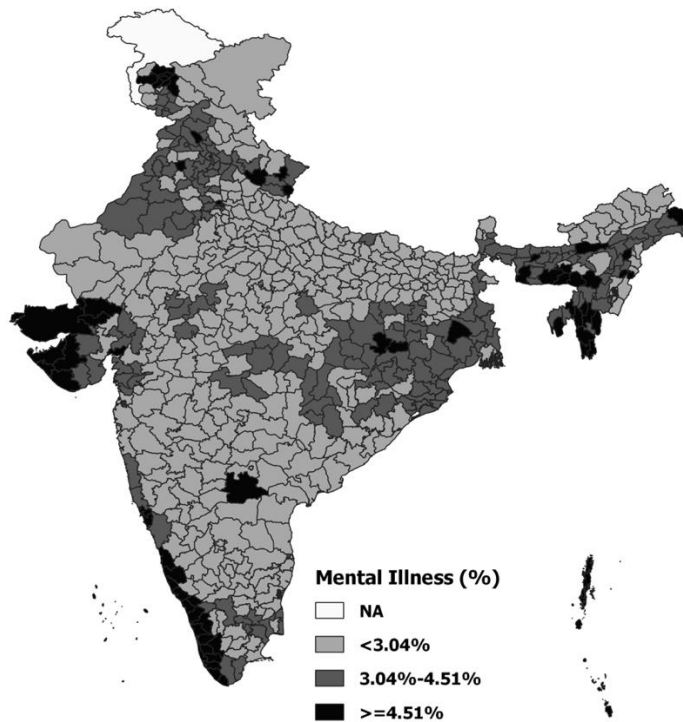
Figure 7 shows the spatial picture of the prevalence of mental illness across the districts of India in 2011. The highest disability prevalence is recorded in the western parts of Gujarat and Kerala, followed by Meghalaya and Mizoram. Assam and some parts of Arunachal Pradesh also scored a higher incidence of mental illness. Comparatively moderate level of mental illness is found in the districts of Punjab, West Bengal and Jharkhand.

Figure 6: Prevalence of Mental Retardation across Districts of India in 2011



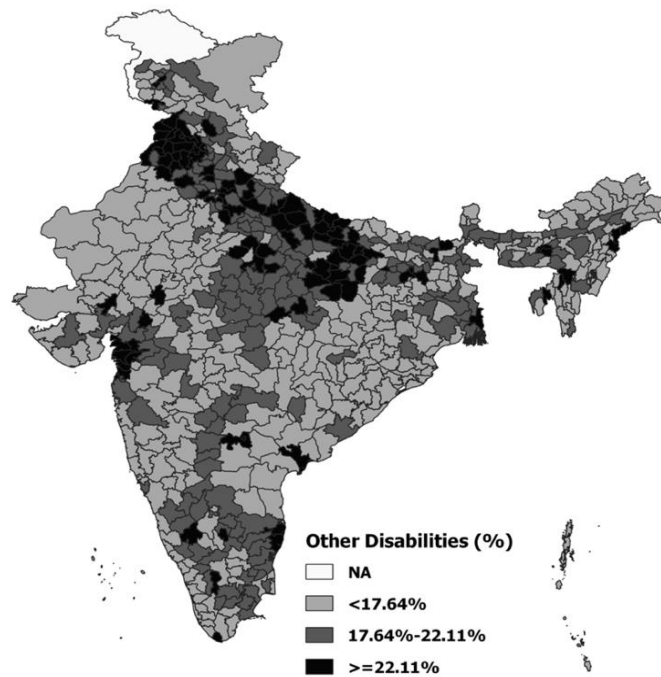
Source: Based on the Census of India 2011

Figure 7: Prevalence of Mental Illness across Districts of India in 2011



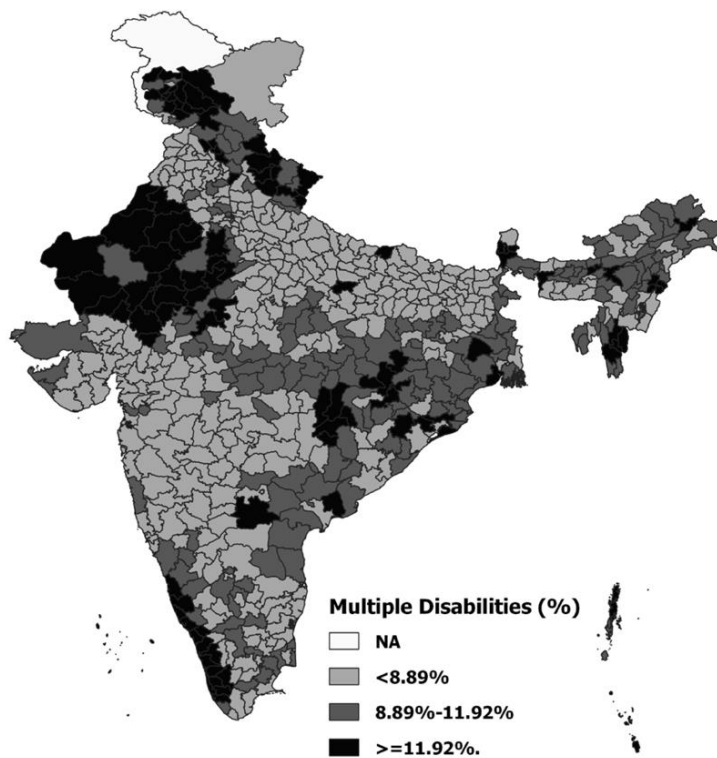
Source: Based on the Census of India 2011

Figure 8: Prevalence of “Any-other” Disability across Districts of India in 2011



Source: Based on the Census of India 2011

Figure 9: Prevalence of Multiple Disability across Districts of India in 2011



Source: Based on the Census of India 2011

Data on Any-Other category of disability was collected for the first time in India in Census 2011. It has emerged as one of the largest categories of disability (about 21%). Figure 8 shows that the clusters which are continuously spread are the regions of Punjab, Haryana, Uttar Pradesh, Bihar and some parts of northern Madhya Pradesh. There are several continuous and discontinues spatial zones. However, it is perceptible that the incidence is more among the districts of north India. Increase in the number of nay-other category of disability also suggests a lack of awareness about disability and ambiguous enumeration process followed by stigma, discrimination and marginalisation. Thus, the prevalence of “any-Other” category of disability is more concentrated in northern regions compared to the southern states. Again, it may be due to lack of proper identification and reporting of type and severity of disability in the regions of the north.

Multiple disability is considered as the most severe form of disability. The spatial pattern is depicted in Figure 9. An enormous territory of the high predominance of multiple disability is spread among the regions of Jammu and Kashmir, Himachal Pradesh, most parts of Rajasthan, western Kerala, West Bengal, Jharkhand, Odisha and some parts of Madhya Pradesh. North-eastern regions have also observed a very high prevalence of multiple disability. Uttar Pradesh and Bihar seem to have recorded lower prevalence rates. The map also shows that the poorest states have a higher incidence of multiple disabilities.

Hence, it is normally expected that the district having better socioeconomic and demographic indicators lead to a lower prevalence of disability. There are regions which are better off on these fronts like Tamil Nadu and Kerala, but a higher incidence of disability is observed. On the other hand, among the bigger states disability prevalence is lowest in Maharashtra. Therefore, there are mixed results, and no conclusion can be drawn simply by looking at spatial patterns.

### **Concluding Remarks**

On an average, one out of each tenth family includes a disabled member in India as per Census 2011 data on disability. The proportion of population with a disability has slightly increased in 2011 as compared to 2001. The decadal growth is marginal, but it is important to note that Census 2011 has made significant improvement in data collection. It collected data for the first time on “any-other” and “multiple” category of disabilities, which are very high and constitute around one-fourth of total PWDs. The significantly large size of “any-other” disability also shows lacunae in the enumeration process of the Census. Because it is incomprehensive to identify individuals by type of their disability under these categories. Thus, A concern has been raised in the present study about the enumeration process.

Further, there is underestimation of disability prevalence in India, particularly among women mostly caused by sociocultural practices and inadequate enumeration process. Thus, proper and accurate counting under specific categories and age cohorts of disability would better target to the desired group of individuals, ensuring that benefits are not misappropriated. The NSS 76<sup>th</sup> round of data on disability (2018) is much more comprehensive, and it has largely overcome the inherent flaws of Census 2011. The survey has been conducted in light of the Rights of Persons with Disabilities (RPWD) Act of 2016. Interestingly, both Census 2011 and NSS 2018 produced broadly similar estimates on the overall prevalence of disability. Thus, it is a matter of further research why there is no change in the overall disability estimates between Census 2011 and NSS 2018.



The findings of the study also suggest that there are sharp variations with regard to gender, regions and social groups for the disabled population in India. Also, the incidence of disability falls disproportionately for different types of disabilities. The Census data of 2011 shows a marginal decline in the number of PWDs in the rural areas; it means that the rate of disability prevalence is increasing in the urban areas. However, still more than two-third PWDs reside in rural areas. Besides, the absolute number of males with disability is greater than that of females. A cursory glance across the district level distribution of persons with disabilities suggests that PWDs are scattered across every nook and corner in India with significant temporal and spatial variations. It is also evident that the most southern states reported higher number of persons with disabilities than the northern counterparts. Southern most states, Kerala and Tamil Nadu, which are also better off on various socioeconomic parameters, have higher rates of disability prevalence. In this context, Kulkarni and et. al., (2019) pointed out that the southern states have provided welfare measures to the PWDs in a better way and more comprehensively than the northern states. Therefore, the northern states may be disinclined in reporting prevalence of disability, as it will add policy liability on the states.

Disability-inclusive policies are a developmental challenge to modern states. Although, India has enacted a number of legislations in line with international conventions and standard practices to improve the lives of the persons with disabilities. However, the outcomes are not encouraging. It is crucial that the state and society made concerted efforts for the betterment of the disabled communities.

### Acknowledgement

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