

Burden of undernutrition among Indian children and women, 2019-21

ABOUT THIS DATA NOTE

Malnutrition, in all its forms, includes undernutrition (wasting, stunting, underweight), inadequate vitamins or minerals, overweight, obesity, and resulting diet-related noncommunicable diseases. Undernutrition includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies (lack of important vitamins and minerals) (WHO 2021).

This Data Note describes trends in undernutrition outcomes among women and children at the national and state levels. In addition to prevalence-based analyses, this Data Note also includes headcount-based analyses at the state and district level. All findings are based on data from the National Family Health Survey (NFHS) 4 (2015-2016) and 5 (2019-2021), combined with population estimates.

The goals of POSHAN Abhiyaan are to achieve improvement in nutritional status of children from 0-6 years, adolescent girls, pregnant women and lactating others in a time-bound manner. Given the importance of geographic targeting in POSHAN Abhiyaan, the burden of stunting, underweight, wasting, severe wasting, and anemia were ranked to help identify priority districts with highest burden of undernutrition among children and women.

This Data Note can be used by national, state and district-level officials, non-governmental organizations (NGOs) and research institutes to diagnose challenges, direct resources and strengthen implementation of programs and policies to improve these outcomes.

Fig 1. Trends in undernutrition outcomes among children and women in India, 2015-16 & 2019-21

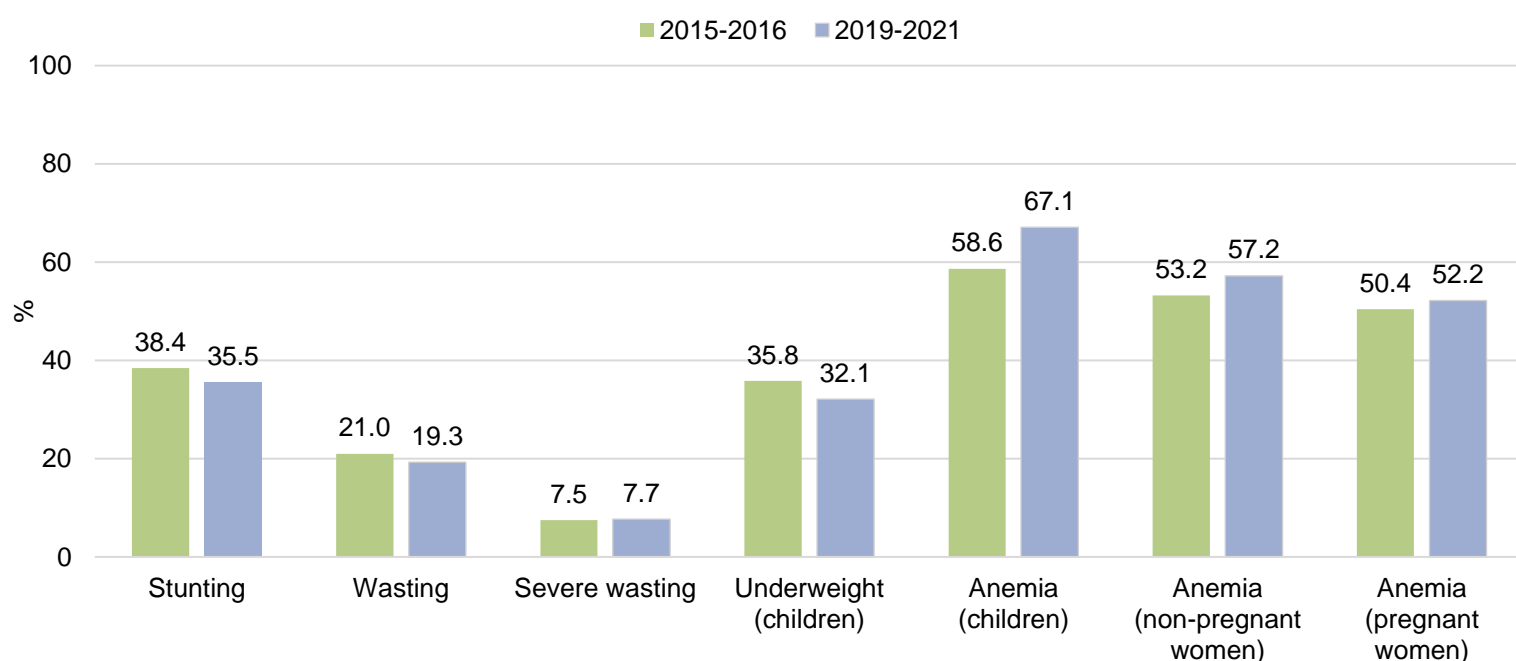


Fig 2. State-level variability in undernutrition outcomes, 2015-16 & 2019-21

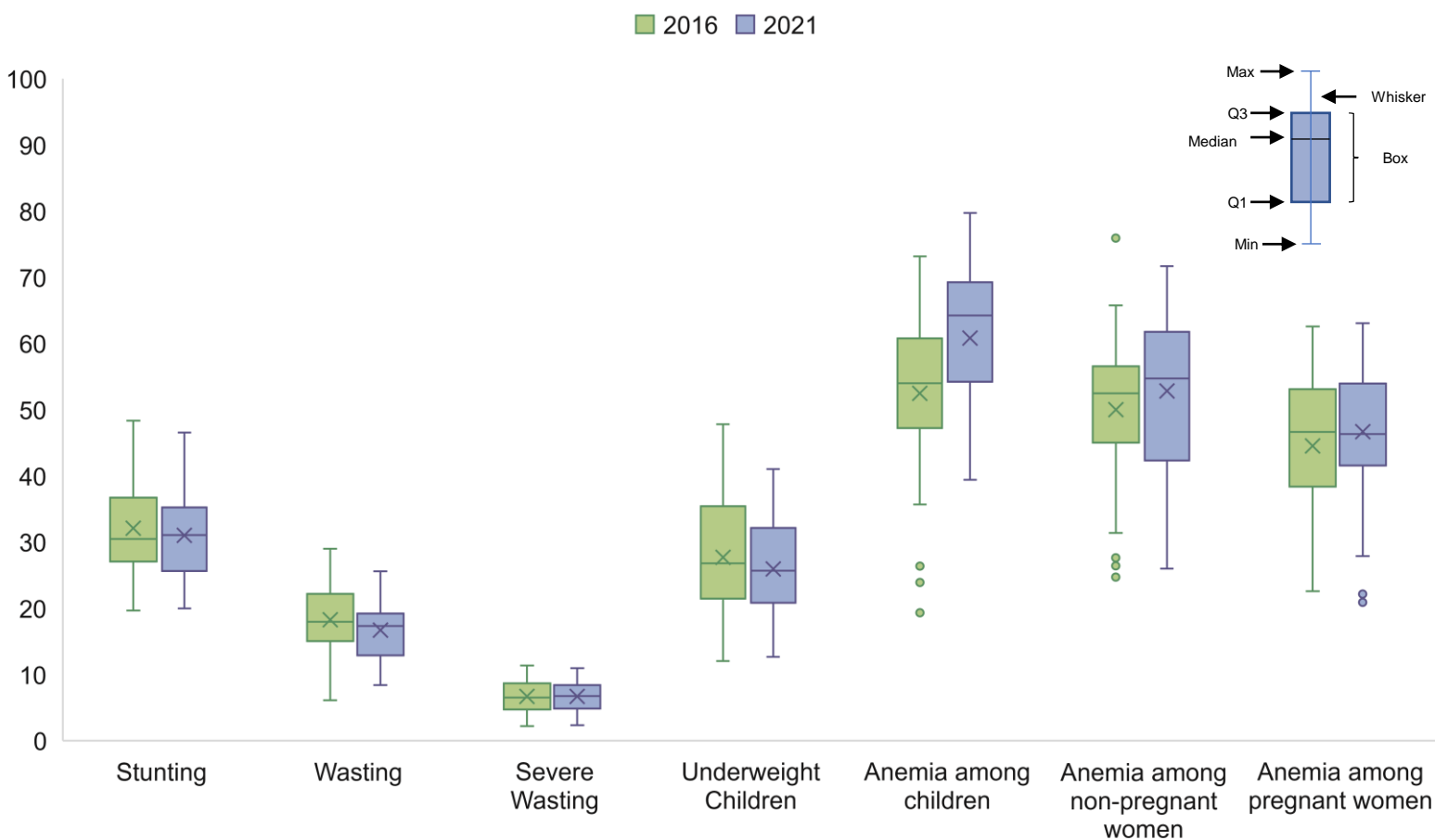
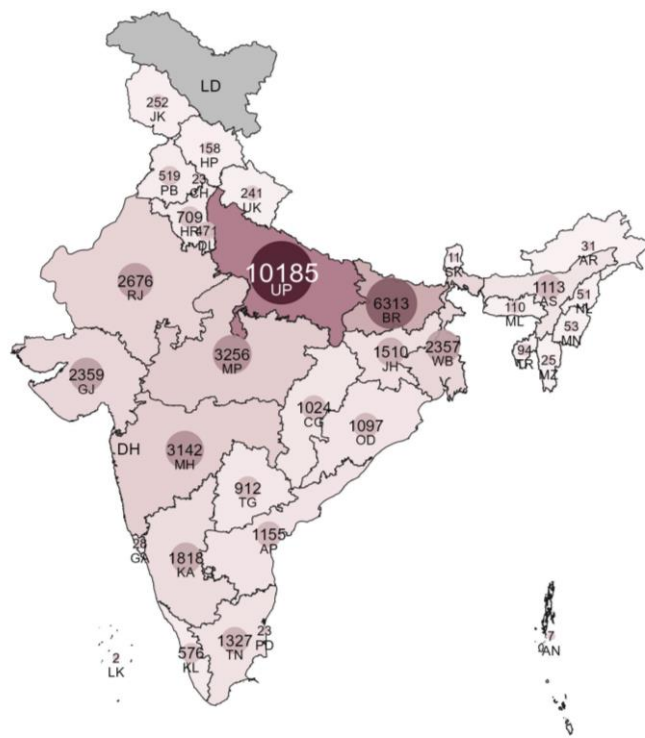
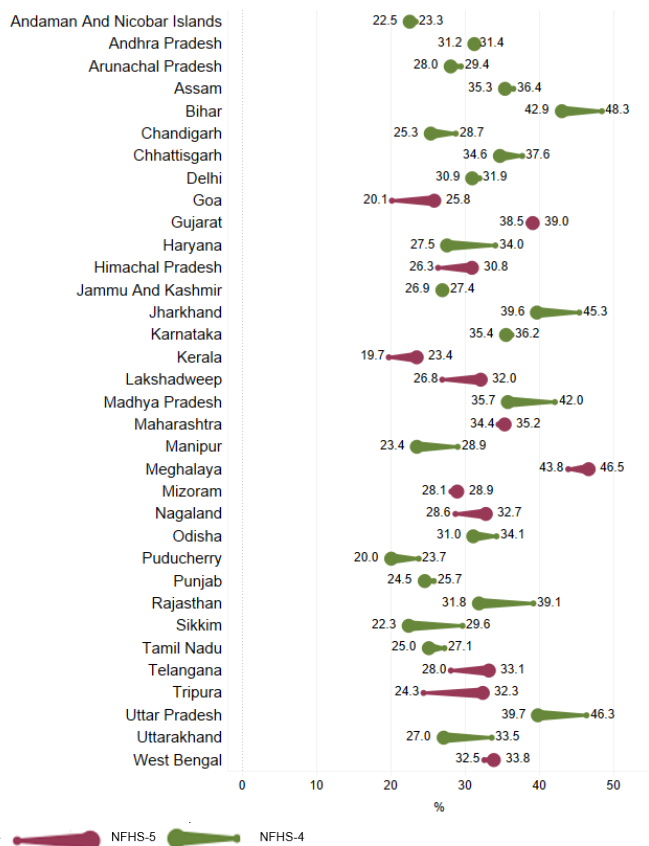


Fig 3. Change in stunting prevalence among children <5y by state, 2015-16 & 2019-21

Map 1. Number of stunted children <5y by state, 2019-21



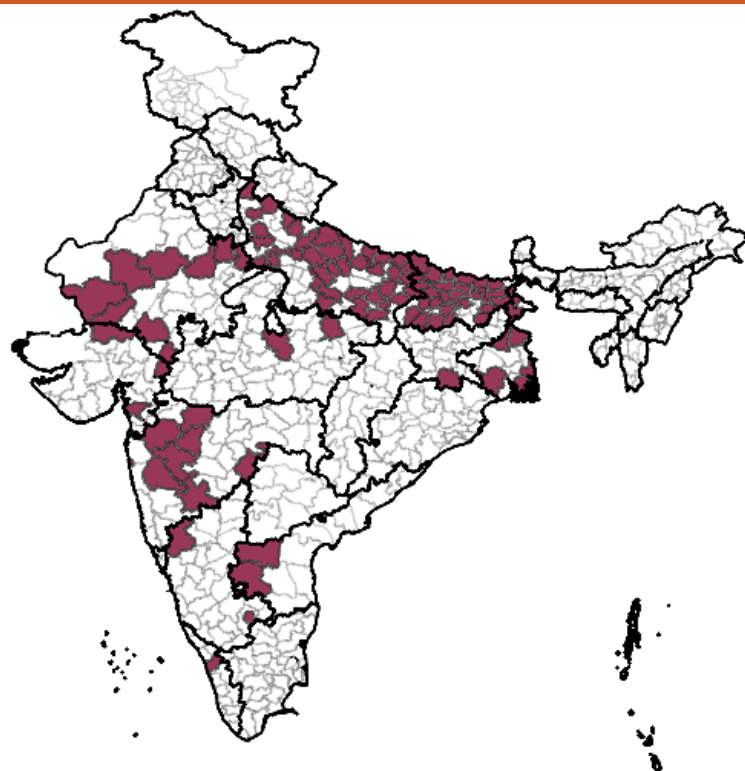
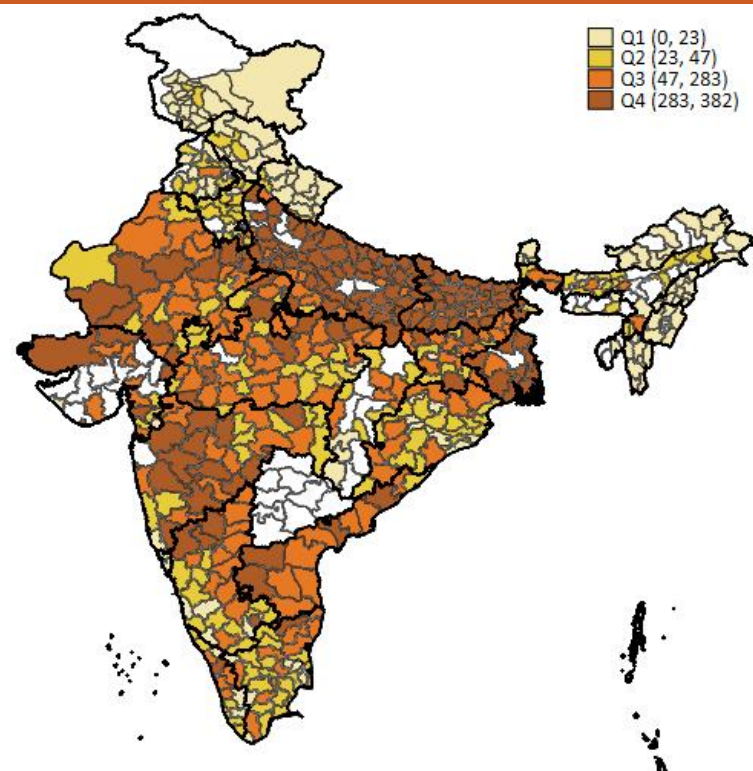
The units of the numbers in the map above is thousands.

Source: NFHS-5 district & state factsheets (2019-21) for 36 states across both survey rounds. Source Map 1: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 state factsheets and projected population for 2019 was estimated using Census 2011.

Note 1: Two newly formed UTs : Ladakh and D&N and D&D have been excluded from Figure 3

Map 2. Number of stunted children <5y by district, 2019-21

Map 3. Top 100 districts with the highest burden of stunting, 2019-21



Note: Darkest colour indicates district is in top quartile of burden distribution. Numbers in legend are in thousands.

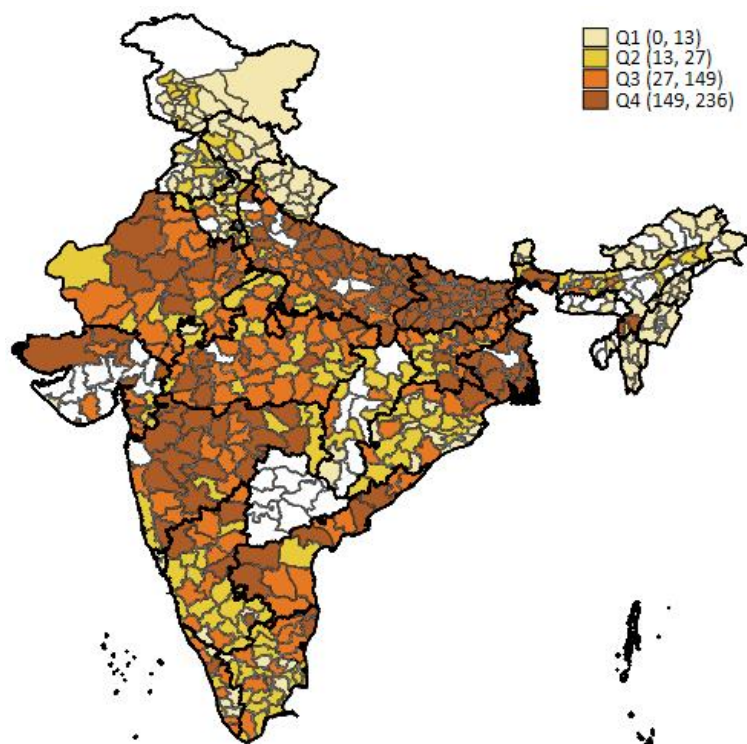
Note: Districts in purple are in the top 100 districts with the highest burden.

Table 1. Top 100 districts with the highest burden of stunting among children <5y in India, 2019-21

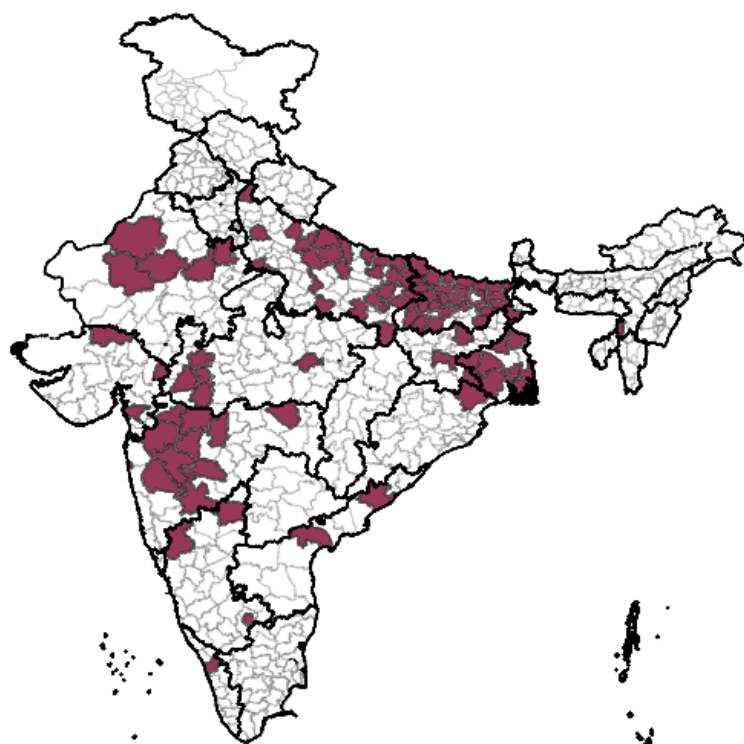
Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden
1	Purba Champaran	BR	381,534	26	Katihar	BR	213,075	51	Rohtas	BR	153,533	76	Udaipur	RJ	137,398
2	Sitapur	UP	297,005	27	Surat	GJ	207,246	52	Banas Kantha	GJ	152,911	77	Satna	MP	136,687
3	Bahraich	UP	284,414	28	North 24 Pargana	WB	205,594	53	Varanasi	UP	152,673	78	Banka	BR	135,636
4	Gaya	BR	283,396	29	Saran	BR	204,418	54	Siwan	BR	151,959	79	Balrampur	UP	134,171
5	Muzaffarpur	BR	279,824	30	Agra	UP	203,726	55	Gorakhpur	UP	151,644	80	Solapur	MH	130,435
6	Sitamarhi	BR	277,649	31	Azamgarh	UP	190,431	56	Siddharthnagar	UP	149,938	81	Sagar	MP	130,073
7	Allahabad	UP	277,330	32	Shahjahanpur	UP	187,401	57	Kushinagar	UP	149,509	82	Pratapgarh	UP	129,926
8	Samastipur	BR	274,258	33	Jaipur	RJ	183,716	58	Firozabad	UP	148,957	83	Rampur	UP	129,082
9	Bareilly	UP	271,728	34	Dohad	GJ	182,940	59	Mirzapur	UP	148,174	84	Jalgaon	MH	128,986
10	Madhubani	BR	269,930	35	Bara Banki	UP	180,701	60	Kanpur Nagar	UP	147,230	85	Saharanpur	UP	128,326
11	Murshidabad	WB	267,553	36	Vaishali	BR	180,471	61	Belgaum	KA	147,004	86	Nagaur	RJ	125,474
12	Kheri	UP	260,653	37	Kurnool	AP	179,685	62	Nawada	BR	144,756	87	Banda	UP	125,351
13	Pashchim Champaran	BR	255,410	38	Ghazipur	UP	177,494	63	Madhepura	BR	144,288	88	Aurangabad	MH	123,051
14	Darbhanga	BR	255,374	39	Bulandshahr	UP	176,537	64	Lucknow	UP	144,282	89	Farrukhabad	UP	122,256
15	South 24 Pargana	WB	250,741	40	Bijnor	UP	173,714	65	Supaul	BR	143,893	90	Malappuram	KL	120,849
16	Patna	BR	250,106	41	Aligarh	UP	171,035	66	Saharsa	BR	143,550	91	Ahmadnagar	MH	119,041
17	Hardoi	UP	242,333	42	Nalanda	BR	169,267	67	Aurangabad	BR	142,301	92	Banswara	RJ	116,484
18	Bangalore	KA	240,522	43	Bhagalpur	BR	168,199	68	Unnao	UP	141,426	93	Gopalganj	BR	115,921
19	Nashik	MH	235,325	44	Ballia	UP	165,342	69	Paschim Medinipur	WB	140,392	94	Etah	UP	115,042
20	Pune	MH	230,914	45	Fatehpur	UP	164,172	70	Bhojpur	BR	140,270	95	Basti	UP	114,753
21	Mumbai Suburban	MH	229,629	46	Maldah	WB	160,360	71	Meerut	UP	139,852	96	Pashchimi Singhbhum	JH	114,411
22	Araria	BR	224,391	47	Begusarai	BR	160,085	72	Uttar Dinajpur	WB	139,651	97	Anantapur	AP	112,943
23	Jaunpur	UP	224,362	48	Alwar	RJ	159,246	73	Bharatpur	RJ	139,598	98	Jalor	RJ	110,455
24	Purnia	BR	223,484	49	Jodhpur	RJ	156,141	74	Deoria	UP	138,990	99	Nanded	MH	109,521
25	Gonda	UP	216,414	50	Barmer	RJ	155,309	75	Mahrajganj	UP	138,947	100	Birbhum	WB	109,196

Source: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 district factsheets and projected population for 2019 was estimated using Census 2011. Burden estimates of 575 comparable districts between NFHS-4 and 5 from 36 states/UTs were ranked to obtain top 100 with highest burden.

Map 6. Number of wasted children <5y by district, 2019-21



Map 7. Top 100 districts with the highest burden of wasting, 2019-21



Note: Darkest colour indicates district is in top quartile of burden distribution. Numbers in legend are in thousands.

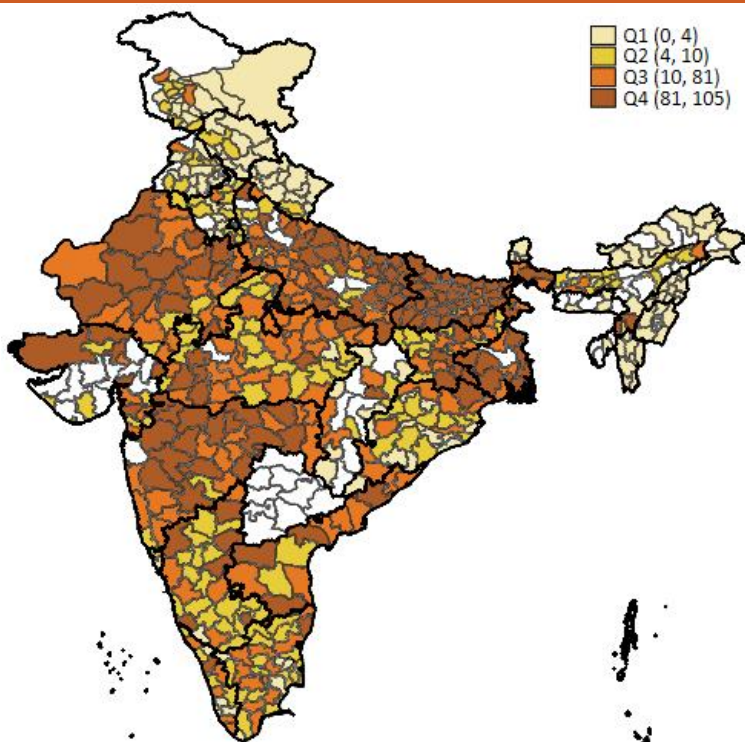
Note: Districts in purple are in the top 100 districts with the highest burden.

Table 2. Top 100 districts with the highest burden of wasting among children <5y in India, 2019-21

Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden
1	Pune	MH	236,180	26	Murshidabad	WB	109,576	51	Kheri	UP	86,428	76	Gopalganj	BR	72,875
2	Patna	BR	199,360	27	Darbhanga	BR	108,562	52	Varanasi	UP	85,772	77	Sonbhadra	UP	72,061
3	Nashik	MH	151,679	28	Jalgaon	MH	108,377	53	North 24 Pargana	WB	84,395	78	Bankura	WB	71,454
4	Surat	GJ	149,263	29	Bhojpur	BR	107,874	54	Solapur	MH	83,363	79	Shahjahanpur	UP	71,413
5	Saran	BR	148,293	30	Araria	BR	107,474	55	Sitamarhi	BR	82,987	80	Buldana	MH	71,176
6	Bangalore	KA	147,541	31	Jaipur	RJ	107,143	56	Ballia	UP	82,746	81	Hugli	WB	70,940
7	Gaya	BR	145,285	32	Madhubani	BR	106,600	57	Azamgarh	UP	82,037	82	Dhule	MH	70,577
8	South 24 Pargana	WB	144,842	33	Belgaum	KA	105,771	58	Jaunpur	UP	81,727	83	Karimganj	AS	70,030
9	Paschim Medinipur	WB	136,781	34	Deoria	UP	100,283	59	Balrampur	UP	81,285	84	Khargone (West Nimar)	MP	69,352
10	Samastipur	BR	132,766	35	Siddharthnagar	UP	100,201	60	Bikaner	RJ	80,772	85	Visakhapatnam	AP	69,047
11	Purnia	BR	132,549	36	Banas Kantha	GJ	99,980	61	Maldah	WB	79,190	86	Ujjain	MP	68,231
12	Muzaffarpur	BR	130,716	37	Saharanpur	UP	97,914	62	Puruliya	WB	78,659	87	Khagaria	BR	67,129
13	Purba Champaran	BR	130,545	38	Aurangabad	MH	94,987	63	Bahraich	UP	78,322	88	Bid	MH	66,741
14	Rohtas	BR	122,059	39	Ahmadnagar	MH	93,505	64	Banka	BR	78,129	89	Jabalpur	MP	66,415
15	Hardoi	UP	121,493	40	Agra	UP	93,367	65	Bara Banki	UP	78,078	90	Mayurbhanj	OD	65,466
16	Gorakhpur	UP	119,563	41	Vaishali	BR	92,356	66	Pashchim Champaran	BR	77,504	91	Gulbarga	KA	64,940
17	Ghazipur	UP	115,906	42	Ranchi	JH	92,318	67	Basti	UP	77,238	92	Bulandshahr	UP	64,865
18	Mumbai Suburban	MH	114,814	43	Dohad	GJ	91,966	68	Indore	MP	76,004	93	Kishanganj	BR	64,688
19	Katihar	BR	114,061	44	Kanpur Nagar	UP	91,232	69	Siwan	BR	75,358	94	Kolkata	WB	64,484
20	Nagpur	MH	113,687	45	Bareilly	UP	91,228	70	Birbhum	WB	75,257	95	Nagaur	RJ	64,449
21	Aurangabad	BR	113,634	46	Dhar	MP	90,684	71	Malappuram	KL	74,811	96	Madhepura	BR	64,197
22	Sitapur	UP	112,837	47	Giridih	JH	90,176	72	Maharajanj	UP	74,728	97	Jodhpur	RJ	63,769
23	Kushinagar	UP	112,805	48	Bhagalpur	BR	89,145	73	Haora	WB	74,019	98	Banda	UP	63,241
24	Nalanda	BR	110,461	49	Begusarai	BR	88,936	74	Buxar	BR	73,786	99	Purbi Singhbhum	JH	63,064
25	Allahabad	UP	110,361	50	Supaul	BR	87,764	75	Alwar	RJ	73,148	100	Guntur	AP	62,489

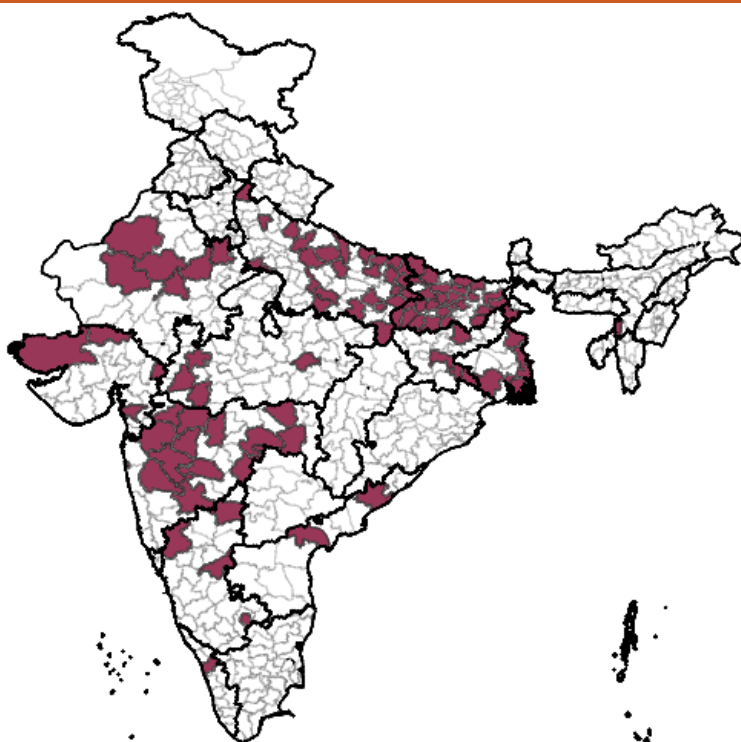
Source: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 district factsheets and projected population for 2019 was estimated using Census 2011. Burden estimates of 575 comparable districts between NFHS-4 and 5 from 36 states/UTs were ranked to obtain top 100 with highest burden.

Map 8. Number of severely wasted children <5y by district, 2019-21



Note: Darkest colour indicates district is in top quartile of burden distribution. Numbers in legend are in thousands.

Map 9. Top 100 districts with the highest burden of severe wasting, 2019-21



Note: Districts in purple are in the top 100 districts with the highest burden.

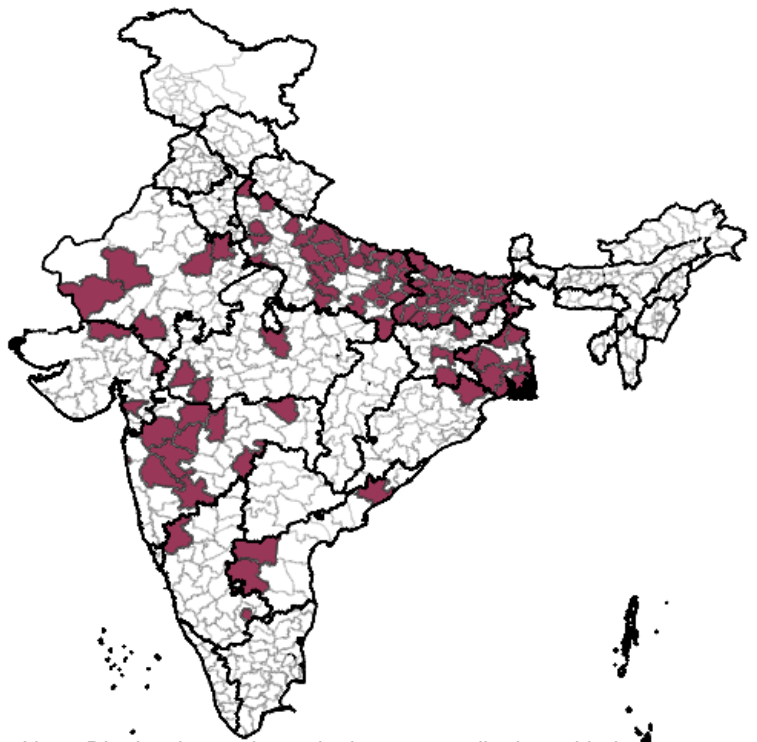
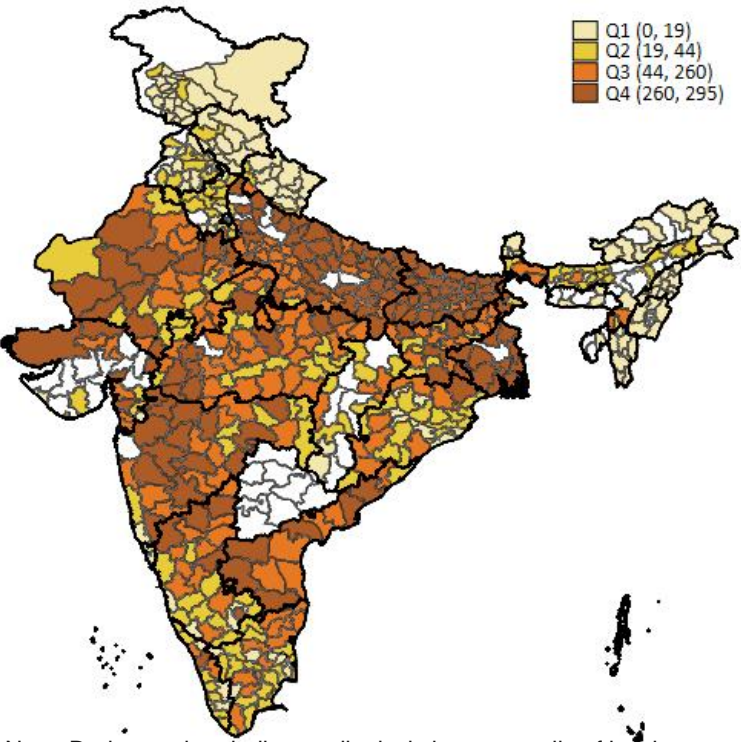
Table 3. Top 100 districts with the highest burden of severe wasting among children <5y in India, 2019-21

Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden
1	Pune	MH	105,303	26	Balrampur	UP	46,528	51	Visakhapatnam	AP	35,968	76	Allahabad	UP	31,343
2	Bangalore	KA	87,602	27	Belgaum	KA	45,715	52	Solapur	MH	35,932	77	Mahrajganj	UP	31,182
3	Surat	GJ	84,391	28	Bhojpur	BR	44,804	53	Ajmer	RJ	35,465	78	Jaipur	RJ	30,791
4	South 24 Pargana	WB	80,620	29	Karimganj	AS	44,498	54	Nagaur	RJ	34,991	79	Vaishali	BR	30,628
5	Patna	BR	76,844	30	Mumbai Suburban	MH	44,444	55	Bhagalpur	BR	34,901	80	Khargone (West Nimar)	MP	30,019
6	Rohtas	BR	69,090	31	Dohad	GJ	44,329	56	Shahjahanpur	UP	34,169	81	Fatehpur	UP	29,130
7	Nagpur	MH	66,875	32	Purba Champaran	BR	44,292	57	Dhar	MP	34,014	82	Ujjain	MP	28,970
8	Aurangabad	BR	63,897	33	Paschim Medinipur	WB	43,336	58	Chandrapur	MH	33,934	83	Jodhpur	RJ	28,747
9	Nashik	MH	63,571	34	Aurangabad	MH	42,456	59	Yavatmal	MH	33,606	84	Guntur	AP	28,436
10	Ghazipur	UP	62,852	35	Katihar	BR	42,227	60	Bara Banki	UP	33,604	85	Jalgaon	MH	28,427
11	Gorakhpur	UP	61,601	36	Kushinagar	UP	41,953	61	Buxar	BR	33,559	86	Bid	MH	27,965
12	Siddharthnagar	UP	58,370	37	Purnia	BR	41,101	62	Alwar	RJ	33,454	87	Supaul	BR	27,894
13	Saharanpur	UP	57,395	38	Bahraich	UP	40,771	63	Banas Kantha	GJ	33,327	88	Malappuram	KL	26,718
14	Gaya	BR	55,603	39	Deoria	UP	40,635	64	Bellary	KA	33,316	89	Nawada	BR	26,666
15	Varanasi	UP	54,199	40	Sitapur	UP	40,512	65	Buldana	MH	33,231	90	Nanded	MH	26,467
16	Hardoi	UP	53,973	41	Ballia	UP	40,316	66	Gopalganj	BR	33,217	91	Agra	UP	26,368
17	Kanpur Nagar	UP	53,446	42	Bikaner	RJ	39,676	67	Bareilly	UP	33,114	92	Mau	UP	26,357
18	Muzaffarpur	BR	53,206	43	Madhubani	BR	37,404	68	Dhule	MH	32,839	93	Saraikele-Kharsawan	JH	26,352
19	Saran	BR	51,491	44	Begusarai	BR	37,268	69	Ahmadnagar	MH	32,295	94	Kachchh	GJ	26,264
20	Samastipur	BR	49,242	45	Jaunpur	UP	37,265	70	Jyotiba Phule Nagar	UP	32,093	95	Nadia	WB	26,075
21	Basti	UP	48,709	46	Kolkata	WB	37,194	71	Banka	BR	31,949	96	Jabalpur	MP	25,082
22	Nalanda	BR	48,078	47	Haora	WB	36,488	72	Banda	UP	31,916	97	Chennai	TN	25,023
23	Ranchi	JH	47,316	48	Kaimur (Bhabua)	BR	36,054	73	North 24 Pargana	WB	31,727	98	Maldah	WB	24,945
24	Giridih	JH	47,019	49	Purbi Singhbhum	JH	36,009	74	Pashchim Champaran	BR	31,706	99	Saharsa	BR	24,926
25	Sonbhadra	UP	46,766	50	Darbhanga	BR	36,000	75	Gulbarga	KA	31,691	100	Murshidabad	WB	24,873

Source: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 district factsheets and projected population for 2019 was estimated using Census 2011. Burden estimates of 575 comparable districts between NFHS-4 and 5 from 36 states/UTs were ranked to obtain top 100 with highest burden.

Map 12. Number of underweight children <5y by district, 2019-21

Map 13. Top 100 districts with the highest burden of underweight, 2019-21



Note: Darkest colour indicates district is in top quartile of burden distribution. Numbers in legend are in thousands.

Note: Districts in purple are in the top 100 districts with the highest burden.

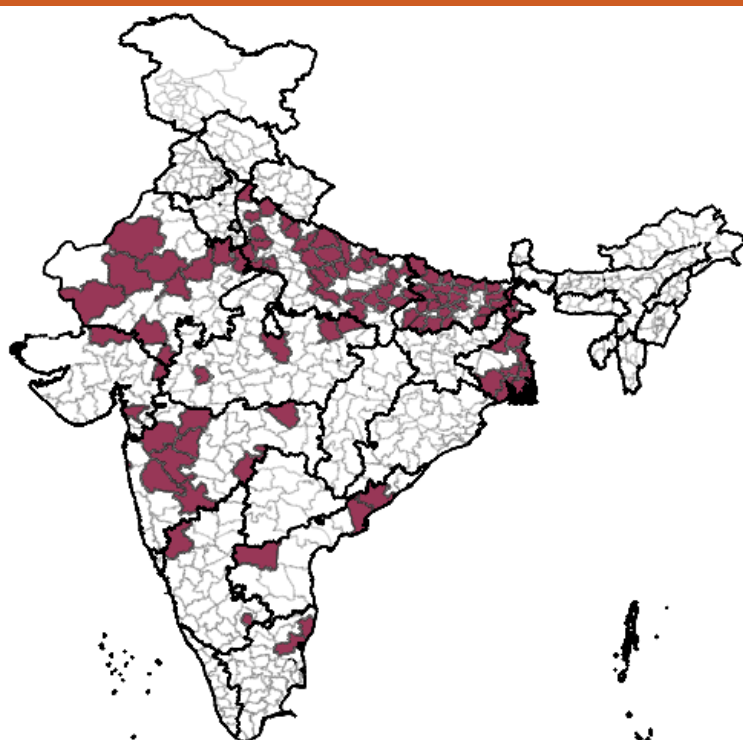
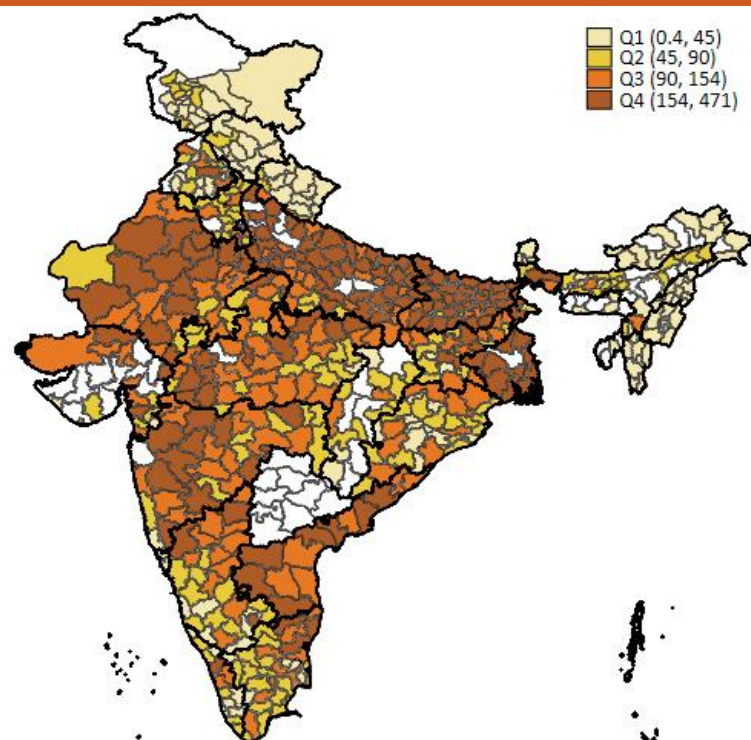
Table 4. Top 100 districts with the highest burden of underweight among children <5y in India, 2019-21

Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden
1	Purba Champaran	BR	294,504	26	Vaishali	BR	180,942	51	Deoria	UP	148,818	76	Purba Medinipur	WB	120,082
2	Patna	BR	287,078	27	Paschim Medinipur	WB	180,568	52	Agra	UP	148,717	77	Saharanpur	UP	119,020
3	Samastipur	BR	266,779	28	Hardoi	UP	179,274	53	Siddharthnagar	UP	146,510	78	Hugli	WB	118,469
4	Gaya	BR	260,079	29	Pashchim Champaran	BR	177,907	54	Shahjahanpur	UP	146,323	79	Solapur	MH	118,218
5	Nashik	MH	249,823	30	Dohad	GJ	175,331	55	Maldah	WB	139,771	80	Kanpur Nagar	UP	118,082
6	Pune	MH	245,958	31	Banas Kantha	GJ	172,907	56	Bara Banki	UP	137,607	81	Pashchimi Singhbhum	JH	117,752
7	Purnia	BR	241,980	32	Ghazipur	UP	172,798	57	Madhepura	BR	135,562	82	Lucknow	UP	114,787
8	Allahabad	UP	238,956	33	Gorakhpur	UP	172,451	58	Banka	BR	133,022	83	Ranchi	JH	114,536
9	Sitapur	UP	235,243	34	Kushinagar	UP	170,044	59	Gonda	UP	132,017	84	Nagpur	MH	113,353
10	Katihar	BR	233,460	35	Bhagalpur	BR	169,881	60	Jalgaon	MH	131,118	85	Alwar	RJ	112,467
11	Saran	BR	231,708	36	Aurangabad	BR	168,206	61	Mahrajganj	UP	128,370	86	Khargone (West Nimar)	MP	111,343
12	Muzaffarpur	BR	227,932	37	Jaunpur	UP	167,940	62	Saharsa	BR	128,234	87	Kishanganj	BR	111,242
13	Madhubani	BR	224,422	38	Belgaum	KA	165,379	63	Aligarh	UP	128,228	88	Giridih	JH	111,138
14	Darbhanga	BR	220,499	39	Kurnool	AP	164,741	64	Siwan	BR	127,529	89	Dhar	MP	110,446
15	South 24 Pargana	WB	219,996	40	Ballia	UP	160,397	65	Anantapur	AP	127,374	90	Nawada	BR	109,299
16	Murshidabad	WB	217,807	41	Azamgarh	UP	159,510	66	Barmer	RJ	126,044	91	Sagar	MP	109,004
17	Bangalore	KA	215,932	42	Varanasi	UP	159,372	67	Basti	UP	125,276	92	Visakhapatnam	AP	107,584
18	Araria	BR	214,948	43	Ahmadnagar	MH	154,716	68	Sonbhadra	UP	125,238	93	Udaipur	RJ	107,561
19	Sitamarhi	BR	209,005	44	Aurangabad	MH	154,353	69	Bulandshahr	UP	124,148	94	Nanded	MH	107,087
20	Bareilly	UP	208,758	45	Supaul	BR	153,078	70	Puruliya	WB	123,875	95	Kaimur (Bhabua)	BR	107,029
21	Bahraich	UP	207,621	46	Jaipur	RJ	152,485	71	Birbhum	WB	123,362	96	Bankura	WB	106,631
22	Kheri	UP	198,763	47	Mumbai Suburban	MH	151,851	72	Banda	UP	122,449	97	Buldana	MH	105,978
23	Surat	GJ	186,579	48	Bhojpur	BR	151,643	73	Fatehpur	UP	122,084	98	Unnao	UP	105,609
24	Nalanda	BR	185,558	49	Begusarai	BR	150,767	74	Jodhpur	RJ	121,885	99	Mayurbhanj	OD	105,569
25	Rohtas	BR	185,007	50	North 24 Pargana	WB	149,753	75	Balrampur	UP	121,161	100	Bijnor	UP	105,065

Source: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 district factsheets and projected population for 2019 was estimated using Census 2011. Burden estimates of 575 comparable districts between NFHS-4 and 5 from 36 states/UTs were ranked to obtain top 100 with highest burden.

Map 14. Number of anemic children <5y by district, 2019-21

Map 15. Top 100 districts with the highest burden of anemic children <5y, 2019-21



Note: Darkest colour indicates district is in top quartile of burden distribution. Numbers in legend are in thousands

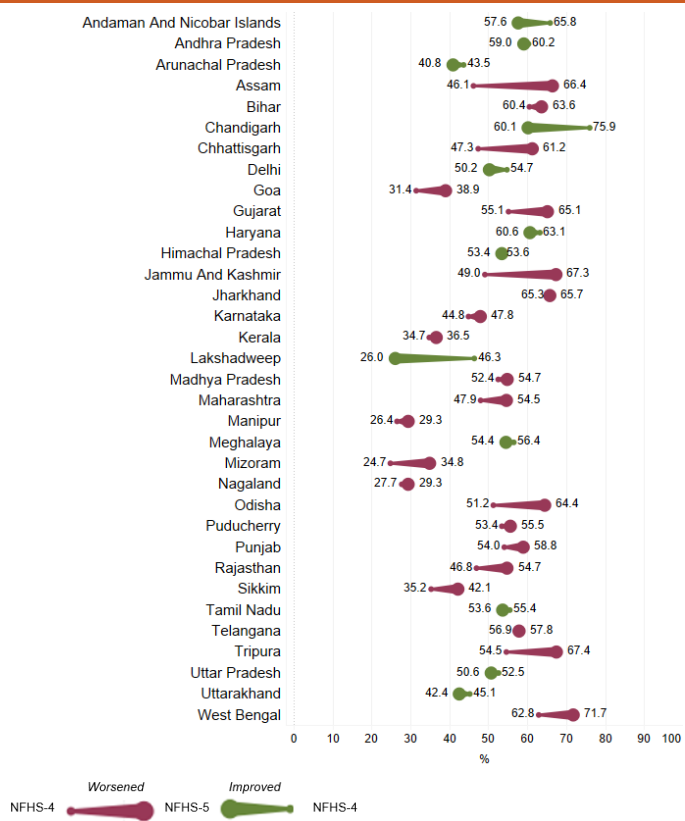
Note: Districts in purple are in the top 100 districts with the highest burden.

Table 5. Top 100 districts with the highest burden of anemia among children < 5y in India, 2019-21

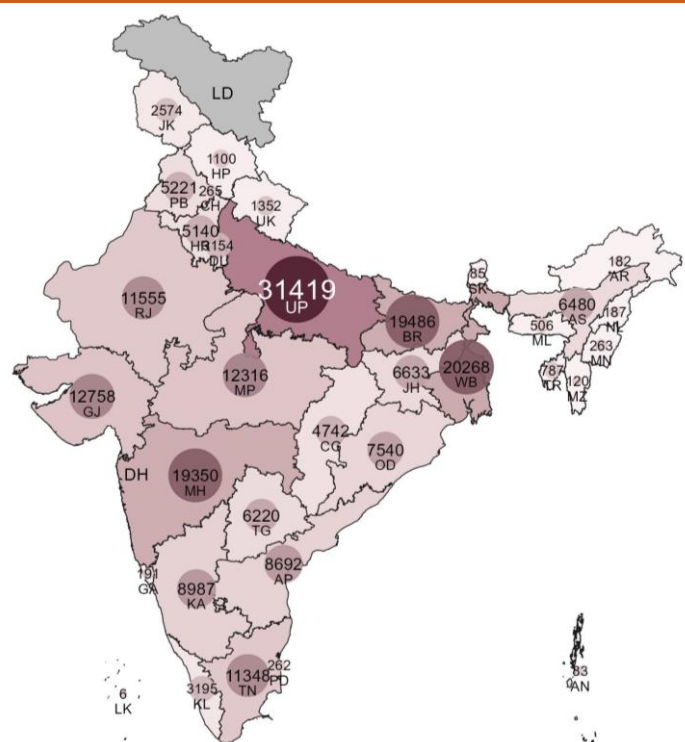
Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden
1	Jaipur	RJ	470,675	26	Pashchim Champaran	BR	324,903	51	Bijnor	UP	262,857	76	Hugli	WB	216,348
2	Murshidabad	WB	435,397	27	Saran	BR	322,855	52	Gonda	UP	262,511	77	Uttar Dinajpur	WB	216,175
3	South 24 Pargana	WB	432,072	28	Sitamarhi	BR	322,121	53	Dohad	GJ	259,133	78	Meerut	UP	216,076
4	Surat	GJ	431,131	29	Purnia	BR	313,827	54	Bara Banki	UP	253,698	79	Lucknow	UP	213,781
5	Patna	BR	425,899	30	Gorakhpur	UP	310,426	55	Indore	MP	253,594	80	Aurangabad	BR	212,223
6	Purba Champaran	BR	425,799	31	Araria	BR	306,195	56	Maldah	WB	252,536	81	Nagpur	MH	211,761
7	Gaya	BR	411,941	32	Azamgarh	UP	301,696	57	Unnao	UP	246,433	82	Haora	WB	211,336
8	Bangalore	KA	406,583	33	Bhagalpur	BR	297,277	58	Ballia	UP	242,629	83	Firozabad	UP	210,825
9	Madhubani	BR	397,599	34	Belgaum	KA	292,693	59	Rohtas	BR	242,394	84	Bhojpur	BR	209,596
10	Pune	MH	396,620	35	Kanpur Nagar	UP	291,464	60	Barmer	RJ	239,632	85	Visakhapatnam	AP	209,442
11	Muzaffarpur	BR	381,181	36	Ghazipur	UP	290,495	61	Mathura	UP	239,439	86	Aurangabad	MH	208,469
12	Samastipur	BR	376,271	37	Nalanda	BR	286,617	62	Varanasi	UP	239,219	87	Nanded	MH	207,971
13	Agra	UP	372,500	38	Katihar	BR	286,019	63	Purba Medinipur	WB	237,949	88	Ajmer	RJ	206,915
14	Hardoi	UP	371,987	39	Shahjahanpur	UP	285,404	64	Siwan	BR	237,675	89	Satna	MP	203,451
15	Sitapur	UP	370,619	40	Begusarai	BR	283,425	65	Bharatpur	RJ	235,762	90	Rewa	MP	203,129
16	Mumbai Suburban	MH	363,757	41	Udaipur	RJ	278,950	66	Bikaner	RJ	233,749	91	Banka	BR	202,984
17	Bareilly	UP	360,369	42	Banas Kantha	GJ	278,243	67	Nagaur	RJ	232,937	92	Birbhum	WB	202,811
18	Bahraich	UP	351,391	43	Jodhpur	RJ	277,039	68	Solapur	MH	228,853	93	Rampur	UP	199,983
19	Darbhanga	BR	348,147	44	Siddharthnagar	UP	274,707	69	Sagar	MP	228,104	94	Nadia	WB	198,631
20	Nashik	MH	337,127	45	Aligarh	UP	274,266	70	Kurnool	AP	226,296	95	Kancheepuram	TN	195,010
21	Allahabad	UP	332,082	46	Saharanpur	UP	272,510	71	Fatehpur	UP	225,577	96	Supaul	BR	194,348
22	North 24 Pargana	WB	330,040	47	Jalgaon	MH	271,956	72	East Godavari	AP	223,410	97	Nawada	BR	192,947
23	Vaishali	BR	326,352	48	Bulandshahr	UP	270,023	73	Balrampur	UP	220,901	98	Banswara	RJ	192,580
24	Kheri	UP	325,955	49	Paschim Medinipur	WB	267,639	74	Kushinagar	UP	220,154	99	Viluppuram	TN	190,873
25	Jaunpur	UP	324,950	50	Alwar	RJ	266,462	75	Ahmadnagar	MH	217,581	100	Pratapgarh	UP	190,684

Source: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 district factsheets and projected population for 2019 was estimated using Census 2011. Burden estimates of 575 comparable districts between NFHS-4 and 5 from 36 states/UTs were ranked to obtain top 100 with highest burden.

Fig 8. Change in anemia prevalence among non-pregnant women by state, 2015-16 & 2019-21

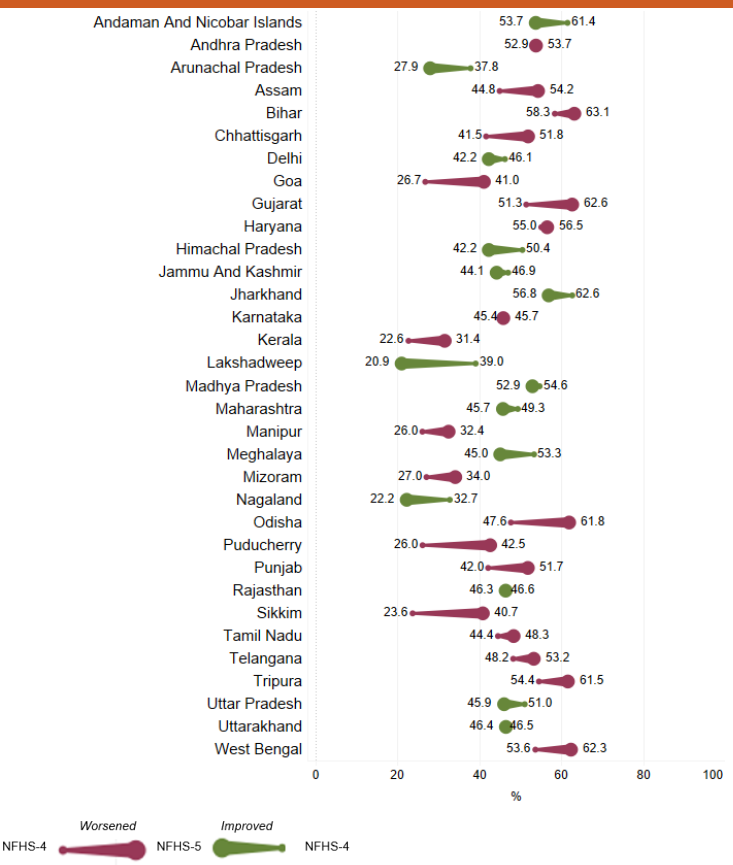


Map 16. Number of anemic non-pregnant women by state, 2019-21

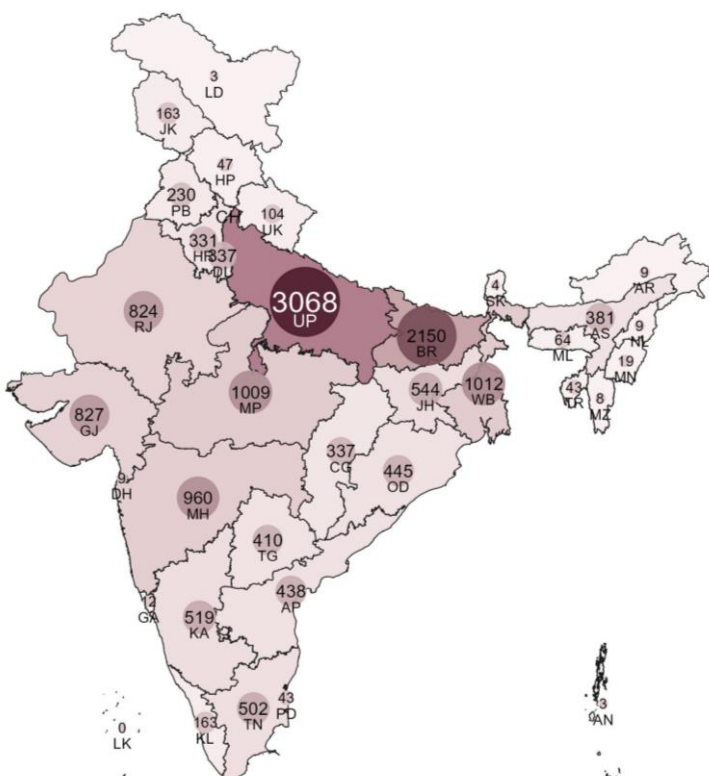


The units of the numbers in the map above is thousands.

Fig 9. Change in anemia prevalence among pregnant women by state, 2015-16 & 2019-21



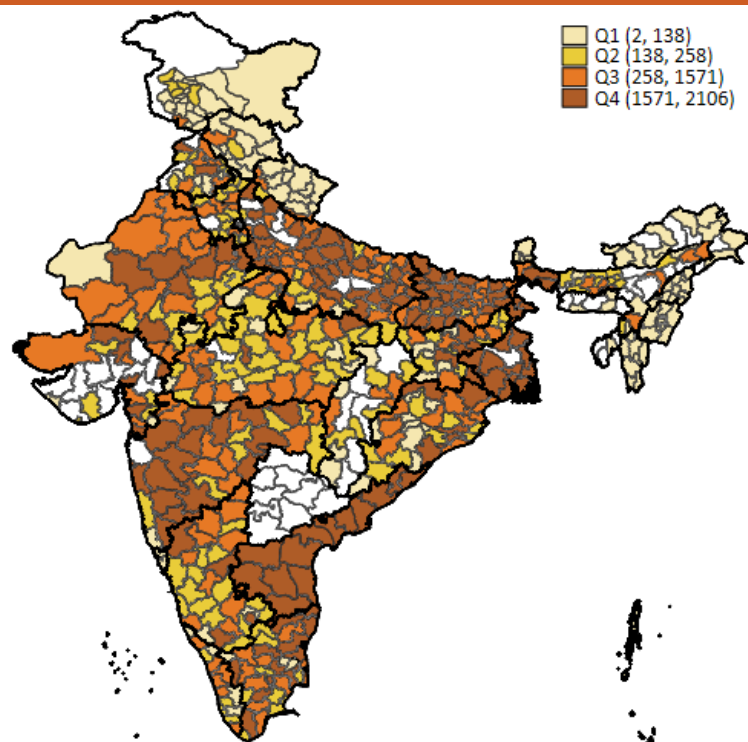
Map 17. Number of anemic pregnant women by state, 2019-21



The units of the numbers in the map above is thousands.

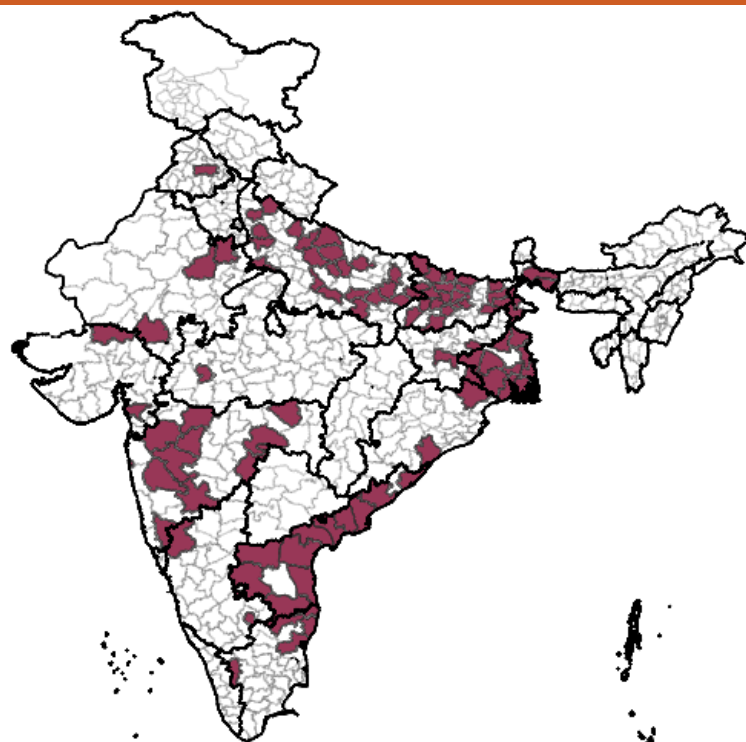
Source NFHS-5 district & state factsheets (2019-21) for 36 states across both survey rounds. Source Map 6&7: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 state factsheets and projected population for 2019 was estimated using Census 2011.
 Note 1: Two newly formed UTs : Ladakh and D&N and D&D have been excluded from Figure 8 and 9.

Map 18. Number of non-pregnant anemic women by district, 2019-21



Note: Darkest colour indicates district is in top quartile of burden distribution. Numbers in legend are in thousands

Map 19. Top 100 districts with the highest burden of non-pregnant anemic women, 2019-21



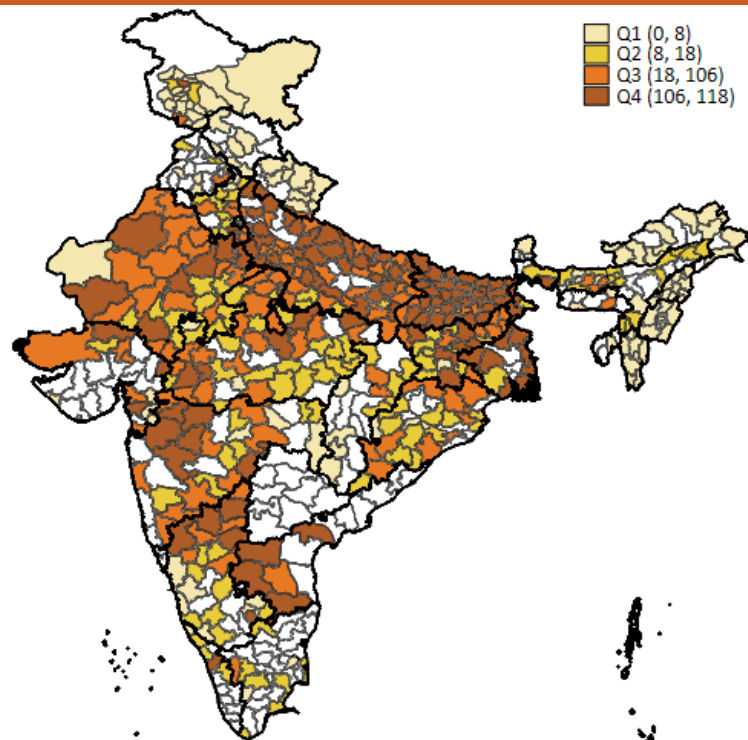
Note: Districts in purple are in the top 100 districts with the highest burden.

Table 6. Top 100 districts with the highest burden of anemia among non-pregnant women in India, 2019-21

Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden
1	North 24 Pargana	WB	2,106,259	26	Jalgaon	MH	839,528	51	Puruliya	WB	647,733
2	Pune	MH	1,652,076	27	Maldah	WB	838,610	52	Bhagalpur	BR	646,964
3	Murshidabad	WB	1,627,725	28	Birbhum	WB	834,634	53	Thiruvallur	TN	645,634
4	South 24 Pargana	WB	1,571,494	29	Agra	UP	833,175	54	Koch Bihar	WB	645,216
5	Paschim Medinipur	WB	1,521,752	30	Muzaffarpur	BR	826,544	55	Chittoor	AP	642,075
6	Mumbai Suburban	MH	1,515,974	31	Kolkata	WB	826,477	56	Aligarh	UP	633,784
7	Surat	GJ	1,361,955	32	Bareilly	UP	825,527	57	Vaishali	BR	632,270
8	Hugli	WB	1,337,411	33	Purba Champaran	BR	821,511	58	Kheri	UP	632,059
9	Patna	BR	1,235,673	34	Azamgarh	UP	817,922	59	Kolhapur	MH	625,660
10	Nadia	WB	1,198,942	35	Madhubani	BR	805,328	60	Viluppuram	TN	621,931
11	Jaipur	RJ	1,179,162	36	Visakhapatnam	AP	781,549	61	Nalanda	BR	613,418
12	Bangalore	KA	1,133,592	37	Gorakhpur	UP	773,538	62	Bhojpur	BR	611,920
13	Purba Medinipur	WB	1,114,555	38	West Godavari	AP	768,838	63	Katihar	BR	610,859
14	Nashik	MH	1,061,578	39	Saran	BR	749,690	64	Purnia	BR	610,650
15	East Godavari	AP	1,013,230	40	Belgaum	KA	745,391	65	Anantapur	AP	604,308
16	Haora	WB	1,011,640	41	Solapur	MH	734,691	66	Prakasam	AP	602,567
17	Guntur	AP	903,152	42	Samastipur	BR	734,051	67	Alwar	RJ	596,431
18	Kanpur Nagar	UP	896,712	43	Ludhiana	PN	727,404	68	Aurangabad	MH	594,759
19	Jalpaiguri	WB	889,505	44	Sitapur	UP	722,722	69	Sitamarhi	BR	594,024
20	Lucknow	UP	881,278	45	Chennai	TN	716,925	70	Uttar Dinajpur	WB	593,956
21	Allahabad	UP	872,313	46	Ahmadnagar	MH	708,554	71	Vellore	TN	590,846
22	Krishna	AP	846,540	47	Darbhanga	BR	703,022	72	Rohtas	BR	588,090
23	Nagpur	MH	846,486	48	Hardoi	UP	700,720	73	Nanded	MH	583,995
24	Gaya	BR	844,108	49	Kurnool	AP	695,697	74	Udaipur	RJ	583,987
25	Bankura	WB	841,440	50	Kancheepuram	TN	689,148	75	Banas Kantha	GJ	571,665
								76	Ranchi	JH	563,988
								77	Ganjam	OD	562,482
								78	Bulandshahr	UP	560,093
								79	Pashchim Champaran	BR	558,803
								80	Siwan	BR	551,203
								81	Dhanbad	JH	549,587
								82	Araria	BR	546,089
								83	Begusarai	BR	544,925
								84	Sri Potti Sriramulu Nello	AP	542,941
								85	Bijnor	UP	541,524
								86	Ballia	UP	534,706
								87	Shahjahanpur	UP	531,584
								88	Bara Banki	UP	529,799
								89	Pratapgarh	UP	528,768
								90	Indore	MP	527,590
								91	Gonda	UP	513,172
								92	Yavatmal	MH	512,655
								93	Ghazipur	UP	512,010
								94	Purbi Singhbhum	JH	511,030
								95	Fatehpur	UP	510,389
								96	Meerut	UP	510,074
								97	Srikakulam	AP	509,343
								98	Coimbatore	TN	503,541
								99	Mayurbhanj	OD	500,066
								100	Jaunpur	UP	499,168

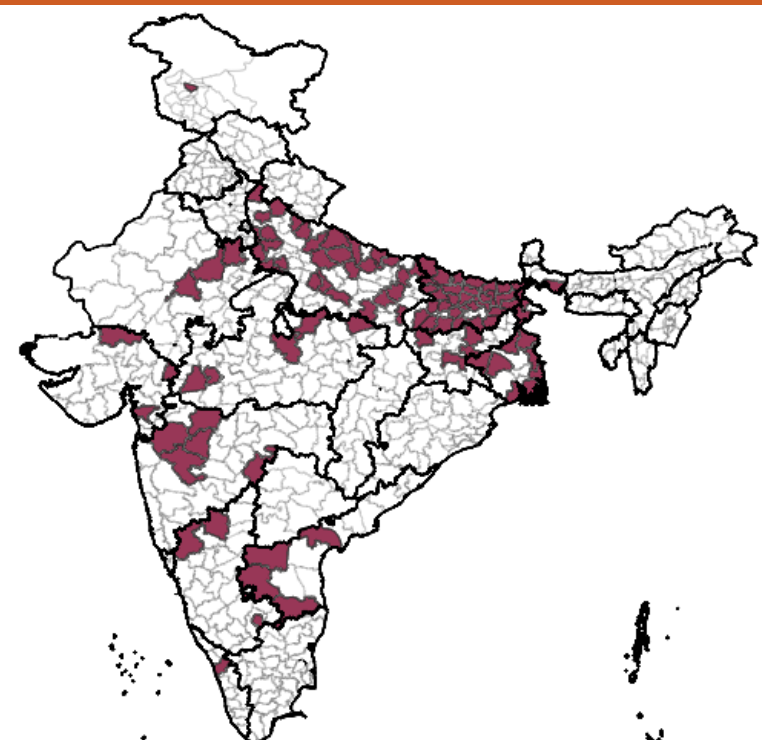
Source: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 district factsheets and projected population for 2019 was estimated using Census 2011. Burden estimates of 575 comparable districts between NFHS-4 and 5 from 36 states/UTs were ranked to obtain top 100 with highest burden.

Map 20. Number of pregnant anemic women by district, 2019-21



Note: Darkest colour indicates district is in top quartile of burden distribution. Numbers in legend are in thousands

Map 21. Top 100 districts with the highest burden of pregnant anemic women, 2019-21



Note: Districts in purple are in the top 100 districts with the highest burden.

Table 7. Top 100 districts with the highest burden of anemia among pregnant women in India, 2019-21

Rank	District	State	Burden	Rank	District	State	Burden	Rank	District	State	Burden
1	Azamgarh	UP	118,279	26	Maldah	WB	70,157	51	Nawada	BR	48,757
2	Murshidabad	WB	114,422	27	Meerut	UP	68,557	52	Madhepura	BR	47,287
3	Patna	BR	110,090	28	Katihar	BR	68,554	53	Aurangabad	BR	47,179
4	Sitapur	UP	105,667	29	Sitamarhi	BR	67,846	54	Kishanganj	BR	47,013
5	Purba Champaran	BR	105,464	30	Bara Banki	UP	67,809	55	Indore	MP	46,900
6	Nashik	MH	97,867	31	Surat	GJ	67,582	56	Gopalganj	BR	46,327
7	Samastipur	BR	96,448	32	Bareilly	UP	67,233	57	Nadia	WB	45,937
8	Hardoi	UP	96,431	33	Begusarai	BR	64,332	58	Rohtas	BR	45,729
9	Muzaffarpur	BR	96,354	34	Siwan	BR	64,224	59	Ajmer	RJ	45,473
10	Pashchim Champaran	BR	95,483	35	Kanpur Nagar	UP	63,757	60	Mathura	UP	43,960
11	North 24 Pargana	WB	93,405	36	Gorakhpur	UP	63,680	61	Dhar	MP	43,028
12	Kheri	UP	92,618	37	Uttar Dinajpur	WB	62,946	62	Jaunpur	UP	43,019
13	Purnia	BR	90,237	38	Bangalore	KA	60,074	63	Supaul	BR	42,502
14	Jaipur	RJ	89,737	39	Gonda	UP	57,664	64	Gautam Buddha Nagar	UP	42,484
15	Madhubani	BR	89,164	40	Purba Medinipur	WB	56,616	65	Puruliya	WB	42,022
16	Bulandshahr	UP	85,208	41	Bhagalpur	BR	56,425	66	Ranchi	JH	41,962
17	Gaya	BR	85,146	42	Shahjahanpur	UP	56,152	67	Saharsa	BR	41,795
18	Araria	BR	81,811	43	Kurnool	AP	55,500	68	Siddharthnagar	UP	41,791
19	Vaishali	BR	81,473	44	Banas Kantha	GJ	55,395	69	Birbhum	WB	41,568
20	Agra	UP	77,294	45	Nalanda	BR	55,077	70	Bhojpur	BR	41,452
21	Darbhanga	BR	74,677	46	Jalgaon	MH	54,726	71	Banka	BR	41,369
22	Allahabad	UP	74,231	47	Aligarh	UP	54,635	72	Mumbai	MH	41,118
23	Saran	BR	74,077	48	Alwar	RJ	52,915	73	Malappuram	KL	40,810
24	South 24 Pargana	WB	73,385	49	Bijnor	UP	50,384	74	Guntur	AP	39,869
25	Bahraich	UP	72,313	50	Dohad	GJ	49,296	75	Bankura	WB	39,839
								76	Fatehpur	UP	39,734
								77	Anantapur	AP	39,275
								78	Rampur	UP	39,003
								79	Rewa	MP	38,683
								80	Bijapur	KA	38,564
								81	Giridih	JH	38,428
								82	Khagaria	BR	38,293
								83	Koch Bihar	WB	38,001
								84	Srinagar	JK	37,940
								85	Aurangabad	MH	37,876
								86	Chandauli	UP	37,768
								87	Chittoor	AP	37,715
								88	Belgaum	KA	37,618
								89	Firozabad	UP	37,615
								90	Ahmadnagar	MH	36,463
								91	Jamui	BR	36,453
								92	Kushinagar	UP	36,390
								93	Balrampur	UP	36,218
								94	Palamu	JH	36,023
								95	Nanded	MH	35,948
								96	Sagar	MP	35,881
								97	Chhatarpur	MP	35,832
								98	Saharanpur	UP	35,791
								99	Kanpur Dehat	UP	35,453
								100	Bokaro	JH	35,125

Source: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 district factsheets and projected population for 2019 was estimated using Census 2011. Burden estimates of 575 comparable districts between NFHS-4 and 5 from 36 states/UTs were ranked to obtain top 100 with highest burden.

Indicator definition

Nutrition outcomes	Definition
Stunting among children	Percentage of children aged 0-59 months who are stunted i.e., height-for-age z score < -2SD
Wasting among children	Percentage of children aged 0-59 months who are wasted i.e., weight-for-height z score < -2SD
Severe wasting among children	Percentage of children aged 0-59 months who are wasted i.e., weight-for-height z score < -3SD
Underweight children	Percentage of children aged 0-59 months who are underweight i.e., weight-for-age z score < -2SD
Anemia among children	Percentage of children aged 6-59 months who are anemic i.e., (Hb <11.0 g/dl)
Anemia among non-pregnant women	Percentage of non-pregnant women aged 15-49 who are anemic (<12.0 g/dl)
Anemia among pregnant women	Percentage of pregnant women aged 15-49 who are anemic (<11.0 g/dl)

Methodological notes

- Nutrition outcomes were identified based on India's national nutrition targets.
- Prevalence estimates of selected indicators for 2015-2016 and 2019-2021 at the national, state, and district-level were obtained from the NFHS-5 (2019-2021) national, state, and district factsheets, respectively
- Data on projected population for states and percentage distribution of age groups for 2019-2021 were obtained from the Population Projections for India and States 2011-2036 (2019) report (National Commission on Population, 2019). Population estimates of pregnant women were obtained from HMIS (both public and private health facilities) at state and district-level. NFHS-5 showed 94% of women aged 15-49y who had a live birth in the five years before the survey registered the pregnancy for their most recent birth, therefore using data on number of registered pregnant women from HMIS may underestimate the number of pregnant women.
- **Steps for calculating undernutrition burden for 2019-2021 at district-level:**
 - *Estimate number of children 0-4 years and women 15-49 years at state-level:* Multiply state's projected population in 2019-2021 with proportion of children 0-4 years and women 15-49 years in projected population to obtain state population of children 0-4 years and women 15-49 years, respectively, for 2019-2021
 - *Estimate number of children 0-4 years and women 15-49 years at district-level:* Multiply population of children 0-4 years and women 15-49 years obtained in step above with proportion of district's population in state's population obtained from Census 2011 to obtain district population of children 0-4 years and women 15-49 years, respectively, for 2019-2021
 - *Estimate number of non-pregnant women 15-49 years a district-level:* Subtract number of pregnant women 15-49 years from number of women 15-49 years obtained in the step above to obtain number of non-pregnant women 15-49 years at district-level for 2019-2021
 - *Estimate undernutrition burden at district-level:* Multiply prevalence rates of child undernutrition outcomes (stunting, wasting, severe wasting, underweight, and anemia) at the district-level with projected population of children 0-4 years at the district-level in 2019-2021 to obtain child undernutrition burden at district-level. Multiply prevalence of anemia among non-pregnant and pregnant women with number of non-pregnant women in 2019-2021 to obtained burden of anemia among non-pregnant and pregnant women, respectively, at the district-level
- 575 comparable districts between NFHS-4 and 5 were ranked based on undernutrition burden and top 100 districts with the highest undernutrition burden were identified. Stata 17.0 was used to perform this analysis
- Comet plots were prepared to illustrate difference in undernutrition prevalence at the state-level between 2015-2016 and 2019-2021 at the state-level using Tableau. State-level undernutrition burden maps for 2019-2021 were prepared using R.
- District-level burden maps and maps identifying top 100 districts with highest undernutrition burden were prepared using Stata.

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Disclaimer: The maps used in this Data Note are based on the districts in NFHS-5 factsheets/reports. The boundaries shown do not imply any official endorsement or acceptance by IFPRI.

ABOUT POSHAN

Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India (POSHAN) is a multi-year initiative that aims to support the use of data and evidence in decision-making for nutrition in India. It is supported by the Bill & Melinda Gates Foundation and led by IFPRI in India.

<http://poshan.ifpri.info/>

ABOUT DATA NOTES

POSHAN Data Notes focus on data visualization to highlight geographic and/or thematic issues related to nutrition in India. They draw on multiple sources of publically available data.

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