Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India

Policy Note

No. 3 | NOVEMBER 2017

# Improving Nutrition in Gujarat

## *Insights from Examining Trends in Outcomes, Determinants and Interventions between 2006 and 2016*

### INTRODUCTION

India has made considerable progress on child nutrition outcomes in the last decade. These rates of improvement, however, have been highly variable across the states, mostly due to variabilities in state-level changes in the determinants of nutrition and in the coverage of health and nutrition interventions. Although all of the states operate under a similar national policy and programmatic environment, the variability in trends in nutritional outcomes points to state-specific factors. An understanding of such factors can facilitate both state-specific learning and cross-state learning, and assist in identifying strategies to help India accelerate its progress on nutrition. In a series of *Policy Notes*, we examine state-specific trends in nutrition outcomes, determinants and the coverage of interventions, with the overall goal of supporting state. This *Policy Note* focuses on Gujarat.

Gujarat, situated on the west coast of India, accounts for 6 percent of the area of the country, includes 33 districts subdivided into 226 blocks, 18,618 villages, and 242 towns (Government of Gujarat 2017). Gujarat is home to more than 60 million people (5 percent of the population of India) (Government of Gujarat 2017). It is one of the most urbanized states in India, with 43 percent of the population living in urban areas (Government of Gujarat 2017). Gujarat is well-positioned compared to many other states in terms of economy, infrastructure, industrialization, and governance. However, maternal and child undernutrition remains a challenge for the state.

The purpose of this *Policy Note* is to examine the trends in undernutrition in Gujarat and to document trends and geographic variability in the major determinants of nutrition and the coverage of key nutrition and health interventions. In doing this analysis, we aim to highlight the key areas of action to improve nutrition in Gujarat.

### METHODS

We used summary data from the recently released National Family Health Survey-4 (NFHS-4 2015–16) fact sheets (International Institute for Population Sciences 2017) and data from NFHS-3 from 2005–06 to compare trends in outcomes, determinants and interventions over a decade (International Institute for Population Sciences 2008). We also used information from fact sheets of the Rapid Survey on Children (RSoC 2013–14) (Ministry of Women and Child Development 2015) for indicators that are currently not available in NFHS-4 fact sheets. We used summary data reported in the NFHS-4 district-level fact sheets to examine inter-district variability. As National Family Health Survey-4 used the Census 2011 district boundaries, this Policy Note reports information for 26 districts only.

For outcome indicators, we examined progress on a set of global nutrition targets for maternal, infant and young child nutrition (WHO 2014). These include stunting, wasting, low birth weight, exclusive breastfeeding, and anemia status among women of reproductive age.

We also examined levels and changes in several immediate, underlying and basic determinants of nutrition (Black et al. 2013). For intervention coverage, we chose to examine a set of nutrition-specific interventions across the lifecycle for which data are currently available. These include interventions affecting, pregnant women, newborn babies, infants, and children.

## FINDINGS

### Trends in nutrition outcomes and variability in outcomes by district

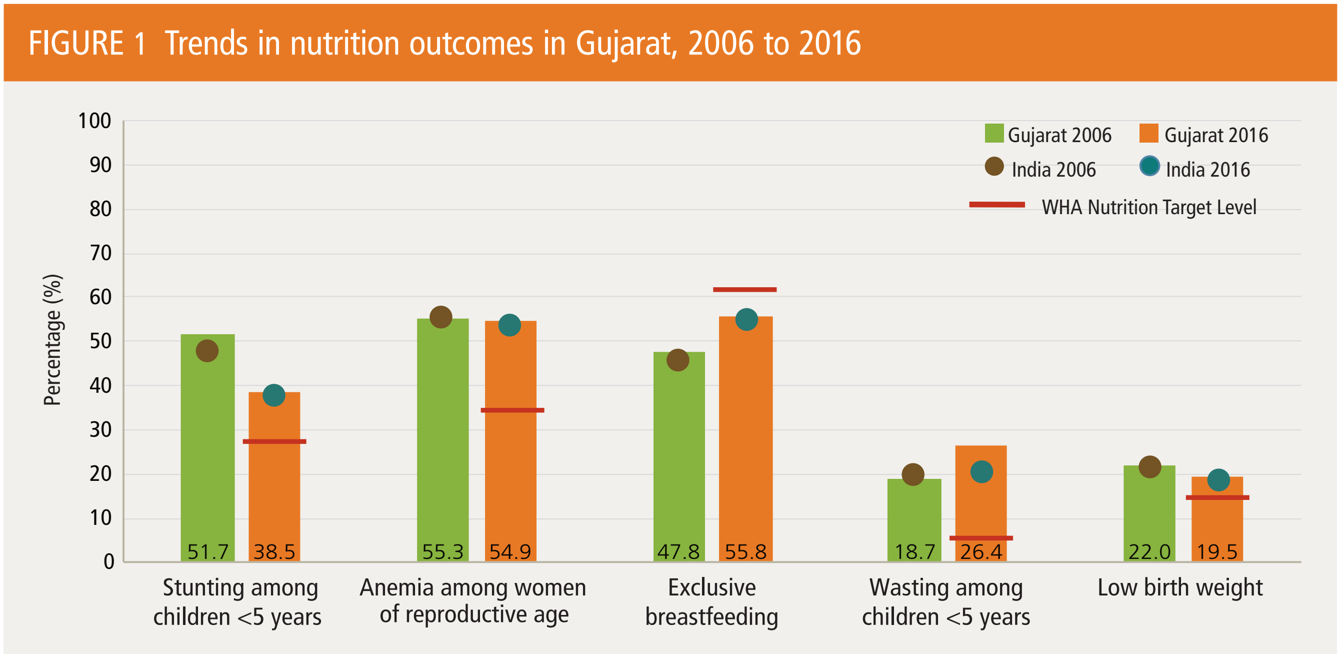
Overall, there have been improvements in some nutrition outcomes in Gurajat between 2006 and 2016 (Figure 1). Stunting prevalence declined from 51.7 percent to 38.5 percent during this period. The prevalence of low birth weight declined slightly from 22.0 percent to 19.5 percent. Exclusive breastfeeding for children under six months increased from 48 percent in 2006 to 56 percent in 2016. Anemia among women remains a significant public health challenge with more than half of the women of reproductive age being anemic. The prevalence of anemia among women of reproductive age had minimal change from 55.3 percent to 54.9 percent. Wasting among children is another key concern which increased from 18.7 percent to 26.4 percent between 2006 and 2016; severe wasting increased from 5.8 percent to 9.5 percent in the same period (IIPS 2008 and IIPS 2017).

Stunting among children under five years of age varies widely among districts, ranging from 23 percent to 51 percent (Map 1). In nearly half of the districts, 40 percent of the children under five are stunted. Sabarkantha district has the highest stunting rate (51 percent) in the state.

There is little variability in the prevalence of anemia among women of reproductive age across Gujarat (Map 2). Except in Surat and Vadodara, in all the other districts more than 50 percent of the women of reproductive age are anemic. In eight districts, more than 60 percent of women are anemic.

The prevalence of wasting ranged from 16 percent (Vadodara) to 43 percent (the Dangs) (Map 3). Rajkot district has the lowest prevalence of severe wasting (3.7 percent) and the Dangs has the highest prevalence (18.9 percent) as seen in Map 4. The

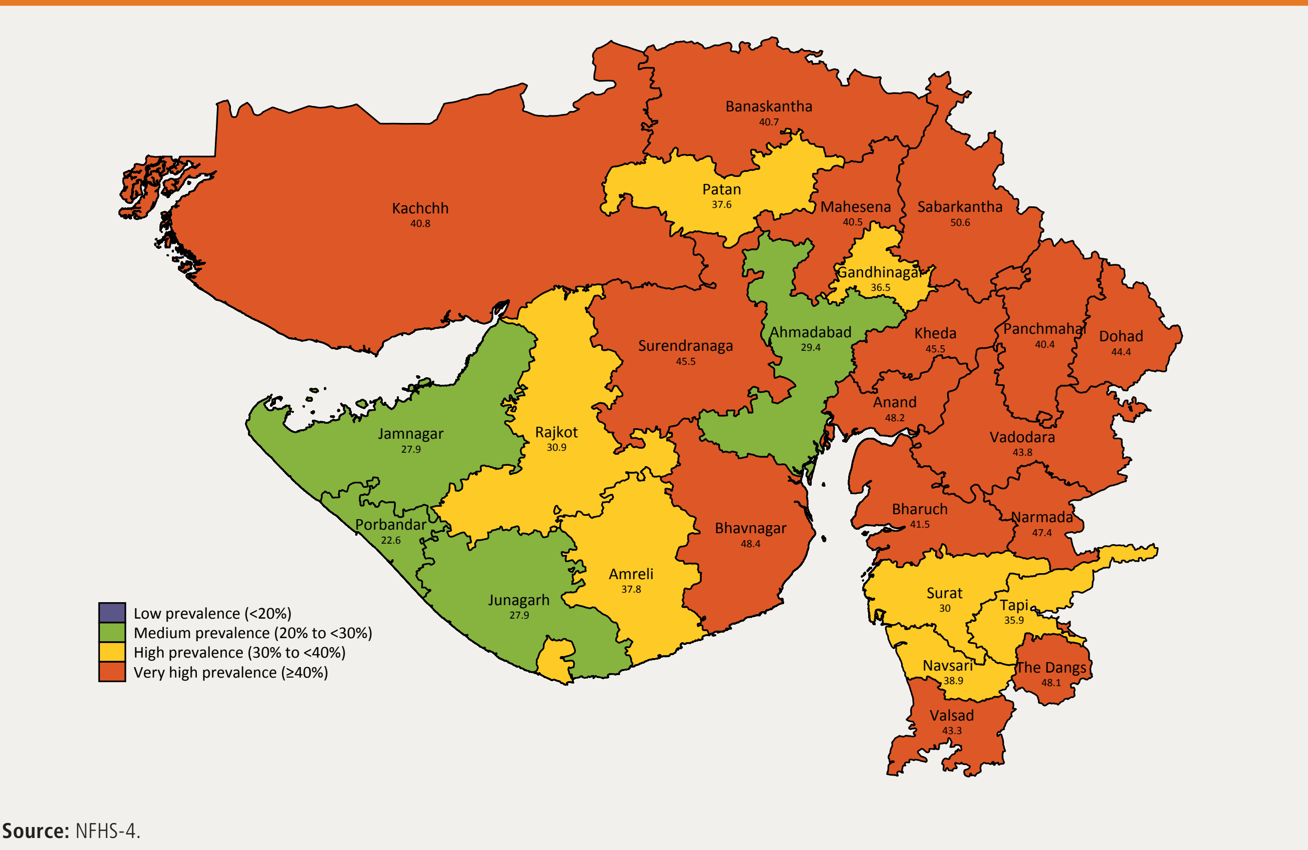
**FIGURE 1** Trends in nutrition outcomes in Gujarat, 2006 to 2016




**Source:** NFHS-3 and NFHS-4 and RSoC for low birth weight.

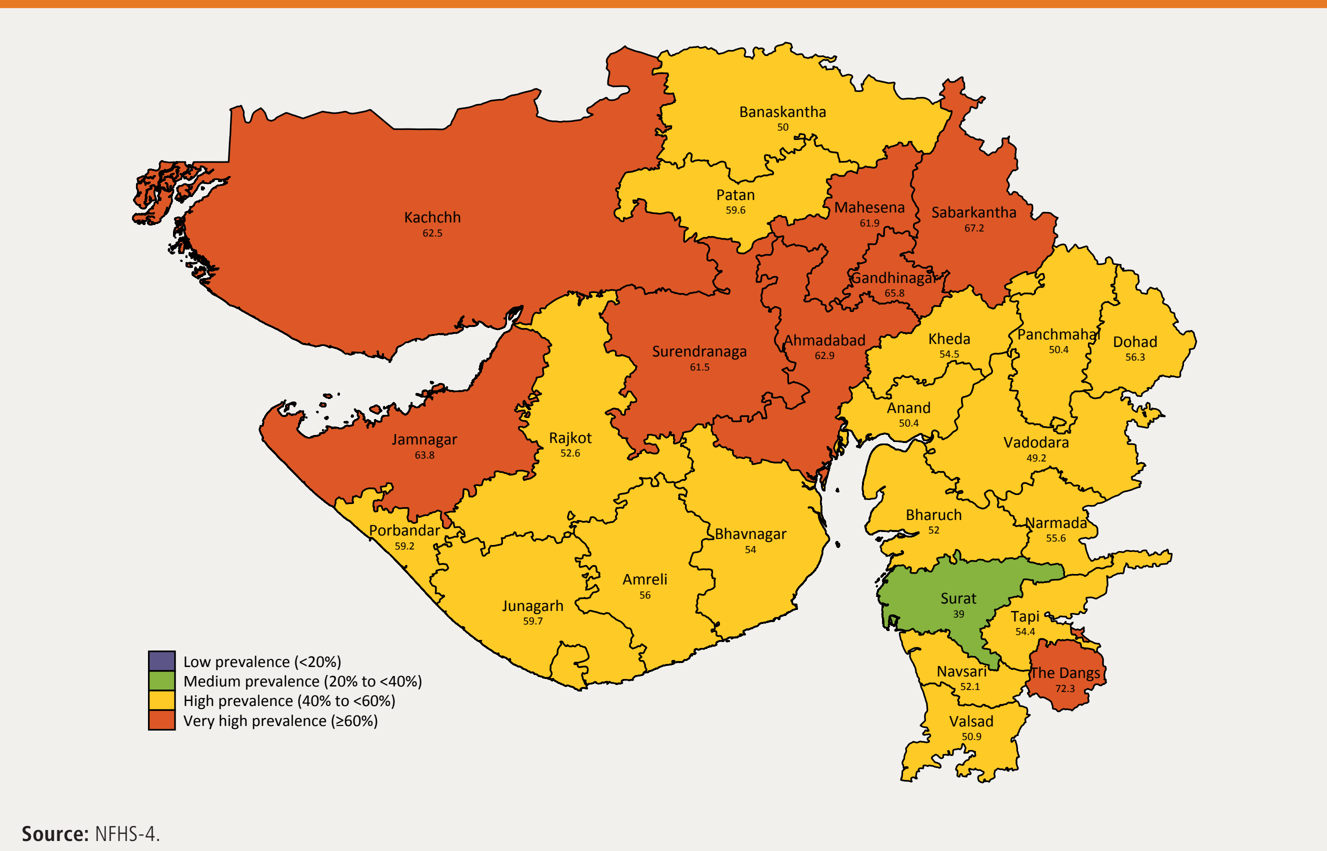
**Note:** A set of global nutrition targets for maternal, infant and young child nutrition were endorsed by the World Health Assembly (WHA) in 2012. The red lines represent the WHA targets to be achieved by the state, by 2025. The baseline reference year for these targets is 2012. The state baseline estimates are based on NFHS-4 (2016) as there is no survey data for 2012; Child overweight data is not available; Refer to endnotes for indicator definitions.

## MAP 1 Stunting (among children <5 years) in Gujarat in 2016, by district



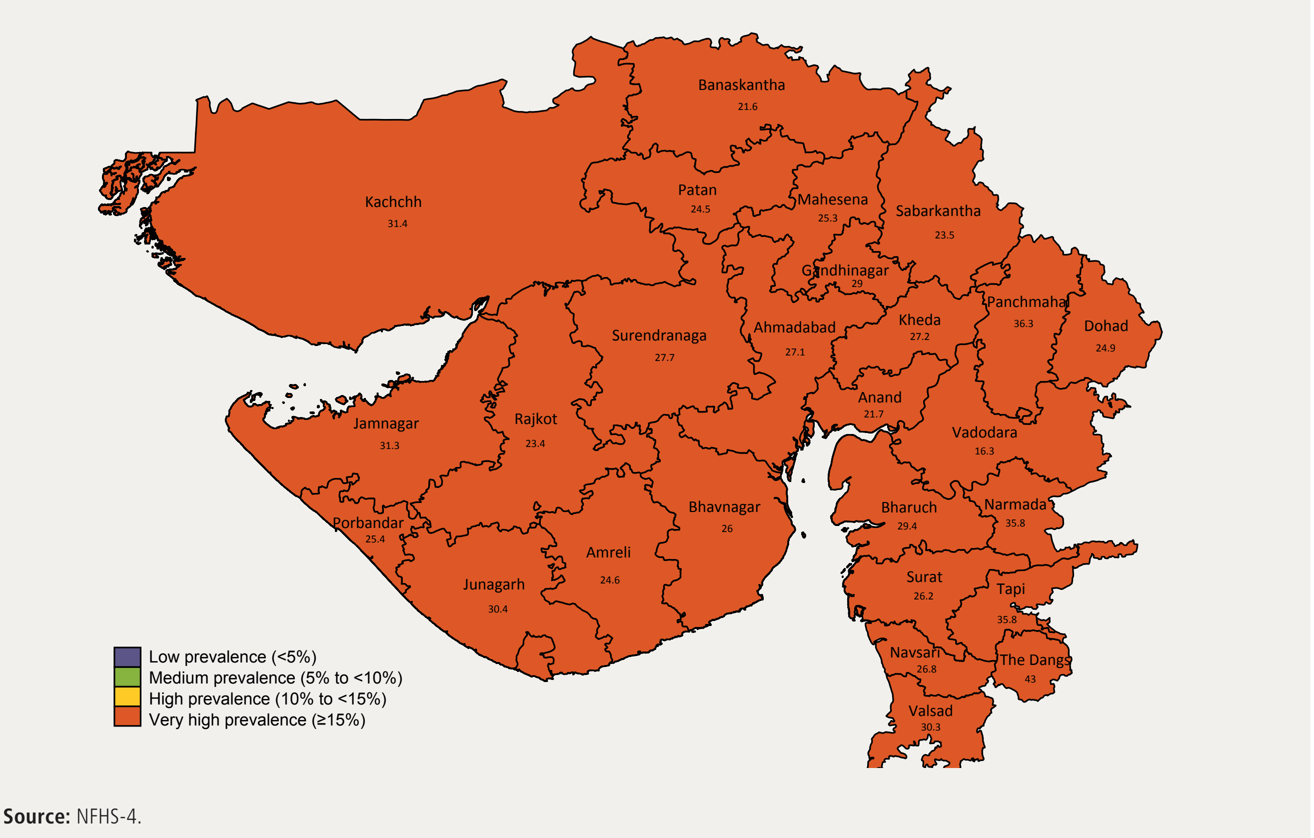

**Source:** NFHS-4.

## MAP 2 Anemia (among women of reproductive age) in Gujarat in 2016, by district



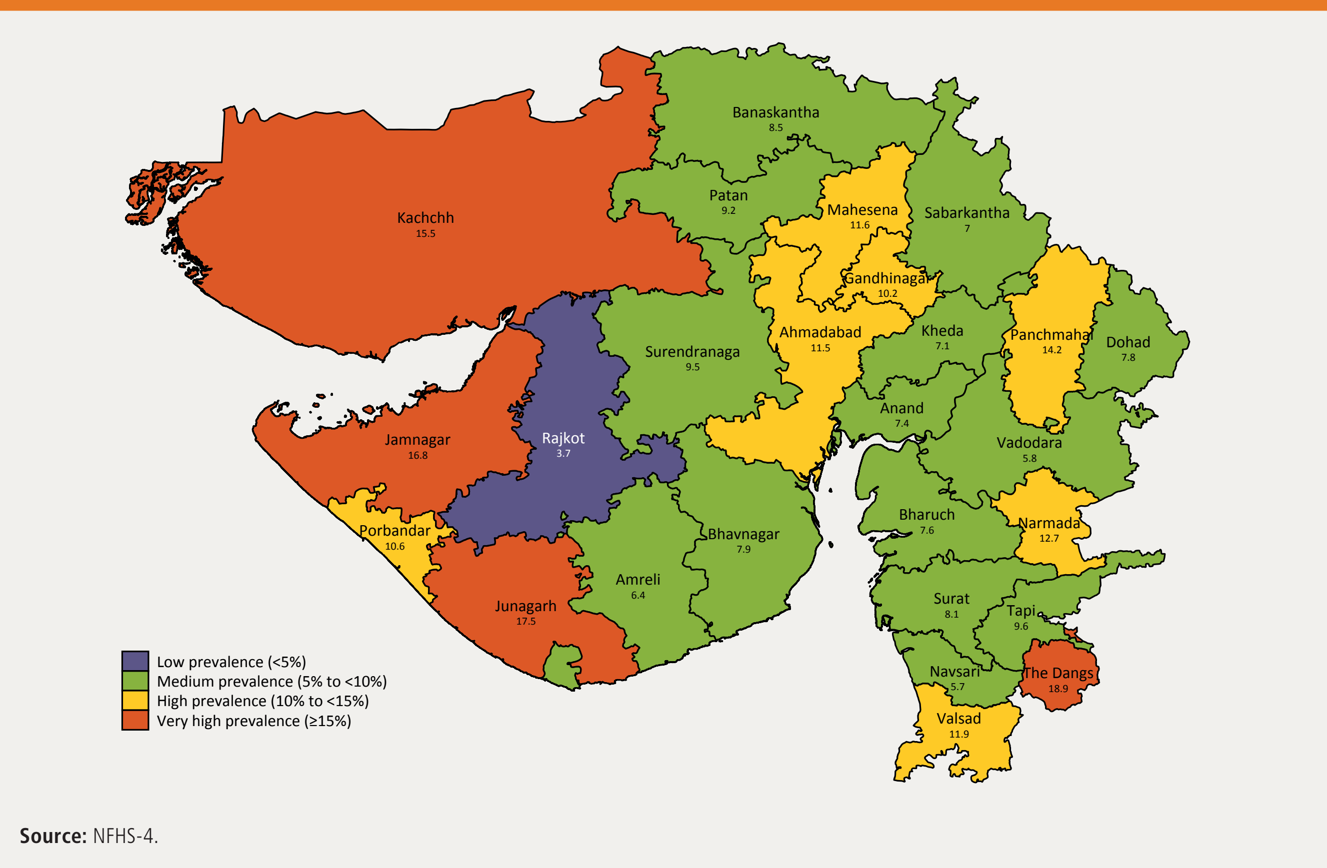

**Source:** NFHS-4.

## MAP 3 Wasting (among children <5 years) in Gujarat in 2016, by district



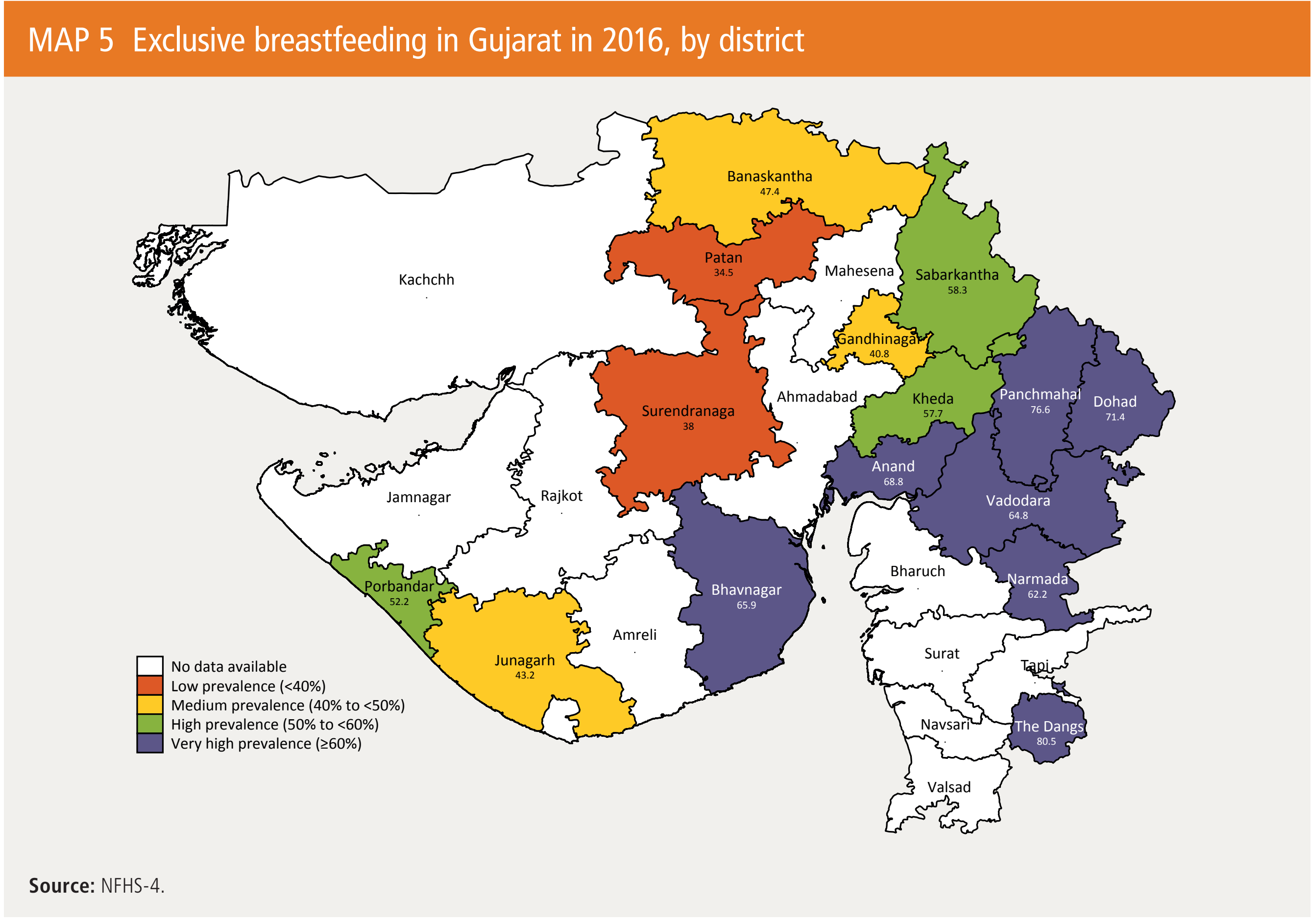

**Source:** NFHS-4.

## MAP 4 Severe wasting (among children <5 years) in Gujarat in 2016, by district




**Source:** NFHS-4.

MAP 5 Exclusive breastfeeding in Gujarat in 2016, by district




**Source:** NFHS-4.

Dangs and Narmada are the two districts with high prevalence rates of both stunting and wasting.

Data on exclusive breastfeeding (EBF) are available only for 15 of the 26 districts in Gujarat (Map 5), because district-specific sample sizes for age sub-groups are too small. Among these districts, the prevalence of breastfeeding ranges from 34 percent to 80 percent. In ten districts, EBF is higher than 50 percent.

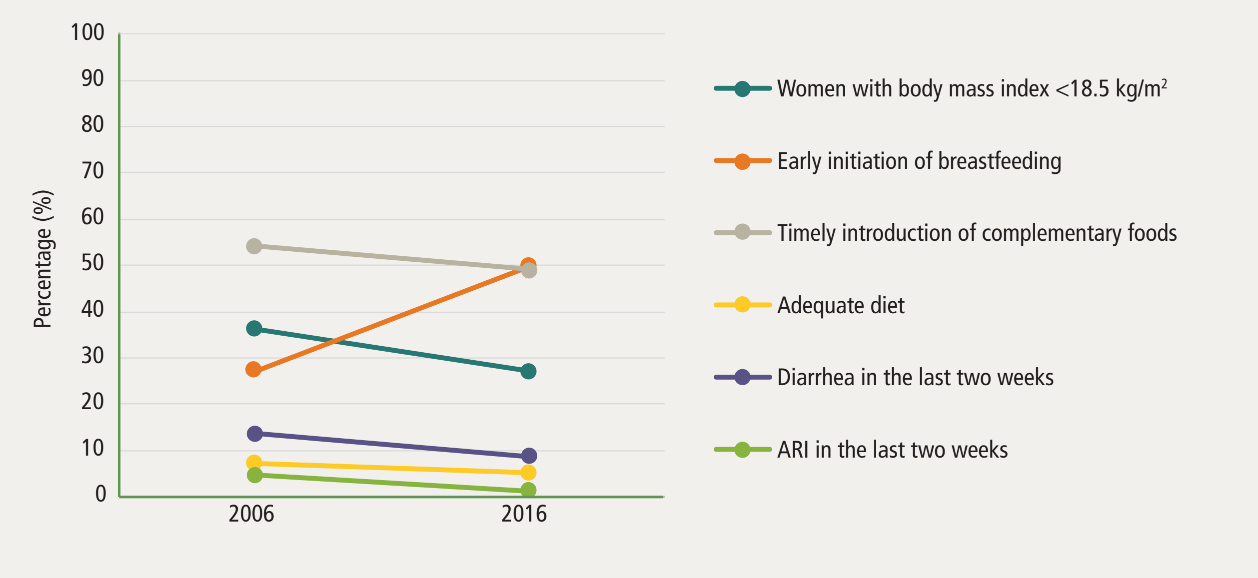
## Changes in the determinants of nutrition

Improving nutrition for women and children requires that investments be made in changing the determinants of poor nutrition, using a variety of policy instruments and other efforts. Here, we examine changes in the immediate determinants and of nutrition-specific interventions to address those determinants. We also describe changes in the underlying determinants of nutrition. We do not examine coverage data on programs to improve the underlying determinants in this Note because data on those are not available at this time.

Changes in the ***immediate determinants*** of nutrition in Gujarat are described in Figure 2. The prevalence of low body mass index (<18.5 kg/m$^2$) among women declined from 36.3 percent to 27.2 percent between 2006-16. Early initiation of breastfeeding has improved considerably in the last decade from 27.1 percent in 2006 to 50 percent in 2016, but despite high rates of institutional deliveries, there is much room for improvement. The proportion of children with diarrhea has declined over time (from 13.1 percent in 2006 to 8.4 percent in 2016), and and the proportion of children with acute respiratory infection (ARI) declined from 4.7 percent to 1.4 percent during the same time period.

Complementary feeding for infants six months and older is of great concern in Gujarat, as it is for India. Timely introduction of complementary foods (between six and eight months of age) declined over the last decade (from 54 percent to 49 percent). In 2016, only 5.2 percent of children (between 6 and 23 months of age) received an adequate diet.

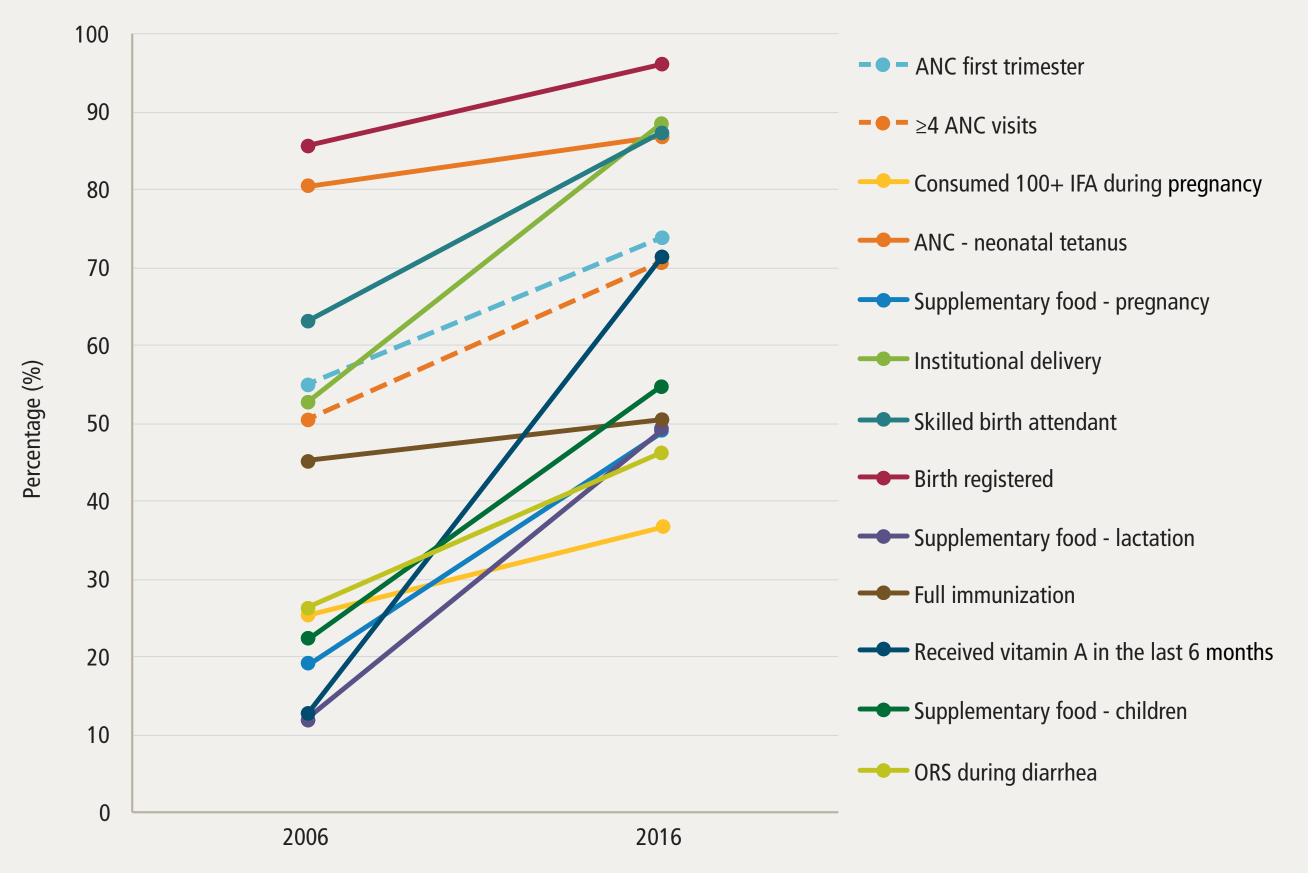
## FIGURE 2 Changes in immediate determinants of nutrition in Gujarat, 2006 to 2016




**Source:** NFHS-3 and NFHS-4.

**Note:** ARI= Acute respiratory infection; Refer to endnotes for indicator definitions.

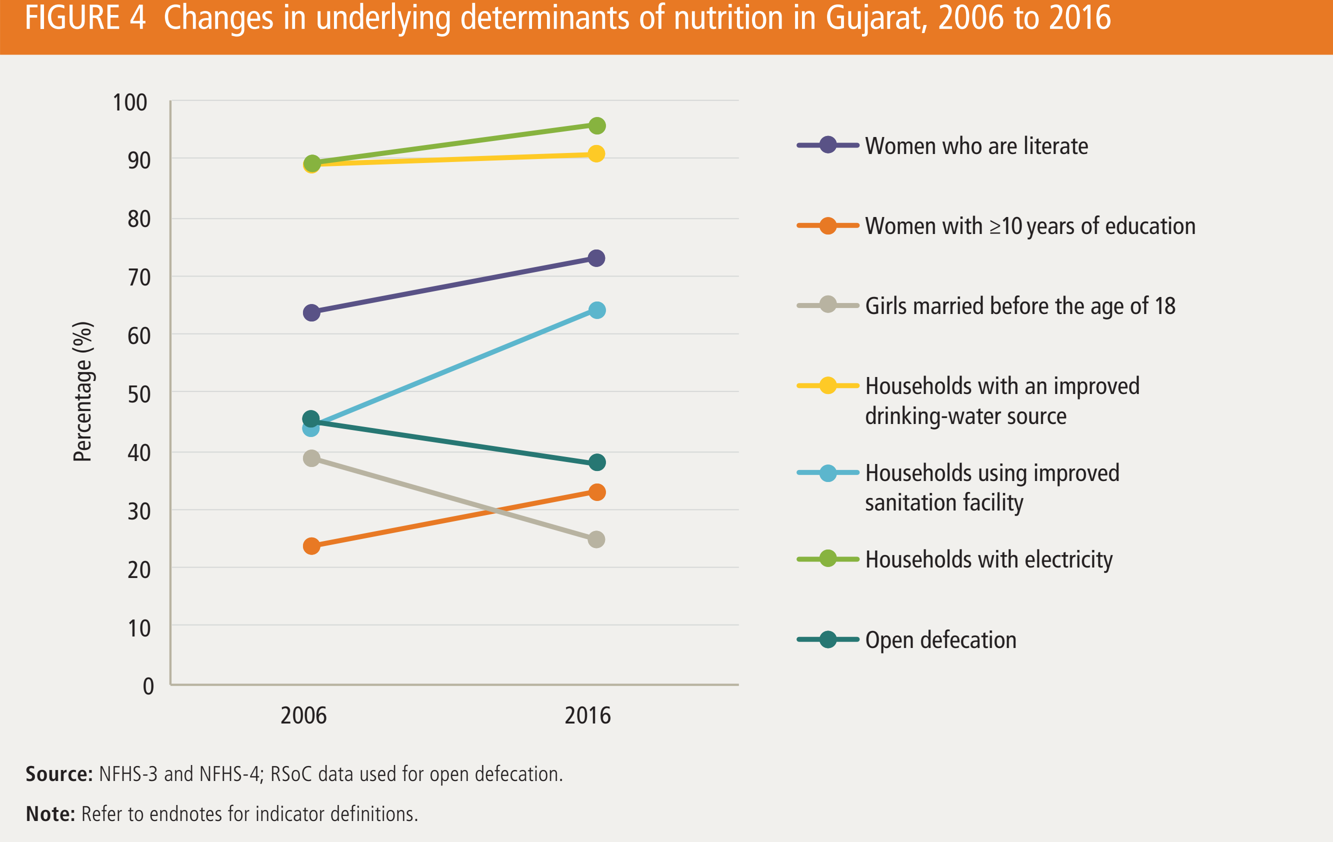
## FIGURE 3 Changes in coverage of nutrition-specific interventions along the continuum of care in Gujarat, 2006 to 2016




**Source:** NFHS-3 and NFHS-4; RSoC data used for food supplementation.

**Note:** ANC= Antental care; IFA= Iron and folic acid; ORS= Oral rehydration salts; Refer to endnotes for indicator definitions.

FIGURE 4 Changes in underlying determinants of nutrition in Gujarat, 2006 to 2016




**Source:** NFHS-3 and NFHS-4; RSoC data used for open defecation.

**Note:** Refer to endnotes for indicator definitions.

Changes in the coverage of ***nutrition-specific interventions*** in Gujarat are presented in Figure 3, and show improvement in coverage of all interventions during the last decade. During pregnancy, the proportion of women who received antenatal care (ANC) during the first trimester and received at least four antenatal visits improved substantially in the last decade. Similar improvements were observed in the proportion of women who delivered in health facilities and whose births were assisted by a health professional. Coverage of food supplementation increased for pregnant women (from 19 percent to 49 percent), lactating women (from 12 percent to 49 percent) and children (from 22.4 percent to 54.5 percent) between 2006 and 2014. Iron and folic acid consumption during pregnancy increased from 25 percent to 37 percent. The proportion of children receiving vitamin A supplementation increased substantially from 13 percent to 71 percent, and children with diarrhea received oral rehydration salts (ORS) also increased from 26 percent to 46 percent. Although the proportion of children who were fully immunized increased slightly (from 45 percent to 50 percent), half the population of children (12–23 months) did not receive all their requisite vaccinations in 2016.

Changes in the ***underlying determinants*** of nutrition are presented in Figure 4. There has been an increase in the proportion of women who are literate (from 64 percent to 73 percent) and the proportion of women with more than 10 years of education (from 24 percent to 33 percent) but there remains much room for improvement in secondary education. Early marriage in girls has dropped considerably in the last decade from 39 percent in 2006 to 25 percent in 2016.

Infrastructure has improved tremendously in Gujarat in the last decade. In 2016, more than 90 percent of households had access to improved drinking water. Access to electricity was high at 89 percent in 2006 and it continued to improve, reaching 96 percent, covering nearly all the households, in 2016. The proportion of households using improved sanitation facilities has increased from 44 percent to 64 percent. The proportion of households practicing open defecation has declined over time, but still remains high at 38.1 percent (RSoC 2013–14).

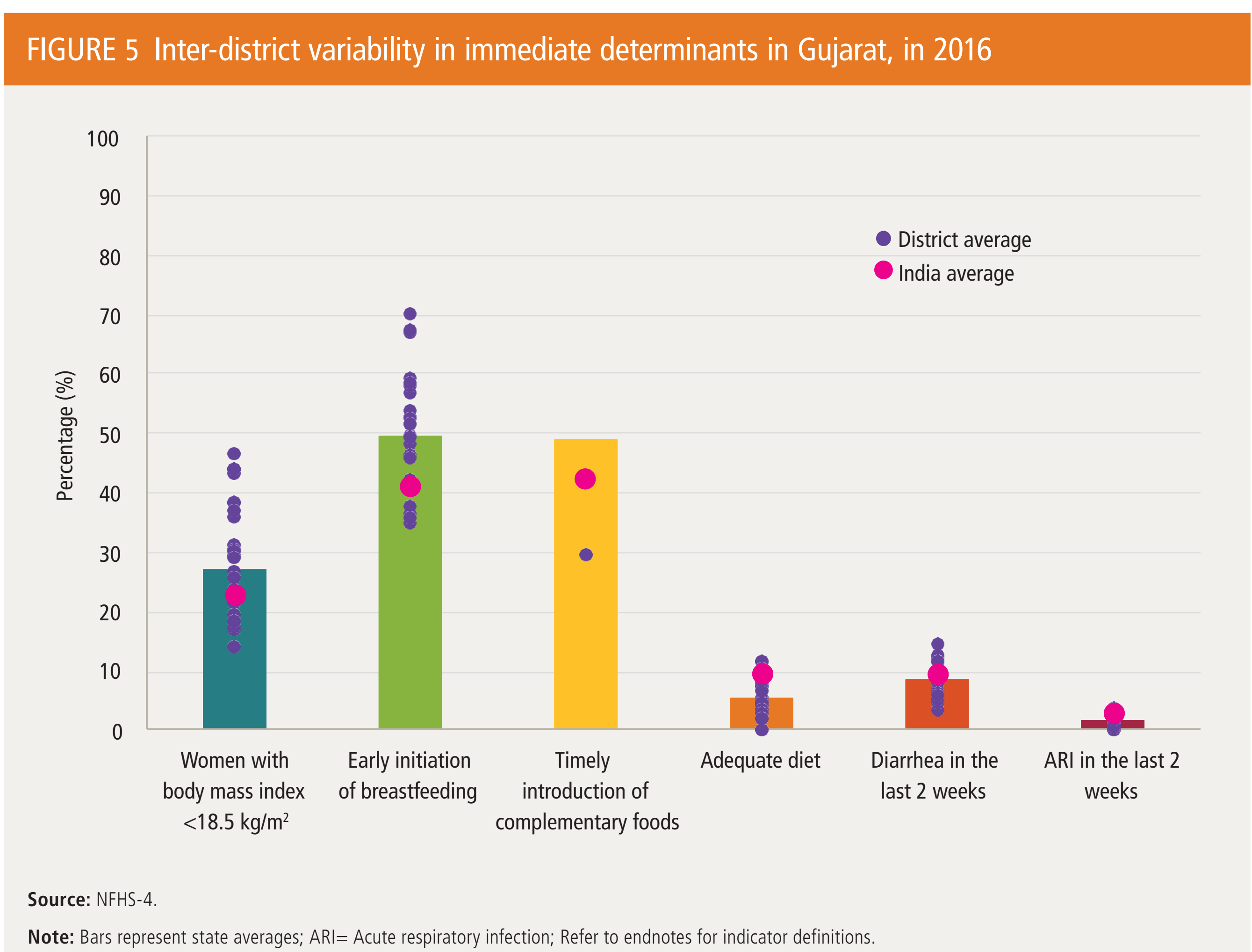
### Inter-district variability in selected determinants and coverage of interventions in Gujarat in 2016

The 26 districts for which NFHS-4 data is available cover a range of agro-ecological and economic characteristics. Among these districts there is a high degree of inter-district variability for some key determinants (that is, early initiation of breastfeeding, coverage of antenatal care, consumption of IFA supplements, full immunization, women's education, age at marriage, etc.). In contrast, there is little to no inter-district variability for some other determinants, either because coverage is very high (for example, institutional delivery, births assisted by a health professional and birth registered, access to electricity and drinking water) or because challenges are uniform across all districts (for example, adequate diet among children 6–23 months is low across districts).

## LOOKING FORWARD: IMPLICATIONS & RECOMMENDATIONS

In the era of India's commitment to global nutrition targets, it is an opportune time for Gujarat to set its own nutrition targets to be achieved by 2025, to examine progress within and across the state, and to accelerate actions necessary to improve all forms of malnutrition. To achieve progress on nutrition, the state should continue to invest in sustaining adequate delivery of those interventions targeting the first 1,000 days of life where coverage is already high, while improving the coverage of those interventions that lag behind. On nutrition-specific interventions in Gujarat, special emphasis is needed on maternal care during pregnancy and on supporting adequate infant and young child feeding practices (particularly complementary feeding practices). On underlying determinants, women's education, early marriage and sanitation need urgent attention.

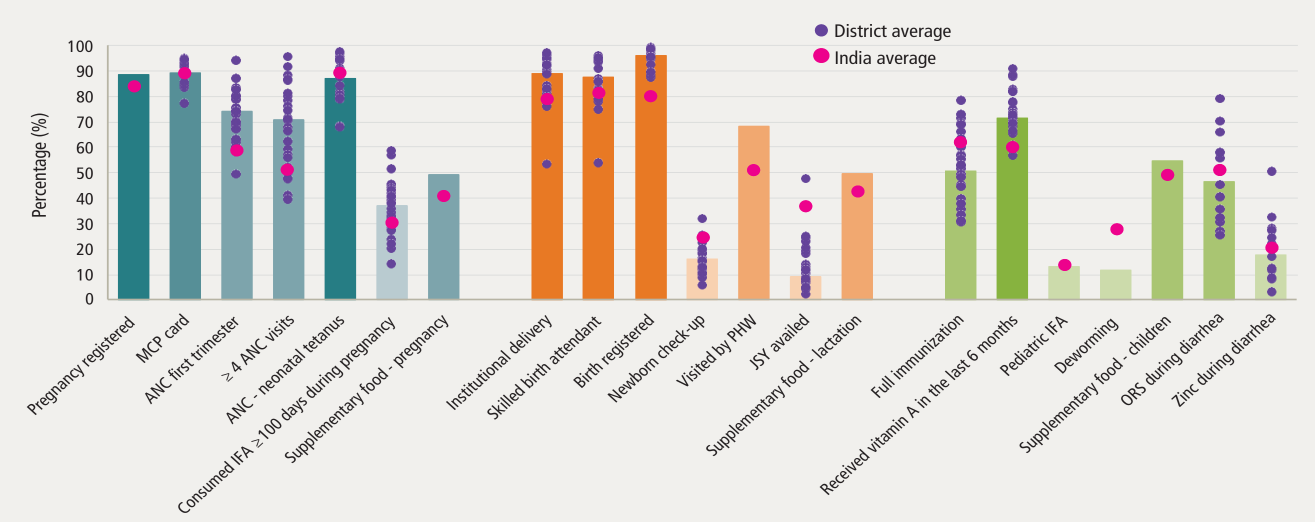
FIGURE 5 Inter-district variability in immediate determinants in Gujarat, in 2016




**Source:** NFHS-4.

**Note:** Bars represent state averages; ARI= Acute respiratory infection; Refer to endnotes for indicator definitions.

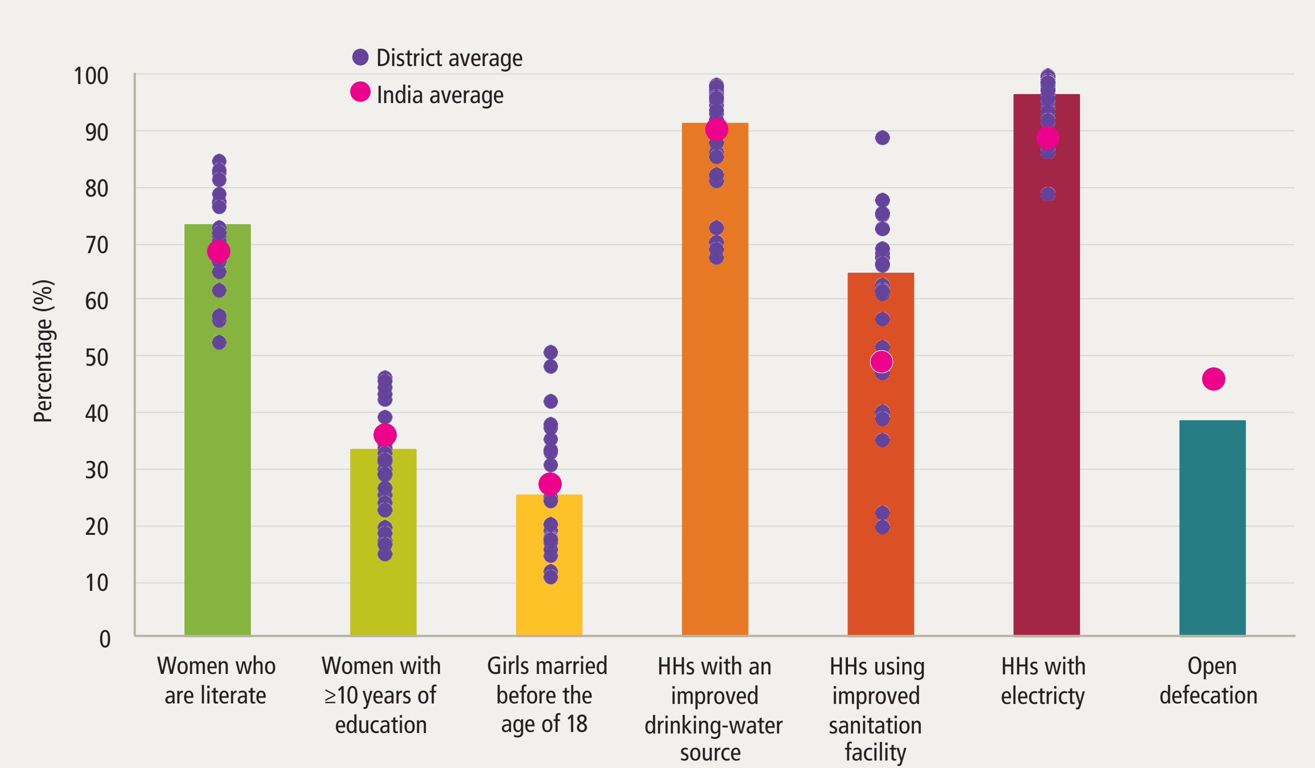
## FIGURE 6 Inter-district variability in selected coverage of interventions in Gujarat, in 2016




**Source:** NFHS-4; RSoC data was used for indicators on pregnancy registration, food supplementation during pregnancy, lactation; and for children, visits by a health worker, pediatric IFA and deworming.

**Note:** Bars represent state averages; As RSoC data is not representative at the district-level, district variablity is unavailable for these indicators; ANC= Antenatal care; IFA= Iron and folic acid; JSY= Janani Suraksha Yojana; ORS= Oral rehydration salts; MCP= Mother and child protection; PHW= Primary health worker; Refer to endnotes for indicator definitions.

## FIGURE 7 Inter-district variability in underlying determinants in Gujarat, in 2016




**Source:** NFHS-4; RSoC data is used for indicator for open defecation.

**Note:** Bars represent state averages; HH= Household; Refer to endnotes for indicator definitions.

Alongside investments in improving early nutrition, it is also important for Gujarat to consider the challenge of non-communicable diseases. As Figure 8 below shows, the challenge is also substantial, with close to a quarter of women and one in five men in Gujarat being overweight or obese. High blood pressure and high blood sugar are also emerging challenges. These suggest that Gujarat needs to develop a strong strategy to simultaneously address undernutrition and emerging non-communicable diseases related to nutrition.

## NOTES

1. Gujarat currently consists of 33 districts. As National Family Health Survey-4 used the Census 2011 district boundaries, this Policy Note reports information for 26 districts only.
2. Indicator definitions, in alphabetical order:

**Access to electricity:** Percentage of households with electricity.

**Adequate diet:** Percentage of children 6–23 months old who received 4 or more food groups and a minimum meal frequency.

**ANC (4 or more visits):** Percentage of mothers receiving at least 4 ANCs for the last birth in the last 5 years.

**ANC (first trimester):** Percentage of mothers who received ANC during the first trimester of pregnancy for the last birth in the last 5 years.

**ANC-neonatal tetanus injections:** Percentage of mothers who were protected against neonatal tetanus for the last birth in the last 5 years. Anemia among women of reproductive age: Percentage of women 15–49 years old who are anemic (<12.0 g/dl for non-pregnant women and <11.0 g/dl for pregnant women).

**Birth registered:** Percentage of children under age 5 years whose birth was registered.

**Consumption of IFA supplements:** Percentage of mothers who took IFA supplements for at least 100 days for the last birth in the last 5 years.

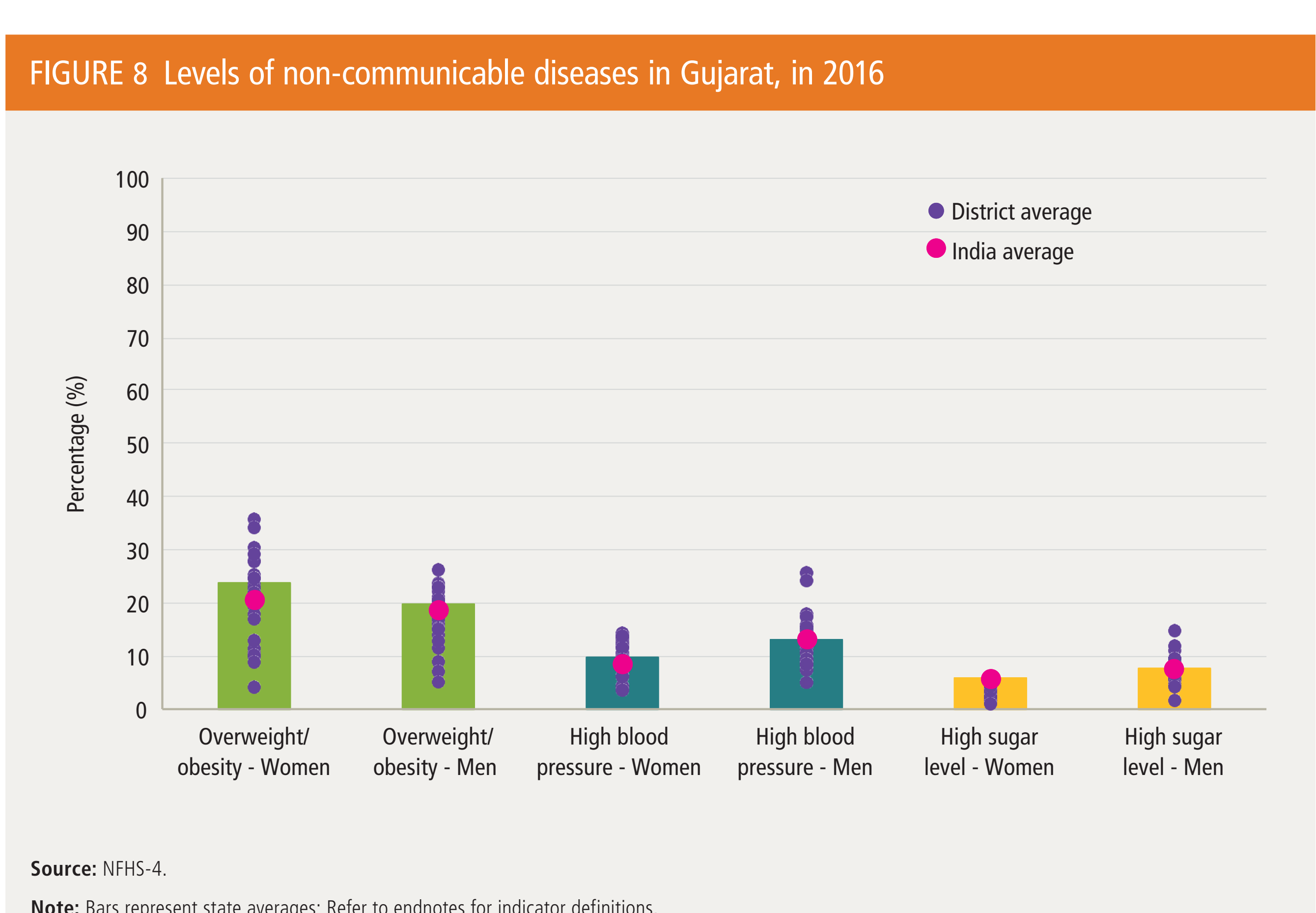
**Deworming:** Percentage of children 6–59 months old who were given deworming medication in the last 6 months.

**Early initiation of breastfeeding:** Percentage of children who were breastfed within one hour of birth.

**Exclusive breastfeeding:** Percentage of infants 0–5 months old who were exclusively breastfed.

**Full immunization:** Percentage of children 12–23 months old who received BCG, measles, and three doses each of DPT and polio vaccine (excluding polio vaccine given at birth).

FIGURE 8 Levels of non-communicable diseases in Gujarat, in 2016




**Source:** NFHS-4.

**Note:** Bars represent state averages; Refer to endnotes for indicator definitions.

**Girls married before age of 18:** Percentage of women 20–24 years old married before age of 18.

**High blood pressure:** 15–49 year old men and women with systolic ≥140 mm of Hg and/or diastolic ≥90 mm of Hg.

**High blood sugar:** 15–49 year old men and women with blood sugar level >140 mg/dl.

**Improved drinking water:** Percent distribution of households with an improved drinking water source.

**Improved sanitation:** Percent distribution of households using improved sanitation facilities.

**Institutional delivery:** Percentage of births delivered in a health facility for births in the last 5 years.

**Janani Suraksha Yojana (JSY) availed:** Percentage of women who received financial assistance under JSY for births delivered in an institution for the last birth in the last 5 years.

**Low birth weight:** Percentage of live births in the last 5 years weighing less than 2,500 grams at birth.

**Mother child protection (MCP) card:** Percentage of registered pregnancies for which the mother received an MCP card.

**Open defecation:** Percentage of household having no sanitation facilities.

**ORS during diarrhea:** Percentage of children below 5 years of age who received ORS during diarrhea.

**Overweight/obesity:** 15–49 year old men and women with body mass index ≥25 kg/m$^2$ Prevalence of acute respiratory infection (ARI): Percentage of children below 5 years of age with symptoms of ARI in 15 days preceding the survey.

**Prevalence of diarrhea:** Percentage of children below 5 years of age who had diarrhea in 15 days preceding the survey.

**Severe wasting:** Percentage of children 0–59 months old who are below <-3SD from median weight for height of the WHO Child Growth Standards.

**Skilled birth attendant:** Percentage of births assisted by a doctor/nurse/LHV/ANM/other health personnel.

**Stunting:** Percentage of children 0–59 months old who are <-2SD from median height for age of the WHO Child Growth Standards.

**Supplementary food (children):** Percentage of children 6–35 months old covered by AWC who received supplementary food provided at the AWC in the last 12 months.

**Supplementary food (lactation):** Percentage of mothers with children under age 6 years in areas covered by an AWC who received supplementary nutrition from the AWC during lactation.

**Supplementary food (pregnancy):** Percentage of mothers with children under age 6 years in areas covered by an Anganwadi center (AWC) who received supplementary nutrition from the AWC during pregnancy.

**Timely introduction of complementary foods:** Percentage of infants 6–8 months old who received solid and semi-solid foods and breastmilk.

**Vitamin A:** Percentage of children 9–59 months old who received vitamin A supplements in the last six months.

**Wasting:** Percentage of children 0–59 months old who are below <-2SD from median weight for height of the WHO Child Growth Standards.

**Women who are literate:** Percentage of women who are literate.

**Women with at least 10 years of education:** Percentage of women 15–49 years old having at least 10 years schooling.

**Women with low body mass index (BMI):** Percentage of women 15–49 years old with BMI less than 18.5 kg/m$^2$.

**Zinc during diarrhea:** Percentage of children below 5 years of age who received zinc during diarrhea.

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## ABOUT POSHAN

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

## ABOUT POLICY NOTES

POSHAN Policy Notes aim to provide evidence-based guidance to support policy and program actions for nutrition in India.


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