POSHAN
Led by IFPRI
Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India
Data Note
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Revised: February 2019

Tracking anemia and its determinants from 2006 to 2016 in India

Insights from the National Family Health Survey-4

ABOUT THIS DATA NOTE

Anemia is a condition defined by low hemoglobin (Hb) levels in the blood, which results in inadequacies to meet the body's physiological needs of oxygen. Anemia is caused by many factors, which include deficiencies in micronutrients (iron, folate, and B12), infection and disease, genetic abnormalities, and blood loss. The World Health Organization defines anemia as Hb < 120 g/L for non-pregnant women, < 110 g/L for pregnant women and children, and <130 g/L for men.

India accounts for the highest burden of anemia globally. In the last fifty years, despite substantial programmatic efforts, progress has been slow throughout the lifecycle including among adolescent girls (15-19 years), women of reproductive age (15-49 years) (WRA), pregnant women, and children (6-59 months), and continues to be a major public health problem. There has been limited progress in anemia reduction between 2006 and 2016 across India, and it has not been uniform across the states and among the districts.

India's policy framework for eliminating anemia has identified a set of interventions to address anemia, including delayed cord clamping, iron and folic acid supplementation, deworming, intense behaviour change communication for promoting consumption of iron-rich foods and appropriate infant and young child feeding practices, testing and treating anemia among school-going adolescents and pregnant women, use of iron-fortified foods in public health facilities, and testing and treating malaria in endemic pockets.

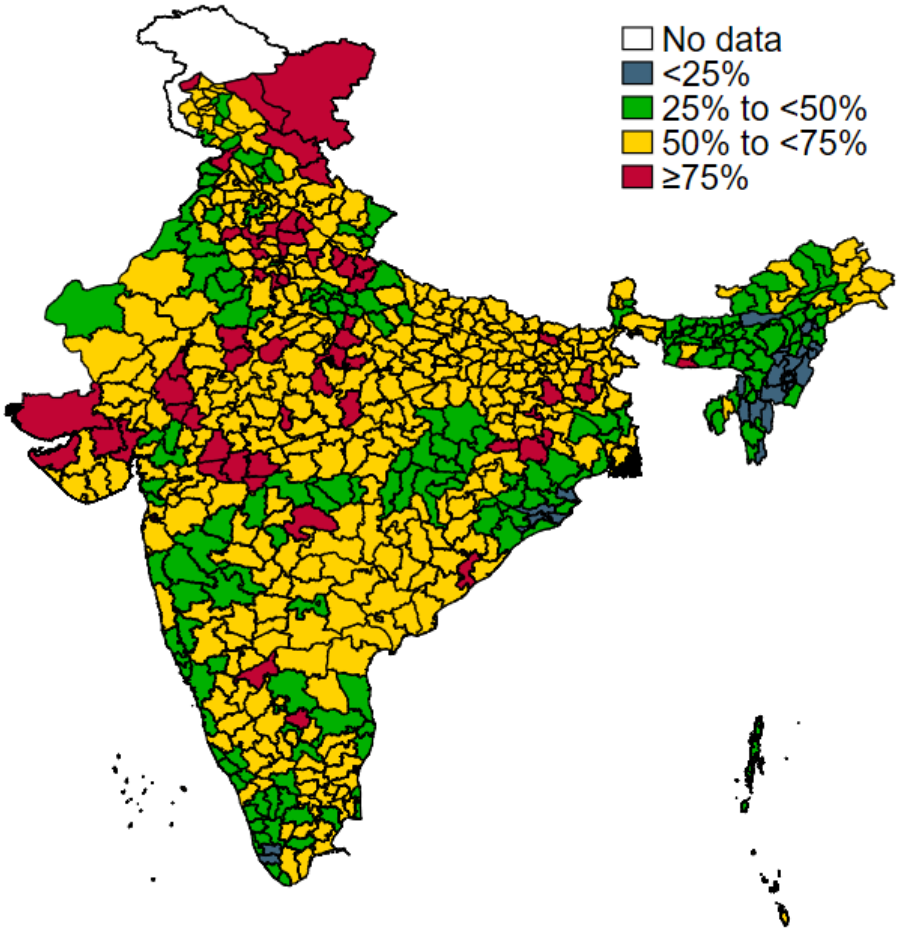
This *Data Note* describes the prevalence of anemia and its determinants (as listed on page 11), and coverage of a set of key interventions targeted at improving anemia. The findings here are based on available data from the National Family Health Surveys in 2005-2006 and 2015-2016. For some indicators, age categories may vary depending on information received from the survey.

FIGURE 1 Anemia prevalence in India, across the lifespan, from 2006 to 2016

Childhood	Adolescence	Pregnancy	Adulthood
			
Girls 6-59 months	**Girls 15-19 years**	**Pregnant women** 15-49 years	**Women 20-49 years**
2006 2016 70.0% → 58.8%	2006 2016 54.0% → 53.8%	2006 2016 57.8% → 50.4%	2006 2016 53.0% → 52.0%
			
Boys 6-59 months	**Boys 15-19 years**	**Lactating women** 15-49 years	**Men 20-49 years**
2006 2016 69.2% → 58.5%	2006 2016 28.9% → 29.3%	2006 2016 63.0% → 57.8%	2006 2016 21.6% → 21.4%

Source: NFHS- 3 & NFHS- 4.

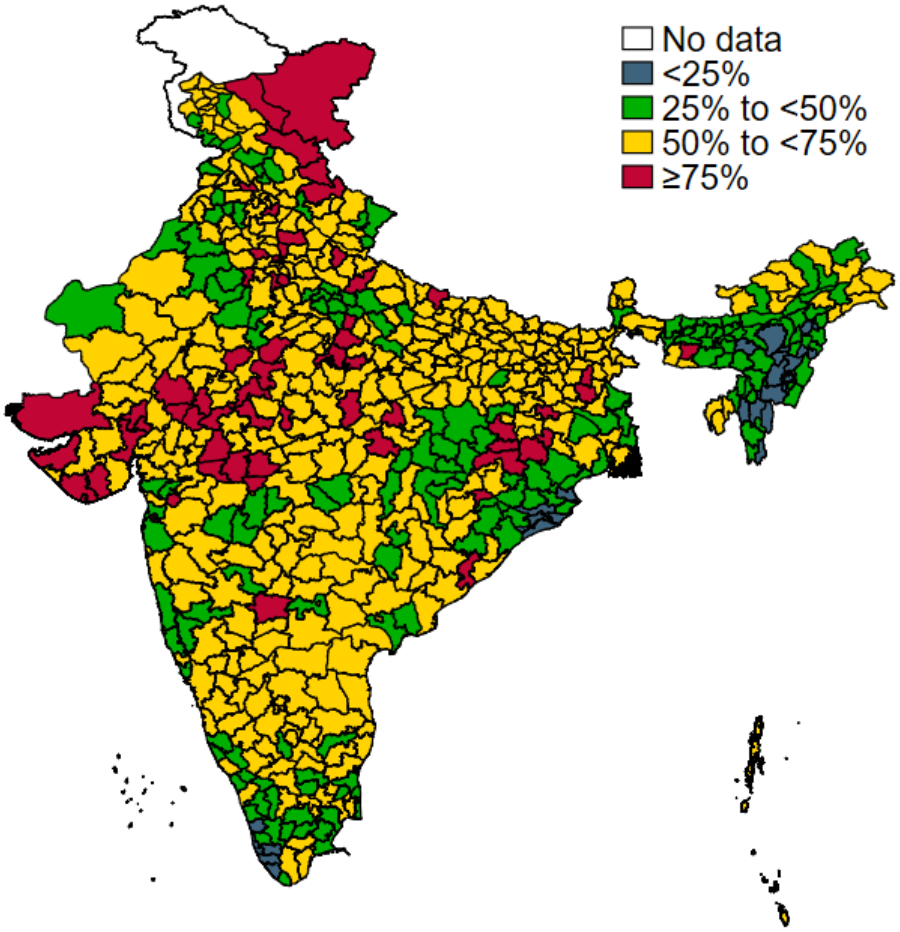
MAP 1 Anemia among girls (6-59 months), by district, 2016



Anemia prevalence	Number of districts
<25%	25
25% to <50%	181
50% to <75%	373
≥75%	61

Source: NFHS-4.

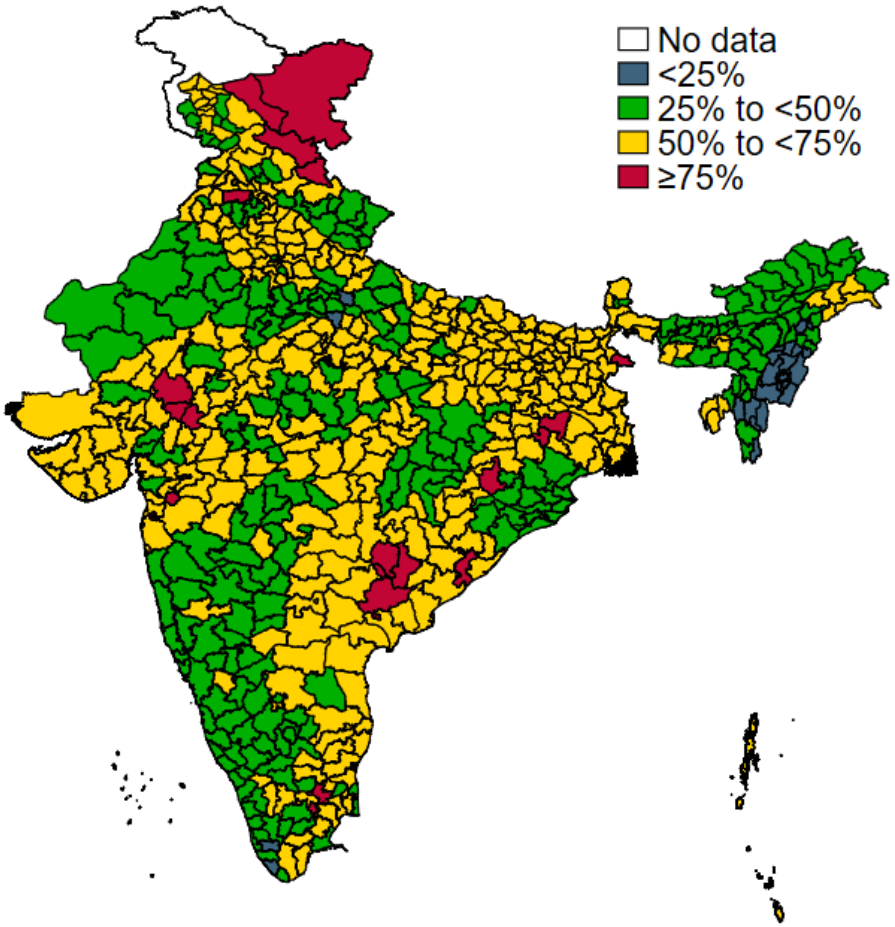
MAP 2 Anemia among boys (6-59 months), by district, 2016



Anemia prevalence	Number of districts
<25%	25
25% to <50%	170
50% to <75%	382
≥75%	63

Source: NFHS-4.

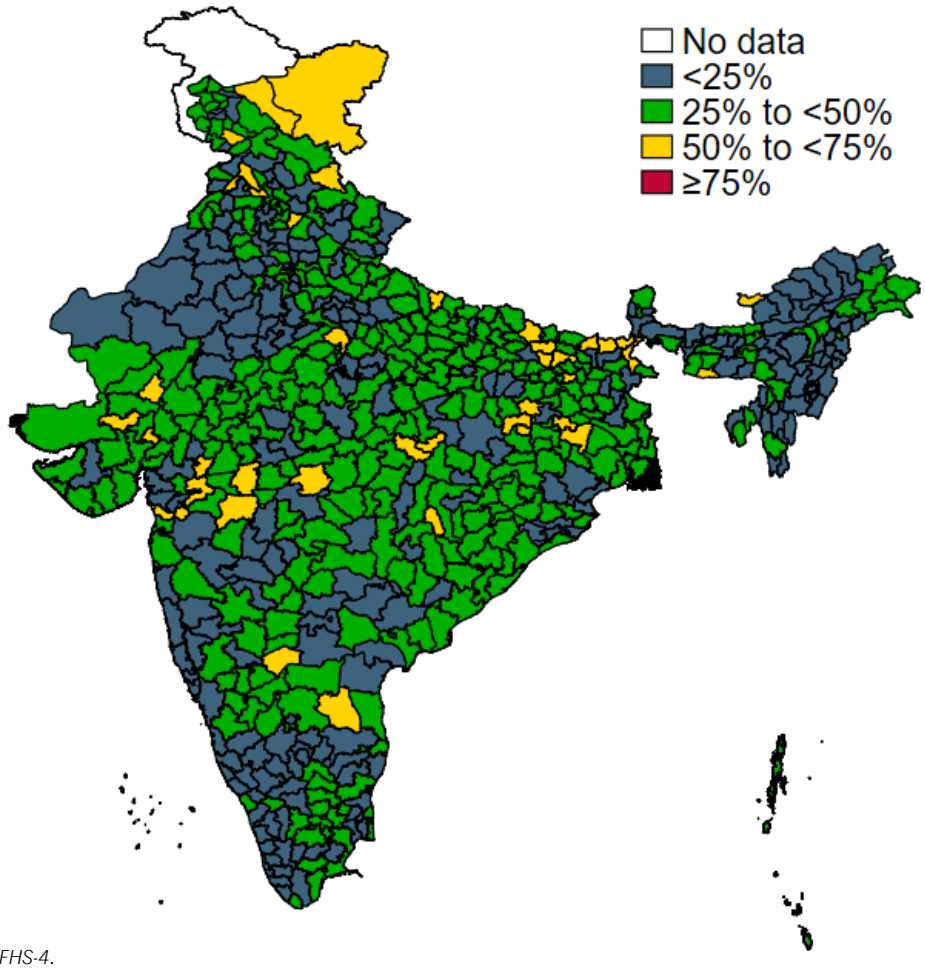
MAP 3 Anemia among adolescent girls (15-19 years), by district, 2016



Anemia prevalence	Number of districts
<25%	24
25% to <50%	253
50% to <75%	343
≥75%	20

Source: NFHS-4.

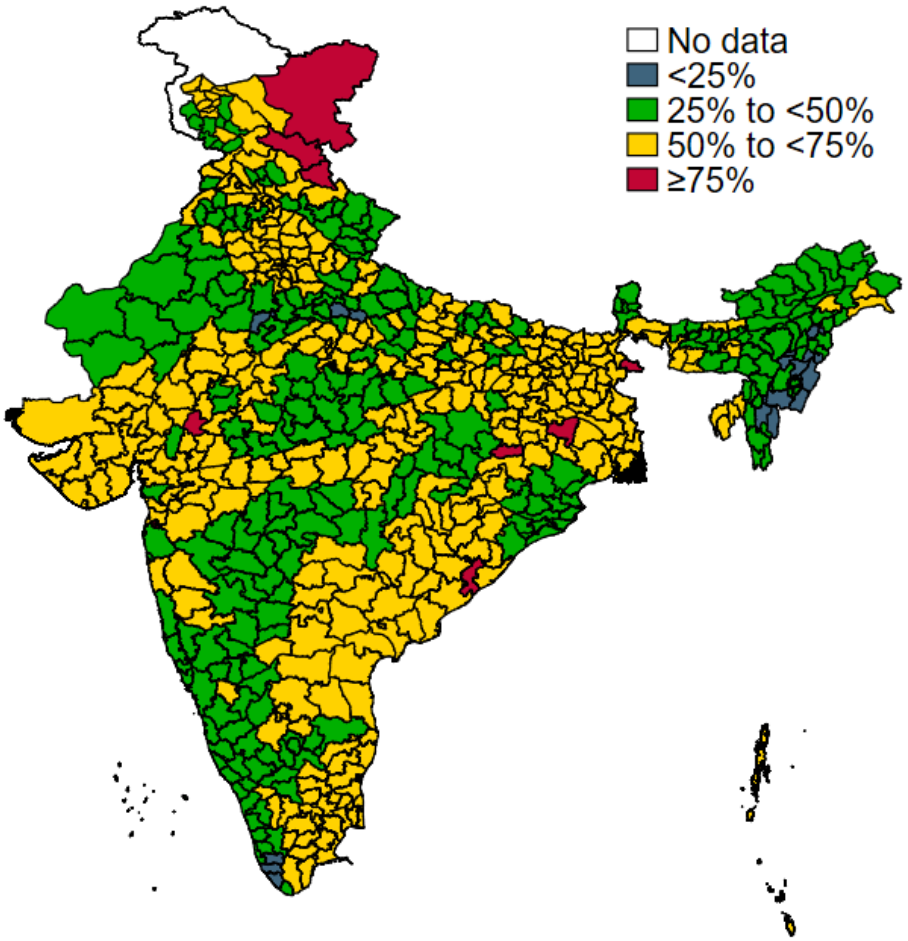
MAP 4 Anemia among adolescent boys (15-19 years), by district, 2016



Anemia prevalence	Number of districts
<25%	255
25% to <50%	342
50% to <75%	42
≥75%	1

Source: NFHS-4.

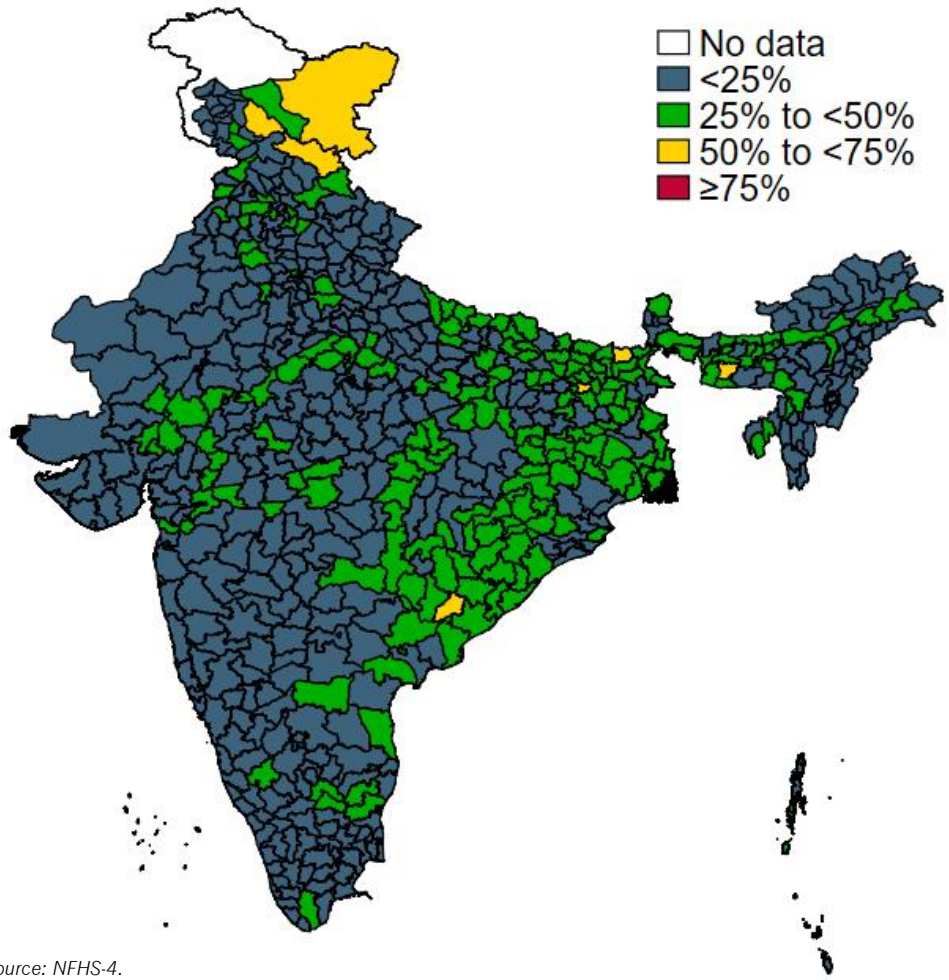
MAP 5 Anemia among women (20-49 years), by district, 2016



Anemia prevalence	Number of districts
<25%	17
25% to <50%	266
50% to <75%	347
≥75%	10

Source: NFHS-4.

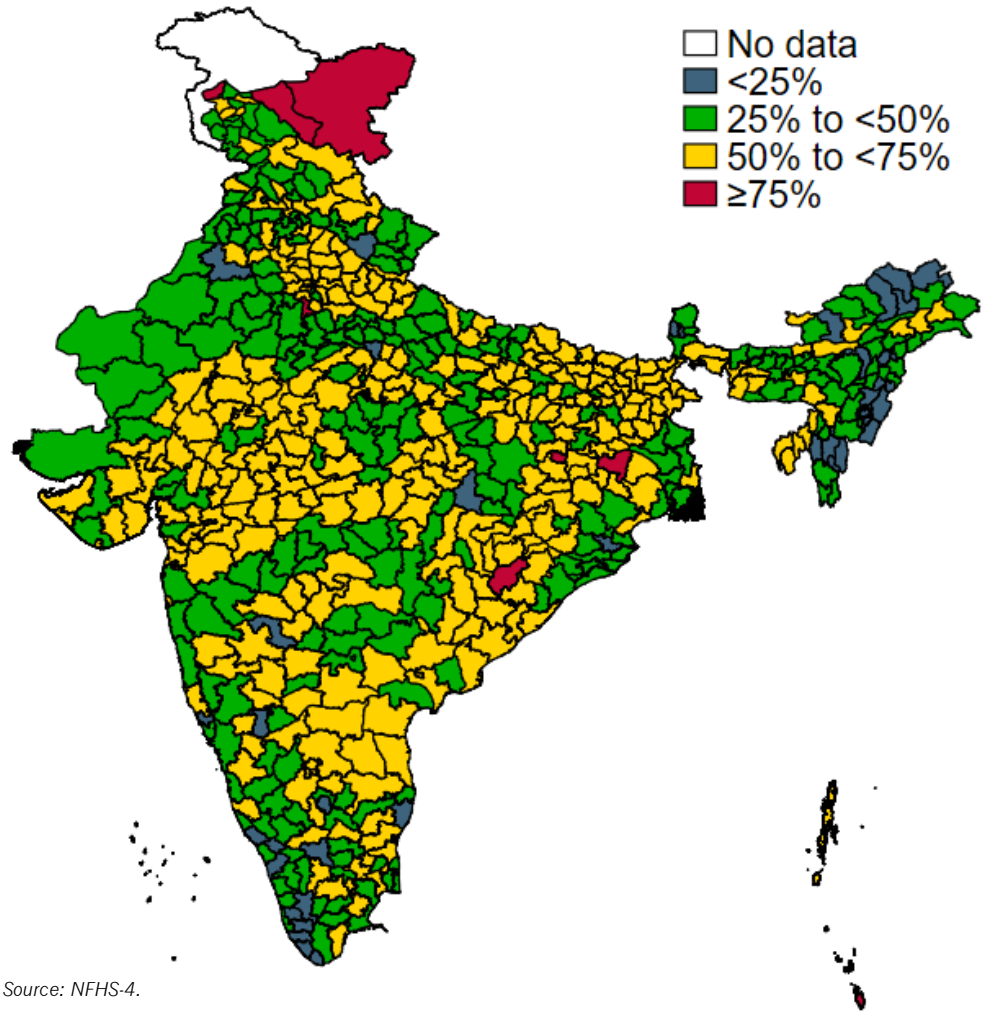
MAP 6 Anemia among men (20-49 years), by district, 2016



Anemia prevalence	Number of districts
<25%	434
25% to <50%	199
50% to <75%	7
≥75%	0

Source: NFHS-4.

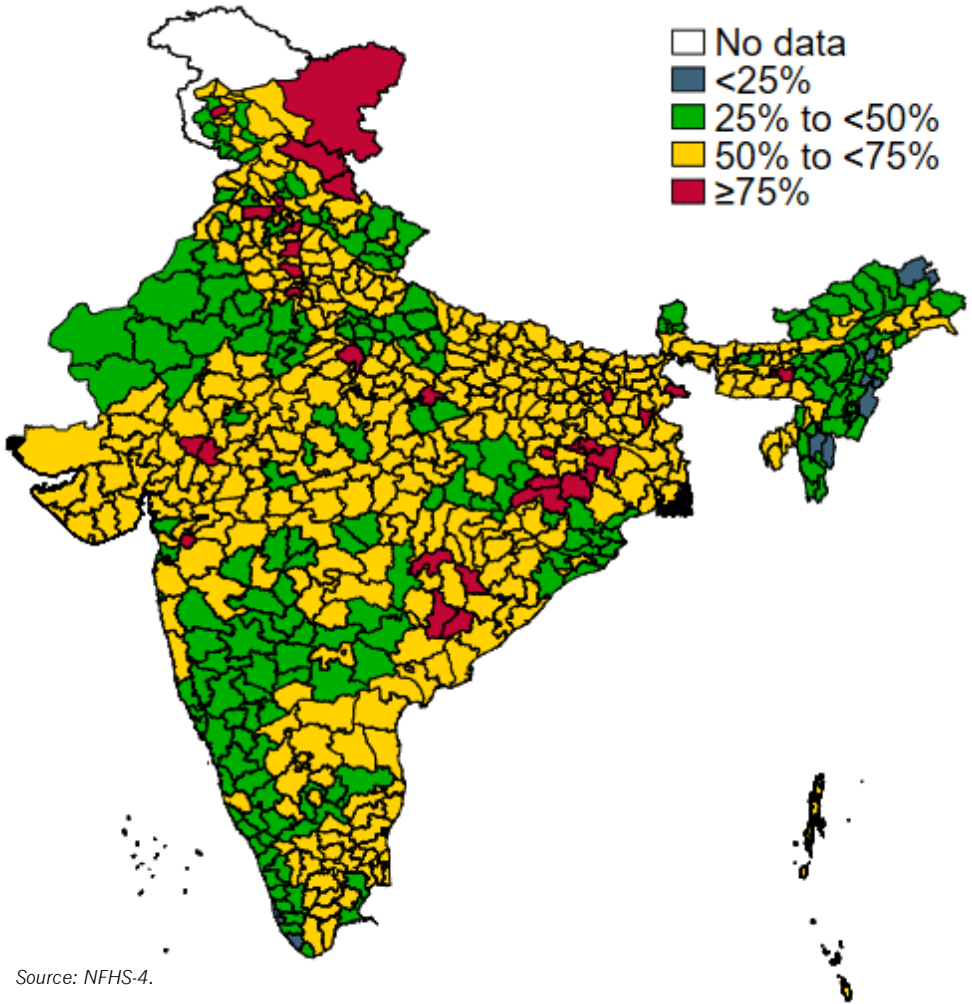
MAP 7 Anemia among pregnant women (15-49 years), by district, 2016



Anemia prevalence	Number of districts
<25%	42
25% to <50%	277
50% to <75%	312
≥75%	9

Source: NFHS-4.

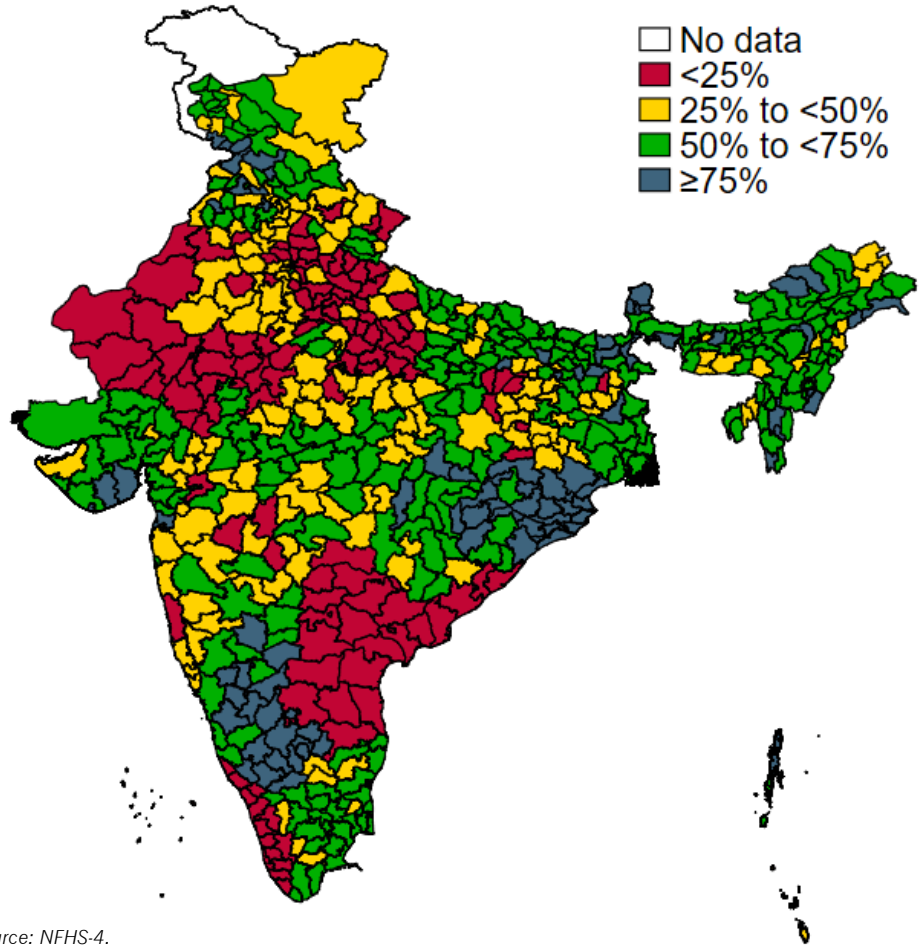
MAP 8 Anemia among lactating women (15-49 years), by district, 2016



Anemia prevalence	Number of districts
<25%	8
25% to <50%	204
50% to <75%	395
≥75%	33

Source: NFHS-4.

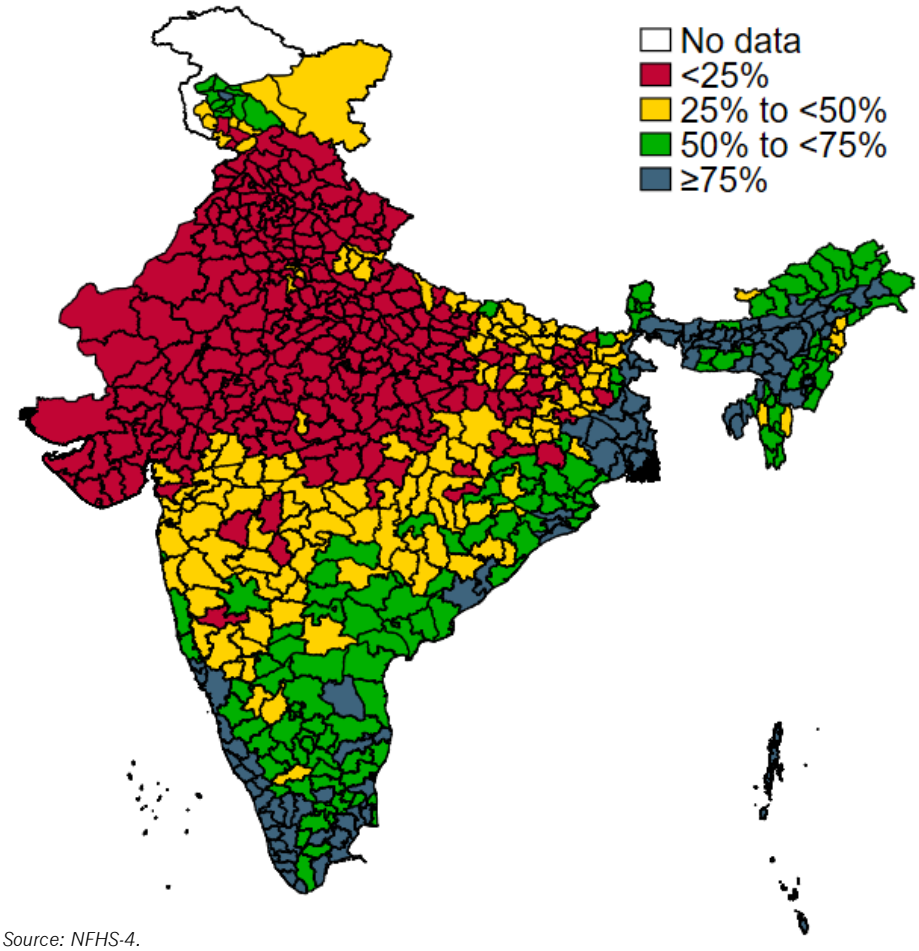
MAP 9 Percentage of women (15-49 years) who consumed dark green leafy vegetables (GLVs), by district, 2016



% of women consuming GLVs	Number of districts
<25%	125
25% to <50%	158
50% to <75%	271
≥75%	86

Source: NFHS-4.

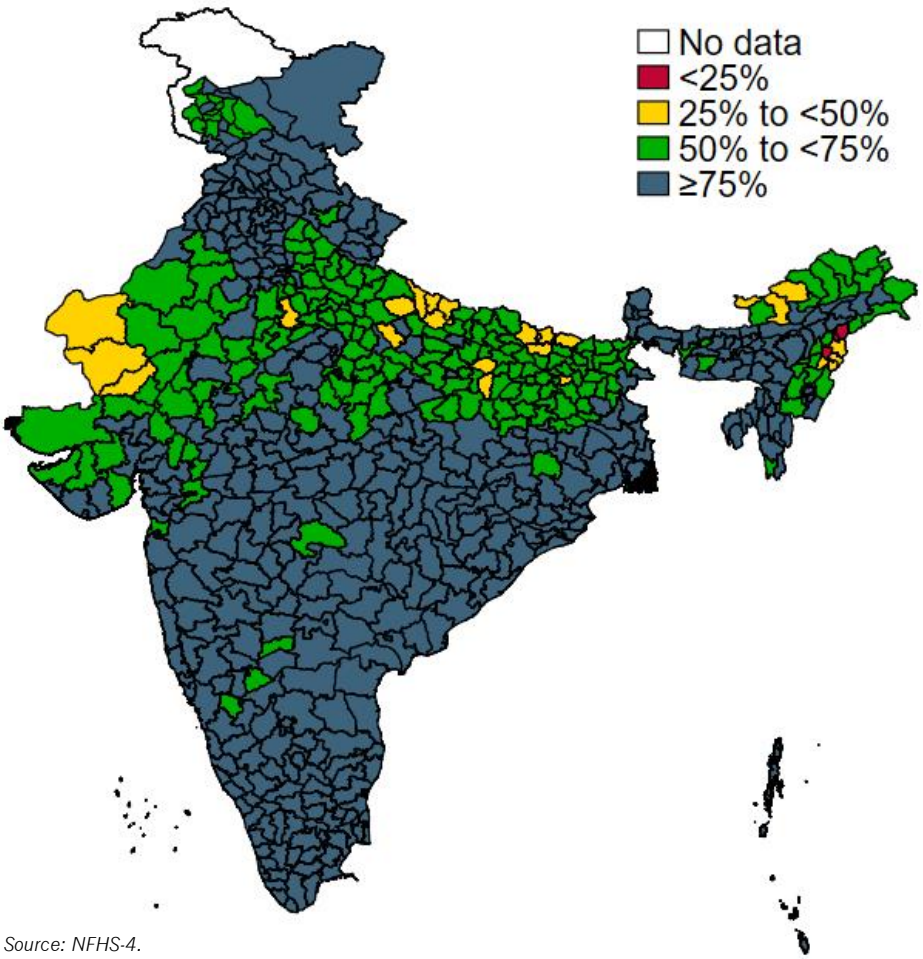
MAP 10 Percentage of women (15-49 years) who consumed fish or meat, by district, 2016



% of women consuming fish/meat	Number of districts
<25%	251
25% to <50%	147
50% to <75%	135
≥75%	107

Source: NFHS-4.

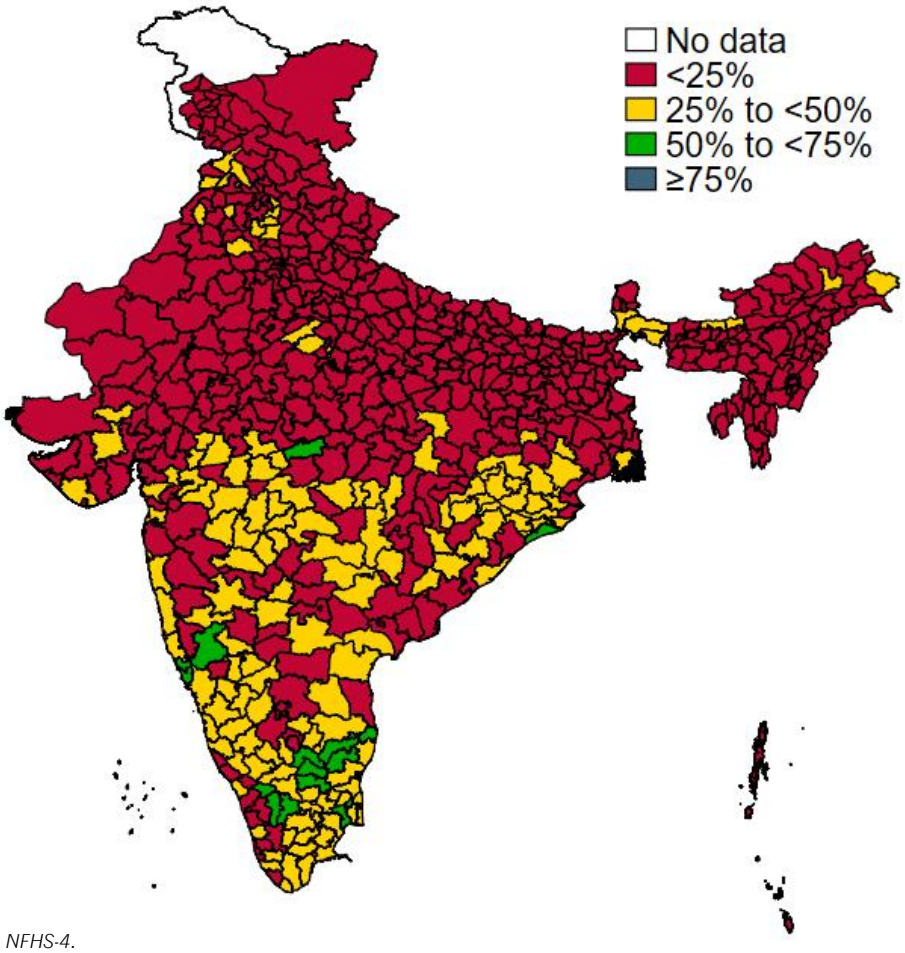
MAP 11 Percentage of women (15-49 years) who received any IFA during pregnancy, by district, 2016



% of women receiving any IFA	Number of districts
<25%	3
25% to <50%	24
50% to <75%	190
≥75%	423

Source: NFHS-4.

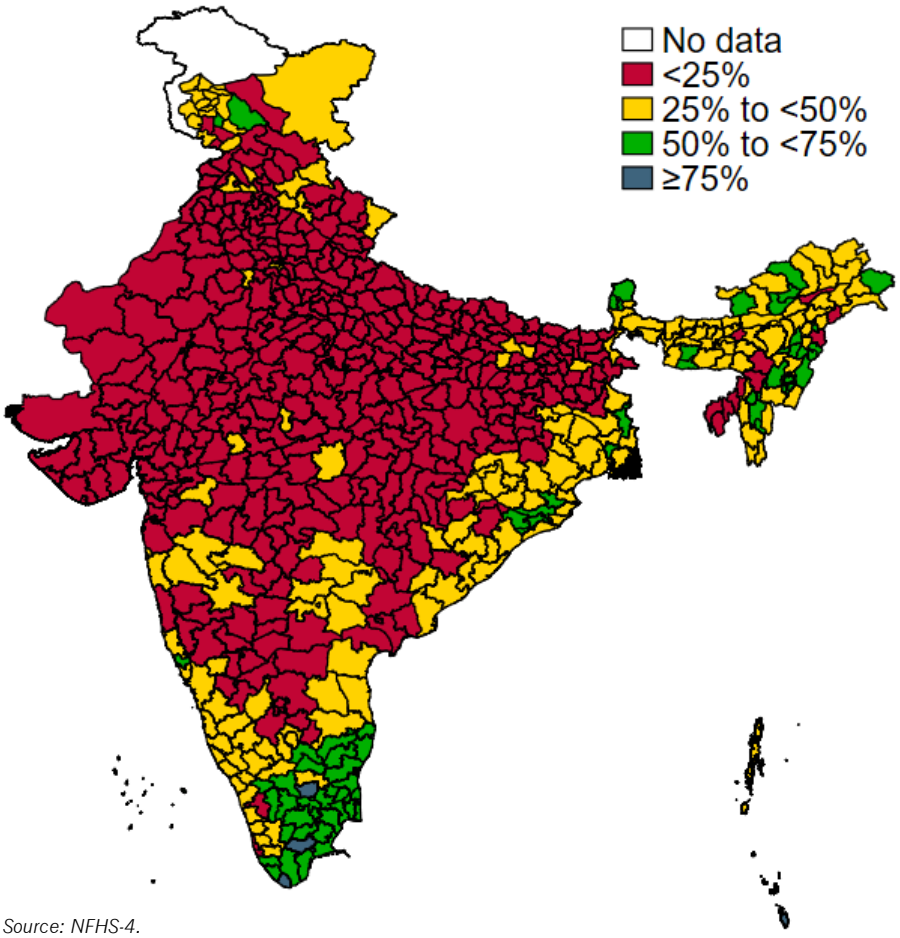
MAP 12 Percentage of women (15-49 years) who received any deworming drug during pregnancy, by district, 2016



% of women receiving deworming drug	Number of districts
<25%	474
25% to <50%	150
50% to <75%	16
≥75%	0

Source: NFHS-4.

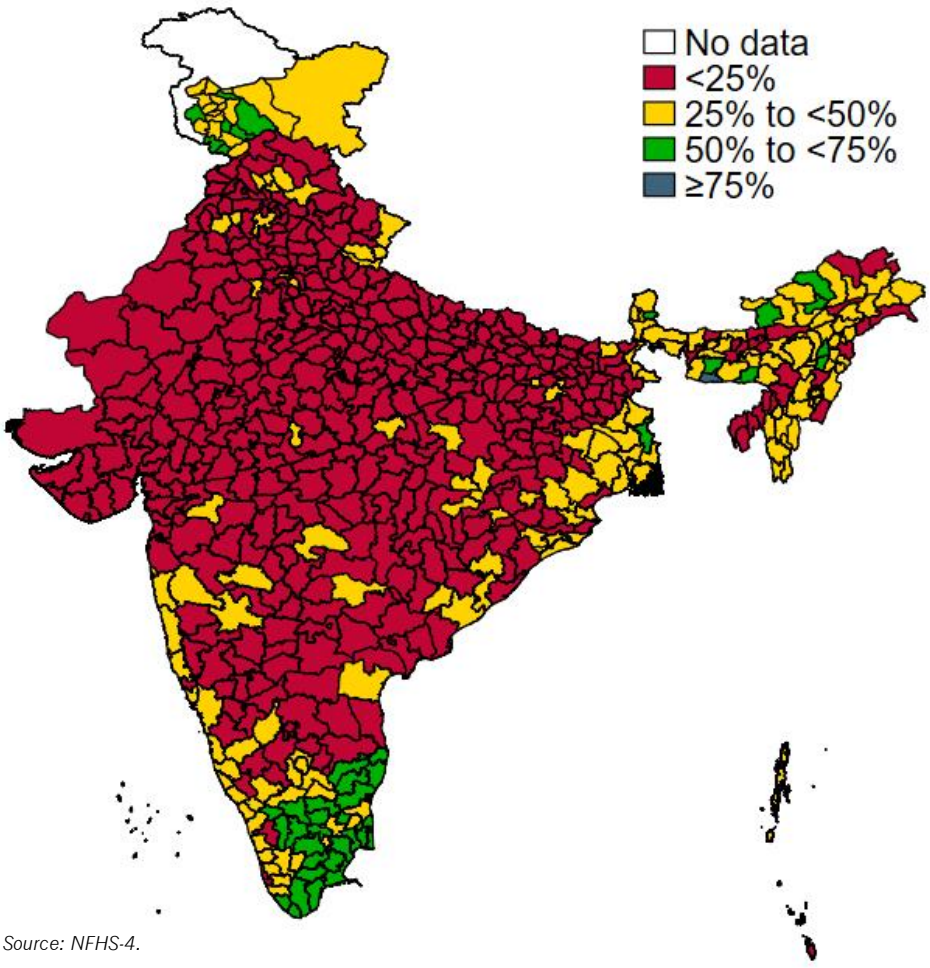
MAP 13 Percentage of children (6-23 months) who received iron-rich food, by district, 2016



% of children consuming iron-rich foods	Number of districts
<25%	388
25% to <50%	179
50% to <75%	67
≥75%	6

Source: NFHS-4.

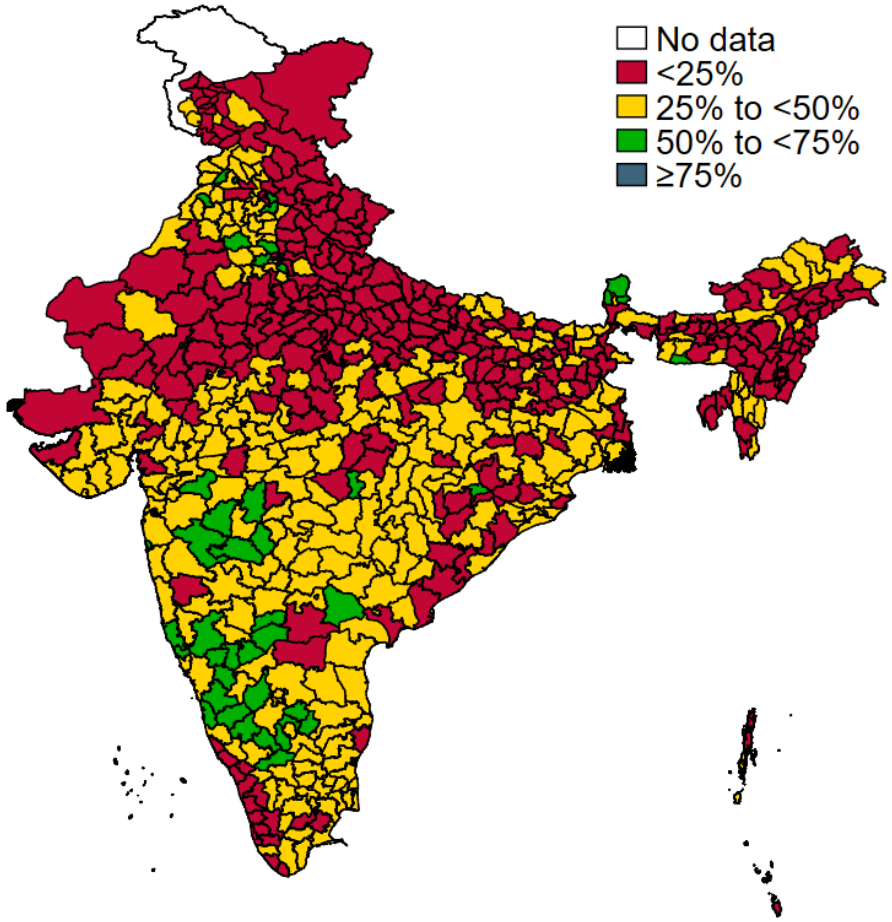
MAP 14 Percentage of children (6-23 months) who achieved dietary diversity, by district, 2016



% of children achieving dietary diversity	Number of districts
<25%	422
25% to <50%	170
50% to <75%	47
≥75%	1

Source: NFHS-4.

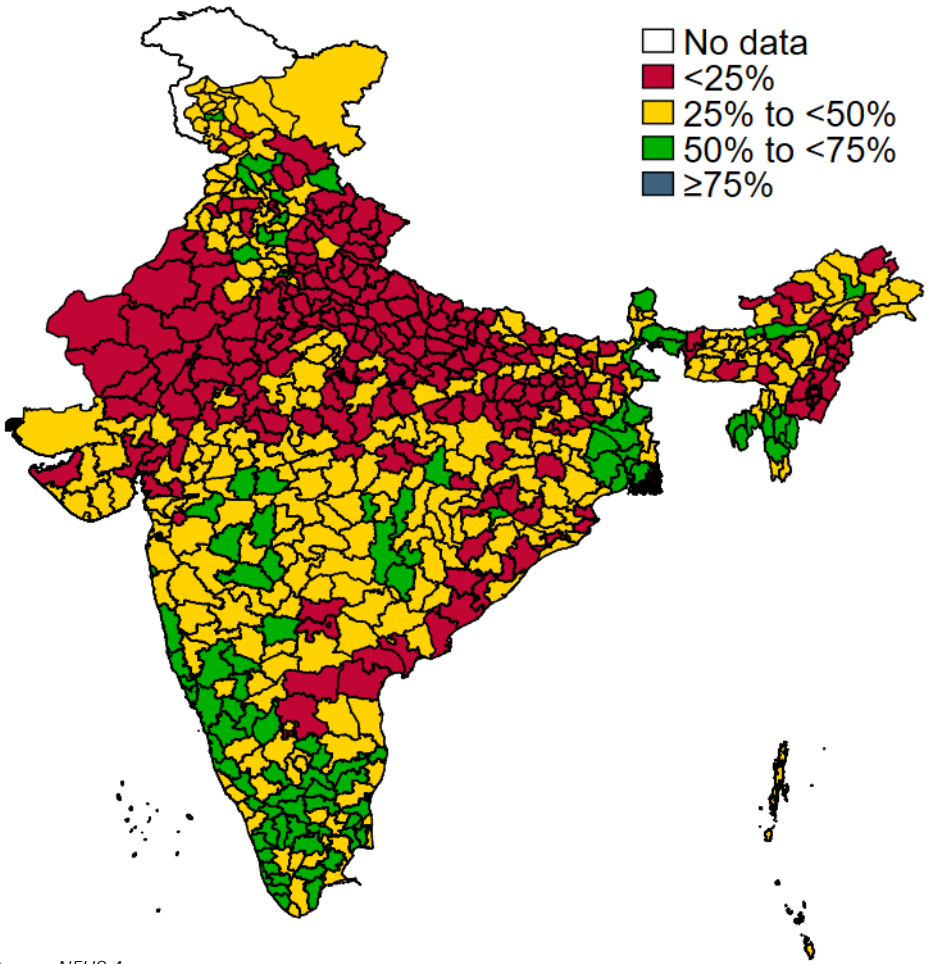
MAP 15 Percentage of children (6-59 months) who received IFA supplements, by district, 2016



% of children receiving IFA	Number of districts
<25%	309
25% to <50%	287
50% to <75%	44
≥75%	0

Source: NFHS-4.

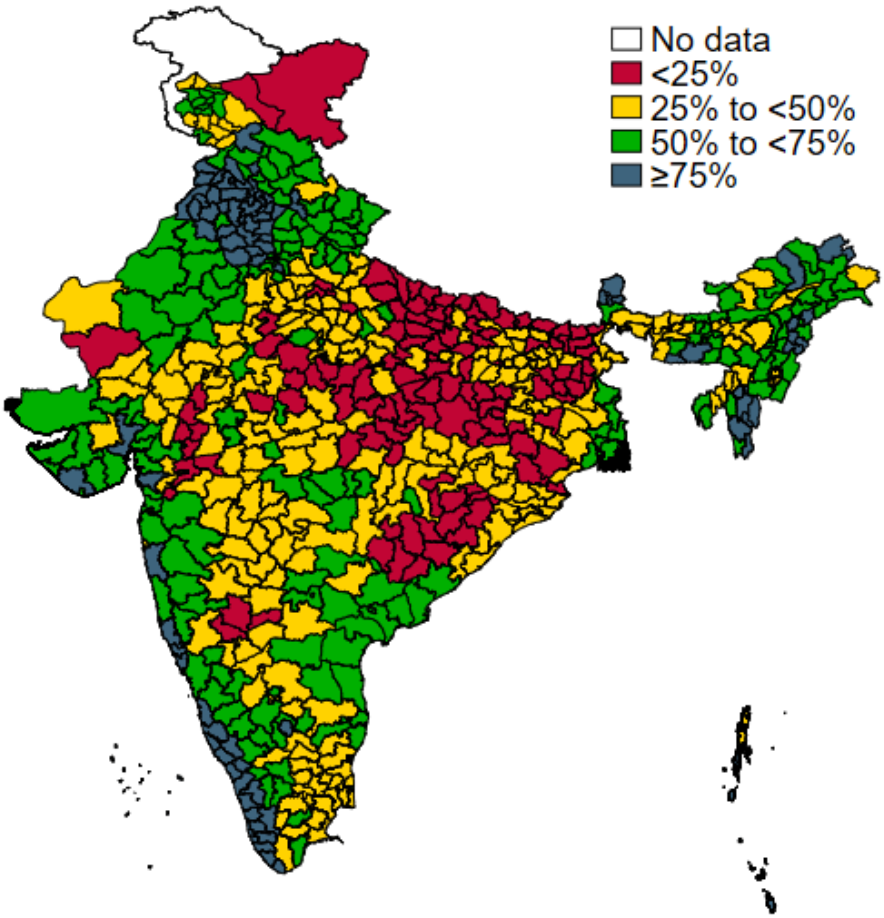
MAP 16 Percentage of children (6-59 months) who received any deworming drug, by district, 2016



% of children receiving deworming drug	Number of districts
<25%	244
25% to <50%	293
50% to <75%	103
≥75%	0

Source: NFHS-4.

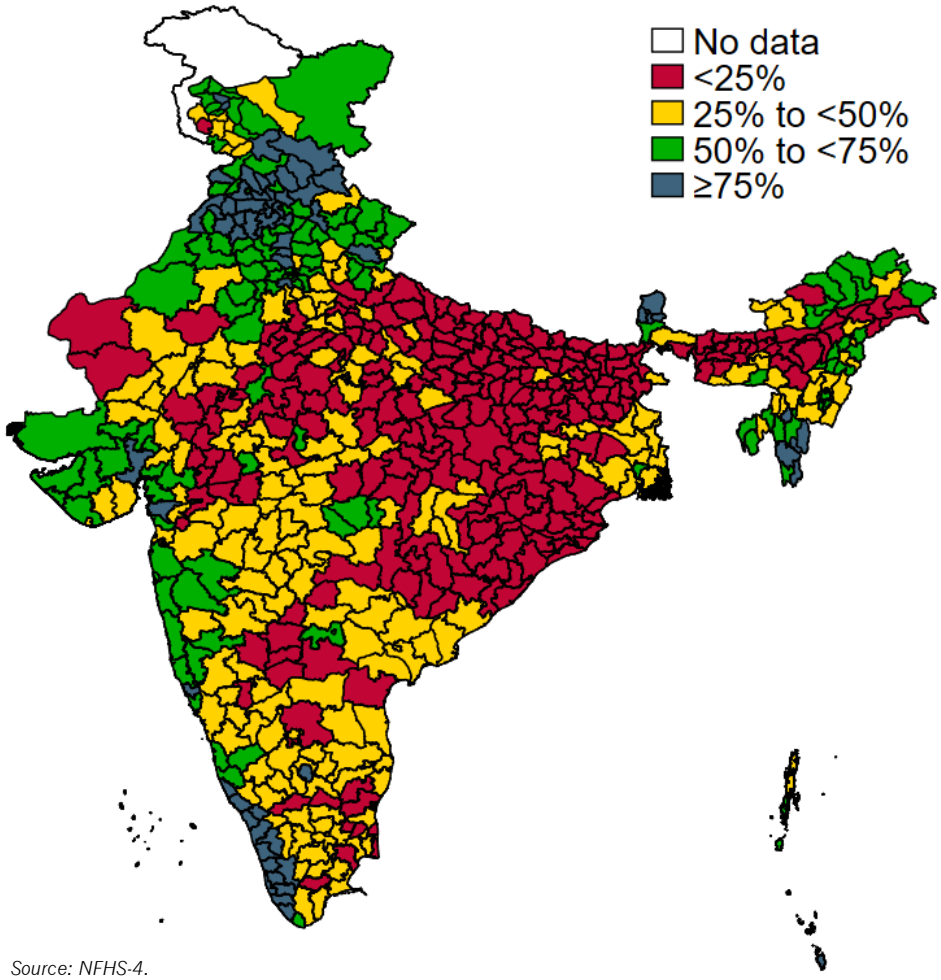
MAP 17 Percentage of households using improved sanitation facilities, by district, 2016



% of households using improved sanitation facilities	Number of districts
<25%	122
25% to <50%	232
50% to <75%	194
≥75%	92

Source: NFHS-4.

MAP 18 Percentage of households where child stool is safely disposed, by district, 2016



% of women practicing safe stool disposal	Number of districts
<25%	253
25% to <50%	190
50% to <75%	125
≥75%	72

Source: NFHS-4.

Summary of findings

Anemia continues to be a significant public health concern in India in both men and women, across the lifespan. Between 2006 and 2016, improvement was slow. There was a moderate decline in anemia prevalence among children below five years of age (11 percentage points), pregnant (7 percentage points) and lactating women (5 percentage points). However, there was nearly no decline in anemia prevalence among adolescents, women of reproductive age and men.

Factors that drive anemia reduction — consumption of green leafy vegetables (GLVs) and animal source foods, sanitation — have room for improvement. Women's consumption of fish or meat and GLVs was low/moderate across districts. Children's dietary diversity and intake of iron-rich foods was extremely low. Poor sanitation continued to be a major problem in 2016.

Coverage of anemia interventions differs by intervention type and population group. Although most women received some IFA during pregnancy, deworming of pregnant women was comparatively low. Pediatric IFA and deworming coverage was low. Coverage of sanitation and safe stool disposal varies greatly across districts, with room for improvement in all the states.

Future efforts need an enhanced focus on anemia reduction among adolescents, women of reproductive age, and men. Improvement in key drivers of anemia reduction — healthy diets, IFA supplementation to target groups, and improved sanitation and hygiene — is necessary to achieve further improvement. Behavior change communication, part of the current Indian policy response to curb anemia, is an important component of interventions targeting these drivers.

ANNEX 1 Definition of indicators used in the analyses

Anemia among adolescent girls	Percentage of adolescent girls (15-19 years) whose haemoglobin levels are less than 120 g/L.
Anemia among adolescent boys	Percentage of adolescent boys (15-19 years) whose haemoglobin levels are less than 120 g/L.
Anemia among women	Percentage of women (20-49 years) who were non-pregnant and non- lactating, whose haemoglobin levels are less than 120 g/L.
Anemia among men	Percentage of men (20-49 years) whose haemoglobin levels are less than 130 g/L.
Anemia among pregnant women	Percentage of pregnant women (15-49 years) whose haemoglobin levels are less than 110 g/L.
Anemia among lactating women	Percentage of lactating women (15-49 years) whose haemoglobin levels are less than 120 g/L.
Anemia among children	Percentage of children (6-59 months) whose haemoglobin levels are less than 110 g/L.
Key drivers of anemia reduction	
Consumption of green-leafy vegetables (daily) - women	Percentage of women (15-49 years) who consumed green-leafy vegetables at least once every day.
Consumption of fish or meat (weekly) - women	Percentage of women (15-49 years) who consumed fish or meat at least once a week.
Received IFA during pregnancy	Percentage of women (15-49 years) with children under 5 years of age who received or bought any IFA tablets/syrup, when they were pregnant with their youngest child.
Deworming during pregnancy	Percentage of women (15-49 years) with children under 5 years of age who received any deworming drug, when they were pregnant with their youngest child.
Consumption of iron rich food - children	Percentage of children (6 -23 months) who received iron-rich food in the last 24 hours.
Dietary diversity among children	Percentage of children (6 -23 months) who received foods from 4 or more food groups in the last 24 hours.
Pediatric IFA	Percentage of last-born children (6-59 months) in the last 5 years, who received iron supplements in the last 7 days prior to the survey.
Deworming among children	Percentage of last-born children (12-59 months) in the last 5 years, who received albendazole or any other deworming drug in the last 6 months prior to the survey.
Improved sanitation	Percentage of households using improved sanitation facilities.
Safe stool disposal	Percentage of households with children under 5 years of age where child stool is safely disposed.

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Lan Tran Mai, Independent Researcher, for support with district-level data extraction from National Family Health Survey factsheets.

Errata (February 2019)

During a post-publication check, we realized the following errors in our Data Note on 'Tracking anemia and its determinants from 2006 to 2016 in India: Insights from the National Family Health Survey-4', first published in September 2018. We apologize for it and request the readers to discard that version. Kindly use the revised version (February 2019) in which the following corrections have been made.

- In 'Map 6: Anemia among men (20-49 years)', the correct number of districts for anemia prevalence of
  - <25% - is 434 in place of 409.
  - 25% to <50% - is 199 in place of 224.
- In 'Map 9: Percentage of women (15-49 years) who consumed dark green leafy vegetables (GLVs)', the correct number of districts for anemia prevalence of
  - <25% - is 125 in place of 129.
  - 25% to <50% - is 158 in place of 142.
  - 50% to <75% - is 271 in place of 259.
  - ≥ 75% - is 86 in place of 110.
- In 'Map 10: Percentage of women (15-49 years) who consumed fish or meat', the correct number of districts for anemia prevalence of
  - <25% - is 251 in place of 389.
  - 25% to <50% - is 147 in place of 176.
  - 50% to <75% - is 135 in place of 70.
  - ≥ 75% - is 107 in place of 5.
- In Maps 1-18, there were erroneous color codes for a few districts, which have now been corrected.

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.

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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