POSHAN
Led by IFPRI
Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India
Data Note
No. 84 | MARCH 2022
TAMIL NADU

State Nutrition Profile: Tamil Nadu

ABOUT THIS DATA NOTE

This *Data Note* describes the trends for a set of key nutrition and health outcomes, determinants, and coverage of interventions. The findings are based on estimates using unit-level data, data from national and state reports from the National Family Health Survey (NFHS)-3 (2005-2006) and NFHS-4 (2015-2016), and data from state factsheets and reports from NFHS-5 (2019-2021). In addition to standard prevalence-based analyses, this *Data Note* includes headcount-based analyses aligned to the POSHAN Abhiyaan monitoring framework to provide evidence that helps identify priority districts and number of districts in the state with public health concern as per the WHO guidelines.[1] The *Data Note* includes a color-coded dashboard to compare the coverage of nutrition interventions across all the districts in the state. It concludes with key takeaways for children, women, and men, and identifies areas where the state has potential to improve.

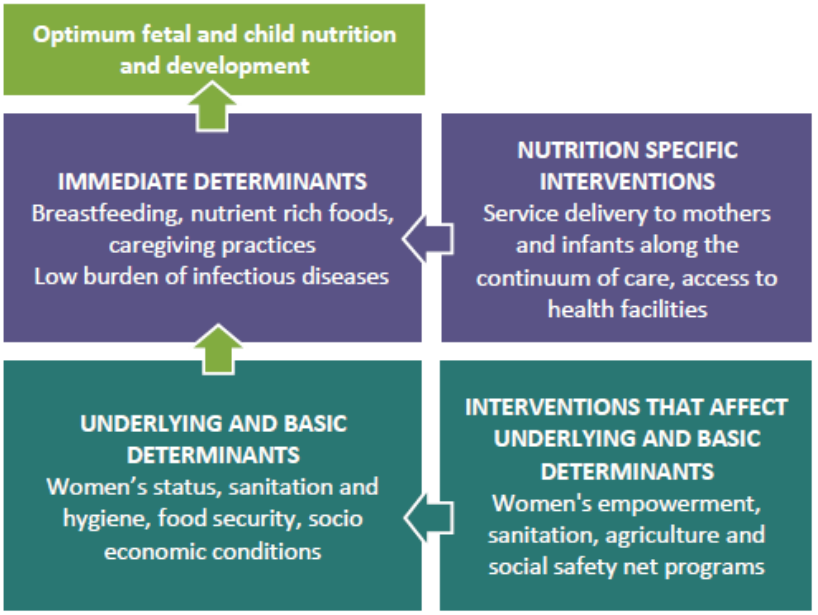
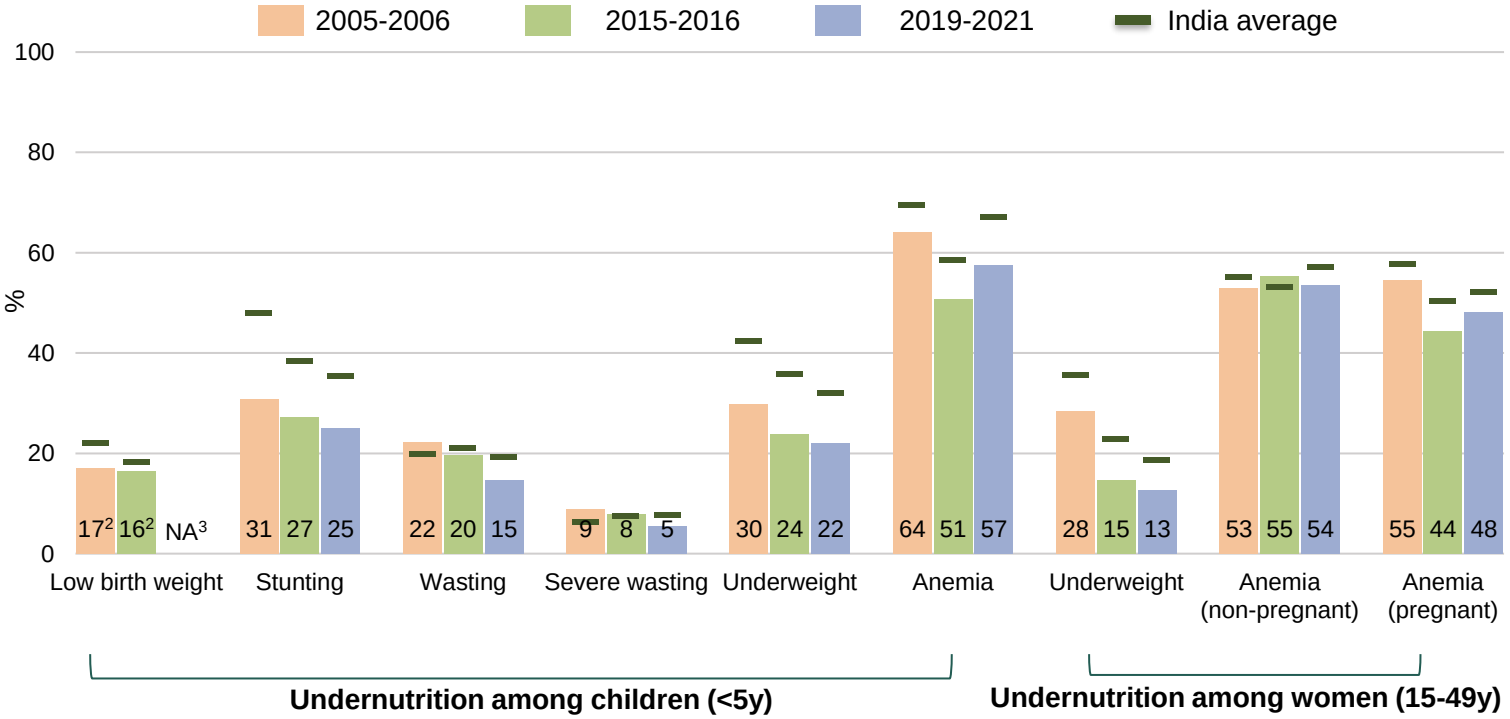


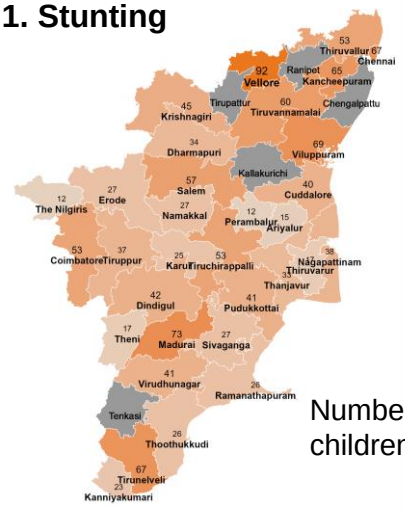
Figure 1. Trends in undernutrition outcomes 2005-2006, 2015-2016, 2019-2021



Source: NFHS-3 (2005-2006) national report and data [IFPRI estimates] and NFHS-5 (2019-2021) national and state factsheets. Anemia among non-pregnant and pregnant women for 2005-2006 are IFPRI estimates using woman dataset:. [1]WHO. Nutrition Landscape Information System (NLiS). Help Topic: Malnutrition in children. Stunting, wasting, overweight and underweight. (https://apps.who.int/nutrition/landscape/help.aspx?menu=0&helpid=391&lang=EN).
[2]In NFHS-3, 9.8% of data were missing, while 1.2% of data were missing in NFHS-4.
[3]NA refers to the unavailability of data for a particular indicator in the specified NFHS round.

Map 1 & 2. Number of stunted & anemic children <5y, 2019-2021

Map 1. Stunting



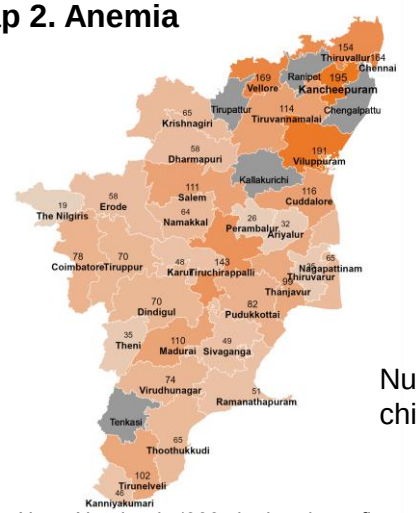
Number of stunted children[2] = 1,314,869

Note: Number in '000s in the above figure

	Highest burden districts	
1	Vellore	92,093
2	Madurai	72,818
3	Viluppuram	69,119
4	Chennai	67,179
5	Tirunelveli	66,801

No. of districts with public health concern[1]: 27 of 32

Map 2. Anemia



Number of anemic children[2] = 2,757,280

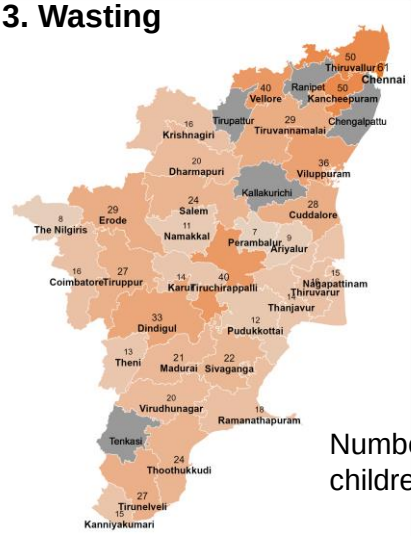
Note: Number in '000s in the above figure

	Highest burden districts	
1	Kancheepuram	195,010
2	Viluppuram	190,873
3	Vellore	169,091
4	Chennai	163,841
5	Thiruvallur	153,558

No. of districts with public health concern[1]: 30 of 32

Map 3 & 4. Number of wasted children <5y, 2019-2021

Map 3. Wasting



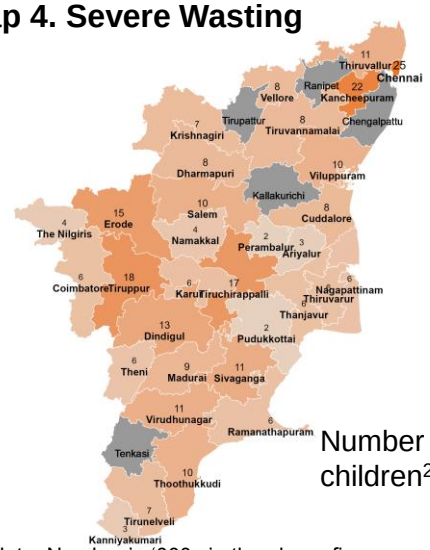
Number of wasted children[2] = 763,104

Note: Number in '000s in the above figure

	Highest burden districts	
1	Chennai	60,510
2	Thiruvallur	49,668
3	Kancheepuram	49,626
4	Tiruchirappalli	40,452
5	Vellore	40,329

No. of districts with public health concern[1]: 28 of 32

Map 4. Severe Wasting



Number of severely wasted children[2] = 286,009

Note: Number in '000s in the above figure

	Highest burden districts	
1	Chennai	25,023
2	Kancheepuram	21,863
3	Tiruppur	17,838
4	Tiruchirappalli	16,661
5	Erode	15,423

No. of districts with public health concern[1]: 31 of 32

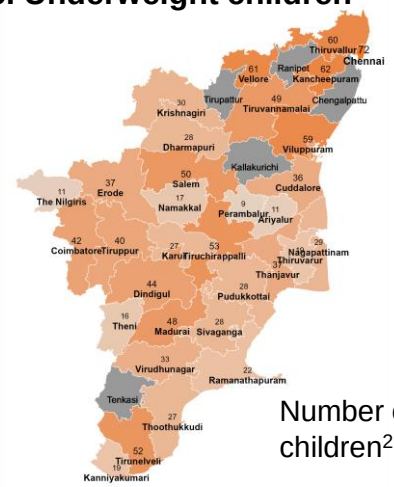
Source: IFPRI estimates - The headcount was calculated as the product of the undernutrition prevalence, and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 (2019-2021; all child data), and the projected population for 2019 was estimated using Census 2011.

[1]Public health concern is defined as ≥20% for stunting, ≥40% for anemia, ≥10% for wasting, and ≥2% for severe wasting (WHO 2011).

[2]The total number of children <5 years is 5,298,650. Note: Gray area in Maps 1-4 indicates districts for which data are not available.

Map 5 & 6. Number of underweight children (<5y) & women (15-49y), 2019-2021

Map 5. Underweight children



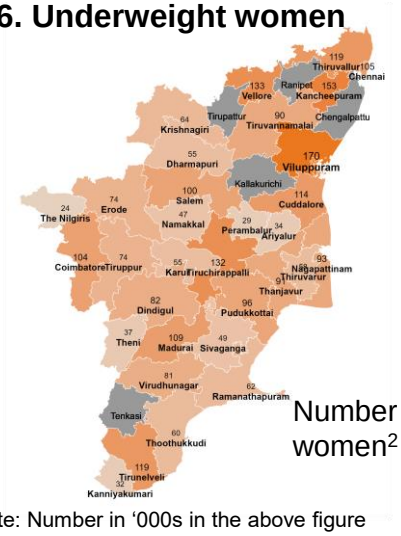
Number of underweight children[2] = 1,155,539

Note: Number in '000s in the above figure

	Highest burden districts	
1	Chennai	72,131
2	Kancheepuram	62,498
3	Vellore	60,849
4	Thiruvallur	60,198
5	Viluppuram	59,394

No. of districts with public health concern[1]: 24 of 32

Map 6. Underweight women



Number of underweight women[2] = 2,641,062

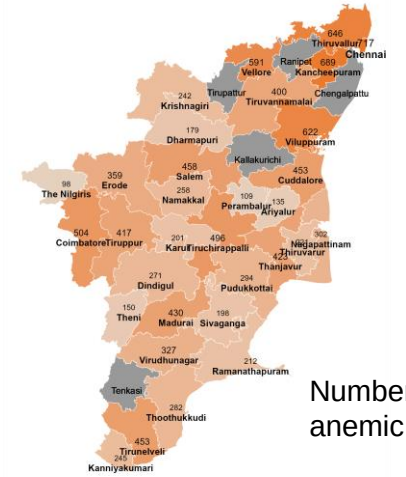
Note: Number in '000s in the above figure

	Highest burden districts	
1	Viluppuram	170,484
2	Kancheepuram	152,566
3	Vellore	132,503
4	Tiruchirappalli	132,090
5	Thiruvallur	118,977

No. of districts with public health concern[1]: 28 of 32

Map 7 & 8. Number of anemic women (15-49y), 2019-2021

Map 7. Anemia among non-pregnant women



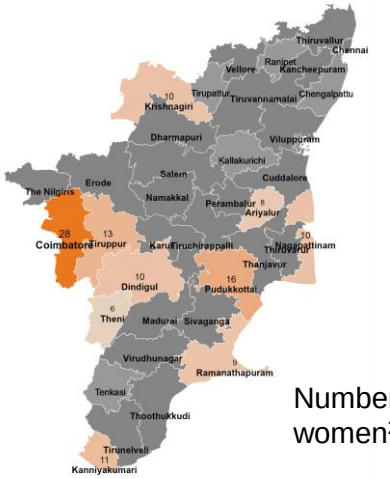
Number of non-pregnant anemic women[2] = 11,381,511

Note: Number in '000s in the above figure

	Highest burden districts	
1	Chennai	716,925
2	Kancheepuram	689,148
3	Thiruvallur	645,634
4	Viluppuram	621,931
5	Vellore	590,846

No. of districts with public health concern[1]: 32 of 32

Map 8. Anemia among pregnant women



Number of pregnant anemic women[2] = 121,417

Note: Number in '000s in the above figure

	Highest burden districts	
1	Coimbatore	28,033
2	Pudukkottai	15,874
3	Tiruppur	13,053
4	Kanniyakumari	11,337
5	Nagapattinam	9,917

No. of districts with public health concern[1]: 7 of 32

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 (2019-2021; all child/woman data), and the projected population for 2019 was estimated using Census 2011. [1]Public health concern is defined as ≥20% for underweight (children), ≥10% for underweight (women), ≥40% for anemia among non-pregnant women, and ≥40% for anemia among pregnant women (WHO 2011). [2]The total number of children <5 years is 5,298,650, pregnant women 15-49 years is 1,039,415, and non-pregnant women 15-49 years is 20,148,745. Note: Gray area in Maps 5-8 indicates districts for which data are not available.

Figure 2. Trends in overweight/obesity & NCDs[2] 2005-2006, 2015-2016, 2019-2021

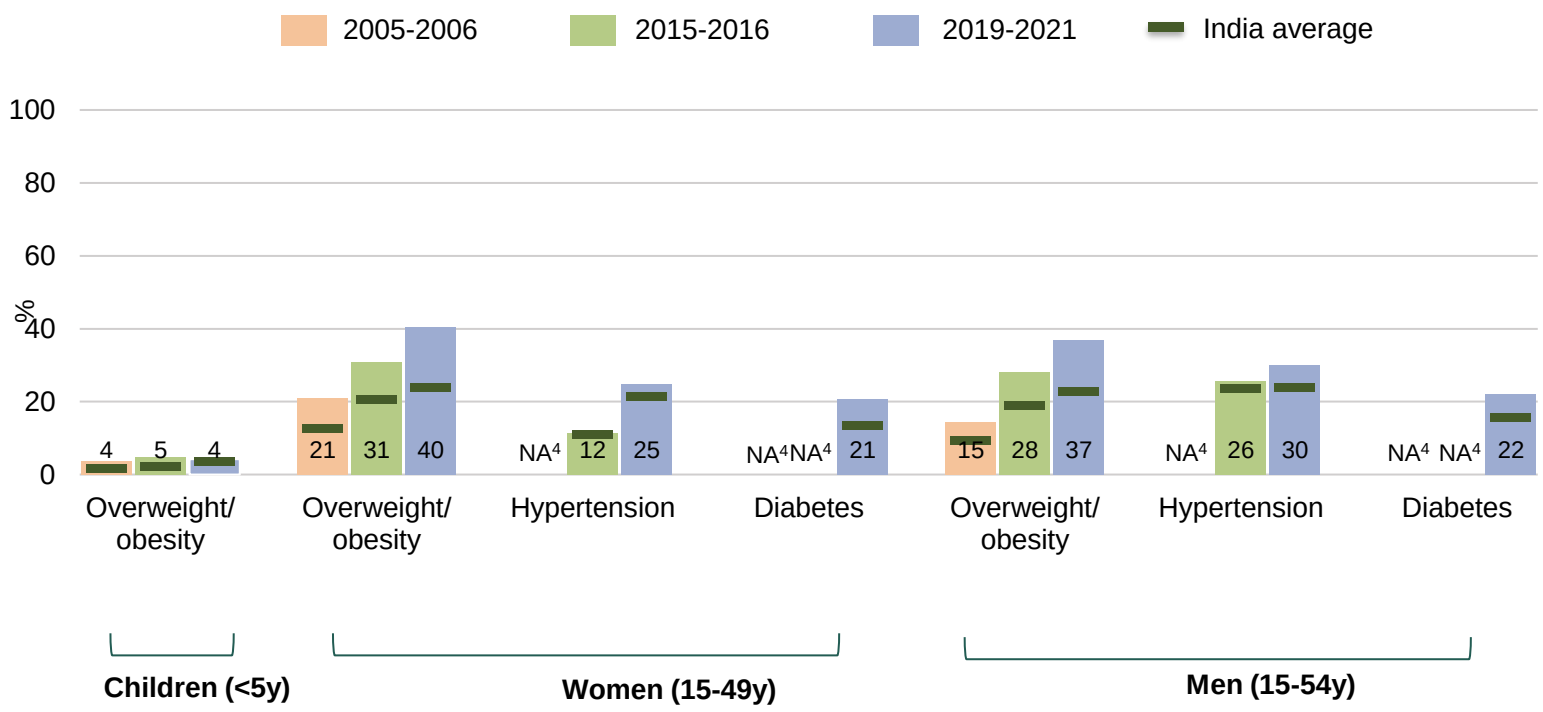


Table 1. Overweight/obesity & NCDs[2] at district-level 2015-2016, 2019-2021

Category	Outcomes	Worst performing districts (pp)	Best performing districts (pp)	Highest burden districts (thousands)[4]	No of districts with public health concern[5] (total=32)
		Difference between (2019-2021) & (2015-2016)[3]	*Difference between (2019-2021) & (2015-2016)*[3]	*2019-2021*	*2019-2021*
Children <5 years	Overweight/ obesity	Sivaganga: +8.3 Krishnagiri: +6.4	Erode: -12.6 Chennai: -7.9	Chennai: 31 Krishnagiri: 16	0
Women (15-49 years)	Overweight/ obesity	Namakkal: +18.6 Tiruppur: +16.9	*Not Applicable*[5]	Chennai: 594 Kancheepuram: 562	32
	Hypertension	Tiruppur: +16.9 The Nilgiris: +16.6	*Not Applicable*[5]	Chennai: 408 Vellore: 302	29
	Diabetes	*NA*[4]		Chennai: 386 Kancheepuram: 277	18
Men (15-54 years)	Overweight /obesity	*NA*[4]			
	Hypertension	Dindigul: +15.2 Chennai: +15.1	Virudhunagar: -21.0 Kanniyakumari: -11.9	Chennai: 521 Kancheepuram: 428	32
	Diabetes	*NA*[4]		Chennai: 347 Kancheepuram: 325	24

Source: NFHS-3 (2005-2006) national report, NFHS-4 (2015-16) national report and data [IFPRI estimates], and NFHS-5 (2019-2021) national and state factsheets. Hypertension among men are IFPRI estimates for NFHS-4 using man dataset. Hypertension among women was estimated at the district-level for NFHS-4 using woman dataset.

[1]NCDs: non-communicable diseases. [2]NA refers to the unavailability of data for a particular indicator in the specified NFHS round. [3]Burden: The headcount was calculated as the product of the prevalence, and the total eligible projected population for each district in 2019. Prevalence estimates were obtained from NFHS-5 (2019-2021) and projected population for 2019 was estimated using Census 2011. [4]Public health concern is defined as prevalence ≥15% for overweight/obesity (children), ≥20% for overweight/obesity (women and men), ≥20% hypertension (women and men), and ≥20% diabetes (women and men) (WHO 2011). [3]The difference is calculated only between districts that are comparable between 2015-2016 and 2019-2021. All districts in Tamil Nadu are comparable. [4]NA refers to the unavailability of data for a particular indicator in the specified NFHS round. Diabetes not available in NFHS-4. [5] Prevalence did not increase or decrease in any of the districts

Figure 3. Trends in immediate determinants (%) 2005-2006, 2015-2016, 2019-2021

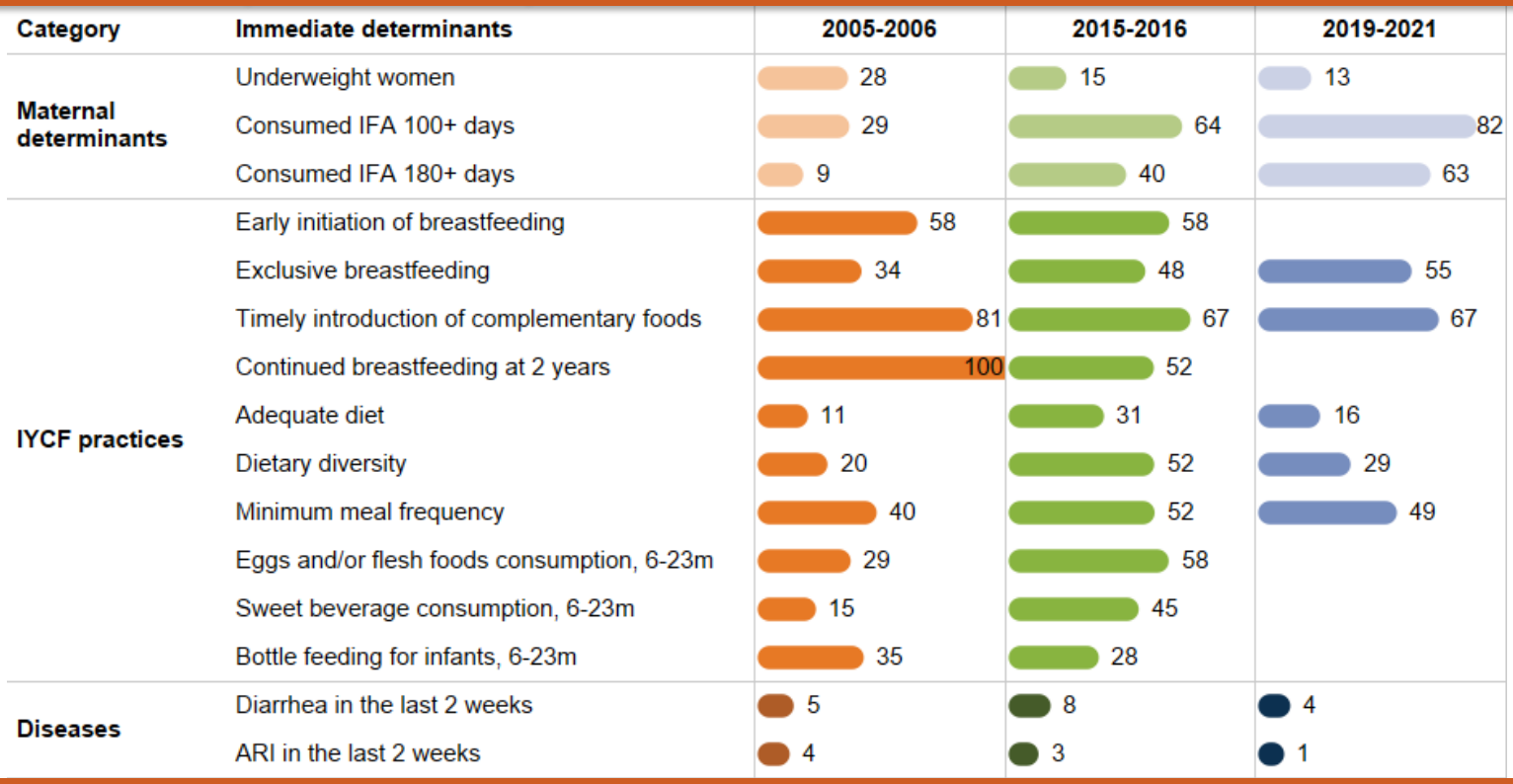


Table 2. Immediate determinants at district-level 2015-2016, 2019-2021

Category	Immediate determinants	Worst performing districts (pp) [2]	Best performing districts (pp) [2]	Top coverage districts (%)[1]
		Difference between (2019-2021) & (2015-2016)	*Difference between (2019-2021) & (2015-2016)*	*2019-2021*
Maternal determinants	Underweight women	Kancheepuram: +3.2 Karur: +3.0	Sivaganga: -7.4 2 Districts[5]: -6.4	Kanniyakumari: 5.9 Chennai: 7.4
	Consumed IFA 100+ days	Karur: -4.3	Tirunelveli: +42.6 Dharmapuri: +41.8	Tiruppur: 95.0 Vellore: 94.2
IYCF practices	Early initiation of breastfeeding	*NA*[3]		
	Exclusive breastfeeding	*NA*[3]		Theni: 53.9 Dindigul: 36.4
	Timely introduction of complementary foods	*NA*[3]		
	Adequate diet	Perambalur: -32.6 Vellore: -27.6	Thiruvallur: +6.6 Chennai: +1.3	Thiruvallur: 26.3 Madurai: 25.0
Diseases	Diarrhea in the last two weeks	Virudhunagar: +1.0 Nagapattinam: +0.4	Perambalur: -11.2 Krishnagiri: -9.2	Salem: 0.7 Kanniyakumari: 0.9
	ARI in the last two weeks	Pudukkottai: +1.9 Chennai: +0.6	Perambalur: -7.5 Tirunelveli: -5.9	11 Districts[4]: 0.0

Source: NFHS-3 (2005-2006) national and state reports and data [IFPRI estimates], NFHS-4 (2015-2016) state report and data [IFPRI estimates], and NFHS-5 factsheets (2019-2021). Adequate diet was estimated for NFHS-3 using last child data. Early initiation of breastfeeding, dietary diversity, minimum meal frequency, egg and/or flesh consumption, sweet beverage consumption, and bottle feeding of infants were estimated for NFHS-3 and 4 using last child data. Consumption of IFA 100+ days and consumption of IFA 180+ days were estimated for NFHS-3 using woman data. pp: percentage points. Note: Data on early initiation of breastfeeding, continued breastfeeding at 2 years, egg and/or flesh foods consumption, sweet beverage consumption, and bottle feeding of infants not available in NFHS-5 factsheets (2019-21)/state report. Definition of early initiation of breastfeeding is based on WHO guidelines. [1]For all indicators, top coverage districts refer to the districts with the highest prevalence in immediate determinants, except for women with a BMI of 18.5 kg/m2, diarrhea in the last two weeks, and ARI in the last two weeks, for which it refers to the districts with the lowest prevalence in coverage. [2]The difference is calculated only between districts that are comparable between 2015-2016 and 2019-2021. All districts in Tamil Nadu are comparable. [3]NA refers to the unavailability of data for a particular indicator in the specified NFHS round. [4] 11 Districts: Ariyalur, Dharmapuri, Erode, Kanniyakumari, Namakkal, Perambalur, Ramanathapuram, Sivaganga,The Nilgiris, Tirunelveli and Virudhunagar. [5]2 Districts: Krishnagiri and Kanniyakumari

Figure 4. Trends in underlying determinants (%) 2005-2006, 2015-2016, 2019-2021

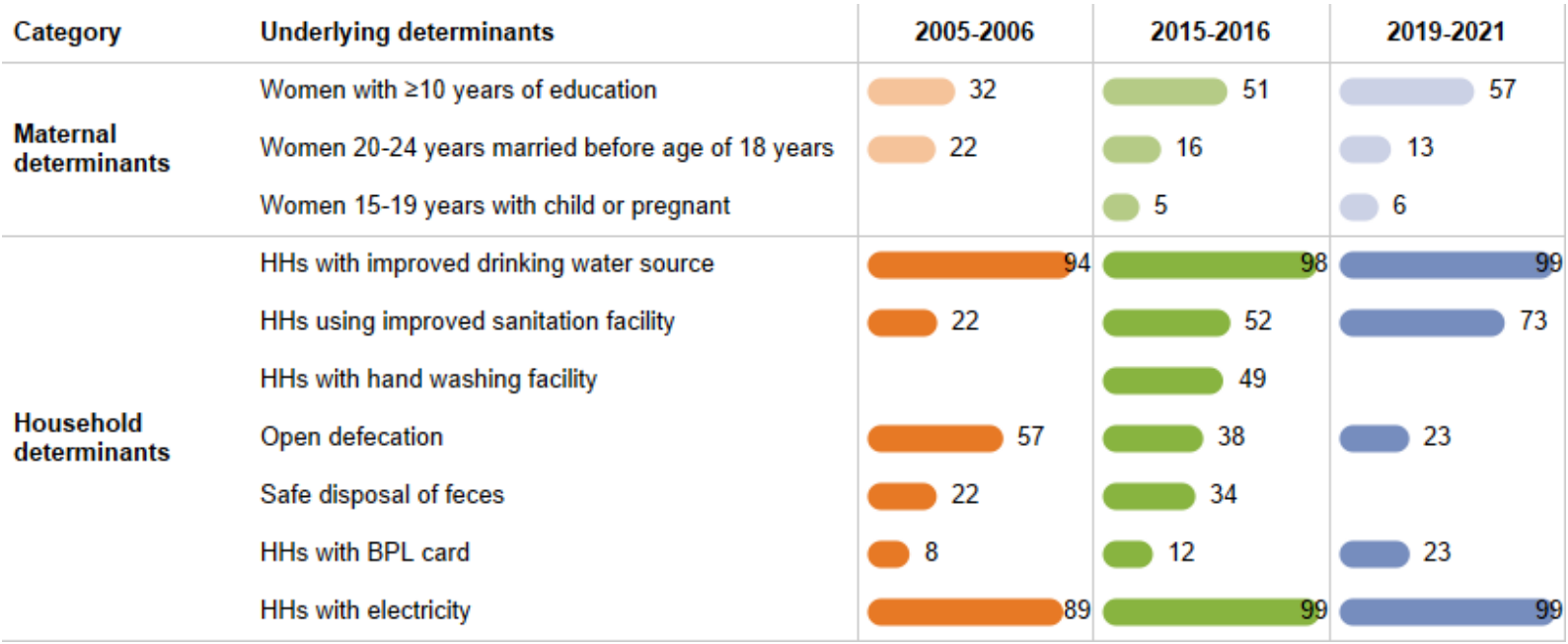


Table 3. Underlying determinants at district-level 2015-2016, 2019-2021

Category	Underlying determinants	Worst performing districts (pp)[3]	Best performing districts (pp)[3]	Top coverage districts (%)[1]
		Difference between (2019-2021) & (2015-2016)	***Difference between (2019-2021) & (2015-2016)***	***2019-2021***
Maternal determinants	Women with ≥10 years education	Kancheepuram: -1.2 Salem: -0.3	Tirunelveli: 14.2 Virudhunagar: +13.8	Kanniyakumari: 77.1 Chennai: 76.7
	Women 20-24 years married before age of 18 years	Perambalur: +7.4 Tirunelveli: +4.7	Theni: -13.1 Dharmapuri: -11.2	Chennai: 1.9 Thanjavur: 4.1
	Women 15-19 years with child or pregnant	Erode: +8.8 Pudukkottai: +6.8	Madurai: -8.0 Ramanathapuram: -3.5	Thoothukkudi: 0.9 Kancheepuram: 2.5
Household determinants	HHs with improved drinking water source	Ariyalur: -6.1 Thoothukkudi: -2.2	Nagapattinam: +6.4 2 Districts[5]: +6.1	3 Districts[6]: 100.0
	HHs using improved sanitation facility	*Not Applicable*[2]	Dharmapuri: +34.9 Tirunelveli: +33.1	Kanniyakumari: 96.2 Chennai: 90.4
	HHs with electricity	Ariyalur: -0.5 3 Districts[4]:0.4	Theni: +1.9 Thoothukkudi: +1.3	Thoothukkudi: 100.0 Chennai: 99.9

pp: percentage points. Source: NFHS-3 (2005-2006) national and state reports and data [IFPRI estimates], NFHS-4 (2015-2016) national and state reports and data [IFPRI estimates], and NFHS-5 (2019-2021) state factsheets and report. Women 20-24 years married before age was estimated for NFHS-3 using women data. Note: Safe disposal of feces not available in NFHS-5 factsheets (2019-21)/state report and data on HHs with hand washing facility not available in NFHS-3 (2005-06) and NFHS-5 factsheets (2019-21)/state report. Data on women 15-19 years with child or pregnant not available in NFHS-3 (2005-06).

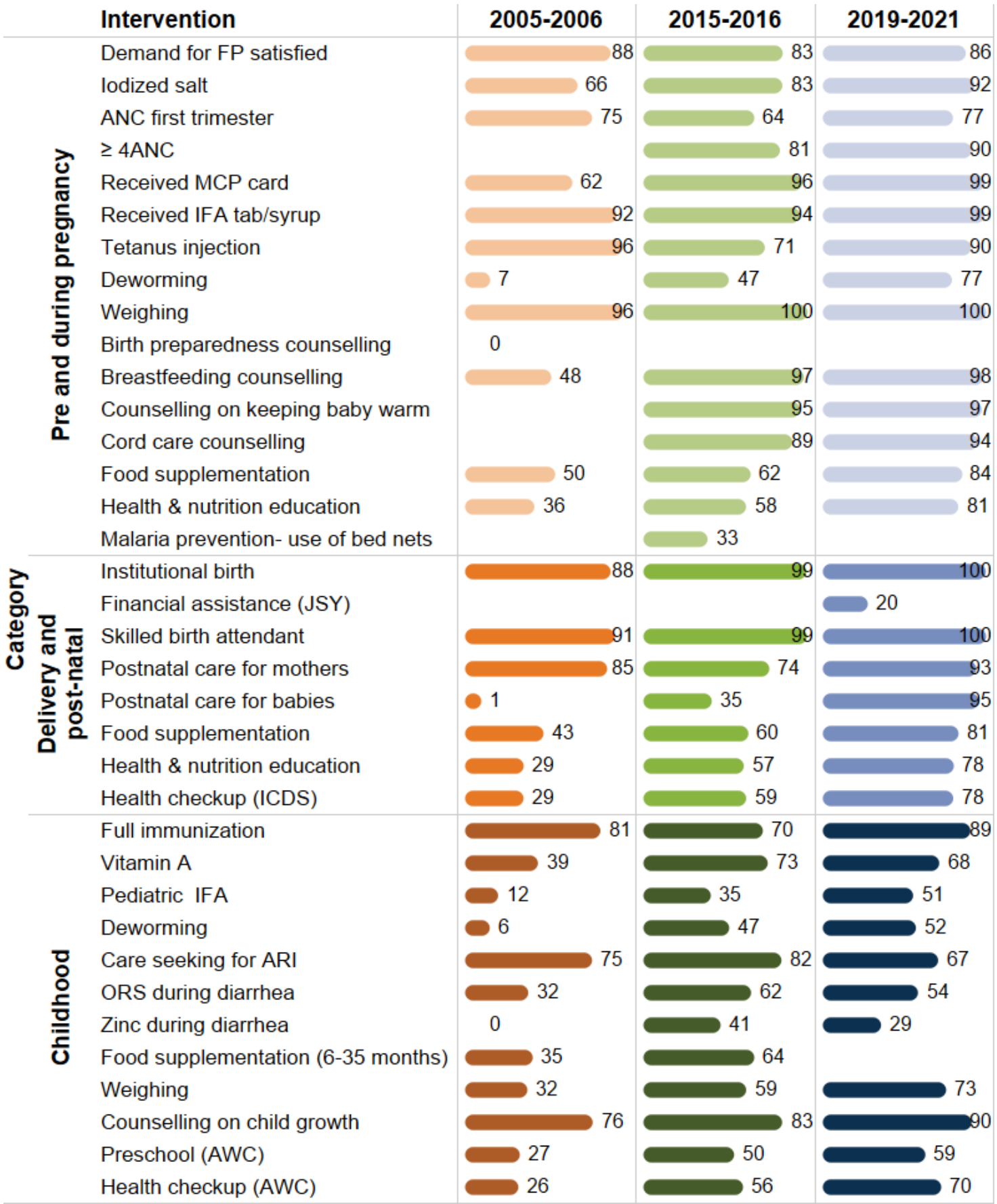
[1]For all indicators, top coverage districts refer to the districts with the highest prevalence in underlying determinants, except for women 20-24 years married before age of 18 years and women 15-19 years with child or pregnant for which it refers to the districts with the lowest prevalence in coverage.

[2]Prevalence did not decrease in any of the districts.

[3]The difference is calculated only between districts that are comparable between 2015-2016 and 2019-2021.

[4]3 Districts: Kancheepuram, Madurai and Namakkal. [5]2 Districts: Madurai and Perambalur. [6]3 Districts: Nagapattinam, Perambalur and Thiruvarur.

Figure 5. Trends in coverage of interventions across the first 1,000 days (%), 2005-2006, 2015-2016, 2019-2021



Source: NFHS-3 (2005-2006) national and state reports and data [IFPRI estimates], NFHS-4 (2015-2016) national and state reports and data [IFPRI estimates], and NFHS-5 (2019-2021) state factsheet and report. Note 1: Received MCP card, birth preparedness counselling, breastfeeding counselling, counselling on keeping baby warm, cord care counselling, and postnatal care for mothers were estimated for NFHS-3 using woman data. Malaria prevention-use of bed nets was estimated for NFHS-4 using woman data. Vitamin A-early childhood was estimated for NFHS-3 using last child data. Postnatal care for babies, food supplementation-early childhood, pediatric IFA, and deworming-early childhood were estimated for NFHS-3 and -4 using last child data. Note 2: The following information is not available in the NFHS-5 factsheets and state reports (2019-21): birth preparedness counselling, malaria prevention, and food supplementation (6-35m). Information on counselling on keeping baby warm and cord care, use of bed nets during pregnancy, and financial assistance under JSY are not available in NFHS-3 data (2005-06). Note 3: Data on demand for family planning satisfied, received IFA, deworming, weighing, counselling on breastfeeding, keeping baby warm, cord care during pregnancy, food supplementation, health and nutrition education during pregnancy and post-natal phases, financial assistance under JSY, pediatric IFA, deworming during early childhood, weight measurement during childhood and counselling on child growth for 2019-2021 are taken from NFHS-5 state reports. Note 4: Refer to district dashboard for the inter-district variability in the coverage of interventions.

Intervention coverage at district level, 2019-2021

<20%	20-<40%	40-<60%	60-<80%	>=80%	Not Available

District name	Pre-pregnancy		Pregnancy													Delivery & postnatal								Early childhood										
	Demand for FP satisfied	Iodized salt	ANC first trimester	≥4 ANC	Received MCP card	Received IFA tab/syrup	Tetanus injection	Deworming	Weighing	Birth preparedness counselling	Breastfeeding counselling	Counselling on keeping baby warm	Cord care counselling	Food supplementation	Health & nutrition education	Malaria prevention-use of bed nets	Institutional birth	Financial assistance (JSY)	Skilled birth attendant	Postnatal care for mothers	Postnatal care for babies	Food supplementation	Health & nutrition education	Health checkup	Full immunization	Vitamin A	Paediatric IFA	Deworming	Care seeking for ARI	ORS during diarrhea	Zinc during diarrhea	Food supplementation (6-35 months)	Weighing	Counselling on child growth	Preschool at AWC	Health checkup
Tamil Nadu	86.1	92.0	77.4	89.9	98.8	98.7	89.7	76.7	99.9		97.9	97.0	94.4	83.8	81.0		99.6	19.9	99.8	93.2	94.9	81.2	78.0	77.6	89.2	68.2	50.5	52.4	67.4	53.8	28.9		72.8	90.0	58.8	69.5
Ariyalur		81.6	65.0	91.4	100.0	99.2	88.4	81.6									100.0	31.0	100.0	95.7	96.2				90.8	61.7										
Chennai		97.0	81.4	89.9	96.8	97.6	96.1	73.3									100.0	21.8	100.0	95.0	96.7				96.6	56.4										
Coimbatore		98.8	72.6	90.0	100.0	98.4	91.8	73.2									100.0	27.7	100.0	95.4	98.6				94.5	75.2										
Cuddalore		88.1	75.5	82.2	98.3	97.3	88.1	64.1									99.2	3.7	99.1	87.7	93.9				79.0	72.7			82.6							
Dharmapuri		93.4	78.4	94.5	100.0	99.1	95.9	84.4									99.6	26.5	99.6	98.0	95.9				90.6	66.2										
Dindigul		81.6	71.9	96.2	99.1	98.8	87.4	79.5									97.0	23.4	98.6	95.3	96.2				92.6	84.0										
Erode		97.6	87.8	93.9	100.0	99.2	97.5	66.1									100.0	15.3	100.0	96.5	98.4				95.9	64.2										
Kancheepuram		88.8	62.6	76.1	97.6	97.8	76.8	55.3									100.0	6.6	100.0	87.3	93.0				69.1	67.9										
Kanniyakumari		97.2	65.6	84.2	97.3	97.7	87.1	79.4									100.0	26.3	100.0	86.0	88.2				96.0	78.4										
Karur		94.2	83.3	95.7	97.3	100.0	82.7	69.1									100.0	10.0	99.2	96.4	91.9				82.5	48.5										
Krishnagiri		95.2	84.5	93.1	99.5	98.5	93.7	89.8									99.6	24.3	100.0	95.5	94.0				87.3	68.5										
Madurai		88.4	70.0	89.5	100.0	99.5	85.6	90.5									100.0	34.6	100.0	91.4	94.5				88.8	66.6										
Nagapattinam		93.3	89.4	93.1	100.0	98.4	93.0	82.7									99.7	24.9	100.0	91.9	92.4				93.8	63.4			80.8							
Namakkal		95.7	76.2	97.8	100.0	99.2	96.3	69.0									100.0	35.9	100.0	94.8	89.9				83.9	66.2										
Perambalur		92.7	85.8	92.2	99.4	99.4	94.1	85.3									100.0	18.7	100.0	90.1	92.6				92.5	64.1										
Pudukkottai		90.6	77.9	91.6	99.2	99.4	89.9	68.6									100.0	10.0	100.0	95.4	94.5				83.3	69.0			63.8							
Ramanathapuram		90.6	82.9	88.2	100.0	97.5	89.1	79.2									99.6	17.1	99.3	94.9	95.8				90.4	75.0										
Salem		95.7	74.7	85.0	100.0	99.1	89.3	78.1									100.0	16.5	100.0	92.9	96.0				77.0	67.8										
Sivaganga		93.2	72.6	90.9	99.3	100.0	76.1	86.3									100.0	52.2	100.0	89.1	92.5				89.4	73.2										
Thanjavur		95.3	86.1	93.7	99.0	96.6	89.5	73.1									100.0	15.5	100.0	93.8	97.1				78.5	49.8			69.4							
The Nilgiris		98.4	80.0	92.5	99.4	99.6	94.1	81.5									100.0	21.0	100.0	91.5	90.9				90.1	69.4										
Theni		76.8	88.8	98.7	100.0	97.1	90.0	84.2									100.0	4.8	100.0	97.1	97.8				95.2	74.0										
Thiruvallur		83.8	77.6	85.4	95.6	99.6	76.8	72.4									100.0	12.3	100.0	90.3	95.2				88.6	62.9			57.4							
Thiruvarur		94.6	80.5	92.3	97.2	98.8	86.8	78.5									100.0	13.3	100.0	89.5	92.2				97.1	70.9										
Thoothukkudi		89.0	59.2	80.7	100.0	99.4	89.1	76.4									100.0	35.2	100.0	94.8	97.2				100.0	63.0										
Tiruchirappalli		94.2	86.1	90.5	98.8	99.4	92.2	77.3									98.6	6.3	99.0	97.6	94.6				97.1	63.8			62.5							
Tirunelveli		89.9	84.5	85.0	98.0	100.0	90.8	86.1									100.0	13.5	100.0	92.9	93.0				93.3	69.0										
Tiruppur		98.3	68.6	93.5	100.0	100.0	95.0	85.9									100.0	26.8	100.0	98.4	99.3					74.2										
Tiruvannamalai		90.3	81.2	97.7	100.0	97.9	94.3	76.1									99.1	26.0	99.1	98.1	98.6				97.1	64.3										
Vellore		93.8	84.4	95.4	100.0	97.9	96.8	79.3									99.5	21.2	100.0	98.6	96.7				92.7	71.6										
Viluppuram		88.1	80.1	94.9	96.0	98.9	95.4	80.1									99.1	19.2	100.0	88.1	94.0				88.5	73.2			67.0							
Virudhunagar		89.5	65.0	83.4	99.3	99.4	86.3	76.1									97.8	28.2	100.0	80.2	86.5				76.7	74.8										

Source: NFHS-5 district factsheets and state reports (2019-21).

Note 1: Data on received IFA tab/syrup, deworming during pregnancy and financial assistance (JSY) for 2019-21 are taken from NFHS-5 state reports. Data on remaining indicators are taken from NFHS-5 factsheets (2019-21).

Note 2: The following information is not available in the NFHS-5 factsheets and state reports (2019-21): (1) Information on preconception and pregnancy-related indicators, including demand for FP satisfied, weighing, birth preparedness and breastfeeding counselling, counselling on keeping baby warm, cord care counselling, food supplementation, health and nutrition education and malaria prevention; (2) lactation-related indicators, including food supplementation, health and nutrition education, and health checkups; and (3) early childhood-related indicators, including pediatric IFA, deworming, food supplementation (6-35m), preschool attendance, health checkups, weighing, and counselling on child growth.

Table 4. Intervention coverage at district-level 2015-2016, 2019-2021

Category	Interventions	Worst performing districts (pp) *Difference between (2019-2021) & (2015-2016)[1]*	Best performing districts (pp) *Difference between (2019-2021) & (2015-2016)[1]*	Top coverage districts (%) *2019-2021*
Pregnancy	ANC first trimester	Tiruppur: -15.9 Coimbatore: -4.8	Theni: +45.1 Tirunelveli: +43.2	Nagapattinam: 89.4 Theni: 88.8
	≥4 ANC visits	Thiruvallur: -6.2 Cuddalore: -3.3	Nagapattinam: +24.8 Theni: +22.7	Theni: 98.7 Namakkal: 97.8
	Received MCP Card	Chennai: -2.7 Thiruvallur: -2.7	Kanniyakumari: +20.1 Virudhunagar: 11.0	14 Districts[4]: 100.0
	Tetanus injection	*Not Applicable[2]*	Theni: +49.7 Tiruchirappalli: +40.7	Erode: 97.5 Vellore: 96.8
Delivery and post-natal	Institutional birth	Dindigul: -2.3 Vellore: -0.5	Krishnagiri: +4.5 Theni: +3.4	21 Districts[5]: 100.0
	Skilled birth attendant	Dindigul: -1.2 Karur: -0.8	Krishnagiri: +4.2 Thoothukkudi: +3.1	25 Districts[6]: 100.0
	Postnatal care for mothers	Thiruvarur: -2.0	Theni: +42.3 Ariyalur: +41.0	Vellore: 98.6 Tiruppur: 98.4
	Postnatal care for babies	*Not Applicable[2]*	Viluppuram: +73.3 Perambalur: +71.4	Tiruppur: 99.3 Coimbatore: 98.6
Early childhood	Full immunization	Karur: -4.9	Nagapattinam: +54.8 Thoothukkudi: +52.3	Thoothukkudi: 100.0 2 Districts[7]: 97.1
	Vitamin A supplementation	Karur: -27.1 Tiruvannamalai: -26.0	Ramanathapuram: +18.6 Kanniyakumari: +14.2	Dindigul: 84.0 Kanniyakumari: 78.4
	Care seeking for ARI°	Thiruvallur: -31.8 Tiruchirappalli: -28.1	Nagapattinam: +14.9 Cuddalore: +4.1	Cuddalore: 82.6 Nagapattinam: 80.8
	ORS treatment during diarrhea	*NA[3]*		
	Zinc treatment during diarrhea	*NA[3]*		

Key takeaways

Children: Stunting and underweight declined by 4 percentage points (pp) and 6pp respectively, from 2006 to 2016 and continued to decline by 2pp from 2016 to 2021. Anemia among children declined by 13pp from 2006 to 2016 but increased by 6pp from 2016 to 2021.

Women: Underweight declined by 13 pp from 2006 to 2016 and continued to decline by 2pp from 2016 to 2021. Anemia in non-pregnant women increased by 2pp from 2006 to 2016 but declined by 1pp from 2016 to 2021. Overweight/obesity increased by 10pp from 2006 to 2016 and continued to increase by 9pp from 2016 to 2021.

Men: Overweight/obesity increased by 13pp from 2006 to 2016 and continued to increase by 9pp from 2016 to 2021.

Attention is needed to improve (%s in 2021):

- ***Outcomes***: Stunting (25%) and anemia in children (57%); anemia in non-pregnant (54%) and pregnant (48%) women
- ***Immediate determinants:*** Adequate diversity (16%); dietary diversity (29%)
- ***Underlying determinants:*** Women with ≥10 years education (57%)
- ***Coverage of interventions:*** Financial assistance (20%); Zinc during diarrhea (29%).

Source: NFHS-3 state and national reports and data [IFPRI estimates], NFHS-4 (2015-2016) state and national reports and data [IFPRI estimates], and NFHS-5 (2019-2021) state reports/factsheets. Postnatal care for babies was estimated for NFHS-4 using last child data at the state- and district-level. pp: percentage points. Note: Interventions' coverage are based on the last child data. [1]The difference is calculated only between districts that are comparable between 2015-2016 and 2019-2021. [2]Prevalence did not decrease in any of the districts. [3]NA refers to the unavailability of data for a particular indicator in the specified NFHS round. [4]14 districts: Ariyalur, Coimbatore, Dharmapuri, Erode, Madurai, Namakkal, Salem, Ramanathapuram. Nagapattinam, Tiruppur, Theni, Tiruvannamalai, Thoothukkudi, Vellore. [5]21 Districts: Ariyalur, Coimbatore, Chennai, Erode, Karur, Kanniyakumari, Kancheepuram, Madurai, Namakkal, Pudukkottai, Perambalur, Sivaganga, Salem, The Nilgiris, Thanjavur, Tiruppur, Tirunelveli, Thiruvallur, Theni, Thiruvarur, Thoothukkudi. [6]25 districts: Ariyalur, Coimbatore, Chennai, Erode, Kanniyakumari, Kancheepuram, Krishnagiri, Madurai, Namakkal, Nagapattinam, Pudukkottai, Perambalur, Sivaganga, Salem, The Nilgiris, Thanjavur, Tiruppur, Tirunelveli, Thiruvallur, Theni, Thoothukkudi, Thiruvarur, Virudhunagar, Vellore, Viluppuram.[7]2 districts: Tiruvannamalai, Tiruchirappalli.

Indicator definition

Nutrition outcomes	Definition
Low birth weight[$%]	Percentage of live births in the five years preceding the survey with a reported birth weight less than 2.5 kg, based on either a written record or the mother's recall
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)
Underweight women	Percentage of women aged 15-49 whose Body Mass Index (BMI) is below normal (BMI <18.5 kg/m^2); sample excluded pregnant women and women with a birth in the preceding 2 months.
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)
Overweight/obesity - children	Percentage of children aged 0-59 months who are overweight i.e., weight-for-height z score > 2SD
Overweight/obesity - women	Percentage of women aged 15-49 who are overweight or obese (BMI ≥25.0 kg/m2); sample excluded pregnant women and women with a birth in the preceding 2 months.
Overweight/obesity – men	Percentage of men aged 15-49 who are overweight or obese (BMI ≥25.0 kg/m^2)
Hypertension among women[^*%]	Percentage of women aged 15-49 with elevated blood pressure (Systolic ≥140 mm Hg or diastolic ≥90 mm Hg) or is currently taking medication to control blood pressure.
Hypertension among men[^*]	Percentage of men aged 15-54 with elevated blood pressure (Systolic ≥140 mm Hg or diastolic ≥90 mm Hg) or is currently taking medication to control blood pressure.
Diabetes among women[^0]	Percentage of women aged 15-49 with high (>140 mg/dl) or very high (>160 mg/dl) blood sugar or taking medicine to control blood sugar.
Diabetes among men[^0]	Percentage of men aged 15-54 with high (>140 mg/dl) or very high (>160 mg/dl) blood sugar or taking medicine to control blood sugar.
Immediate determinants	
Underweight women	Percentage of women aged 15-49 whose Body Mass Index (BMI) is below normal (BMI <18.5 kg/m^2); sample excluded pregnant women and women with a birth in the preceding 2 months.
Consumed IFA 100+ days*	Percentage of mothers aged 15-49 who consumed iron folic acid for 100 days or more during the last pregnancy in last five years preceding the survey
Consumed IFA 180+ days*	Percentage of mothers aged 15-49 who consumed iron folic acid for 180 days or more during the last pregnancy in last five years preceding the survey
Early initiation of breastfeeding[#*]	Percentage of children breastfed within one hour of birth for the last child born in the 2 years before the survey
Exclusive breastfeeding	Percentage of youngest children under age 6 months living with mother who were exclusively breastfed
Timely introduction of complementary foods	Percentage of youngest children aged 6-8 months living with mother who received solid or semi-solid food and breastmilk
Continued breastfeeding at 2 years[$*%]	Percentage of youngest children 12–23 months of age living with mother who were fed breast milk during the previous day
Adequate diet*	Percentage of youngest children 6–23 months of age who consumed a minimum acceptable diet during the previous day
Dietary diversity*[@]	Percentage of youngest children 6-23 months of age who were fed a diet that met minimum dietary diversity during the previous day.
Minimum meal frequency*[@]	Percentage of youngest children 6-23 months of age who were fed the minimum recommended number of times during the previous day
Eggs and/or flesh foods consumption[$ * #]	Percentage of youngest children 6–23 months of age who consumed egg and/or flesh food during the previous day
Sweet beverage[$ * #]	Percentage of youngest children 6–23 months of age who consumed a sweet beverage during the previous day
Bottle feeding for infants[$ * #]	Percentage of youngest children 0–23 months of age who were fed from a bottle with a nipple during the previous day
Diarrhea in the last two weeks	Percentage of children under age 5 who had diarrhea in the 2 weeks preceding the survey
ARI in the last two weeks	Percentage of children under age 5 who had symptoms of acute respiratory infection (ARI) in the 2 weeks preceding the survey
Underlying determinants	
Women with ≥10 years education	Percentage of women aged 15-49 with 10 or more years of schooling
Women 20-24 years married before age of 18 years*	Percentage of women aged 20-24 years who were married before age 18 years
Women 15-19 years with child or pregnant[^]	Percentage of currently married women aged 15-49 who had their first birth before age 20 years and in the five years preceding the survey
HHs with improved drinking water source	Population living in households with an improved drinking-water source
HHs using improved sanitation facility	Population living in households that use an improved sanitation facility
HHs with hand washing facility[^$]	Percentage of households in which a place for washing hands was observed.
Open defecation[@%]	Percentage of households that have no toilet facility/defecates in open
Safe disposal of feces[$%]	Percentage of youngest children living with mother whose stools were disposed of safely
HHs with BPL card[@%]	Percentage of households with BPL card
HHs with electricity	Population living in households with electricity

Note: Unless specified, indicators values for NFHS-3 taken from either NFHS-3 national or state reports.
[^]Indicator cannot be constructed using unit-level NFHS-3 data. [0]Indicator cannot be constructed using unit-level NFHS-4 data. [$]Indicator not available in NFHS-5 factsheet/report. [@]Indicator not available in NFHS-5 factsheet but in NFHS-5 report. [%]Indicator not available in NFHS-5 factsheet but available in NFHS-4 report. *Indicator estimated using NFHS-3 and/or NFHS-4 unit-level data. [#]Indicator constructed based on WHO guidelines.

Indicator definition

Interventions	Definition
Demand for FP satisfied[@%]	Percentage of currently married women aged 15-49 with demand for family planning satisfied by modern methods
Iodized salt	Percentage of households using iodized salt
ANC first trimester	Percentage of women (15-49 years of age) attended by any provider during the first trimester of pregnancy that led to the birth of the youngest child in the last 2 years
≥ 4ANC^	Percentage of mothers aged 15-49 who had at least 4 antenatal care visits for last birth in the 5 years before the survey
Received MCP card	Percentage of mothers who registered last pregnancy in the 5 years preceding the survey for which she received a Mother and Child Protection (MCP) card
Received IFA tab/syrup[@%]	Percentage of women who received IFA (given or purchased) tablets during the pregnancy for their most recent live birth in the 5 years preceding the survey
Tetanus injection	Percentage of women whose last birth was protected against neonatal tetanus (for last birth in the five years preceding the survey)
Deworming- pregnancy[@%]	Percentage of women who took an intestinal parasite drug during the pregnancy for their most recent live birth in the 5 years preceding the survey
Weighing- pregnancy[@%]	Percentage of women aged 15-49 with a live birth in the five years preceding the survey who were weighed during ANC for the last birth
Birth preparedness counselling[0$]	Percentage of women who had at least one contact with a health worker in the three months preceding the survey and were counselled on birth preparedness (for the last pregnancy in the five years preceding the survey)
Breastfeeding counselling[@%]	Percentage of women who met with a community health worker in the last three months of pregnancy and received advice on breastfeeding (for the last pregnancy in the five years preceding the survey)
Counselling on keeping baby warm^[@%]	Percentage of women who met with a community health worker in the last three months of pregnancy and received advice on keeping the baby warm for their most recent live birth in the five years preceding the survey
Cord care counselling^[@%]	Percentage of women who met with a community health worker in the last three months of pregnancy and received advice on cord care for their most recent live birth in the five years preceding the survey
Food supplementation - pregnancy[@%]	Among children under 6 years, percentage whose mother received specific benefits from AWC during pregnancy: supplementary food
Health & nutrition education – pregnancy[@%]	Among children under 6 years, percentage whose mother received specific benefits from AWC during pregnancy: health and nutrition education
Malaria prevention- use of bed nets^[$*]	Percentage of women who used mosquito net during the pregnancy for their most recent live birth in the 5 years preceding the survey
Institutional birth	Percentage of live births to women aged 15-49 in the five years preceding the survey that took place in a health/institutional facility
Financial assistance (JSY) [^@]	Percentage of women who received financial assistance under JSY for their most recent live birth that took place in institutional facility in the 5 years preceding the survey
Skilled birth attendant	Percentage of births attended by skilled health personnel for births in the 5 years before the survey
Postnatal care for mothers*	Percentage of mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within 2 days of delivery for their most recent live birth in the five years preceding the survey
Postnatal care for babies*	Percentage of children who received postnatal care from a doctor /nurse /LHV /ANM /midwife /other health personnel within 2 days of delivery for last birth in the 5 years before the survey
Food supplementation – postnatal[@%]	Among children under 6 years, percentage whose mother received specific benefits from AWC while breastfeeding: supplementary food
Health & nutrition education – postnatal[@%]	Among children under 6 years, percentage whose mother received specific benefits from AWC while breastfeeding: health and nutrition education
Health checkup (ICDS)[@%]	Among children under 6 years, percentage whose mother received specific benefits from AWC while breastfeeding: health checkup.
Full immunization	Percentage of children aged 12-23 months fully vaccinated based on information from either vaccination card or mother's recall
Vitamin A – early childhood*	Percentage of children aged 9-35 months who received a vitamin A dose in the last 6 months
Pediatric IFA*[@%]	Percentage of youngest children aged 6-23 months who received iron supplements in the past 7 days preceding the survey.
Deworming – early childhood*[@%]	Percentage of youngest children aged 6-23 months who received deworming tablets in the last 6 months preceding the survey.
Care seeking for ARI	Percentage of children under age 5 years with fever or symptoms of ARI in the 2 weeks preceding the survey taken to a health facility or health provider
ORS during diarrhea	Percentage of children under age 5 years with diarrhea in the 2 weeks preceding the survey who received ORS
Zinc during diarrhea	Percentage of children under age 5 years with diarrhea in the 2 weeks preceding the survey who received zinc
Food supplementation (children 6-35 months) [$*]	Percentage of youngest children aged 6-35 months who received food supplements from AWC in the 12 months preceding the survey
Weighing – early childhood[@%]	Percentage of youngest children under age 5 who were weighed at AWC in the 12 months preceding the survey
Counselling on child growth[@%]	Percentage of youngest children under age 5 whose mother received counselling from an AWC after child was weighed in the 12 months preceding the survey
Preschool at AWC[@%]	Percentage of children age 36-71 months who went for early childhood care/preschool at an AWC in the 12 months preceding the survey.
Health checkup (AWC)[@%]	Percentage of children age under 6 years who received health checkups from an AWC in the 12 months preceding the survey

Note: Unless specified, indicators values for NFHS-3 taken from either NFHS-3 national or state reports.
^Indicator cannot be constructed using unit-level NFHS-3 data. [0]Indicator cannot be constructed using unit-level NFHS-4 data. [$]Indicator not available in NFHS-5 factsheet/report. [@]Indicator not available in NFHS-5 factsheet but in NFHS-5 report. [%]Indicator not available in NFHS-5 factsheet but available in NFHS-4 report.
*Indicator estimated using NFHS-3 and/or NFHS-4 unit-level data. [#]Indicator constructed based on WHO guidelines.

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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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