POSHAN
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Data Note
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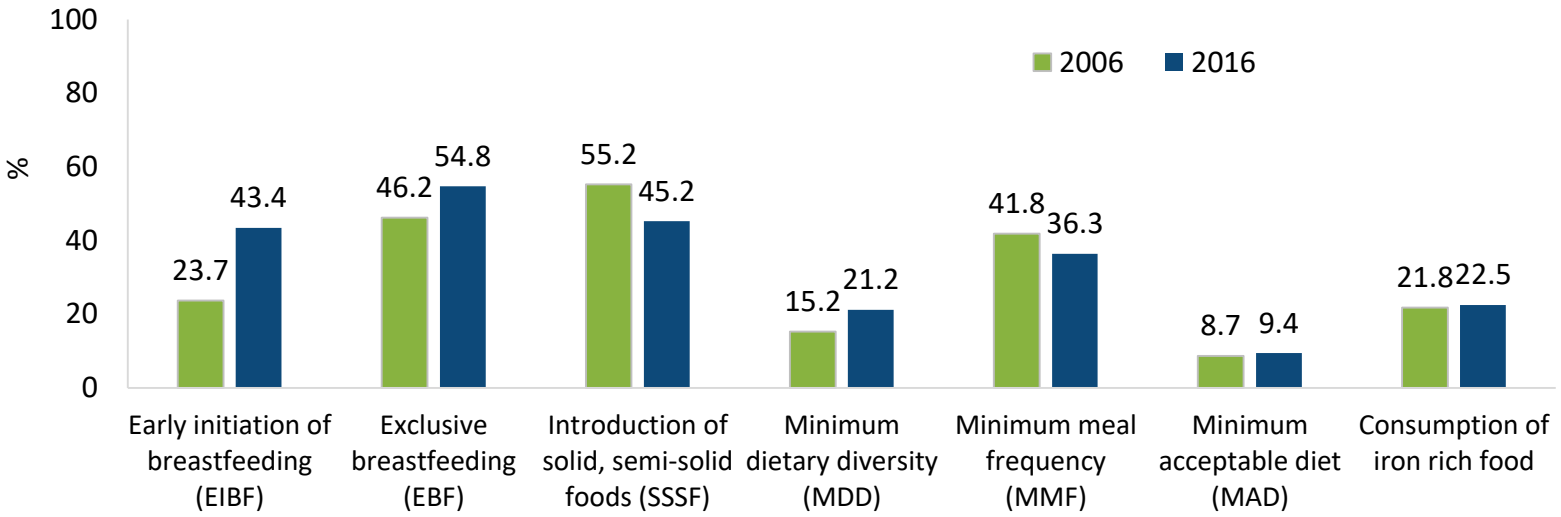
Feeding India's Babies: Trends and Patterns in Infant and Young Child Feeding Practices Across India's States and Districts

ABOUT THIS DATA NOTE

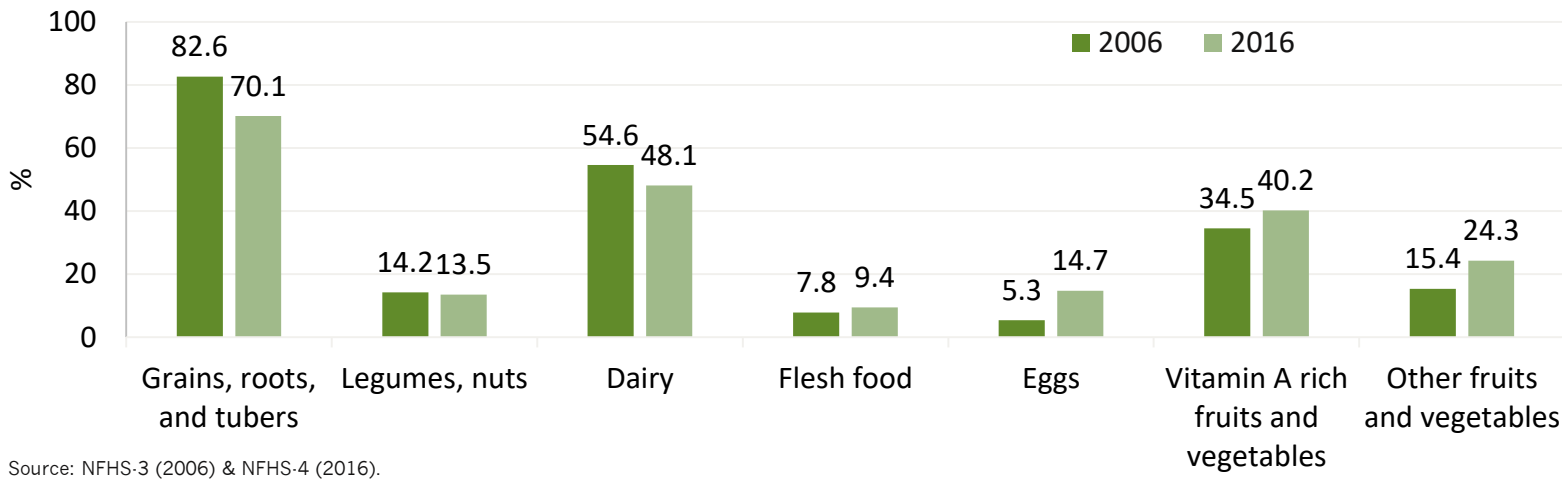
Appropriate nutrition during early life, coming mainly from adequate infant and young child feeding (IYCF) practices, is essential for optimal growth and development. This *Data Note* describes the trends and patterns in key IYCF practices and food consumption patterns among children, summarizing state[1] and district[2] data from the third and fourth rounds of National Family Health Surveys (2006 & 2016).

FIGURE 1 Trends in infant and young child feeding practices, between 2006 and 2016



Source: NFHS-3 (2006) & NFHS-4 (2016).
Note: All the indicators are for last child.

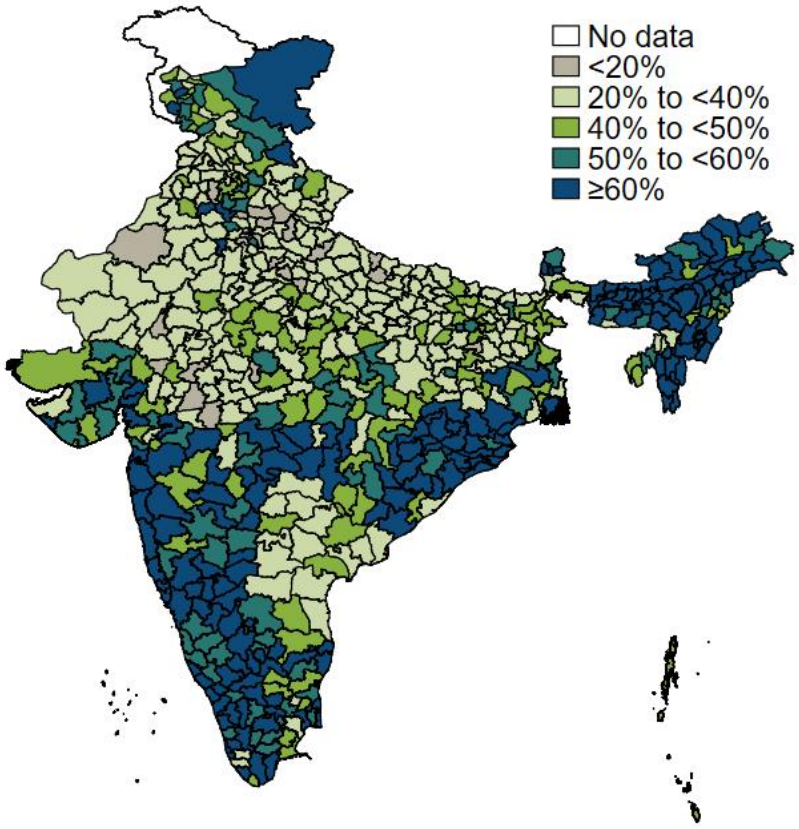
FIGURE 2 Trends in food group consumption among children (6-23 months), between 2006 and 2016



Source: NFHS-3 (2006) & NFHS-4 (2016).
Note: All the indicators are for last child.

[1] This document was developed prior to the Jammu and Kashmir Reorganisation Act, 2019. Hence, it does not take into account the reorganization of the state.
[2] NFHS-4 followed Census 2011 district boundaries and therefore data reported in this Data Note includes 640 districts.

MAP 1 Percentage of children (0-23 months) who were breastfed within one hour of birth, by district, in 2016

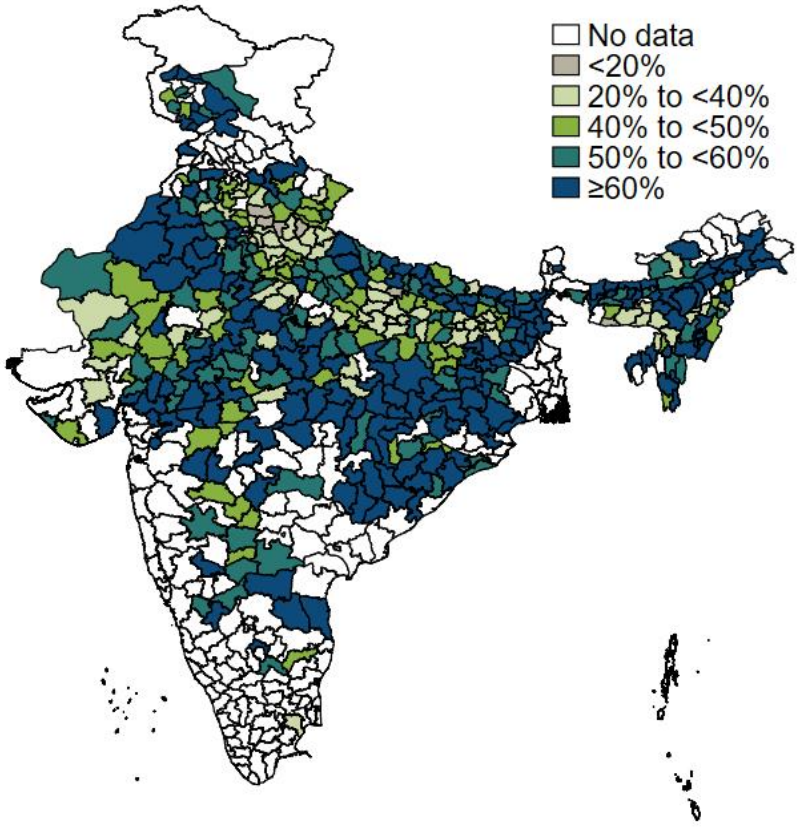


Top 5 districts, %	
Saiha (MZ)	90.8
Baudh (OR)	90.6
North Goa (GA)	89.5
Balangir (OR)	89.0
Nuapada (OR)	88.3

Bottom 5 districts, %	
Meerut (UP)	12.8
Bijnor (UP)	13.4
Rajsamand (RJ)	14.0
Shahjahanpur (UP)	15.0
Bikaner (RJ)	15.5

Source: NFHS-4.
Note: Sample size = 91,086.

MAP 2 Percentage of children (0-5 months) who were exclusively breastfed, by district, in 2016

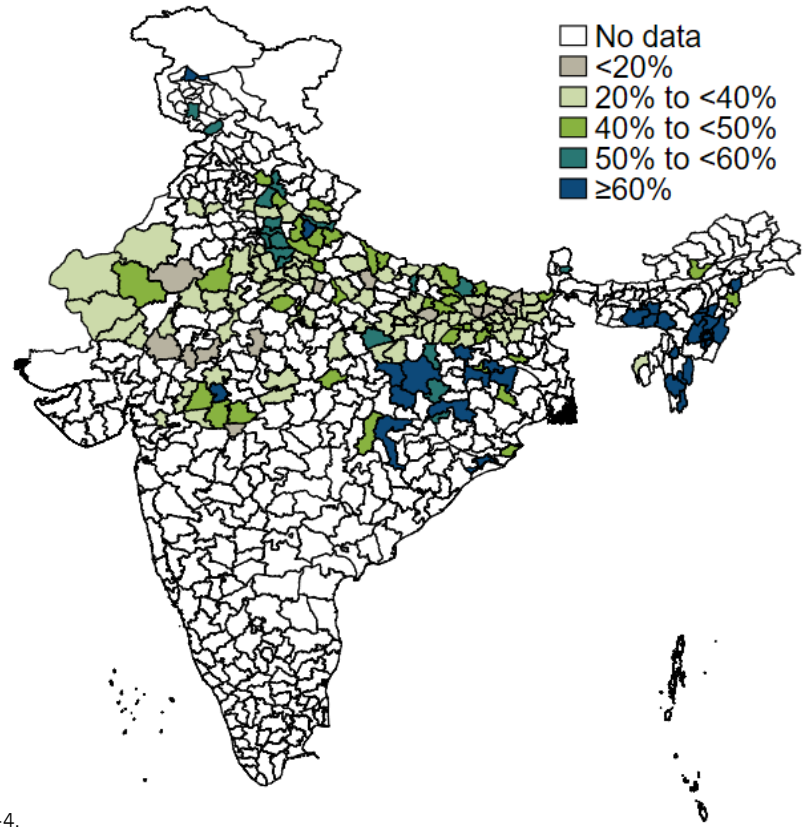


Top 5 districts, %	
Mandsaur (MP)	95.0
Churu (RJ)	91.3
Jhunjhunun (RJ)	89.1
Kurnool (AP)	88.9
Nagpur (MH)	88.1

Bottom 5 districts, %	
South Garo Hills (ML)	10.4
Muzaffarnagar (UP)	13.3
Rampur (UP)	15.0
Meerut (UP)	15.2
Ambedkar Nagar (UP)	17.4

Source: NFHS-4.
Note: Sample size = 22,473; Data not shown for districts with fewer than 25 unweighted cases.

MAP 3 Percentage of children (6-8 months) who received solid/semi solid foods, by district, in 2016

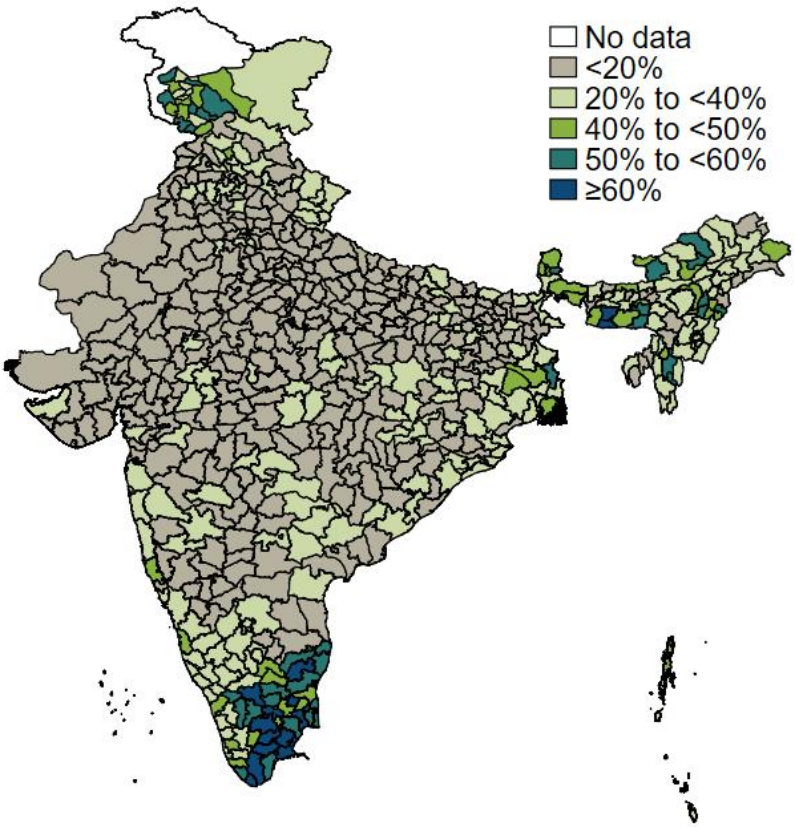


Top 5 districts, %	
Tamenglong (MN)	85.8
Ukhrul (MN)	83.5
Senapati (MN)	83.5
Bishnupur (MN)	83.4
West Khasi Hills (ML)	81.7

Bottom 5 districts, %	
Pratapgarh (RJ)	7.3
Udaipur (RJ)	11.0
Bara Banki (UP)	15.6
Burhanpur (MP)	16.1
Ghazipur (UP)	16.2

Source: NFHS-4.
Note: Sample size = 12,788; Data not shown for districts with fewer than 25 unweighted cases.

MAP 4 Percentage of children (6-23 months) who were fed at least a minimum number of foods groups recommended for their age, by district, in 2016

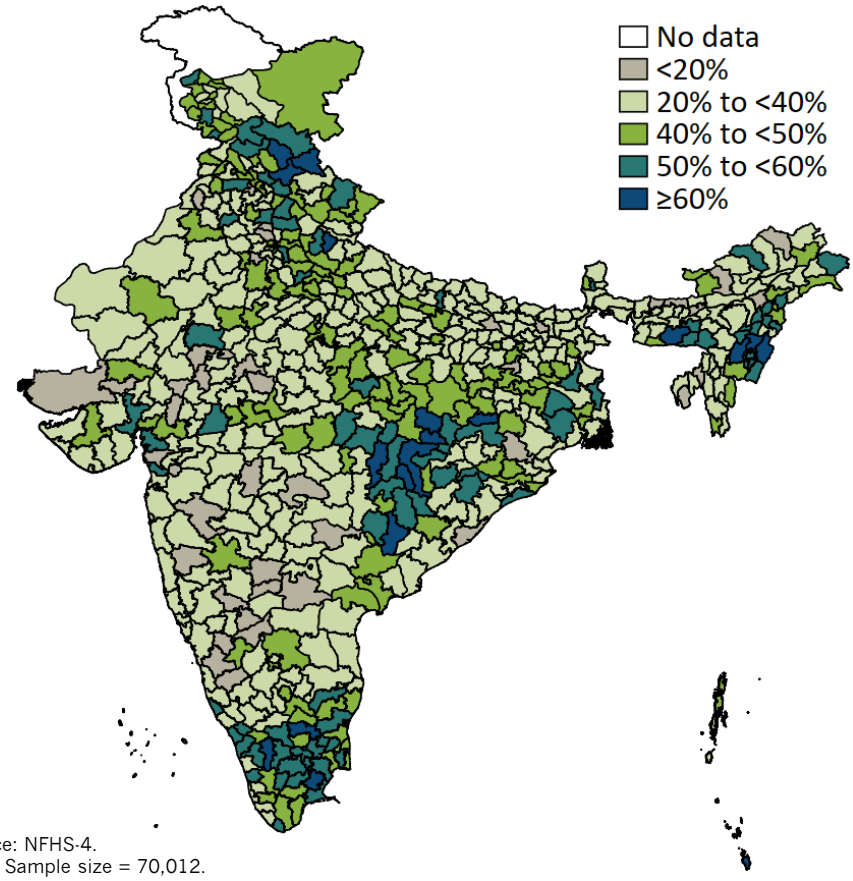


Top 5 districts, %	
South Garo Hills (ML)	78.2
Kanniyakumari (TN)	70.1
Tirunelveli (TN)	68.1
Perambalur (TN)	67.0
Dindigul (TN)	64.8

Bottom 5 districts, %	
Gurdaspur (PB)	1.0
Jhalawar (RJ)	1.1
Dadra and Nagar Haveli (DN)	1.1
Sirsa (HR)	1.7
Jalaun (UP)	2.1

Source: NFHS-4.
Note: Sample size = 71,135.

MAP 5 Percentage of children (6-23 months) who were fed at least as many meals as recommended for their age, by district, in 2016

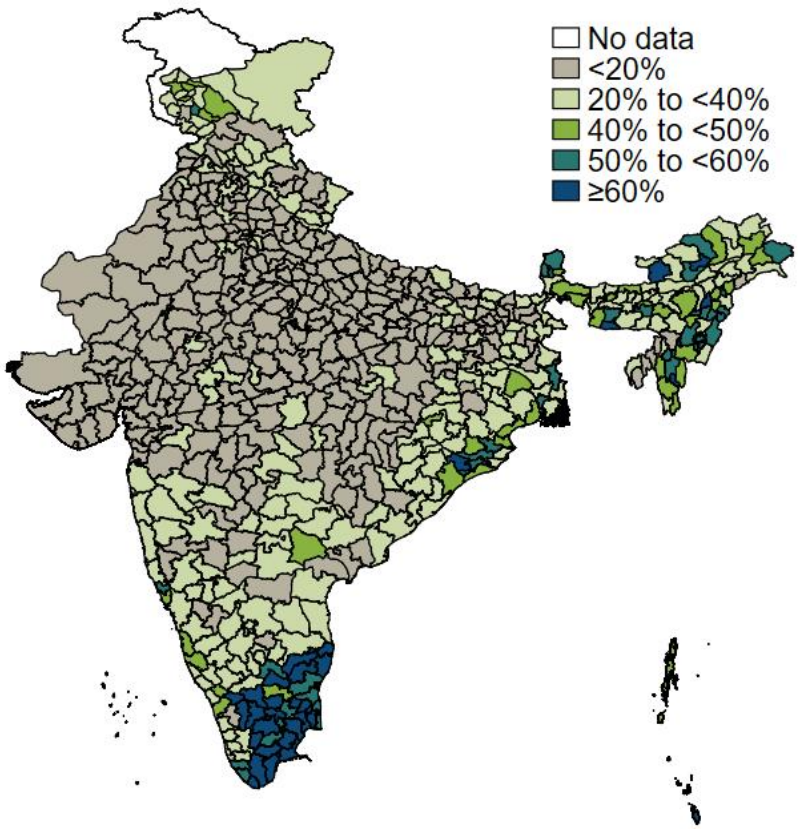


Source: NFHS-4.
Note: Sample size = 70,012.

Top 5 districts, %	
West Khasi Hills (ML)	71.0
Rajnandgaon (CT)	68.7
Kinnaur (HP)	68.0
Tamenglong (MN)	66.4
Chennai (TN)	66.4

Bottom 5 districts, %	
Upper Siang (AR)	9.1
Rajgarh (MP)	10.7
Darrang (AS)	10.9
Fatehgarh Sahib (PB)	11.9
Chittaurgarh (RJ)	12.5

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

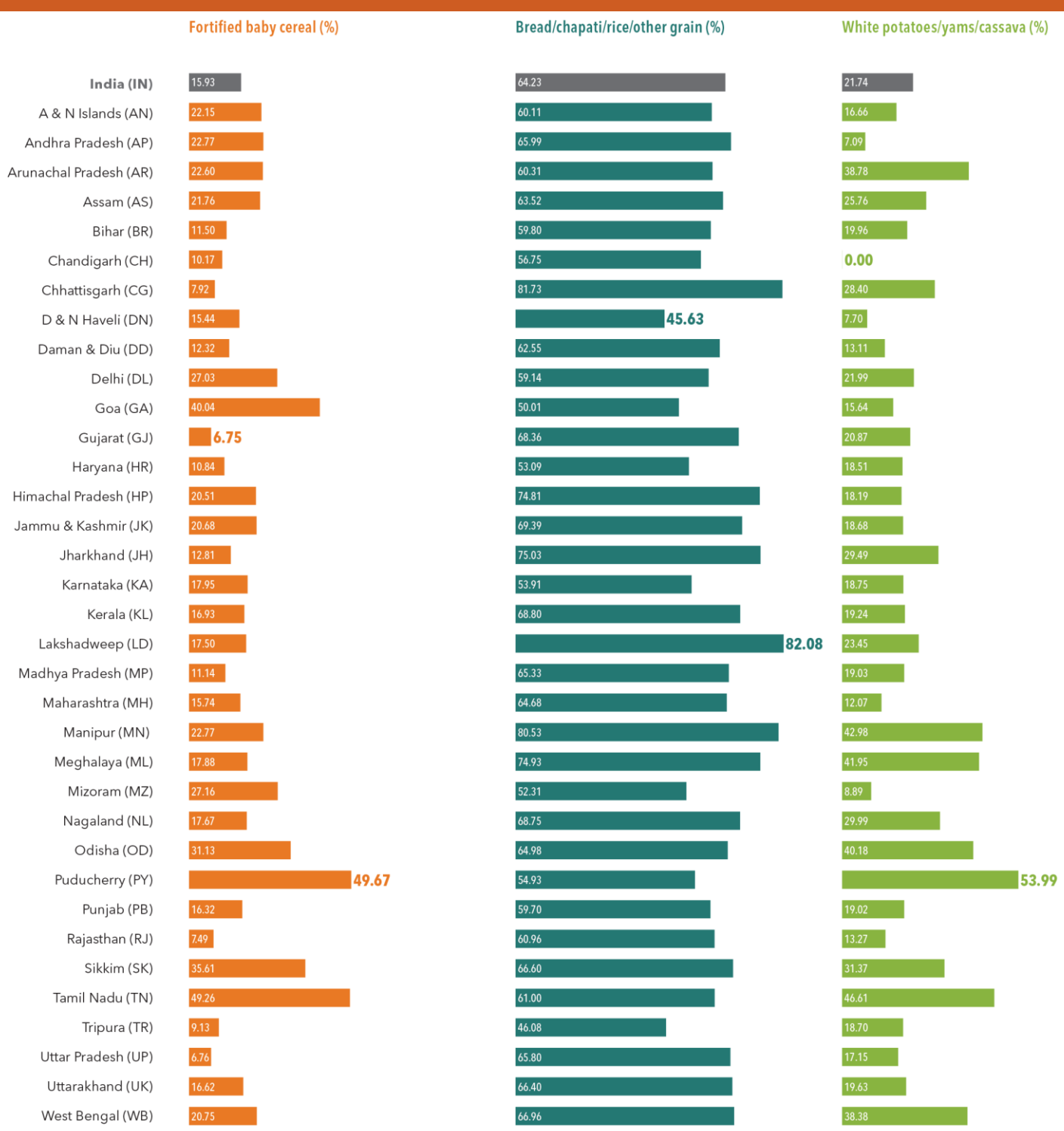


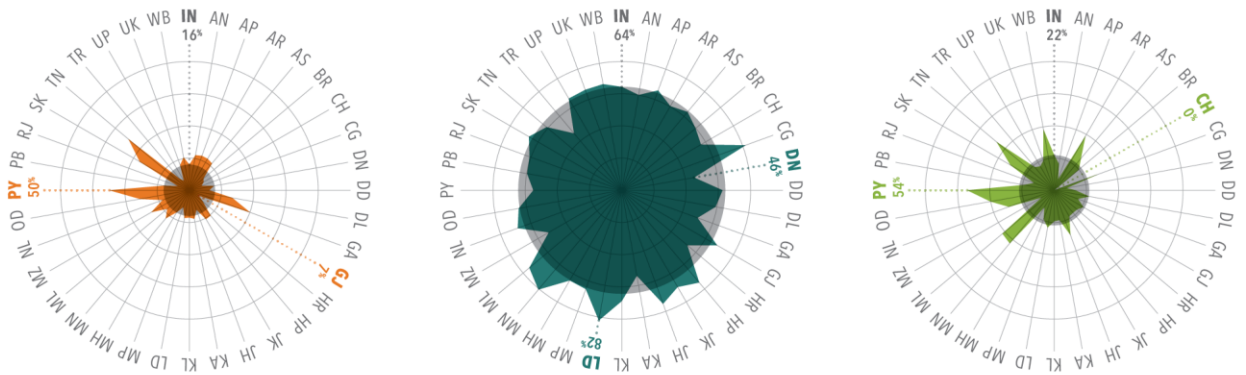
Source: NFHS-4.
Note: Sample size = 71,135.

Top 5 districts, %	
Nicobar (AN)	84.5
Chennai (TN)	81.9
Kanniyakumari (TN)	81.3
Namakkal (TN)	79.4
Karaikal (PY)	76.7

Bottom 5 districts, %	
Budaun (UP)	0.0
Panchmahal (GJ)	1.0
Pilibhit (UP)	1.3
Sidhi (MP)	2.1
Dindori (MP)	2.6

FIGURE 3 Consumption of grains, roots, and tubers among children (6-23 months), by state, in 2016

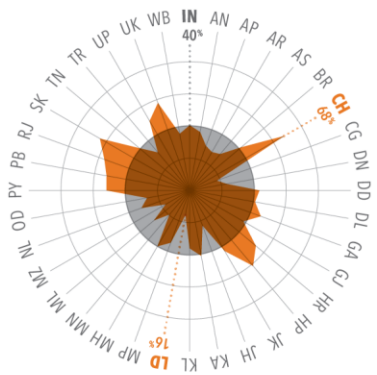


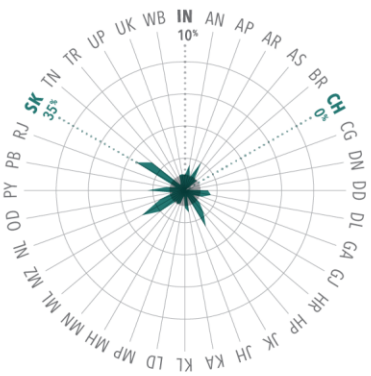


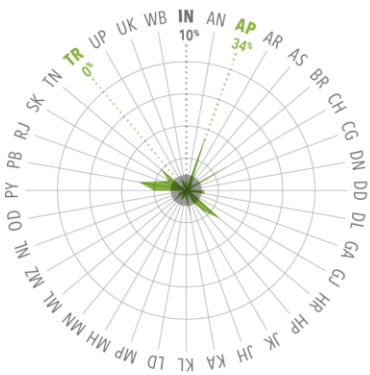
Source: NFHS-4.

FIGURE 4 Consumption of dairy products among children (6-23 months), by state, in 2016

	Tinned/powdered/fresh milk (%)	Cheese/other milk products (%)	Yogurt (%)
India (IN)	40.46	9.64	9.67
A & N Islands (AN)	36.87	15.90	1.97
Andhra Pradesh (AP)	29.43	8.61	**33.69**
Arunachal Pradesh (AR)	27.50	19.92	8.52
Assam (AS)	29.48	8.90	5.04
Bihar (BR)	41.64	9.57	3.73
Chandigarh (CH)	**67.56**	**0.00**	29.33
Chhattisgarh (CG)	17.89	5.92	2.62
D & N Haveli (DN)	23.25	2.30	2.30
Daman & Diu (DD)	43.26	14.22	11.00
Delhi (DL)	41.16	16.27	11.67
Goa (GA)	46.93	11.16	2.95
Gujarat (GJ)	38.40	5.71	6.24
Haryana (HR)	53.54	11.61	27.06
Himachal Pradesh (HP)	61.18	17.75	16.69
Jammu & Kashmir (JK)	43.42	25.80	8.73
Jharkhand (JH)	23.20	3.64	1.41
Karnataka (KA)	41.22	13.67	16.17
Kerala (KL)	36.00	10.76	4.96
Lakshadweep (LD)	**15.57**	3.40	3.33
Madhya Pradesh (MP)	34.54	8.51	4.94
Maharashtra (MH)	40.04	9.60	7.13
Manipur (MN)	19.50	8.52	2.43
Meghalaya (ML)	28.86	20.18	11.05
Mizoram (MZ)	17.16	30.67	4.53
Nagaland (NL)	31.86	16.33	5.77
Odisha (OD)	26.86	7.33	0.96
Puducherry (PY)	51.70	23.06	20.00
Punjab (PB)	52.46	11.73	29.71
Rajasthan (RJ)	56.42	5.90	16.37
Sikkim (SK)	64.40	**34.81**	12.61
Tamil Nadu (TN)	40.81	26.92	21.00
Tripura (TR)	30.77	4.46	**0.00**
Uttar Pradesh (UP)	49.82	5.36	4.66
Uttarakhand (UK)	57.83	10.07	8.88
West Bengal (WB)	35.76	10.21	3.66



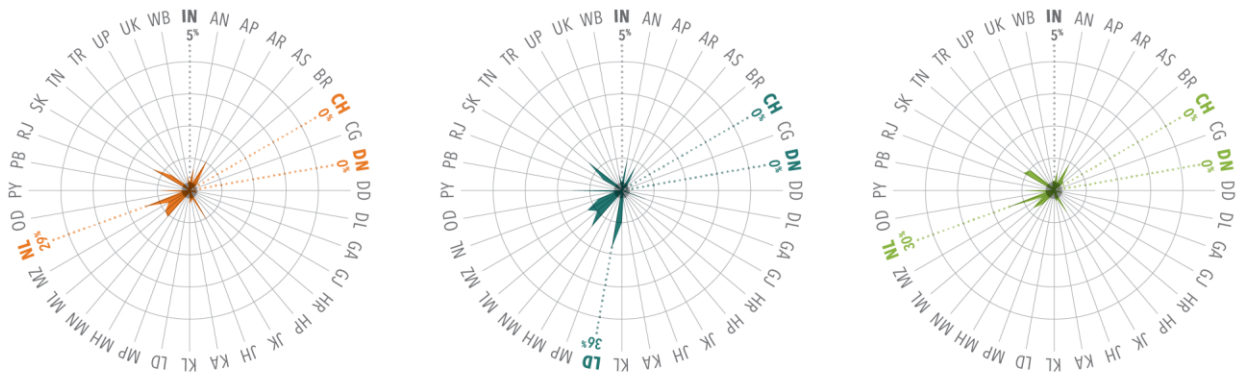




Source: NFHS-4.

FIGURE 5 Consumption of flesh foods among children (6-23 months), by state, in 2016

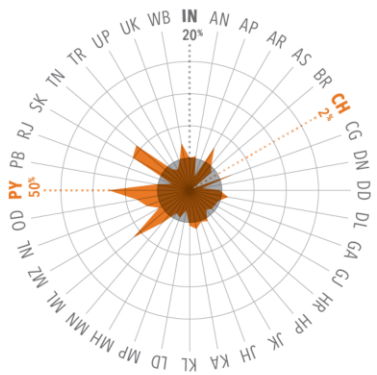
	Chicken/duck/other birds (%)	Fish/shellfish (%)	Liver/kidney/heart (%)
India (IN)	4.89	4.86	5.25
A & N Islands (AN)	13.56	19.22	11.48
Andhra Pradesh (AP)	4.92	2.66	4.55
Arunachal Pradesh (AR)	20.98	16.25	18.56
Assam (AS)	8.65	6.82	7.99
Bihar (BR)	5.99	3.88	7.55
Chandigarh (CH)	**0.00**	**0.00**	**0.00**
Chhattisgarh (CG)	3.46	1.72	2.69
D & N Haveli (DN)	**0.00**	**0.00**	**0.00**
Daman & Diu (DD)	5.10	6.26	0.75
Delhi (DL)	3.21	1.95	3.92
Goa (GA)	5.02	15.55	5.16
Gujarat (GJ)	1.43	1.06	0.95
Haryana (HR)	1.36	0.78	2.78
Himachal Pradesh (HP)	1.24	0.08	1.90
Jammu & Kashmir (JK)	20.81	6.50	15.59
Jharkhand (JH)	5.56	2.63	5.77
Karnataka (KA)	6.46	5.34	6.78
Kerala (KL)	8.09	19.84	2.04
Lakshadweep (LD)	1.07	**36.05**	1.09
Madhya Pradesh (MP)	2.44	1.78	2.98
Maharashtra (MH)	4.01	3.48	4.98
Manipur (MN)	21.30	29.12	11.24
Meghalaya (ML)	19.58	19.84	16.84
Mizoram (MZ)	14.81	24.54	8.46
Nagaland (NL)	**28.88**	15.46	**29.68**
Odisha (OD)	4.77	4.52	4.98
Puducherry (PY)	17.64	30.41	17.88
Punjab (PB)	0.51	0.57	1.29
Rajasthan (RJ)	0.65	0.25	1.16
Sikkim (SK)	26.15	13.10	21.80
Tamil Nadu (TN)	14.51	26.85	19.24
Tripura (TR)	5.31	4.66	4.96
Uttar Pradesh (UP)	1.30	0.75	1.85
Uttarakhand (UK)	1.64	0.85	2.83
West Bengal (WB)	8.75	9.89	6.37

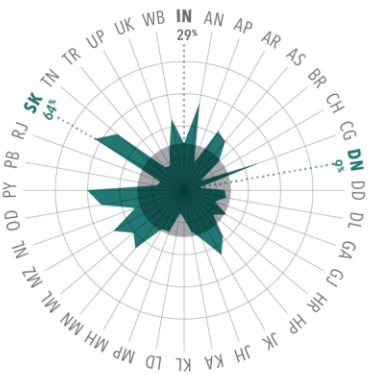


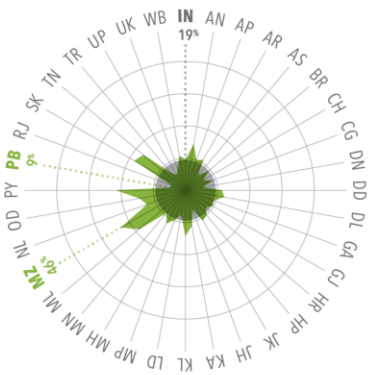
Source: NFHS-4.

FIGURE 6 Consumption of vitamin-A rich fruits and vegetables among children (6-23 months), by state, in 2016

	Pumpkin/carrots/squash (%)	Any dark green leafy vegetables (%)	Ripe mangoes/papayas/ other vitamin A-rich fruits (%)
India (IN)	20.06	29.01	18.77
A & N Islands (AN)	21.57	54.91	29.17
Andhra Pradesh (AP)	9.05	18.12	19.82
Arunachal Pradesh (AR)	30.61	42.31	21.92
Assam (AS)	20.82	39.49	11.94
Bihar (BR)	17.38	28.2	18.66
Chandigarh (CH)	1.85	11.8	12.62
Chhattisgarh (CG)	28.03	48.9	17.61
D & N Haveli (DN)	7.67	9.48	10.81
Daman & Diu (DD)	18.46	25.23	22.68
Delhi (DL)	24.21	26.44	24.42
Goa (GA)	19	20.25	18.53
Gujarat (GJ)	18.12	30.25	19.47
Haryana (HR)	17.89	23.4	16.51
Himachal Pradesh (HP)	15.79	37.47	20.31
Jammu & Kashmir (JK)	22.03	46.3	21.61
Jharkhand (JH)	20.78	32.21	12.6
Karnataka (KA)	24.33	26.02	22.42
Kerala (KL)	21.95	17.52	28.22
Lakshadweep (LD)	12.7	14.25	15.51
Madhya Pradesh (MP)	17.93	27.18	19.54
Maharashtra (MH)	16.24	27.8	23.84
Manipur (MN)	26.2	46.96	18.22
Meghalaya (ML)	45.59	41.09	37.76
Mizoram (MZ)	21.73	50.49	46.09
Nagaland (NL)	28.32	32.22	25.33
Odisha (OD)	33.22	52.17	29.1
Puducherry (PY)	50.25	60.2	43.02
Punjab (PB)	21.14	17.23	9.36
Rajasthan (RJ)	11.46	15.64	9.38
Sikkim (SK)	40.83	63.86	36.71
Tamil Nadu (TN)	43.25	54.3	34.22
Tripura (TR)	16.73	18.59	14.19
Uttar Pradesh (UP)	14.83	17.49	10.86
Uttarakhand (UK)	18.43	26.51	14.17
West Bengal (WB)	29.47	44.74	21.71

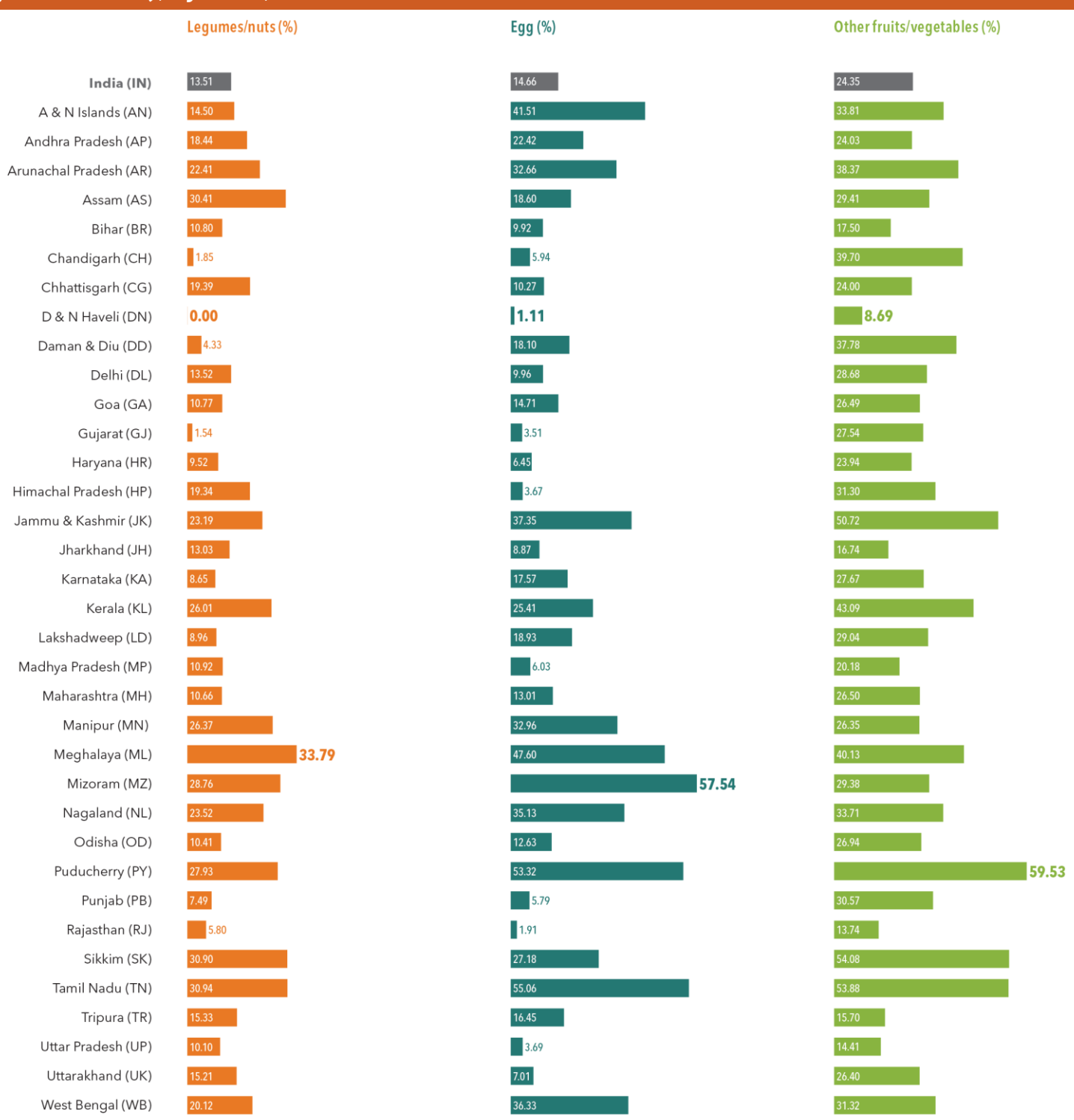


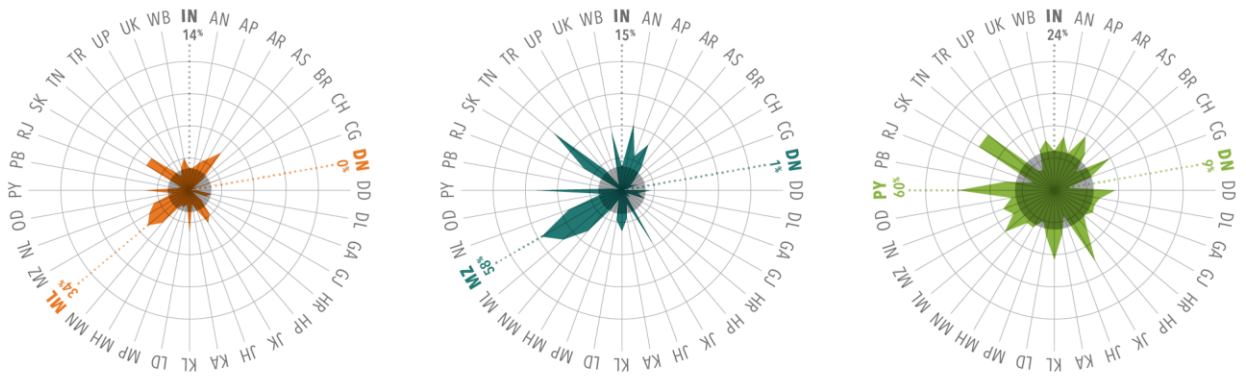




Source: NFHS-4.

FIGURE 7 Consumption of legumes and nuts, egg, and other fruits and vegetables among children (6-23 months), by state, in 2016





Source: NFHS-4.

TABLE 1 Number of districts in different prevalence categories for each IYCF practice indicator

IYCF practices	Prevalence category (%)					Number of districts with no data[3]
	0-19.9	20-39.9	40-49.9	50-59.9	≥60	
	Number of districts in prevalence categories					
Early initiation of breastfeeding	24	233	113	88	182	0
Exclusive breastfeeding	6	66	69	96	186	217
Timely introduction of solid and semi solid food	13	79	37	18	32	461
Minimum dietary diversity	344	201	42	38	15	0
Minimum meal frequency	42	341	151	86	20	0
Iron-rich food	310	213	44	37	36	0

[3] Districts with fewer than 25 unweighted cases were not included.

Key findings, messages and recommendations

Data on the trends and patterns in infant and young child feeding practices and food consumption patterns among children highlight that IYCF practices are poor and that food consumption patterns vary widely by districts and states. Major data gaps, mainly due to small sample sizes, mean that in several districts, it is not possible to know how babies are fed.

Early Initiation of Breastfeeding (EIBF) & Exclusive Breastfeeding (EBF) : Between 2006 and 2016, there was a significant improvement in breastfeeding practices (Figure 1). EIBF nearly doubled (from 23 percent to 42 percent), and EBF increased from 46 percent to 55 percent during this period. However, it is concerning to note that in 2016, out of 640 districts, prevalence of EIBF was 60 percent or higher in less than a third of the districts (Map 1). Data for exclusively breastfed children was available only in 423 out of 640 districts. Hence, there is a need to:

- Close the data gaps for exclusive breastfeeding.
- Promote EIBF and EBF through concerted behavior change communication.

Timely introduction of solid/semi-solid food : Between 2006 and 2016, there was nearly a 10-percentage-point decline in the timely introduction of solid or semi-solid foods (from 55 percent to 45 percent). In 2016, data for children (6-8 months) who received solid/semi solid foods in a timely manner was available in less than a third of the districts (only in 179 out of 640 districts). Of these 179 districts, timely introduction of solid/semi-solid foods was ≥60 percent in only 32 districts (Map 3). This indicates that:

- Complementary feeding practices need special emphasis through intense behavior change communication and accompanying interventions such as the use of the ICDS food supplements.
- A narrow age range for the timely introduction indicator leads to huge data gaps. Innovative approaches to close this are needed.

Minimum Dietary Diversity (MDD) : Between 2006 and 2016, MDD increased slightly (15 percent to 21 percent). But in 2016, in more than half the districts in the country (344 out of 640 districts), the level of MDD was ≤ 20 percent, which is a matter of concern (Map 4). Of the 15 districts where MDD was more than 60 percent, most were in Tamil Nadu.

Trends in food group consumption patterns among children (6-23 months), between 2006 and 2016, show a marginal improvement in the consumption of flesh foods, eggs, vitamin-A rich fruits and vegetables and other fruits and vegetable (Figure 2). However, there was a decline in the consumption of some food groups including grains, roots and tubers, legumes and nuts, and dairy products.

In 2016, only 13 percent of children (6-23 months) in India consumed foods from legumes & nuts group. Less than a quarter of children (24 percent) consumed other fruits and vegetables.

Only 15 percent of children consumed eggs and just about 9 percent consumed flesh foods, in 2016. This calls for:

- A nation-wide campaign to increase awareness on the importance of dietary diversity to make better diets aspirational.
- Highlighting the nutrient benefits of legumes & nuts, flesh foods and eggs and promoting their consumption, especially among growing children.
- Promotion of dietary diversity through agricultural, livelihood, and social safety-net interventions.
- Investing in addressing major food systems issues, including food prices and food availability to ensure diet diversity.

Minimum Meal Frequency (MMF) and Minimum Acceptable Diet (MAD): It is a matter of concern that MMF decreased from 42 percent in 2006 to 36 percent in 2016. Minimum acceptable diet (~9 percent) was extremely low and did not change much over this period (Figure 1). The Comprehensive National Nutrition Survey (CNNS) results of 2016-18 also show that only 6.4 percent of children under the age of two years get minimum acceptable diet in India. To meet the nutrition targets set by the National Nutrition Mission (or POSHAN Abhiyaan), it is essential to:

- Examine the role of Take-Home Rations, under the Integrated Child Development Services' Supplementary Nutrition Program, in relation to the overall feeding patterns.
- Improve policy guidance, policy coordination and monitoring of existing programs on food supplementation and fortification.

Consumption of iron-rich foods: Between 2006 and 2016, consumption of iron-rich foods remained stagnant at around 20 percent. In 2016, out of 640 districts, consumption of iron-rich foods was ≥60 percent in only 36 districts (Map 6). Districts with the highest levels of iron-rich food consumption (>70 percent) in 2016, were in Tamil Nadu, Meghalaya, Puducherry and Andaman & Nicobar Islands.

A primary reason to encourage the consumption of iron-rich food is that iron deficiency is an important cause of anemia, which is widely prevalent among 1-4 year-old children according to CNNS 2016-18. To encourage the consumption of iron-rich foods, it is important to:

- Generate awareness about the health benefits of an iron-rich diet, its sources, and the significance of adding a source of vitamin C to enhance iron absorption.
- Improve availability of data on outcomes and determinants of iron deficiency, and their relation to food consumption patterns.
- Improve policy guidance, policy coordination and monitoring of existing programs on iron supplementation and iron fortification.

Definitions

Early initiation of breastfeeding: Proportion of children born in the last 24 months who were put to the breast within one hour of birth.
Exclusive breastfeeding: Proportion of infants 0–5 months of age who are fed exclusively with breast milk.
Introduction of solid, semi-solid foods: Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods.
Minimum dietary diversity: Proportion of children 6–23 months of age who receive foods from 4 or more food groups.
Minimum meal frequency: Proportion of breastfed and non-breastfed children 6–23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more.
Minimum acceptable diet: Proportion of children 6–23 months of age who receive a minimum acceptable diet (apart from breast milk).
Consumption of iron rich food: Proportion of children 6–23 months of age who receive an iron-rich food or iron-fortified food that is specially designed for infants and young children, or that is fortified in the home.

Source: https://www.who.int/nutrition/publications/infantfeeding/9789241599290/en/

Note: 1. The number of districts in the maps for exclusive breastfeeding and for introduction of solid/semi-solid foods are 423 and 179, respectively, because the districts with fewer than 25 unweighted cases were not included. 2. Estimates used in this Data Note are for both breastfed children and non-breastfed children.

Codes for States and Union Territories

AN - Andaman & Nicobar Islands
AP - Andhra Pradesh
AR - Arunachal Pradesh
AS - Assam
BR - Bihar
CH - Chandigarh
CT - Chhattisgarh
DN - Dadra & Nagar Haveli
DD - Daman & Diu
DL - Delhi
GA - Goa
GJ - Gujarat
HR - Haryana
HP - Himachal Pradesh
JK - Jammu & Kashmir
JH - Jharkhand
KA - Karnataka
KL - Kerala
LD - Lakshadweep
MP - Madhya Pradesh
MH - Maharashtra
MN - Manipur
ML - Meghalaya
MZ - Mizoram
NL - Nagaland
OR - Odisha
PY - Puducherry
PB - Punjab
RJ - Rajasthan
SK - Sikkim
TN - Tamil Nadu
TG - Telangana
TR - Tripura
UT - Uttarakhand
UP - Uttar Pradesh
WB - West Bengal

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Disclaimer: The maps used in this Data Note are based on the territorial jurisdictions of the Government of India's 2011 census. 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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