

THE LANCET

Global Health

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Acharya R, Porwal A. A vulnerability index for the management of and response to the COVID-19 epidemic in India: an ecological study. *Lancet Glob Health* 2020; published online July 16. [http://dx.doi.org/10.1016/S2214-109X\(20\)30300-4](http://dx.doi.org/10.1016/S2214-109X(20)30300-4).

Appendix A: Choice of indicators

1. Socioeconomic vulnerability

Aim of this domain and rationale: The aim of this domain is to capture social and economic deprivation in the population concerned. The relationship between poverty and disasters is well established;¹ poor are less likely to have resources to prepare for or mitigate or recover after an epidemic. Similarly, presence of socially marginalised groups in a population often make the community more vulnerable than others at different stages of a disaster. As for example, in the context of an epidemic, a socially marginalised group likely lack enough information about the epidemic or may have less education to understand the information provided to them, lack concept of social distancing essential for protecting themselves from infection or even if they have the concept, may not actually have options to exercise it². Also, since they are most likely to engage in menial jobs,³ they have high risks of losing their income in time of the epidemic because of cessation of most economic activities in the country, and this make them economically vulnerable. There is also a relationship between level of education and disaster as compared to others, persons with higher levels of education are more likely to have access to and act upon information available during different phases of epidemic⁴.

Indicators used: We used three indicators to capture the domain – 1) percent of population belonging to scheduled caste and scheduled tribe -two most backward groups in the country 2) percent of population aged 15 or above who have completed secondary or higher level or education and 3) an asset deprivation index. We used percent of population belonging to scheduled castes and scheduled tribe to represent marginalised population as there is evidence that these groups are the most backward groups in the country (in terms of most of the social and development indicators).⁵ We considered secondary or higher education level to represent overall education level of the population, it has been found to have strong relationship with most of the social and development outcomes. Finally, we calculated an asset index as proportion of households that do not have any of the following – a motorized vehicle (a two-wheeler, car or truck, or tractor), television, computer, bicycle, refrigerator, thresher, air-conditioner/cooler). It is found that an asset index is more closely related to poverty indices compared to usual wealth index available in the Demographic and Health Surveys.⁶

Source of data: National Family Health Survey 2015-16, since this is the most recent data available in the country on the above indicators.

2. Demographic vulnerability

Aim of this domain and rationale: Several demographic characteristics of a population enhance risk of a pandemic spread and its subsequent consequences and these characteristics include elderly population, high urbanization and high population density.^{7,8} The aim of this domain is to capture vulnerability due to such demographic characteristics of the population. Persons in older age group (age 60 years or above) are dependent on other people in the household for support even during normal times and more so during the time of a disaster such as COVID-19 epidemic. According to the trend so far, elders are particularly vulnerable to COVID-19 because of their reduced immunity resulting in high case fatality.^{2,9} Given that COVID-19 came to the country through air route and started spreading through major transportation hubs, a district with high urban population and high population density might be at higher risk of both virus introduction through transportation links and its spread because of difficulty in practicing social/physical distancing.

Indicators used: We captured elderly population by the indicator: proportion of population aged 60 years or older. Urbanization and population density were indicated by percent urban population and number of persons living per square kilometre, respectively.

Source of data: National Family Health Survey 2015-16 for first two indicators, since this is the most recent data available in the country on the above indicators. In order to get population density at the district level, Census 2011 data were used. We obtained area of a district from Census 2011 and population as on December 2019 by projecting 2011 population linearly, based on growth rate calculated from 2001 and 2011 census data.

3. Vulnerability due to *housing and hygiene condition*

Aim of the domain and rationale: It is now well known that housing condition, particularly intra-household crowding, use of shared toilet facility, and poor hand and respiratory hygiene are crucial factors that determine spread of the virus and pace of spread.^{10,11} The aim of the domain is to capture vulnerability of a population to spread of infection by evaluating these factors.

Indicators used: We considered three variables to represent this domain – 1) number of members per room available for sleeping (to capture intra-household crowding), 2) percent of households having own toilet facility, and 3) availability of soap and water for handwashing (the latter two indicators capture hygiene). We do not have any data on respiratory hygiene and hence it could not be captured.

Source of data: National Family Health Survey 2015-16, since this is the most recent data available in the country on the above indicators at district level.

4. Vulnerability due to non-availability of healthcare

Aim of the domain and rationale: During a disaster such as COVID-19 epidemic It is important to have a capable and responsive health care system as these would be the local first responder if the epidemics breaks out in a community. Also important is the ability of people to access health care. The aim of this domain is to capture the health security (insurance), access to public healthcare and capacity of health system.

Indicators used: There is not much data available in India at the district level that can represent the strength of its health care system. With the available data from different sources, we have three variables to represent the domain – percent of households with health insurance, percent of households who reported no nearby public health facility and number of public hospitals per 100,000 population (only at district level) and number of hospital beds per 1000 population (only at state/UT level) – to capture health security, accessibility of affordable health care and health care system capacity.

Source of data: We used National Family Health Survey 2015-16 for first two indicators. For district level data on capacity of health facility we used Rural health statistics 2018 for numerator and linearly projected population as on December 2019 using growth rate calculated for each district based on 2001 and 2011 census for denominator. In case of state level healthcare capacity, we used data available in national health profile, 2019.

5. Epidemiological vulnerability

Aim of the domain and rationale: It is now well known that people with co-morbidities such as diabetes, heart disease or respiratory issues have higher fatality in case of COVID-19 infection¹². India is often called the diabetes capital of the world¹³. In addition, many people in India also suffer from other chronic ailments such as cardiovascular diseases, asthma, and cancer. As per a systematic review, tobacco use increases risk of suffering from COVID-19¹⁴. The aim of this domain is to capture the vulnerability of the population because of the epidemiological factors related to COVID-19, such as prevalence of co-morbidities, smoking etc.

Indicators used: Data on these epidemiological factors are not available in India for general population or for older population at the district level. We thus captured through three variables extracted from National Family Health Survey 2015-16 – proportions of males (aged 40-54) and females (aged 40-49) who reported suffering from any of these conditions - cardiovascular disease, diabetes, asthma, or cancer - and proportion of males who smoke tobacco. We understand that there are two limitations of these indicators – first, there will be a substantial proportion of men and women above age 54 and 49, respectively, who may be suffering from these ailments and are not captured here and second, these health conditions are self-reported and may not accurately reflect the actual situation. However, given no other data are available, we consider that these indicators best reflect the epidemiological vulnerability prevailing in each district or state. Finally, these variables are calculated from separate male and female datafiles as there are no such data available at the household level (male and female combined). Because of this reason, it was not possible to combine male and female health condition variables into one.

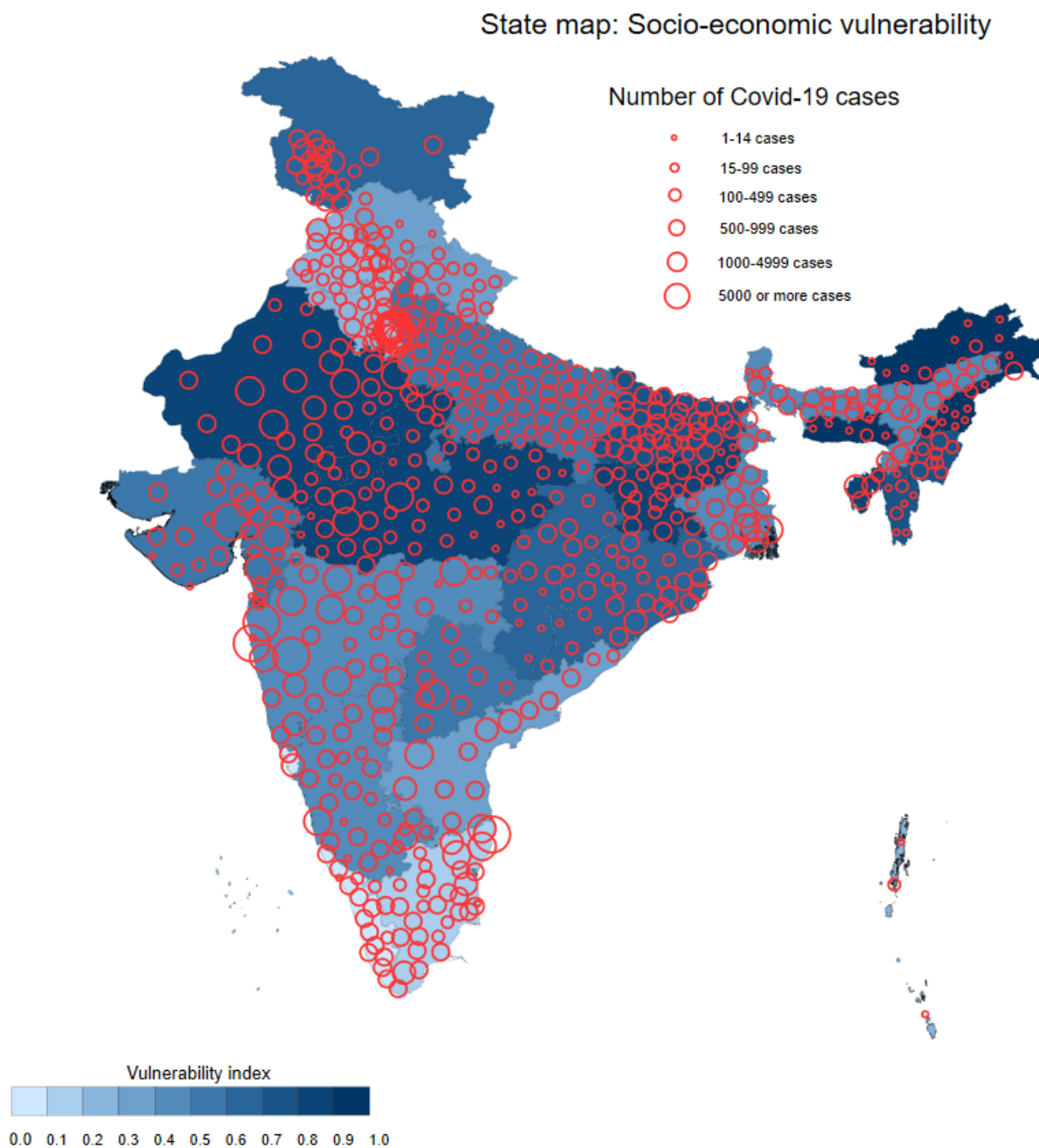
Source of data: National Family Health Survey 2015-16, since this is the most recent data available in the country on the above indicators at district level.

References

1. Rentschler JE. Why Resilience Matters — The Poverty Impacts of Disasters. The World Bank. November 2013.
2. The Lancet. 2020. Redefining vulnerability in the era of COVID-19. [editorial] *The Lancet* 395(10230): P1089. [https://doi.org/10.1016/S0140-6736\(20\)30757-1](https://doi.org/10.1016/S0140-6736(20)30757-1)
3. Government of India, Ministry of social justice and empowerment. *Handbook on Social Welfare Statistics*. Tables 4.6 and 4.9, page 331. New Delhi. 2018.
4. UDISDR and Centre for Research on the Epidemiology of Disasters (CRED). *Economic Losses, Poverty and Disasters 1998-2017*. Belgium. 2017.
5. International Institute for Population Sciences (IIPS) and ICF. 2017. National Family Health Survey (NFHS-4), 2015-16: India. Mumbai: IIPS.
6. Wittenberg M, Leibbrandt M. Measuring inequality by asset indices: A general approach with application to South Africa. December 2017. The review of income and wealth. Series 63(4):706-730. Doi: 10.1111/roiw.12286.
7. Kaneda T, Greenbaum C. How demographic changes make us more vulnerable to pandemics like coronavirus. Population Reference Bureau. April 13, 2020. <https://www.prb.org/how-demographic-changes-make-us-more-vulnerable-to-pandemics-like-the-coronavirus/> [Accessed on May 27, 2020 at 08:30 AM IST].
8. Bhardwaj G, Esch T, Lall SV, Marconcini M, Soppelsa ME, Wahba S. Cities, Crowding, and the Coronavirus : Predicting Contagion Risk Hotspots. 2020. World Bank, Washington, DC. <https://openknowledge.worldbank.org/handle/10986/33648> [Accessed on May 27, 2020 at 08:30 AM IST].
9. Lloyd-Sherlock P, Ebrahim S, Geffen L, Mckee M. Bearing the brunt of covid-19: older people in low- and middle-income countries. 2020. *BMJ* 368: m1052.
10. Wall T. Cramped living conditions may be accelerating UK spread of coronavirus. The Observer. The Guardian. <https://www.theguardian.com/world/2020/apr/12/virus-hitting-hardest-modern-equivalent-victorian-slums>. [Accessed on May 27, 2020 at 10:55 AM IST]
11. World Health Organization. Coronavirus disease (COVID-19) advice for the public. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>. [Accessed on May 27, 2020 10:49 AM IST].
12. Wang B, Li R, Lu Z, Huang Y. Does comorbidity increase the risk of patients with COVID-19: evidence from meta-analysis. *Aging (Albany NY)*. 2020;12(7):6049-6057. doi:10.18632/aging.103000
13. World Health Organization. *Diabetes country profiles, 2016*. Geneva.
14. Vardavas CI, Nikitara K. COVID-19 and smoking: A systematic review of the evidence. *Tob. Induc. Dis.* 2020;18(March):20
15. Tierney KJ. Social inequality, hazards, and disasters. In (eds.) Daniels RJ, Kettl DF, Kunreuther H. *On Risk and Disaster: Lessons from Hurricane Katrina*. Doi: <https://doi.org/10.9783/9780812205473>.

Appendix B: Domain specific vulnerability maps

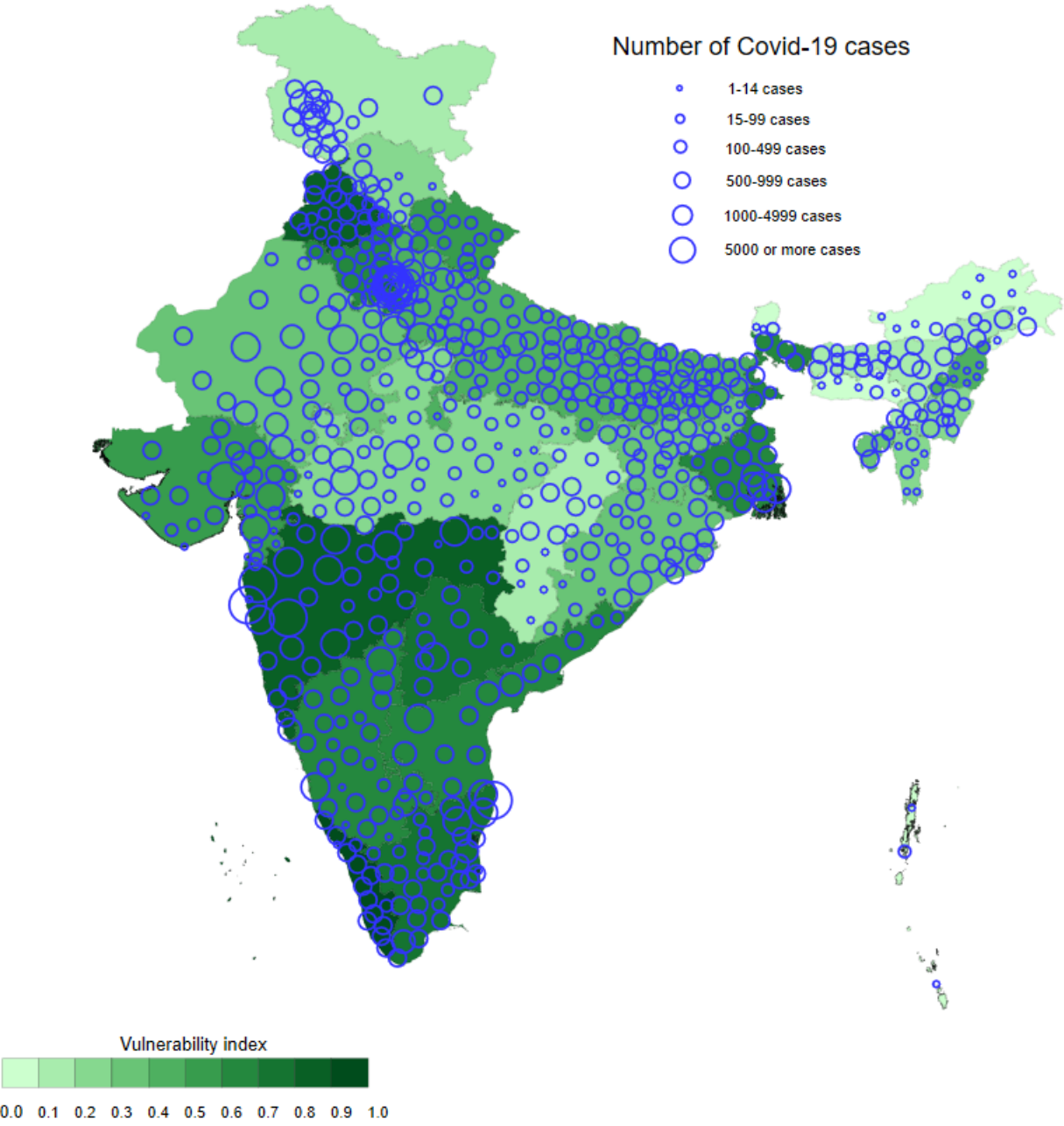
Appendix figure 1: State map for socio-economic vulnerability and number of confirmed COVID-19 cases as of June 17, 2020.



Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

Appendix figure 2: State map for demographic vulnerability and number of confirmed COVID-19 cases as of June 17, 2020

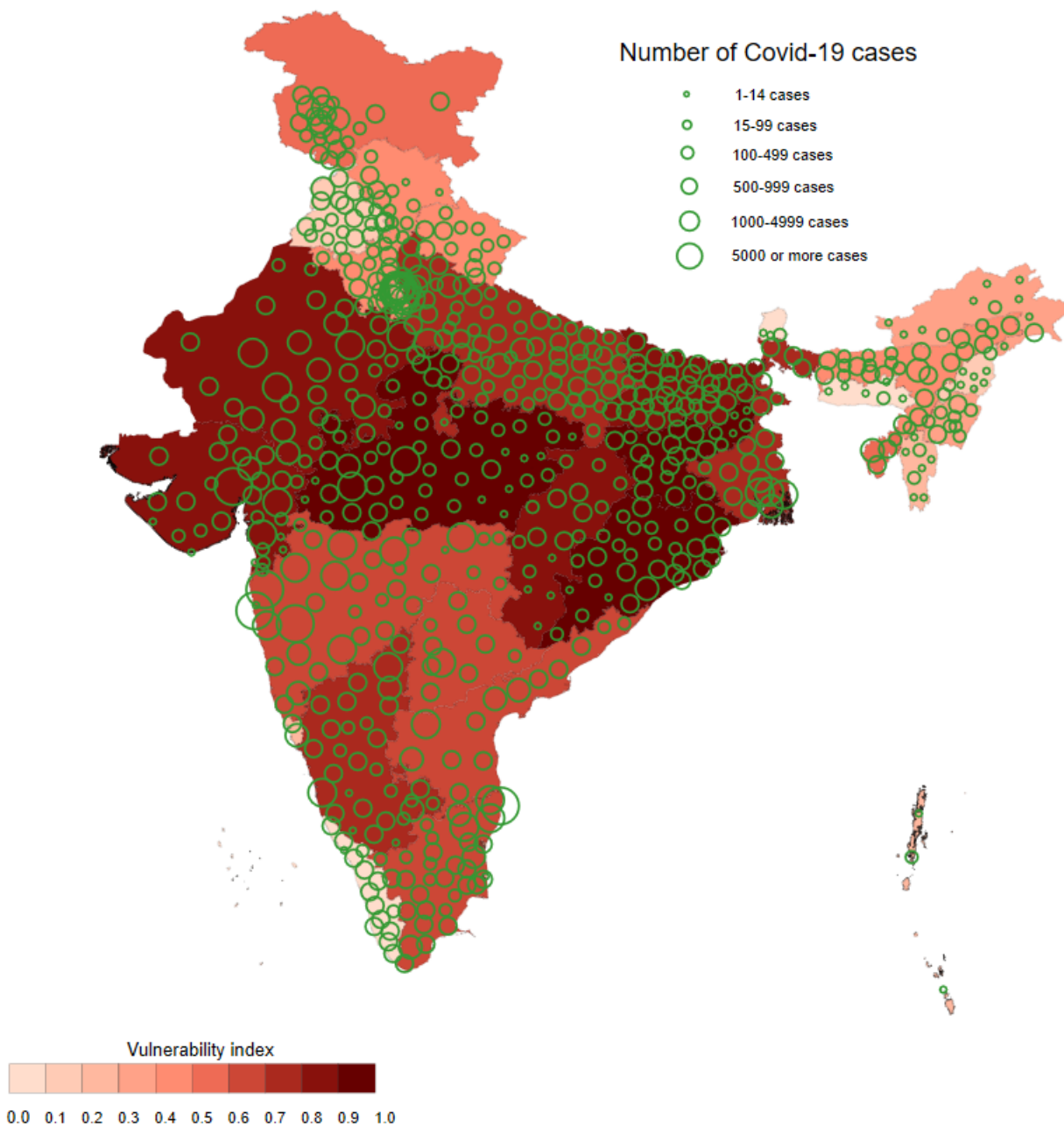
State map: Demographic vulnerability



Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

Appendix figure 3: State map for vulnerability due to poor housing and hygiene condition and number of confirmed COVID-19 cases as of June 17, 2020

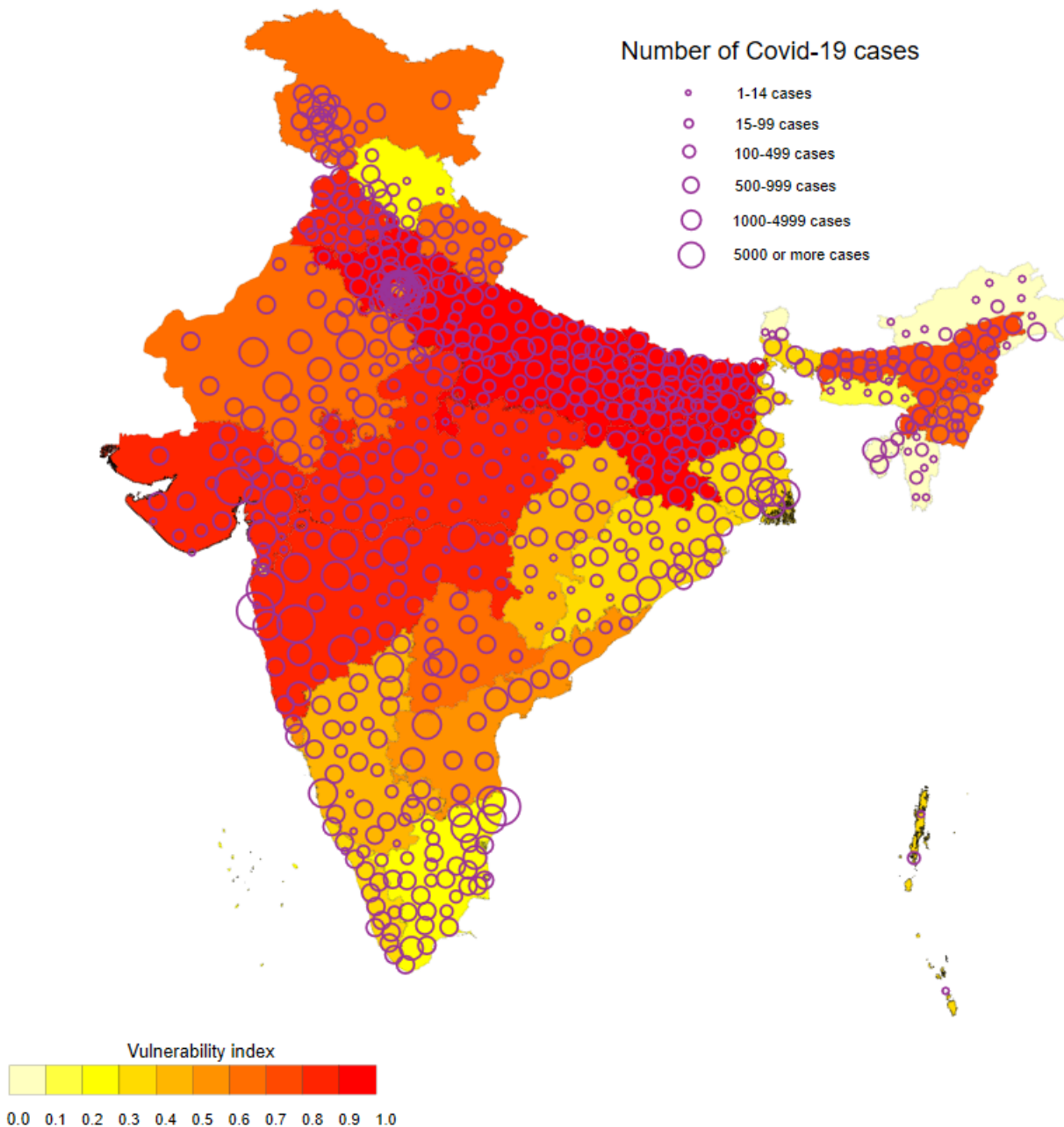
State map: Vulnerability due to housing and hygiene condition



Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

Appendix figure 4: State map for vulnerability due to non-availability of healthcare and number of confirmed COVID-19 cases as of June 17, 2020

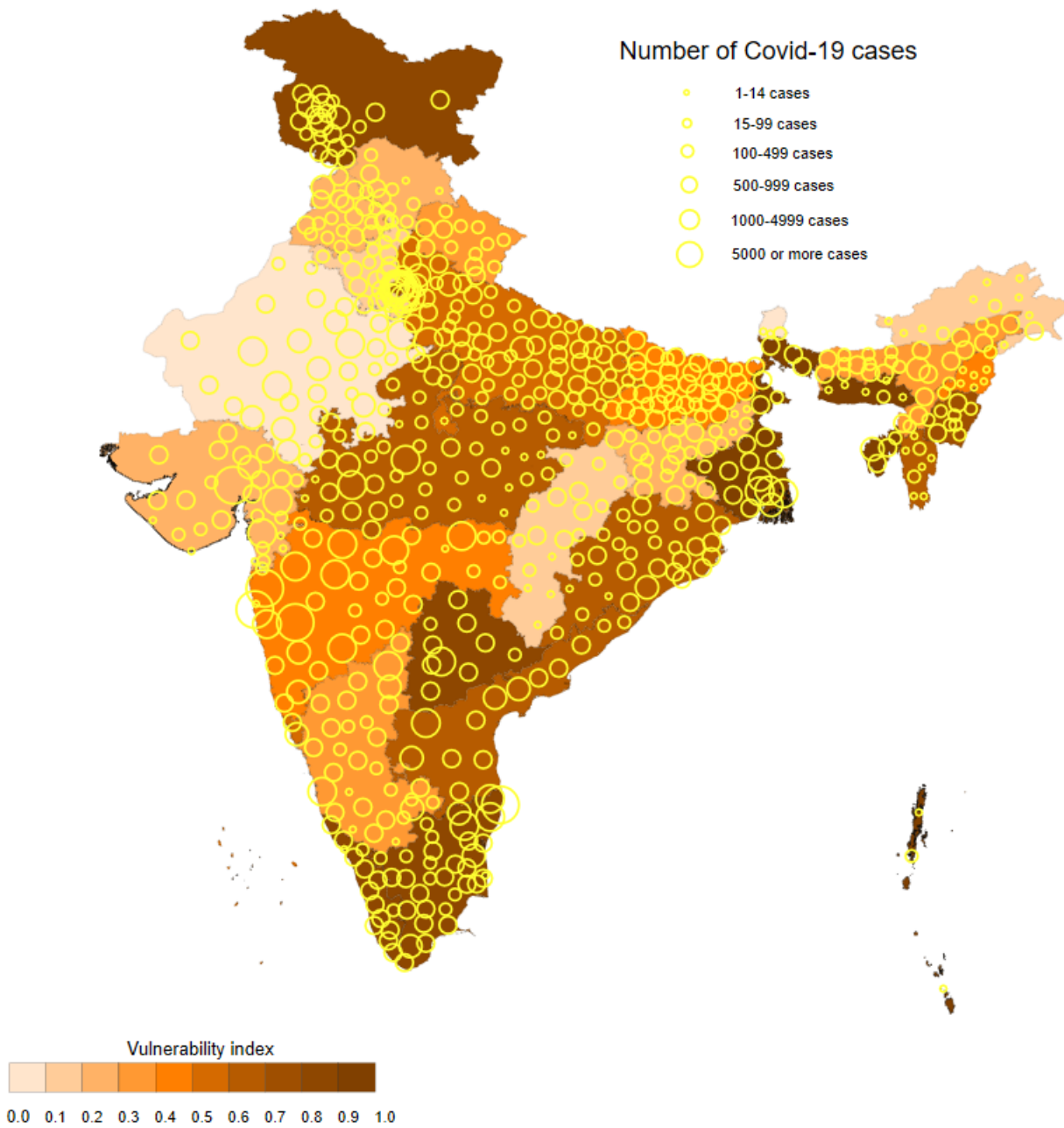
State map: Vulnerability due to non-availability of healthcare



Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

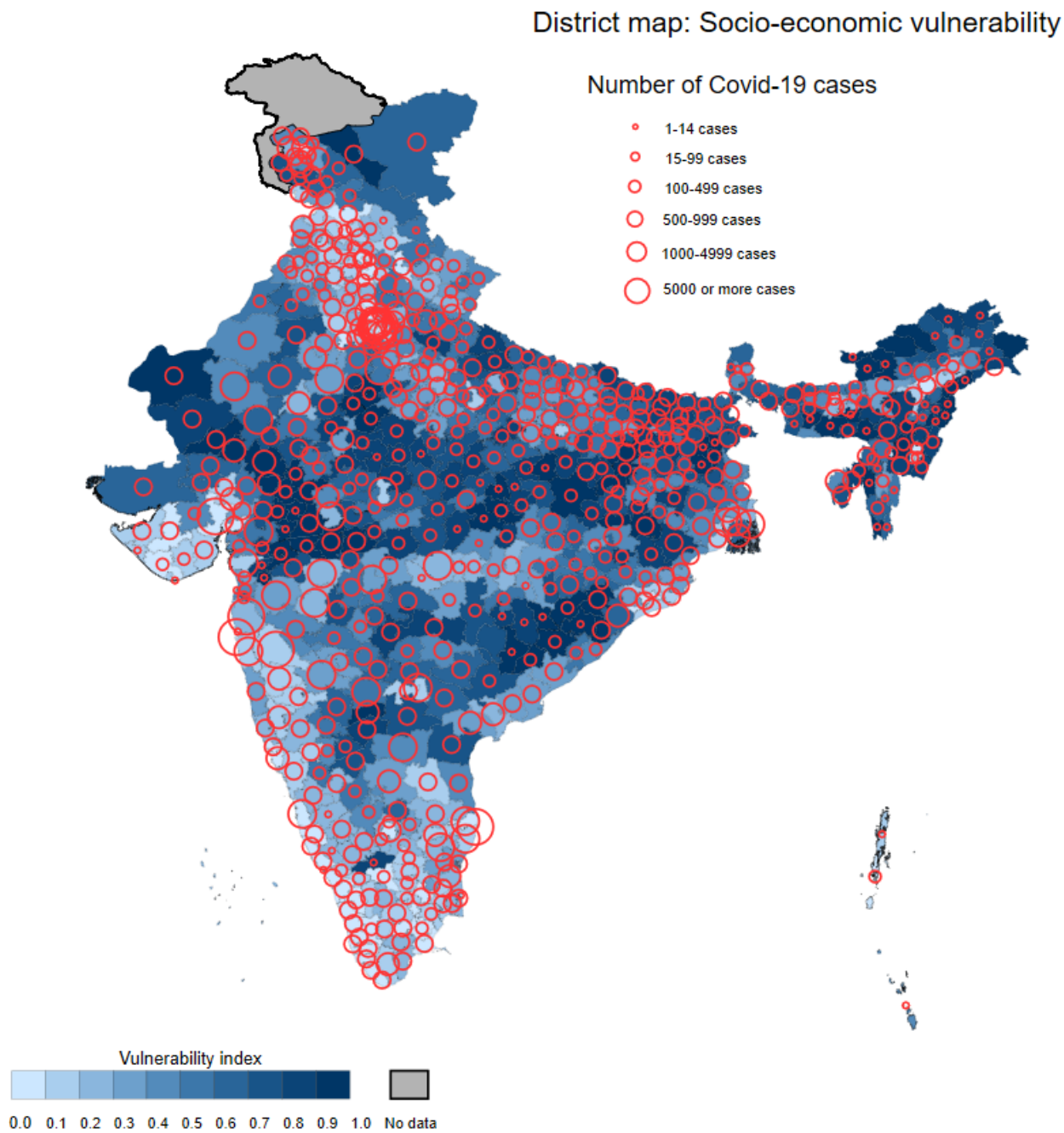
Appendix figure 5: State map for epidemiological vulnerability and number of confirmed COVID-19 cases as of June 17, 2020

State map: Epidemiological vulnerability



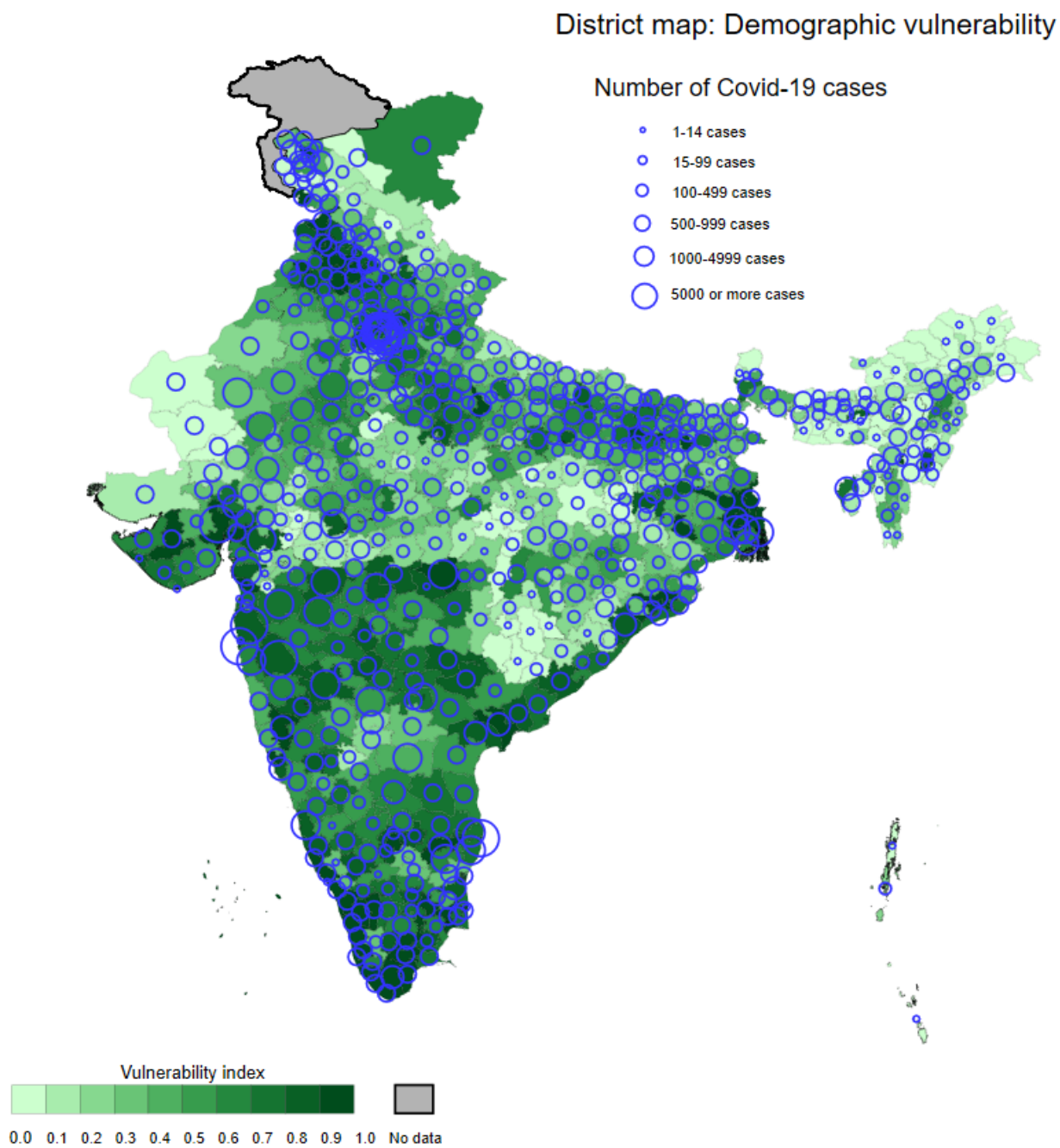
Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

Appendix figure 6: District map for socio-economic vulnerability and number of confirmed COVID-19 cases as of June 17, 2020



Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

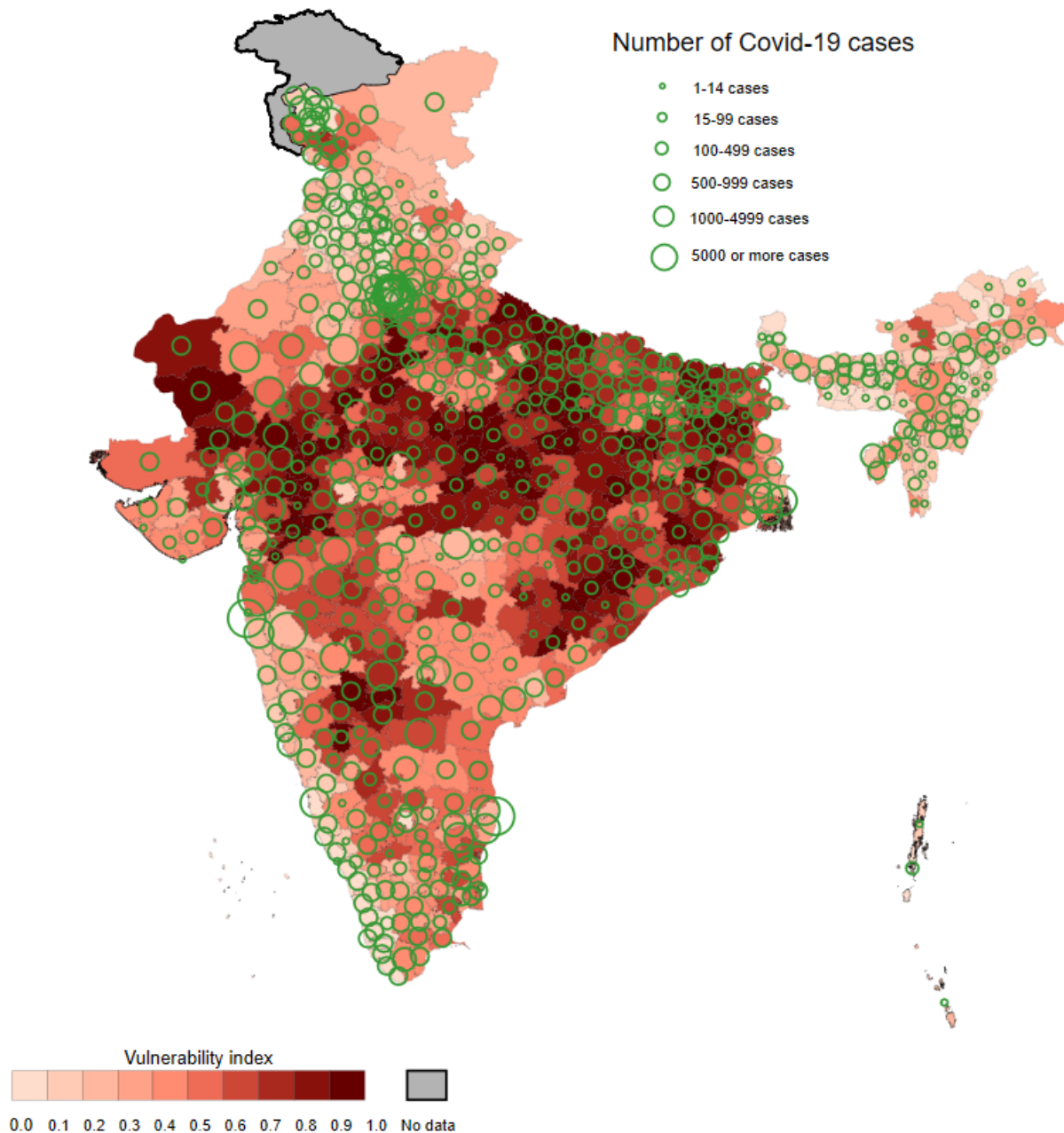
Appendix figure 7: District map for demographic vulnerability and number of confirmed COVID-19 cases as of June 17, 2020



Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

Appendix figure 8: District map for vulnerability due to poor housing and hygiene condition and number of confirmed COVID-19 cases as of June 17, 2020

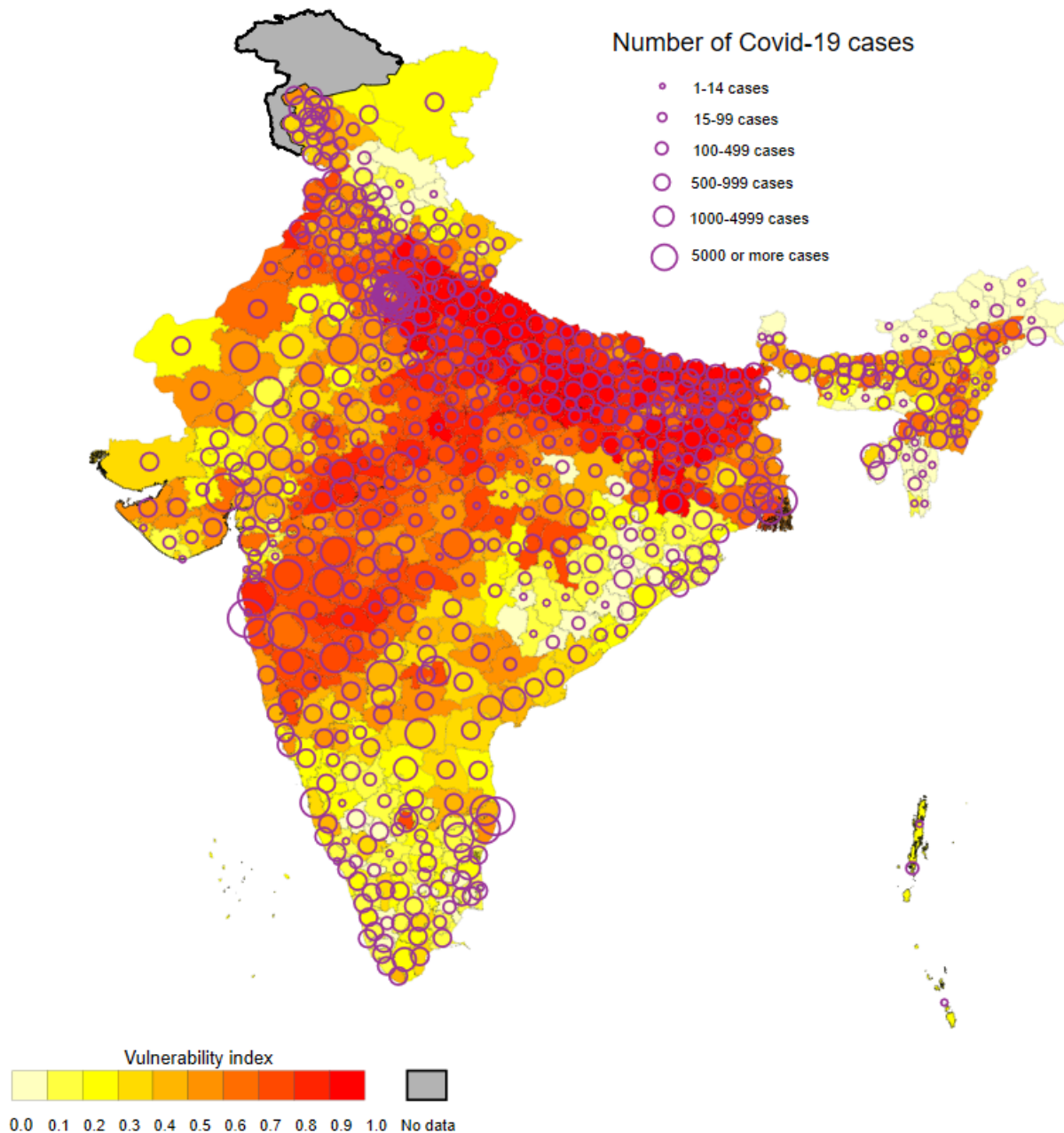
District map: Vulnerability due to housing and hygiene condition



Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

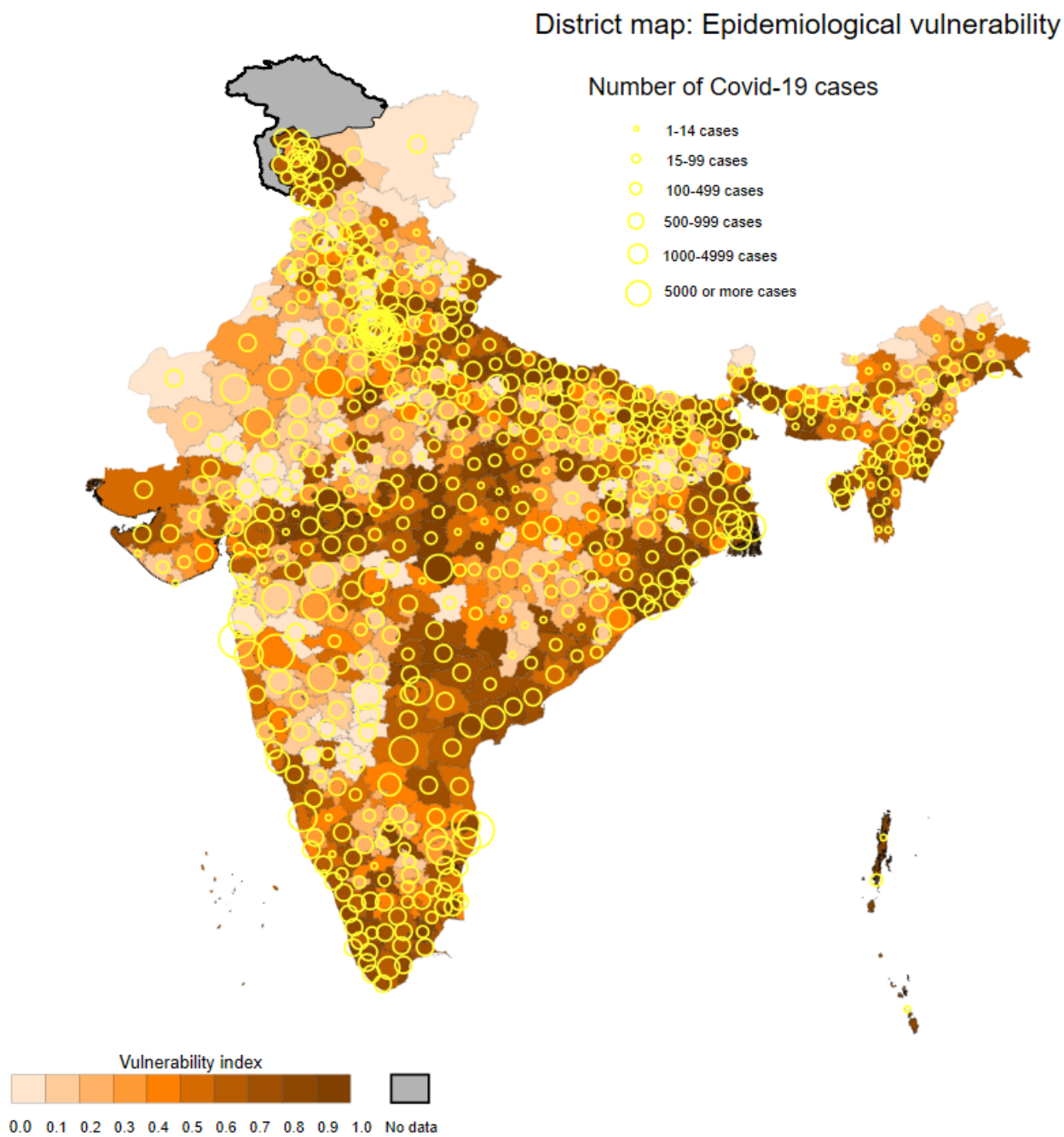
Appendix figure 9: District map for vulnerability due to non-availability of health care and number of confirmed COVID-19 cases as of June 17, 2020

District map: Vulnerability due to non-availability of healthcare



Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

Appendix figure 10: District map for epidemiological vulnerability and number of confirmed COVID-19 cases as of June 17, 2020



Note: This map does not reflect changes made in Jammu & Kashmir state (now union territory) in August 2019.

Appendix C: District level vulnerability score

Appendix Table 1: Domain-wise and overall COVID-vulnerability score by district

State/Union Territory	District	Socio-economic vulnerability	Demographic vulnerability	Vulnerability due to housing condition	Vulnerability due to non-availability of healthcare	Epidemiological vulnerability	Overall Vulnerability
Sikkim	South District	0.311	0.103	0.000	0.063	0.009	0.000
Sikkim	North District	0.642	0.008	0.003	0.036	0.034	0.002
Sikkim	West District	0.628	0.033	0.000	0.064	0.116	0.003
Assam	Jorhat	0.059	0.302	0.155	0.252	0.164	0.005
Himachal Pradesh	Kangra	0.039	0.357	0.210	0.180	0.166	0.006
Uttarakhand	Rudraprayag	0.297	0.224	0.185	0.260	0.033	0.008
Arunachal Pradesh	Dibang Valley	0.876	0.094	0.017	0.025	0.063	0.009
Arunachal Pradesh	Lower Subansiri	0.775	0.025	0.097	0.011	0.172	0.011
Himachal Pradesh	Lahul And Spiti	0.601	0.186	0.219	0.066	0.023	0.013
Himachal Pradesh	Shimla	0.153	0.433	0.228	0.042	0.286	0.014
Arunachal Pradesh	West Siang	0.753	0.053	0.014	0.005	0.326	0.016
Arunachal Pradesh	Upper Siang	0.847	0.049	0.105	0.003	0.166	0.017
Himachal Pradesh	Mandi	0.258	0.377	0.280	0.049	0.216	0.019
Assam	Golaghat	0.127	0.080	0.171	0.462	0.354	0.020
Assam	Nalbari	0.111	0.227	0.045	0.235	0.576	0.022
Himachal Pradesh	Chamba	0.560	0.138	0.360	0.039	0.103	0.023
Jammu and Kashmir	Baramula	0.261	0.189	0.039	0.383	0.338	0.025
Arunachal Pradesh	East Siang	0.520	0.116	0.088	0.000	0.562	0.027
Haryana	Panchkula	0.013	0.814	0.078	0.391	0.008	0.028
Arunachal Pradesh	Kurung Kumey	0.995	0.002	0.282	0.009	0.019	0.030
Assam	Udalguri	0.567	0.091	0.119	0.371	0.177	0.031
Uttarakhand	Chamoli	0.388	0.316	0.189	0.408	0.027	0.033
Arunachal Pradesh	Papumpare	0.598	0.117	0.183	0.139	0.296	0.034
Uttarakhand	Tehri Garhwal	0.365	0.329	0.374	0.230	0.049	0.036
Himachal Pradesh	Kullu	0.260	0.092	0.347	0.158	0.501	0.038
Himachal Pradesh	Kinnaur	0.509	0.178	0.264	0.053	0.365	0.039
Kerala	Idukki	0.019	0.335	0.047	0.078	0.892	0.041
Tamil Nadu	Dharmapuri	0.182	0.385	0.520	0.122	0.196	0.042
Himachal Pradesh	Sirmaur	0.415	0.279	0.396	0.130	0.191	0.044
Arunachal Pradesh	Upper Subansiri	0.953	0.042	0.293	0.020	0.124	0.045
Delhi	Central	0.100	0.928	0.097	0.125	0.208	0.047
Meghalaya	South Garo Hills	0.407	0.003	0.013	0.038	0.998	0.049
Uttarakhand	Almora	0.382	0.388	0.243	0.415	0.053	0.050
Delhi	West	0.034	0.983	0.030	0.290	0.152	0.052
Arunachal Pradesh	Lohit	0.790	0.075	0.390	0.016	0.224	0.053
Arunachal Pradesh	Tawang	0.984	0.103	0.200	0.027	0.185	0.055
Assam	Baksa	0.516	0.131	0.149	0.654	0.050	0.056
Karnataka	Kodagu	0.279	0.394	0.144	0.131	0.556	0.058
Maharashtra	Sindhudurg	0.214	0.424	0.116	0.468	0.288	0.059
Himachal Pradesh	Una	0.089	0.397	0.164	0.444	0.427	0.061
Puducherry	Yanam	0.066	0.875	0.180	0.185	0.227	0.063
Daman&Diu	Diu	0.038	0.969	0.308	0.085	0.133	0.063
Kerala	Wayanad	0.147	0.385	0.164	0.061	0.776	0.066
A&N Islands	South Andaman	0.027	0.202	0.050	0.279	0.991	0.067
Mizoram	Champhai	0.590	0.250	0.142	0.013	0.552	0.067
Tamil Nadu	The Nilgiris	0.166	0.740	0.338	0.041	0.268	0.070
Himachal Pradesh	Solan	0.236	0.290	0.269	0.121	0.645	0.072
Himachal Pradesh	Bilaspur	0.119	0.457	0.310	0.156	0.523	0.074
Assam	Chirang	0.667	0.050	0.249	0.315	0.304	0.075
Arunachal Pradesh	Tirap	0.962	0.038	0.232	0.022	0.341	0.077
Chhattisgarh	Rajnandgaon	0.324	0.099	0.548	0.238	0.388	0.078
Assam	Lakhimpur	0.427	0.155	0.322	0.441	0.252	0.080
Gujarat	Junagadh	0.097	0.709	0.426	0.192	0.175	0.081
Haryana	Sonipat	0.045	0.750	0.113	0.685	0.016	0.083
Assam	Barpeta	0.454	0.196	0.194	0.315	0.452	0.085
Himachal Pradesh	Hamirpur	0.114	0.552	0.239	0.196	0.515	0.086
Meghalaya	West Khasi Hills	0.991	0.013	0.036	0.077	0.504	0.088
A&N Islands	North & Middle Andaman	0.163	0.063	0.153	0.247	0.995	0.089
Chhattisgarh	Uttar Bastar						
	Kanker	0.571	0.113	0.609	0.103	0.227	0.091
Arunachal Pradesh	Lower Dibang Valley	0.704	0.055	0.305	0.055	0.505	0.092
Uttarakhand	Uttarkashi	0.565	0.130	0.510	0.263	0.161	0.094
Arunachal Pradesh	West Kameng	0.908	0.044	0.235	0.045	0.402	0.095

State/Union Territory	District	Socio-economic vulnerability	Demographic vulnerability	Vulnerability due to housing condition	Vulnerability due to non-availability of healthcare	Epidemiological vulnerability	Overall Vulnerability
Sikkim	East District	0.313	0.448	0.011	0.194	0.689	0.097
Jammu and Kashmir	Shupiyan	0.385	0.282	0.053	0.491	0.457	0.099
Kerala	Kasaragod	0.022	0.966	0.023	0.224	0.441	0.100
Meghalaya	Jaintia Hills	1.000	0.005	0.136	0.052	0.488	0.102
Haryana	Panipat	0.042	0.775	0.049	0.818	0.000	0.103
Meghalaya	Ribhoi	0.994	0.020	0.135	0.142	0.394	0.105
Rajasthan	Jhunjhunun	0.307	0.631	0.205	0.277	0.268	0.106
Rajasthan	Ajmer	0.230	0.504	0.310	0.504	0.141	0.108
Mizoram	Saiha	0.690	0.241	0.111	0.017	0.635	0.110
Haryana	Mahendragarh	0.055	0.595	0.304	0.646	0.102	0.111
Chandigarh	Chandigarh	0.044	0.973	0.108	0.266	0.313	0.113
Haryana	Karnal	0.202	0.742	0.063	0.678	0.031	0.114
Haryana	Kurukshetra	0.081	0.861	0.061	0.653	0.070	0.116
Jammu and Kashmir	Leh	0.632	0.601	0.218	0.247	0.044	0.117
Assam	Kamrup	0.291	0.160	0.191	0.615	0.485	0.119
Jammu and Kashmir	Kargil	0.901	0.088	0.324	0.282	0.149	0.121
Kerala	Pathanamthitta	0.011	0.664	0.085	0.099	0.890	0.122
Assam	Kokrajhar	0.729	0.056	0.146	0.327	0.496	0.124
Kerala	Kottayam	0.002	0.972	0.020	0.102	0.660	0.125
Jammu and Kashmir	Pulwama	0.236	0.709	0.027	0.582	0.203	0.127
Assam	Dibrugarh	0.241	0.266	0.196	0.690	0.371	0.128
Tamil Nadu	Salem	0.197	0.682	0.466	0.214	0.205	0.130
Punjab	Hoshiarpur	0.175	0.820	0.095	0.592	0.094	0.131
Punjab	Fatehgarh Sahib	0.164	0.942	0.171	0.391	0.121	0.133
Nagaland	Phek	0.937	0.213	0.075	0.326	0.244	0.135
Karnataka	Mandya	0.230	0.668	0.541	0.097	0.260	0.136
Rajasthan	Churu	0.754	0.315	0.380	0.271	0.078	0.138
Punjab	Jalandhar	0.178	0.977	0.044	0.551	0.055	0.139
Mizoram	Serchhip	0.526	0.399	0.169	0.005	0.709	0.141
Haryana	Bhiwani	0.100	0.474	0.238	0.665	0.330	0.141
Gujarat	Mahesana	0.108	0.707	0.571	0.200	0.222	0.144
Mizoram	Mamit	0.936	0.088	0.244	0.019	0.523	0.146
Delhi	North West	0.095	0.914	0.252	0.421	0.130	0.147
Assam	Nagaon	0.344	0.218	0.225	0.551	0.480	0.149
Assam	Karbi Anglong	0.820	0.019	0.407	0.480	0.094	0.150
Uttarakhand	Bageshwar	0.593	0.182	0.283	0.172	0.592	0.152
Rajasthan	Sikar	0.327	0.455	0.230	0.462	0.347	0.152
Haryana	Yamunanagar	0.146	0.851	0.133	0.649	0.047	0.155
A&N Islands	Nicobars	0.418	0.009	0.299	0.213	0.898	0.156
Assam	Bongaigaon	0.412	0.280	0.296	0.390	0.462	0.158
Karnataka	Ramanagara	0.221	0.822	0.541	0.138	0.117	0.158
Punjab	Barnala	0.255	0.886	0.092	0.484	0.125	0.161
Kerala	Kannur	0.014	0.987	0.016	0.175	0.651	0.163
Karnataka	Koppal	0.728	0.149	0.667	0.280	0.025	0.164
Chhattisgarh	Dhamtari	0.393	0.167	0.557	0.387	0.344	0.164
Haryana	Gurgaon	0.180	0.617	0.182	0.826	0.044	0.164
Karnataka	Davanagere	0.213	0.717	0.385	0.139	0.396	0.169
Haryana	Fatehabad	0.336	0.587	0.149	0.695	0.089	0.171
Puducherry	Mahe	0.000	1.000	0.006	0.050	0.808	0.172
Assam	Sonitpur	0.305	0.141	0.163	0.562	0.693	0.172
Punjab	Patiala	0.127	0.920	0.105	0.418	0.299	0.175
Rajasthan	Ganganagar	0.537	0.441	0.279	0.606	0.014	0.177
Daman & Diu	Daman	0.264	0.836	0.161	0.609	0.013	0.178
Haryana	Ambala	0.081	0.582	0.034	0.505	0.681	0.180
Uttarakhand	Dehradun	0.061	0.869	0.070	0.588	0.305	0.182
Karnataka	Udupi	0.075	0.825	0.083	0.354	0.560	0.183
Haryana	Rohtak	0.244	0.793	0.285	0.377	0.199	0.185
Rajasthan	Jodhpur	0.402	0.347	0.443	0.565	0.144	0.186
Tamil Nadu	Namakkal	0.171	0.850	0.402	0.152	0.327	0.186
Meghalaya	East Khasi Hills	0.820	0.282	0.052	0.221	0.529	0.189
Tamil Nadu	Tiruvannamalai	0.269	0.623	0.579	0.111	0.324	0.191
Tamil Nadu	Vellore	0.142	0.933	0.313	0.186	0.336	0.192
Karnataka	Shimoga	0.228	0.676	0.147	0.221	0.640	0.194
Gujarat	Navsari	0.302	0.923	0.382	0.211	0.097	0.196
Karnataka	Uttara Kannada	0.167	0.557	0.208	0.243	0.742	0.197
Delhi	New Delhi	0.141	0.798	0.067	0.034	0.878	0.199
Punjab	Sangrur	0.254	0.825	0.081	0.498	0.264	0.200
Odisha	Baudh	0.632	0.249	0.926	0.080	0.038	0.202

State/Union Territory	District	Socio-economic vulnerability	Demographic vulnerability	Vulnerability due to housing condition	Vulnerability due to non-availability of healthcare	Epidemiological vulnerability	Overall Vulnerability
Haryana	Hisar	0.202	0.654	0.108	0.739	0.225	0.203
Assam	Darrang	0.379	0.127	0.125	0.366	0.933	0.205
Goa	North Goa	0.027	0.934	0.127	0.268	0.577	0.207
Puducherry	Karaikal	0.080	0.984	0.327	0.074	0.479	0.208
Maharashtra	Gondiya	0.297	0.520	0.343	0.471	0.318	0.210
Tamil Nadu	Karur	0.199	0.778	0.387	0.083	0.505	0.211
Meghalaya	West Garo Hills	0.776	0.031	0.025	0.124	0.997	0.213
Arunachal Pradesh	Changlang	0.853	0.022	0.210	0.033	0.837	0.214
Kerala	Kozhikode	0.008	0.991	0.064	0.152	0.748	0.216
Karnataka	Dakshina Kannada	0.061	0.886	0.164	0.490	0.362	0.216
Gujarat	Sabarkantha	0.546	0.304	0.773	0.308	0.036	0.219
Karnataka	Chikmagalur	0.271	0.512	0.484	0.233	0.468	0.219
Kerala	Palakkad	0.020	0.915	0.156	0.182	0.700	0.222
Chhattisgarh	Korea (Koriya)	0.731	0.208	0.603	0.075	0.357	0.222
Arunachal Pradesh	Anjaw	0.959	0.000	0.421	0.002	0.596	0.225
Uttarakhand	Garhwal	0.218	0.462	0.340	0.662	0.300	0.227
Mizoram	Aizawl	0.324	0.485	0.114	0.070	0.989	0.228
Punjab	Faridkot	0.283	0.905	0.066	0.496	0.235	0.230
Tamil Nadu	Ariyalur	0.169	0.476	0.670	0.059	0.628	0.232
Odisha	Bargarh	0.552	0.426	0.790	0.106	0.131	0.233
Nagaland	Kiphire	0.951	0.153	0.152	0.313	0.437	0.235
Haryana	Faridabad	0.091	0.800	0.294	0.740	0.085	0.236
Delhi	South West	0.064	0.840	0.247	0.247	0.612	0.238
Karnataka	Kolar	0.390	0.847	0.369	0.161	0.247	0.239
Gujarat	Gandhinagar	0.186	0.762	0.462	0.282	0.335	0.241
Tamil Nadu	Tiruppur	0.268	0.732	0.307	0.293	0.430	0.243
Gujarat	Porbandar	0.199	0.829	0.435	0.330	0.246	0.244
Punjab	Tarn Taran	0.371	0.526	0.326	0.714	0.103	0.244
Tamil Nadu	Dindigul	0.144	0.634	0.468	0.110	0.685	0.247
Jammu and Kashmir	Ganderbal	0.432	0.529	0.056	0.302	0.728	0.249
Kerala	Thiruvananthapuram	0.023	0.995	0.055	0.100	0.875	0.250
Kerala	Alappuzha	0.005	0.998	0.019	0.111	0.915	0.250
Chhattisgarh	Bastar	0.886	0.052	0.797	0.191	0.128	0.254
Kerala	Thrissur	0.003	0.989	0.042	0.197	0.823	0.255
Punjab	Sahibzada Ajit Singh Nagar	0.086	0.833	0.216	0.380	0.543	0.257
Jammu and Kashmir	Badgam	0.399	0.451	0.033	0.383	0.795	0.258
Odisha	Gajapati	0.983	0.127	0.750	0.091	0.113	0.260
Gujarat	Amreli	0.150	0.695	0.480	0.341	0.399	0.261
Kerala	Malappuram	0.017	0.975	0.009	0.297	0.773	0.263
Assam	Hailakandi	0.610	0.119	0.174	0.435	0.734	0.263
Assam	Sivasagar	0.161	0.222	0.329	0.407	0.955	0.266
Delhi	East	0.030	0.980	0.100	0.430	0.537	0.268
Tamil Nadu	Perambalur	0.338	0.545	0.626	0.056	0.513	0.269
Rajasthan	Bikaner	0.457	0.297	0.366	0.628	0.332	0.271
Tamil Nadu	Nagapattinam	0.224	0.779	0.532	0.136	0.408	0.271
Chhattisgarh	Dakshin Bastar Dantewada	0.975	0.044	0.756	0.199	0.108	0.274
Maharashtra	Satara	0.149	0.670	0.368	0.756	0.149	0.275
Karnataka	Bangalore Rural	0.252	0.804	0.463	0.272	0.305	0.277
Nagaland	Mon	0.989	0.171	0.185	0.599	0.153	0.277
Manipur	Churachandpur	0.854	0.059	0.207	0.449	0.529	0.280
Punjab	Moga	0.360	0.775	0.130	0.526	0.310	0.282
Nagaland	Longleng	0.934	0.247	0.227	0.376	0.319	0.283
Gujarat	Surendranagar	0.455	0.401	0.737	0.257	0.254	0.283
Maharashtra	Gadchiroli	0.725	0.224	0.415	0.282	0.471	0.286
Karnataka	Haveri	0.552	0.473	0.682	0.236	0.174	0.288
Delhi	North East	0.072	0.864	0.131	0.510	0.545	0.290
Mizoram	Lunglei	0.615	0.433	0.128	0.030	0.917	0.291
Kerala	Kollam	0.016	0.994	0.028	0.189	0.897	0.291
Kerala	Ernakulam	0.009	0.997	0.022	0.225	0.872	0.294
Punjab	Muktsar	0.393	0.717	0.222	0.703	0.091	0.294
Nagaland	Tuensang	0.964	0.260	0.177	0.413	0.313	0.297
Rajasthan	Jaisalmer	0.911	0.039	0.829	0.291	0.056	0.297
Maharashtra	Chandrapur	0.383	0.739	0.371	0.568	0.067	0.300
Karnataka	Hassan	0.224	0.743	0.457	0.095	0.610	0.302
Andhra Pradesh	Anantapur	0.352	0.643	0.471	0.261	0.405	0.304
Tamil Nadu	Chennai	0.052	0.878	0.094	0.304	0.806	0.304
Punjab	Amritsar	0.275	0.858	0.219	0.676	0.106	0.307

State/Union Territory	District	Socio-economic vulnerability	Demographic vulnerability	Vulnerability due to housing condition	Vulnerability due to non-availability of healthcare	Epidemiological vulnerability	Overall Vulnerability
Lakshadweep	Lakshadweep	0.266	0.986	0.038	0.241	0.604	0.308
Odisha	Nuapada	0.707	0.102	0.840	0.131	0.365	0.310
Maharashtra	Bhandara	0.293	0.613	0.266	0.493	0.482	0.311
Karnataka	Tumkur	0.463	0.664	0.648	0.174	0.200	0.313
Tamil Nadu	Krishnagiri	0.216	0.319	0.576	0.205	0.834	0.315
Tamil Nadu	Erode	0.081	0.723	0.297	0.166	0.883	0.315
Karnataka	Belgaum	0.282	0.682	0.598	0.477	0.114	0.318
Karnataka	Bellary	0.701	0.429	0.645	0.351	0.030	0.319
Tamil Nadu	Tiruchirappalli	0.094	0.948	0.444	0.252	0.418	0.321
Maharashtra	Amravati	0.349	0.869	0.355	0.557	0.027	0.321
Manipur	Imphal East	0.056	0.862	0.121	0.369	0.756	0.324
Tamil Nadu	Viluppuram	0.315	0.322	0.649	0.128	0.754	0.326
Punjab	Firozpur	0.424	0.567	0.139	0.803	0.239	0.327
Haryana	Sirsa	0.407	0.576	0.116	0.721	0.357	0.329
Odisha	Anugul	0.505	0.228	0.662	0.163	0.620	0.330
Rajasthan	Alwar	0.527	0.275	0.556	0.546	0.283	0.332
Nagaland	Zunheboto	0.837	0.570	0.272	0.207	0.302	0.332
Tamil Nadu	Kanniyakumari	0.006	0.992	0.041	0.402	0.746	0.332
Puducherry	Puducherry	0.077	0.833	0.316	0.264	0.704	0.336
Gujarat	Kachchh	0.674	0.161	0.501	0.358	0.501	0.338
Maharashtra	Ratnagiri	0.329	0.496	0.275	0.576	0.523	0.340
Assam	Goalpara	0.734	0.189	0.302	0.294	0.681	0.341
Haryana	Kaithal	0.272	0.729	0.257	0.700	0.243	0.343
Gujarat	Tapi	0.840	0.255	0.759	0.144	0.202	0.343
Punjab	Kapurthala	0.219	0.939	0.069	0.446	0.529	0.346
Jammu and Kashmir	Anantnag	0.358	0.412	0.058	0.545	0.833	0.347
Uttar Pradesh	Lucknow	0.239	0.792	0.352	0.756	0.069	0.349
Mizoram	Lawngtlai	0.955	0.067	0.423	0.146	0.624	0.351
Goa	South Goa	0.031	0.864	0.202	0.532	0.585	0.351
Rajasthan	Pali	0.607	0.556	0.545	0.166	0.341	0.354
Mizoram	Kolasib	0.673	0.374	0.197	0.008	0.966	0.355
Punjab	Gurdaspur	0.106	0.926	0.266	0.767	0.155	0.357
Manipur	Tamenglong	0.966	0.072	0.316	0.443	0.426	0.358
Karnataka	Gulbarga	0.510	0.581	0.703	0.435	0.000	0.360
Tamil Nadu	Pudukkottai	0.122	0.676	0.656	0.094	0.695	0.362
Uttarakhand	Nainital	0.222	0.518	0.192	0.459	0.856	0.363
Meghalaya	East Garo Hills	0.941	0.030	0.075	0.202	1.000	0.363
Maharashtra	Raigarh	0.114	0.664	0.288	0.797	0.388	0.366
Rajasthan	Nagaur	0.631	0.427	0.524	0.310	0.365	0.368
Assam	Morigaon	0.646	0.152	0.363	0.257	0.844	0.369
Gujarat	Bhavnagar	0.174	0.549	0.521	0.570	0.449	0.371
Assam	Karimganj	0.606	0.155	0.232	0.696	0.574	0.371
Gujarat	Patan	0.654	0.382	0.736	0.218	0.274	0.371
Chhattisgarh	Korba	0.524	0.261	0.651	0.421	0.408	0.376
Tripura	South Tripura	0.712	0.142	0.332	0.091	0.991	0.377
Rajasthan	Jaipur	0.302	0.618	0.351	0.560	0.441	0.379
Tripura	Dhalai	0.900	0.070	0.496	0.031	0.775	0.379
Assam	Dima Hasao	0.884	0.121	0.412	0.296	0.562	0.382
Chhattisgarh	Narayanpur	0.890	0.022	0.879	0.045	0.440	0.383
Delhi	South	0.056	0.859	0.199	0.571	0.593	0.385
Uttarakhand	Pithoragarh	0.490	0.407	0.254	0.363	0.765	0.385
Dadra & Nagar Haveli	Dadra & Nagar Haveli	0.692	0.454	0.728	0.218	0.188	0.385
Odisha	Balangir	0.640	0.351	0.869	0.166	0.258	0.390
Rajasthan	Hanumangarh	0.623	0.413	0.332	0.623	0.297	0.391
Chhattisgarh	Bijapur	0.739	0.006	0.656	0.023	0.864	0.391
Odisha	Debagarh	0.825	0.124	0.781	0.106	0.455	0.394
Maharashtra	Mumbai	0.092	0.951	0.299	0.340	0.609	0.394
Assam	Dhemaji	0.635	0.027	0.419	0.584	0.629	0.397
West Bengal	Purba Medinipur	0.131	0.640	0.441	0.637	0.446	0.399
Jammu and Kashmir	Bandipore	0.421	0.421	0.080	0.488	0.887	0.401
Jammu and Kashmir	Kulgam	0.459	0.574	0.072	0.355	0.839	0.402
Punjab	Ludhiana	0.138	0.961	0.059	0.689	0.468	0.404
Tamil Nadu	Thanjavur	0.156	0.942	0.397	0.152	0.668	0.405
Gujarat	Anand	0.053	0.930	0.485	0.484	0.369	0.407
Nagaland	Kohima	0.684	0.365	0.031	0.576	0.667	0.408
Manipur	Imphal West	0.025	0.941	0.091	0.391	0.876	0.410
Tamil Nadu	Kancheepuram	0.155	0.784	0.336	0.515	0.535	0.412
Tamil Nadu	Madurai	0.036	0.942	0.358	0.315	0.679	0.413

Arunachal Pradesh	East Kameng	0.997	0.066	0.690	0.013	0.570	0.415
Tamil Nadu	Ramanathapuram	0.067	0.751	0.546	0.188	0.782	0.415
Chhattisgarh	Raipur	0.332	0.535	0.612	0.723	0.135	0.418
Gujarat	Rajkot	0.050	0.908	0.349	0.515	0.518	0.419
Punjab	Rupnagar	0.103	0.872	0.103	0.645	0.620	0.421
Rajasthan	Rajsamand	0.743	0.394	0.618	0.382	0.211	0.423
Tamil Nadu	Thiruvallur	0.088	0.753	0.261	0.412	0.842	0.424
Maharashtra	Sangli	0.135	0.811	0.376	0.770	0.266	0.426
Karnataka	Dharwad	0.185	0.837	0.684	0.595	0.056	0.426
Jammu and Kashmir	Srinagar	0.039	0.958	0.005	0.543	0.817	0.429
Rajasthan	Bhilwara	0.595	0.535	0.725	0.365	0.142	0.429
Haryana	Rewari	0.125	0.898	0.354	0.673	0.311	0.429
Tamil Nadu	Theni	0.152	0.884	0.432	0.177	0.718	0.433
Punjab	Shahid Bhagat Singh Nagar	0.194	0.936	0.124	0.538	0.573	0.435
Chhattisgarh	Bilaspur	0.460	0.232	0.685	0.531	0.459	0.437
Manipur	Ukhrul	0.815	0.150	0.175	0.474	0.757	0.438
Haryana	Jind	0.249	0.524	0.274	0.726	0.599	0.438
Karnataka	Bagalkot	0.523	0.687	0.762	0.387	0.022	0.441
Punjab	Mansa	0.482	0.764	0.178	0.512	0.444	0.441
West Bengal	Koch Bihar	0.751	0.296	0.236	0.347	0.751	0.444
Gujarat	Bharuch	0.474	0.695	0.454	0.347	0.413	0.446
Jharkhand	Latehar	0.955	0.094	0.894	0.402	0.041	0.448
Tamil Nadu	Cuddalore	0.261	0.879	0.498	0.228	0.529	0.449
Chhattisgarh	Kabirdham	0.817	0.086	0.897	0.518	0.081	0.451
Jammu and Kashmir	Kupwara	0.487	0.332	0.160	0.537	0.887	0.452
Andhra Pradesh	Chittoor	0.280	0.770	0.507	0.433	0.413	0.454
Gujarat	Valsad	0.495	0.726	0.613	0.457	0.122	0.455
Jammu and Kashmir	Jammu	0.139	0.937	0.260	0.335	0.743	0.457
Chhattisgarh	Raigarh	0.649	0.308	0.801	0.230	0.427	0.459
Jammu and Kashmir	Kathua	0.316	0.419	0.551	0.482	0.654	0.460
Jammu and Kashmir	Punch	0.782	0.064	0.568	0.336	0.673	0.462
Chhattisgarh	Janjgir - Champa	0.535	0.499	0.839	0.495	0.059	0.463
Uttar Pradesh	Kushinagar	0.449	0.371	0.642	0.585	0.380	0.463
Odisha	Kandhamal	0.958	0.110	0.987	0.028	0.349	0.466
Rajasthan	Kota	0.397	0.692	0.509	0.452	0.382	0.466
Rajasthan	Jalor	0.922	0.077	0.864	0.567	0.006	0.469
Chhattisgarh	Mahasamund	0.582	0.258	0.822	0.424	0.351	0.471
Odisha	Kalahandi	0.911	0.299	0.912	0.114	0.207	0.473
Assam	Kamrup Metropolitan	0.207	0.886	0.102	0.540	0.710	0.474
Rajasthan	Sirohi	0.942	0.286	0.815	0.333	0.072	0.476
Chhattisgarh	Surgeja	0.923	0.083	0.850	0.452	0.146	0.477
West Bengal	Darjiling	0.432	0.745	0.291	0.429	0.559	0.479
Madhya Pradesh	Morena	0.412	0.595	0.571	0.817	0.061	0.479
Assam	Tinsukia	0.477	0.200	0.346	0.681	0.753	0.482
Tamil Nadu	Sivaganga	0.099	0.900	0.376	0.171	0.912	0.482
Maharashtra	Ahmadnagar	0.402	0.656	0.618	0.765	0.017	0.485
Andhra Pradesh	Y.S.R.	0.188	0.781	0.427	0.338	0.725	0.485
Telangana	Hyderabad	0.078	0.844	0.258	0.571	0.717	0.488
Tamil Nadu	Tirunelveli	0.196	0.967	0.416	0.216	0.673	0.488
Maharashtra	Nashik	0.380	0.736	0.501	0.704	0.147	0.488
Gujarat	The Dangs	0.972	0.014	0.969	0.116	0.399	0.493
Tripura	North Tripura	0.844	0.324	0.451	0.150	0.706	0.495
Uttarakhand	Hardwar	0.423	0.579	0.405	0.746	0.321	0.495
Odisha	Sambalpur	0.617	0.540	0.775	0.089	0.454	0.495
Assam	Cachar	0.576	0.203	0.332	0.679	0.684	0.495
Maharashtra	Pune	0.171	0.837	0.290	0.690	0.493	0.501
Nagaland	Mokokchung	0.628	0.698	0.008	0.322	0.825	0.501
Odisha	Dhenkanal	0.482	0.440	0.712	0.081	0.768	0.504
Chhattisgarh	Durg	0.210	0.604	0.582	0.715	0.372	0.505
Gujarat	Narmada	0.895	0.111	0.806	0.131	0.548	0.507
Odisha	Jagatsinghapur	0.156	0.759	0.617	0.147	0.815	0.509
Delhi	North	0.070	0.847	0.214	0.397	0.967	0.510
Manipur	Bishnupur	0.069	0.919	0.188	0.418	0.903	0.510
Jammu and Kashmir	Rajouri	0.740	0.058	0.593	0.324	0.781	0.513
Punjab	Bathinda	0.257	0.876	0.074	0.629	0.668	0.515
Andhra Pradesh	Kurnool	0.493	0.407	0.628	0.399	0.582	0.516
Telangana	Rangareddy	0.136	0.764	0.316	0.746	0.546	0.516
Tamil Nadu	Thiruvarur	0.230	0.712	0.571	0.088	0.909	0.520

State/Union Territory	District	Socio-economic vulnerability	Demographic vulnerability	Vulnerability due to housing condition	Vulnerability due to non-availability of healthcare	Epidemiological vulnerability	Overall Vulnerability
Haryana	Jhajjar	0.113	0.853	0.158	0.604	0.784	0.521
Chhattisgarh	Jashpur	0.886	0.172	0.934	0.072	0.448	0.521
West Bengal	Kolkata	0.160	0.978	0.210	0.210	0.956	0.524
Rajasthan	Pratapgarh	0.978	0.100	1.000	0.371	0.077	0.526
Madhya Pradesh	Datia	0.502	0.563	0.474	0.803	0.186	0.527
Karnataka	Chikkaballapura	0.692	0.676	0.651	0.274	0.238	0.529
Jammu and Kashmir	Reasi	0.781	0.016	0.695	0.351	0.689	0.529
Gujarat	Ahmadabad	0.033	0.981	0.246	0.640	0.634	0.532
Odisha	Sundargarh	0.435	0.482	0.593	0.288	0.739	0.534
Karnataka	Yadgir	0.947	0.269	0.994	0.319	0.011	0.535
Maharashtra	Wardha	0.277	0.867	0.360	0.626	0.412	0.537
Maharashtra	Kolhapur	0.119	0.962	0.255	0.792	0.416	0.538
Odisha	Bhadrak	0.372	0.216	0.864	0.182	0.912	0.540
Assam	Dhubri	0.657	0.221	0.372	0.613	0.689	0.541
Jharkhand	Lohardaga	0.784	0.285	0.701	0.643	0.139	0.541
Rajasthan	Dungarpur	0.973	0.264	0.862	0.416	0.039	0.545
Andhra Pradesh	Visakhapatnam	0.332	0.809	0.474	0.371	0.571	0.546
Manipur	Thoubal	0.105	0.901	0.250	0.468	0.836	0.548
Tamil Nadu	Virudhunagar	0.208	0.953	0.513	0.286	0.603	0.549
Maharashtra	Thane	0.247	0.845	0.532	0.854	0.086	0.551
Odisha	Nayagarh	0.346	0.380	0.808	0.058	0.975	0.552
Madhya Pradesh	Bhind	0.308	0.734	0.563	0.786	0.180	0.554
Andhra Pradesh	Sri Potti Sriramulu Nellore	0.495	0.657	0.576	0.299	0.549	0.556
Odisha	Puri	0.124	0.746	0.640	0.127	0.947	0.557
Madhya Pradesh	Burhanpur	0.715	0.443	0.624	0.541	0.261	0.559
Uttar Pradesh	Farrukhabad	0.387	0.593	0.687	0.850	0.074	0.560
Gujarat	Surat	0.183	0.822	0.341	0.607	0.638	0.562
Rajasthan	Tonk	0.776	0.659	0.732	0.269	0.156	0.563
Bihar	Arwal	0.762	0.643	0.565	0.562	0.063	0.565
Madhya Pradesh	Hoshangabad	0.437	0.336	0.408	0.693	0.720	0.565
Tripura	West Tripura	0.405	0.754	0.136	0.368	0.936	0.568
West Bengal	Murshidabad	0.487	0.590	0.495	0.598	0.435	0.570
Gujarat	Kheda	0.343	0.768	0.850	0.435	0.211	0.571
Andhra Pradesh	Srikakulam	0.401	0.721	0.728	0.208	0.551	0.573
Tamil Nadu	Coimbatore	0.192	0.931	0.343	0.307	0.844	0.574
Gujarat	Banaskantha	0.700	0.180	0.901	0.299	0.537	0.574
Karnataka	Raichur	0.881	0.257	0.886	0.534	0.066	0.577
Karnataka	Chamarajanagar	0.826	0.520	0.654	0.158	0.466	0.579
Maharashtra	Jalgaon	0.243	0.894	0.554	0.754	0.183	0.581
Andhra Pradesh	West Godavari	0.335	0.828	0.277	0.360	0.829	0.582
Madhya Pradesh	Neemuch	0.557	0.393	0.665	0.753	0.263	0.584
Odisha	Rayagada	0.970	0.139	0.814	0.067	0.642	0.585
Bihar	Aurangabad	0.665	0.488	0.493	0.629	0.360	0.587
Karnataka	Bidar	0.612	0.728	0.784	0.355	0.156	0.588
Rajasthan	Banswara	0.987	0.146	0.992	0.507	0.005	0.590
Uttar Pradesh	Jhansi	0.349	0.873	0.455	0.782	0.178	0.592
Manipur	Chandel	0.881	0.044	0.263	0.534	0.922	0.593
Uttar Pradesh	Rampur	0.510	0.484	0.487	0.955	0.210	0.595
Telangana	Nalgonda	0.646	0.612	0.423	0.377	0.590	0.596
Karnataka	Chitradurga	0.599	0.532	0.764	0.177	0.581	0.598
Bihar	Rohtas	0.582	0.480	0.581	0.859	0.166	0.599
Gujarat	Jamnagar	0.177	0.693	0.474	0.548	0.776	0.599
Andhra Pradesh	Prakasam	0.703	0.504	0.512	0.321	0.632	0.603
Rajasthan	Chittaurgarh	0.745	0.443	0.808	0.520	0.156	0.603
Manipur	Senapati (Excluding 3 Sub-Divisions)	0.861	0.016	0.203	0.637	0.962	0.606
Uttar Pradesh	Jalaun	0.372	0.759	0.440	0.840	0.268	0.606
Maharashtra	Solapur	0.354	0.892	0.446	0.707	0.290	0.609
Madhya Pradesh	Sehore	0.507	0.493	0.449	0.729	0.512	0.610
Odisha	Khordha	0.047	0.956	0.560	0.255	0.873	0.612
Jharkhand	Khunti	0.872	0.254	0.811	0.706	0.052	0.613
Bihar	Bhojpur	0.498	0.703	0.516	0.901	0.075	0.613
Uttar Pradesh	Deoria	0.346	0.610	0.592	0.889	0.257	0.613
Jammu and Kashmir	Samba	0.377	0.582	0.448	0.502	0.786	0.618
Jammu and Kashmir	Udhampur	0.642	0.263	0.698	0.476	0.618	0.620
Jammu and Kashmir	Kishtwar	0.618	0.135	0.562	0.499	0.883	0.620

State/Union Territory	District	Socio-economic vulnerability	Demographic vulnerability	Vulnerability due to housing condition	Vulnerability due to non-availability of healthcare	Epidemiological vulnerability	Overall Vulnerability
Karnataka	Bijapur	0.660	0.479	0.950	0.501	0.110	0.623
Uttar Pradesh	Kanpur Nagar	0.110	0.908	0.383	0.839	0.460	0.623
Madhya Pradesh	Mandla	0.950	0.081	0.870	0.396	0.404	0.626
Madhya Pradesh	Guna	0.801	0.232	0.828	0.710	0.138	0.628
Odisha	Jharsuguda	0.321	0.674	0.610	0.246	0.858	0.628
Uttar Pradesh	Ghaziabad	0.235	0.662	0.357	0.969	0.488	0.631
J&K	Doda	0.603	0.041	0.631	0.579	0.861	0.632
Karnataka	Mysore	0.290	0.842	0.535	0.332	0.715	0.632
Rajasthan	Barmer	0.870	0.085	0.986	0.587	0.189	0.635
Nagaland	Dimapur	0.541	0.349	0.141	0.701	0.984	0.635
Odisha	Subarnapur	0.590	0.415	0.980	0.069	0.668	0.638
Uttarakhand	Champawat	0.462	0.351	0.399	0.610	0.901	0.640
Andhra Pradesh	East Godavari	0.354	0.720	0.515	0.344	0.790	0.642
Karnataka	Bangalore	0.049	0.906	0.088	0.775	0.906	0.642
Rajasthan	Jhalawar	0.898	0.432	0.864	0.432	0.099	0.645
Madhya Pradesh	Raisen	0.676	0.236	0.679	0.623	0.515	0.646
Jharkhand	Kodarma	0.532	0.369	0.751	1.000	0.080	0.648
Uttar Pradesh	Gautam Buddha Nagar	0.191	0.599	0.330	0.881	0.736	0.649
Madhya Pradesh	Ashoknagar	0.817	0.196	0.723	0.773	0.232	0.651
Jharkhand	Hazaribagh	0.653	0.277	0.725	0.881	0.230	0.653
Odisha	Ganjam	0.659	0.815	0.632	0.225	0.437	0.654
Maharashtra	Hingoli	0.695	0.545	0.570	0.781	0.182	0.656
Odisha	Jajapur	0.310	0.582	0.779	0.117	0.983	0.656
Rajasthan	Dhaulpur	0.764	0.299	0.936	0.451	0.322	0.656
Jharkhand	Simdega	0.909	0.167	0.765	0.698	0.233	0.660
Andhra Pradesh	Krishna	0.294	0.912	0.408	0.460	0.707	0.662
Maharashtra	Mumbai Suburban	0.074	0.817	0.363	0.734	0.797	0.664
Bihar	Kaimur (Bhabua)	0.790	0.344	0.623	0.814	0.216	0.665
Tamil Nadu	Thoothukkudi	0.211	0.955	0.437	0.305	0.881	0.667
Odisha	Kendrapara	0.362	0.562	0.833	0.164	0.870	0.668
Rajasthan	Udaipur	0.961	0.446	0.941	0.346	0.099	0.670
Nagaland	Peren	0.939	0.133	0.271	0.465	0.994	0.671
Madhya Pradesh	Gwalior	0.396	0.653	0.430	0.864	0.462	0.673
Uttar Pradesh	Mahoba	0.649	0.615	0.598	0.732	0.211	0.674
Uttar Pradesh	Sultanpur	0.469	0.377	0.887	0.962	0.119	0.676
Uttar Pradesh	Mainpuri	0.272	0.673	0.848	0.853	0.171	0.678
Odisha	Malkangiri	0.969	0.028	0.972	0.044	0.809	0.679
Uttar Pradesh	Baghpat	0.246	0.808	0.451	0.895	0.424	0.681
Odisha	Koraput	0.981	0.175	0.897	0.085	0.685	0.681
Madhya Pradesh	Indore	0.202	0.829	0.122	0.894	0.776	0.681
Uttar Pradesh	Jyotiba Phule Nagar	0.545	0.501	0.538	0.948	0.294	0.685
Maharashtra	Aurangabad	0.288	0.790	0.643	0.795	0.313	0.687
Uttar Pradesh	Banda	0.579	0.485	0.628	0.890	0.250	0.689
Madhya Pradesh	Bhopal	0.130	0.787	0.241	0.745	0.936	0.690
Madhya Pradesh	Shajapur	0.618	0.438	0.504	0.900	0.379	0.690
Jharkhand	Giridih	0.800	0.318	0.826	0.906	0.003	0.693
Maharashtra	Latur	0.531	0.879	0.659	0.632	0.161	0.695
Jharkhand	Ramgarh	0.557	0.698	0.582	0.761	0.268	0.696
Rajasthan	Bundi	0.858	0.490	0.905	0.523	0.092	0.698
Maharashtra	Osmanabad	0.322	0.538	0.754	0.737	0.518	0.700
Madhya Pradesh	Dindori	0.977	0.011	0.958	0.327	0.601	0.701
Jharkhand	Purbi Singhbhum	0.465	0.911	0.588	0.870	0.042	0.703
Maharashtra	Akola	0.329	0.890	0.491	0.670	0.499	0.704
Uttar Pradesh	Basti	0.443	0.469	0.845	0.836	0.290	0.706
Andhra Pradesh	Vizianagaram	0.563	0.646	0.674	0.203	0.800	0.707
Uttar Pradesh	Agra	0.368	0.689	0.559	0.928	0.346	0.709
Jharkhand	Jamtara	0.795	0.305	0.945	0.770	0.081	0.710
Odisha	Nabarangapur	0.928	0.069	0.966	0.105	0.829	0.712
Telangana	Nizamabad	0.574	0.706	0.480	0.424	0.723	0.714
West Bengal	North Twenty Four Parganas	0.250	0.947	0.224	0.507	0.986	0.715
Odisha	Mayurbhanj	0.808	0.228	0.894	0.149	0.840	0.717
Odisha	Baleswar	0.419	0.646	0.709	0.244	0.905	0.718
Jammu and Kashmir	Ramban	0.712	0.034	0.740	0.513	0.925	0.720
Odisha	Cuttack	0.117	0.922	0.678	0.274	0.941	0.721
Bihar	Siwan	0.613	0.682	0.720	0.809	0.111	0.723
Bihar	Jehanabad	0.734	0.782	0.499	0.574	0.351	0.725
Andhra Pradesh	Guntur	0.391	0.894	0.429	0.410	0.820	0.726
Maharashtra	Yavatmal	0.638	0.554	0.465	0.723	0.568	0.728

State/Union Territory	District	Socio-economic vulnerability	Demographic vulnerability	Vulnerability due to housing condition	Vulnerability due to non-availability of healthcare	Epidemiological vulnerability	Overall Vulnerability
Madhya Pradesh	Sheopur	0.926	0.074	0.955	0.726	0.280	0.729
Uttar Pradesh	Firozabad	0.340	0.773	0.618	0.844	0.388	0.731
West Bengal	Bankura	0.645	0.421	0.815	0.362	0.721	0.732
Madhya Pradesh	Harda	0.873	0.219	0.537	0.750	0.588	0.734
Uttar Pradesh	Chandauli	0.438	0.468	0.850	0.925	0.290	0.736
Rajasthan	Dausa	0.811	0.516	0.770	0.401	0.477	0.737
Bihar	Madhepura	0.839	0.326	0.743	0.825	0.247	0.739
Maharashtra	Nandurbar	0.980	0.207	0.942	0.603	0.254	0.740
Telangana	Medak	0.671	0.725	0.418	0.343	0.828	0.740
Uttar Pradesh	Bulandshahr	0.429	0.606	0.523	0.941	0.495	0.743
Uttar Pradesh	Ballia	0.451	0.466	0.734	0.861	0.484	0.745
Madhya Pradesh	Rajgarh	0.695	0.540	0.925	0.710	0.125	0.745
Maharashtra	Washim	0.577	0.629	0.490	0.740	0.567	0.748
Madhya Pradesh	Balaghat	0.468	0.236	0.748	0.750	0.803	0.750
Telangana	Khammam	0.718	0.523	0.401	0.596	0.768	0.751
Uttar Pradesh	Unnao	0.624	0.493	0.714	0.937	0.241	0.753
Haryana	Palwal	0.476	0.559	0.518	0.811	0.649	0.754
Madhya Pradesh	Anuppur	0.844	0.183	0.840	0.484	0.665	0.756
Rajasthan	Bharatpur	0.588	0.509	0.911	0.601	0.407	0.756
Uttar Pradesh	Varanasi	0.133	0.879	0.673	0.984	0.354	0.759
Uttar Pradesh	Auraiya	0.316	0.609	0.590	0.897	0.613	0.761
Madhya Pradesh	Singrauli	0.917	0.114	0.933	0.682	0.382	0.762
Madhya Pradesh	Shivpuri	0.829	0.239	0.878	0.798	0.285	0.764
Uttar Pradesh	Mathura	0.319	0.757	0.671	0.944	0.340	0.765
Uttarakhand	Udham Singh Nagar	0.429	0.531	0.315	0.808	0.964	0.767
Uttar Pradesh	Shahjahanpur	0.562	0.407	0.587	0.980	0.510	0.767
Bihar	Patna	0.363	0.903	0.394	0.848	0.540	0.770
Uttar Pradesh	Lalitpur	0.814	0.243	0.917	0.994	0.088	0.772
Jharkhand	Dumka	0.915	0.232	0.876	0.898	0.135	0.773
Uttar Pradesh	Jaunpur	0.341	0.573	0.922	0.945	0.277	0.775
Maharashtra	Nagpur	0.227	0.950	0.285	0.657	0.944	0.776
West Bengal	Paschim Medinipur	0.498	0.590	0.638	0.687	0.651	0.778
Rajasthan	Baran	0.864	0.268	0.767	0.405	0.761	0.778
West Bengal	Jalpaiguri	0.664	0.452	0.393	0.592	0.967	0.781
Uttar Pradesh	Moradabad	0.521	0.701	0.433	0.998	0.421	0.782
West Bengal	Dakshin Dinajpur	0.726	0.540	0.388	0.455	0.980	0.784
Jharkhand	Bokaro	0.473	0.793	0.634	0.909	0.280	0.784
Bihar	Gopalganj	0.670	0.416	0.660	0.920	0.432	0.787
Telangana	Karimnagar	0.444	0.854	0.438	0.466	0.898	0.789
Gujarat	Panchmahal	0.770	0.358	0.861	0.479	0.635	0.790
West Bengal	Hugli	0.368	0.970	0.390	0.660	0.728	0.792
Odisha	Kendujhar	0.856	0.330	0.920	0.119	0.892	0.793
Nagaland	Wokha	0.789	0.628	0.086	0.709	0.908	0.795
Jharkhand	Pakur	0.945	0.136	0.956	0.887	0.194	0.795
Telangana	Mahbubnagar	0.756	0.358	0.789	0.556	0.662	0.798
Gujarat	Dohad	0.967	0.172	0.998	0.238	0.750	0.800
Madhya Pradesh	Seoni	0.875	0.108	0.831	0.717	0.596	0.801
Uttar Pradesh	Faizabad	0.448	0.515	0.856	0.947	0.363	0.803
Maharashtra	Nanded	0.803	0.789	0.598	0.664	0.279	0.804
Bihar	Buxar	0.570	0.570	0.596	0.837	0.565	0.806
West Bengal	Haora	0.189	0.964	0.404	0.651	0.931	0.808
Madhya Pradesh	Shahdol	0.865	0.244	0.822	0.549	0.662	0.809
Uttar Pradesh	Gorakhpur	0.372	0.801	0.615	0.879	0.474	0.809
Maharashtra	Buldana	0.548	0.646	0.606	0.674	0.673	0.812
Madhya Pradesh	Rewa	0.698	0.469	0.751	0.731	0.505	0.814
Jharkhand	Dhanbad	0.416	0.806	0.746	0.953	0.235	0.815
Uttar Pradesh	Hamirpur	0.504	0.681	0.471	0.634	0.867	0.817
Maharashtra	Parbhani	0.490	0.818	0.662	0.856	0.333	0.818
Bihar	Nawada	0.826	0.560	0.567	0.684	0.523	0.820
Uttar Pradesh	Ghazipur	0.485	0.626	0.800	0.922	0.329	0.822
Madhya Pradesh	Jabalpur	0.501	0.659	0.693	0.668	0.642	0.823
Bihar	Kishanganj	0.662	0.365	0.687	0.956	0.498	0.825
Uttar Pradesh	Mahamaya Nagar	0.286	0.638	0.700	0.961	0.582	0.826
Madhya Pradesh	Chhatarpur	0.772	0.294	0.909	0.822	0.374	0.828
Maharashtra	Bid	0.551	0.731	0.603	0.812	0.476	0.829
Gujarat	Vadodara	0.579	0.894	0.668	0.427	0.607	0.831
Uttar Pradesh	Kanpur Dehat	0.527	0.551	0.696	0.981	0.419	0.831
Jharkhand	Gumla	0.797	0.078	0.836	0.618	0.848	0.834
Madhya Pradesh	Khargone (West Nimar)	0.905	0.122	0.676	0.656	0.818	0.834

State/Union Territory	District	Socio-economic vulnerability	Demographic vulnerability	Vulnerability due to housing condition	Vulnerability due to non-availability of healthcare	Epidemiological vulnerability	Overall Vulnerability
Uttar Pradesh	Pratapgarh	0.300	0.430	0.900	0.933	0.617	0.837
Bihar	Jamui	0.878	0.211	0.942	0.964	0.196	0.839
Uttar Pradesh	Maharajganj	0.567	0.252	0.692	0.787	0.895	0.840
Madhya Pradesh	Barwani	0.986	0.106	0.989	0.554	0.557	0.840
Jharkhand	Pashchimi Singhbhum	0.931	0.164	0.795	0.908	0.397	0.844
Bihar	Sheikhpura	0.833	0.642	0.714	0.523	0.488	0.845
Jharkhand	Ranchi	0.440	0.856	0.582	0.941	0.387	0.847
Uttar Pradesh	Mirzapur	0.556	0.477	0.967	0.989	0.219	0.848
Jharkhand	Godda	0.905	0.355	0.939	0.991	0.020	0.850
Uttar Pradesh	Mau	0.477	0.770	0.706	0.992	0.274	0.851
Uttar Pradesh	Muzaffarnagar	0.543	0.635	0.469	0.815	0.765	0.853
Uttar Pradesh	Bijnor	0.441	0.513	0.488	0.966	0.822	0.854
Telangana	Adilabad	0.894	0.465	0.775	0.311	0.789	0.856
Telangana	Warangal	0.607	0.803	0.479	0.559	0.787	0.858
Karnataka	Gadag	0.451	0.756	0.906	0.473	0.654	0.859
Maharashtra	Jalna	0.737	0.603	0.743	0.768	0.388	0.859
Uttar Pradesh	Saharanpur	0.549	0.671	0.459	0.977	0.585	0.862
Bihar	Katihar	0.687	0.405	0.552	0.806	0.792	0.864
Uttar Pradesh	Etawah	0.285	0.786	0.709	0.762	0.703	0.865
West Bengal	Nadia	0.469	0.958	0.321	0.527	0.972	0.867
Uttar Pradesh	Meerut	0.296	0.812	0.379	0.917	0.848	0.869
Madhya Pradesh	Ujjain	0.444	0.534	0.529	0.826	0.923	0.870
Madhya Pradesh	Mandsaur	0.595	0.340	0.914	0.617	0.797	0.872
Madhya Pradesh	Chhindwara	0.798	0.214	0.822	0.527	0.911	0.873
West Bengal	Birbhum	0.773	0.402	0.717	0.521	0.865	0.875
Madhya Pradesh	Ratlam	0.930	0.416	0.798	0.778	0.385	0.876
Madhya Pradesh	Betul	0.869	0.244	0.840	0.659	0.696	0.878
Uttar Pradesh	Kanshiram Nagar	0.585	0.502	0.742	0.720	0.764	0.879
Madhya Pradesh	Khandwa (East Nimar)	0.925	0.144	0.731	0.756	0.762	0.881
Uttar Pradesh	Sant Ravidas Nagar (Bhadohi)	0.466	0.507	0.984	0.983	0.377	0.881
West Bengal	Maldah	0.757	0.376	0.635	0.581	0.970	0.884
Bihar	Bhagalpur	0.723	0.737	0.772	0.779	0.308	0.886
Bihar	Banka	0.717	0.354	0.959	0.865	0.432	0.887
Uttar Pradesh	Shrawasti	0.750	0.146	0.983	0.870	0.579	0.887
Bihar	Sitamarhi	0.787	0.510	0.784	0.876	0.374	0.890
Uttar Pradesh	Pilibhit	0.516	0.321	0.527	0.997	0.973	0.892
Madhya Pradesh	Tikamgarh	0.768	0.205	0.884	0.873	0.623	0.894
Uttar Pradesh	Kaushambi	0.851	0.341	0.977	0.995	0.192	0.895
Maharashtra	Dhule	0.765	0.632	0.637	0.648	0.678	0.897
Bihar	Madhubani	0.812	0.576	0.858	0.903	0.221	0.898
Uttar Pradesh	Kannauj	0.534	0.565	0.961	0.851	0.465	0.900
West Bengal	Puruliya	0.897	0.498	0.970	0.590	0.423	0.901
Jharkhand	Saraikela Kharsawan	0.682	0.460	0.847	0.834	0.554	0.901
West Bengal	Uttar Dinajpur	0.721	0.327	0.607	0.787	0.950	0.905
Madhya Pradesh	Katni	0.745	0.311	0.978	0.718	0.657	0.906
Bihar	Araria	0.759	0.291	0.717	0.915	0.731	0.908
Madhya Pradesh	Dewas	0.745	0.463	0.460	0.784	0.961	0.908
Madhya Pradesh	Sidhi	0.848	0.097	0.950	0.671	0.851	0.911
Uttar Pradesh	Fatehpur	0.637	0.548	0.784	0.986	0.473	0.912
Haryana	Mewat	0.676	0.183	0.804	0.912	0.851	0.914
Bihar	Purba Champaran	0.776	0.390	0.757	0.884	0.631	0.915
West Bengal	Bardhaman	0.540	0.917	0.504	0.621	0.858	0.917
Uttar Pradesh	Budaun	0.809	0.332	0.775	0.923	0.626	0.919
Uttar Pradesh	Etah	0.426	0.433	0.930	0.831	0.847	0.920
Bihar	Begusarai	0.684	0.646	0.812	0.845	0.485	0.922
Bihar	Supaul	0.786	0.269	0.859	0.919	0.646	0.923
Uttar Pradesh	Bareilly	0.515	0.715	0.413	0.970	0.869	0.925
Bihar	Pashchim Champaran	0.836	0.274	0.793	0.875	0.714	0.926
Jharkhand	Chatra	0.919	0.164	0.953	0.939	0.518	0.928
Bihar	Muzaffarpur	0.626	0.746	0.549	0.914	0.657	0.930
Madhya Pradesh	Vidisha	0.831	0.210	0.892	0.829	0.737	0.931
Madhya Pradesh	Panna	0.867	0.177	0.947	0.665	0.861	0.933
Uttar Pradesh	Kheri	0.834	0.199	0.973	0.911	0.604	0.934
Rajasthan	Sawai Madhopur	0.920	0.526	0.875	0.446	0.772	0.936
Uttar Pradesh	Gonda	0.477	0.305	0.928	0.878	0.950	0.936
West Bengal	South 24 Parganas	0.668	0.624	0.531	0.776	0.939	0.936
Jharkhand	Garhwa	0.892	0.163	0.820	0.934	0.731	0.941

State/Union Territory	District	Socio-economic vulnerability	Demographic vulnerability	Vulnerability due to housing condition	Vulnerability due to non-availability of healthcare	Epidemiological vulnerability	Overall Vulnerability
Uttar Pradesh	Azamgarh	0.538	0.621	0.720	0.951	0.710	0.942
Jharkhand	Sahibganj	0.948	0.310	0.850	0.987	0.451	0.944
Madhya Pradesh	Damoh	0.850	0.192	0.947	0.858	0.700	0.944
Uttar Pradesh	Allahabad	0.357	0.712	0.914	0.972	0.595	0.947
Madhya Pradesh	Narsimhapur	0.710	0.341	0.906	0.635	0.958	0.948
Uttar Pradesh	Rae Bareli	0.585	0.491	0.975	0.762	0.743	0.950
Bihar	Purnia	0.707	0.358	0.704	0.847	0.948	0.951
Uttar Pradesh	Siddharth Nagar	0.571	0.288	0.931	0.862	0.928	0.953
Bihar	Nalanda	0.858	0.767	0.526	0.620	0.811	0.953
Uttar Pradesh	Sonbhadra	0.840	0.158	0.887	0.840	0.854	0.956
Uttar Pradesh	Aligarh	0.410	0.793	0.540	0.958	0.886	0.958
Uttar Pradesh	Ambedkar Nagar	0.365	0.607	0.707	0.975	0.934	0.959
Uttar Pradesh	Bahraich	0.689	0.194	0.962	0.931	0.812	0.959
Bihar	Lakhisarai	0.718	0.595	0.767	0.869	0.648	0.962
Jharkhand	Palamu	0.886	0.358	0.923	0.736	0.696	0.964
Madhya Pradesh	Umaria	0.914	0.125	0.981	0.640	0.942	0.966
Bihar	Gaya	0.901	0.404	0.803	0.978	0.541	0.967
Madhya Pradesh	Dhar	0.931	0.186	0.739	0.820	0.953	0.969
Madhya Pradesh	Satna	0.679	0.568	0.792	0.612	0.987	0.970
Bihar	Khagaria	0.732	0.368	0.879	0.926	0.739	0.972
Rajasthan	Karauli	0.942	0.383	0.964	0.435	0.926	0.973
Uttar Pradesh	Sant Kabir Nagar	0.656	0.391	0.818	0.886	0.919	0.975
Uttar Pradesh	Chitrakoot	0.803	0.272	0.997	0.892	0.726	0.977
Bihar	Munger	0.513	0.923	0.646	0.801	0.814	0.978
Uttar Pradesh	Hardoi	0.793	0.336	0.834	0.936	0.804	0.980
Uttar Pradesh	Bara Banki	0.759	0.311	0.870	0.950	0.826	0.981
Madhya Pradesh	Alirajpur	0.992	0.036	0.989	0.743	0.959	0.983
Madhya Pradesh	Sagar	0.765	0.344	0.837	0.793	0.981	0.984
Jharkhand	Deoghar	0.618	0.620	0.937	0.959	0.615	0.986
Uttar Pradesh	Balrampur	0.681	0.293	0.890	0.967	0.928	0.987
Bihar	Saharsa	0.740	0.457	0.917	0.867	0.793	0.989
Bihar	Vaishali	0.706	0.635	0.681	0.790	0.977	0.991
Madhya Pradesh	Jhabua	0.998	0.061	0.995	0.798	0.978	0.992
Bihar	Sheohar	0.862	0.689	0.781	0.823	0.759	0.994
Bihar	Saran	0.603	0.704	0.761	0.930	0.920	0.995
Bihar	Samastipur	0.820	0.448	0.870	0.905	0.878	0.997
Uttar Pradesh	Sitapur	0.806	0.372	0.879	0.973	0.944	0.998
Bihar	Darbhanga	0.879	0.588	0.903	0.833	0.800	1.000

Appendix Table 2: Pearson's correlation between overall vulnerability and domain-specific vulnerability (computed at the district level)

Domains of vulnerability	Correlation with overall vulnerability
Socio- economic vulnerability	0.41
Demographic vulnerability	0.04
Vulnerability due to housing and hygiene condition	0.70
Vulnerability due to non-availability of healthcare	0.68
Epidemiological vulnerability	0.39