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FAQs on Child Anthropometric Failures in India: Insights from the National Family Health Survey 2015-16

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Abstract

Nutritional wellbeing is central for achievement of several prominent national and international development goals. Despite considerable efforts and increasing policy commitments, India is yet to witness meaningful reductions in the burden of child undernutrition. We analyse the latest National Family Health Survey to develop critical policy insights to catalyse the reductions in child anthropometric failures in India. We describe that the POSHAN targets are far from modest and will require greater contribution from poor-performing states. The two fundamental concerns as reflected by this analysis are non-response of economic growth on nutritional well-being and greater burden among the poor. This calls for strengthening developmental finance for socioeconomic upliftment as well as enhanced programmatic support for nutritional interventions. The gaps in analytical inputs for programmatic purposes also deserves attention to unravel intricacies that otherwise remain obscured through customary enquiries. On one hand, this may serve well to improve policy targeting and on the other can help comprehend the nature and reasons of heterogeneities and inequities in nutritional outcomes across groups and geographies. In conclusion, we recommend strengthening analytical capacities of programme managers and health functionaries.

Introduction

The Sustainable Development Agenda calls for ending, by 2030, all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age. It is widely acknowledged that nutritional wellbeing is central for achievement of several prominent national and international development goals (SDG 2016; NITI Aayog 2017). Given its intrinsic and instrumental relevance, there are increasing policy commitments by the Union and State Governments in India including nutrition-specific programmes starting from the Balwadi Nutrition Programme (BNP) in 1970, the massive Integrated Child Development Scheme (ICDS) in late 1970s and the Mid-Day Meal Scheme (MDMS) in 1995. However, despite considerable efforts, India is yet to witness meaningful reductions in the burden of child undernutrition. The latest National Family Health Survey (NFHS 2015-16) confirms that every second child in India continues to suffer from some form of anthropometric failure (either stunting, or underweight, or wasting). Given the huge population base, the situation is rather grave as over 60 million children in India (aged below 5) are undernourished. The problem further intensifies because of an unexpected non-response of child nutritional improvements to economic growth (Joe et al 2016, Subramanyam et al 2011). The poor state of affairs is thus attributable to a range of social determinants including policy targeting and coordination across nutrition-related developmental sectors (Smith and Haddad 2015).

The recently launched Prime Minister's Overarching Scheme for Holistic Nourishment (POSHAN Abhiyaan) takes explicit cognisance of these concerns (NITI Aayog 2017). In order to provide macro policy and strategic direction, the National Institution for Transforming India, also called the NITI Aayog, the highest advisory body to the GOI, developed a National Nutrition Strategy (NNS) that provides broad inputs on these important aspects for program roll-out. With a budget of Rs. 9046 crores, POSHAN Abhiyaan is designed to cover all the states/UTs and districts in three phases i.e. 315 districts in 2017-18, 235 districts in 2018-19 and remaining districts in 2019-20. While POSHAN Abhiyaan in itself has an earmarked three-year budget of Rs.9046.17 crore commencing from 2017-18, it really is an overarching framework that seeks to leverage funds, functionaries, technical resources and community awareness activities from existing programs and schemes such as the Integrated Child Development Services (ICDS), Pradhan Mantri Matru Vandana Yojana (PMMVY), National Heath Mission (NHM), Swacch Bharat Mission (SBM), National Rural Livelihood Mission (NRLM), National Rural Employment Guarantee Act (NREGA) and the

Public Distribution System (PDS). The idea is to align the efforts of every stakeholder in a direction that could positively impact nutrition outcomes. The program focuses on strengthening policy implementation (at central and state level) to improve targeting (identification of high burden districts), enhance multi-sectoral convergence, develop innovative service delivery models and rejuvenate counselling and community-based monitoring. The NNM focuses on implementing a wide range of nutrition interventions and calls for strengthening governance structure and norms for nutrition challenges including an emphasis on geographic and programmatic convergence across health and nutrition-sensitive sectors.

More specifically, the POSHAN Abhiyaan aims to reduce child stunting, underweight and low birth weight by 2 percentage points per annum and anaemia (among young children, women and adolescent girls) by 3 percentage points per annum. It is worth noting that these targets are more than twice the observed rate of improvements since the 1990s. To translate such intent into action calls for insightful deliberations on a range of policy issues. For instance, the POSHAN Abhiyaan emphasises on timely and systematic collection of programmatic data for monitoring both supply-side and demand-side factors. But, if the data collected is not interpreted and utilized at state, district and local levels, a major opportunity to fine tune actions would have been lost. Given the heterogeneity in geographical and sociocultural contexts, such details can be instrumental for administrative planning and targeting.

This paper outlines key programmatic concerns that require substantial local-level insights for strategic feedback and course corrections to achieve accelerated reductions in child undernutrition. The issues discussed are based on the analysis of household survey data from NFHS 2005-06 and 2015-16. Based on WHO child growth reference standards, the primary outcome variables are child (below 5 years) stunting - defined as height-for-age z-scores less than -2 SD (Standard Deviation), underweight as weight-for-age z-scores less than -2SD, and wasting as weight-for-height z-scores less than -2SD. The final analytic sample for analysis includes 236,446 children from NFHS 2016 and 48,084 children from NFHS 2006 aged 0-59 months with complete anthropometric and socioeconomic status related information. The data on Per capita Net State Product (PCNSDP) is obtained from EPWRF India Time Series database.

Why Child Undernutrition?

Food – in addition to air and water – is a necessary condition for life. Experiencing a chronic state of insecurity in the availability and accessibility to food can be considered a failure from an *intrinsic* human rights perspective. There are also *instrumental* reasons for the current and future quality of life (whether measured through health or other indicators of well-being such as cognitive development and future standards of living) given the inter-generational consequences. Undernourishment in early stages of life leaves the individual susceptible to severe illness, including diarrhoea and pneumonia. Not only that, infectious diseases and ailments caused due to unhygienic living conditions contribute to undernourishment and reflects a reverse causality wherein children who are infected with either of these ailments depict poor nutritional status. A person borne undernourished is also more likely to face undernourishment in subsequent years. Undernutrition that starts at foetal level results in low birth weight for babies and, in the absence of effective interventions in the form of food supplements during pregnancy and proper pre- and post- partum care, it can initiate a vicious cycle where underweight babies become underweight mothers and again give birth to underweight babies. From a humans rights' perspective, undernutrition hampers the development of basic capabilities and functioning and disregards the child's right to lead a healthy life. Although child welfare has been a prime item in the agenda of the Central and the State governments, the disquieting evidence on the burden of child health deprivations clearly points out the failures in protecting - what the Convention on Child Rights (CRC) identifies as - the basic right to survival, protection, participation and development. Several layers of social and economic disadvantages get wrapped up within the summary statistics of undernutrition. Hence, focusing on threats to child nutrition becomes one of the most important and direct ways of enhancing health and well-being of the population.

Is India Making Progress in Reducing Chid Undernutrition?

Table 1 provides state-wise estimates for stunting, underweight and wasting for 2005-06 and 2015-16. Over the past 10 years, the national prevalence of stunting declined from 48.3% to 38.4%; underweight decreased from 42.5% to 35.7%; and wasting increased from 19.8% to 21.0%. The average annual rate of reduction in stunting and underweight prevalence was 1 percentage point per annum and 0.7 percentage point per annum, respectively. At the state level, in 2015-16, stunting prevalence varied from 20.0% in Kerala to 48.4% in Bihar, and

underweight ranged from 11.9% in Mizoram to 47.8% in Jharkhand. Chhattisgarh witnessed the highest annual average reduction in stunting (1.6 percentage point per annum between 2005-06 and 2015-16) whereas Jharkhand experienced the slowest improvements (0.4 percentage point per annum). It is worth noting that the states with low prevalence of stunting (Kerala, Goa and Tamil Nadu) displayed very slow reductions. The largest reduction in underweight (2.0 percentage point per annum) was in Meghalaya, whereas negligible improvement was found in Delhi, Andhra Pradesh (undivided), Maharashtra and Goa. In this regard, Map 1, 2 and 3 display state-wise changes in the prevalence of stunting, wasting and underweight respectively between 2006 and 2016.

The POSHAN Abhiyaan aims to double the observed rate of reduction in stunting and, more ambitiously, achieve a three-fold increase in the observed rate of improvements in underweight outcomes. It is, therefore, critical to examine its potential implications for progress across Indian states. We found that the annual average rate of reduction was positively correlated with the prevalence levels. The correlation coefficients for the association of state-wise average annual reductions (between 2005-06 and 2015-16) with base level stunting (in 2005-06) was 0.38 (p- =0.041) and with base level underweight was 0.43 (p=0.018). This implies that states with lower base levels will likely have difficulties in achieving policy goals, whereas states with higher base levels will have to overcome systemic inertia to foster nutritional health among deprived populations. Besides, even with the assumption of equal progress across states (i.e. 2 percentage point reduction per annum), six states (Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan Jharkhand and Odisha) have the biggest opportunity and can account for 50% share in achieving the POSHAN targets nationally. Such high expected contribution from these states is attributable to both population-share and prevalence level across these states. This finding is of high relevance because POSHAN targets may still remain unachieved despite better performing states progressing as per policy expectations.

Do High Burden States Also Have Larger Rich-Poor Gap?

Figure 1 shows the scatter plots for child anthropometric failures and absolute rich poor gap within states (i.e. difference between the highest and lowest wealth quintile) for all Indian states and UTs. We found s significant positive association between the prevalence of child stunting across states and rich-poor gap within states. This implies that states with higher

burden of child stunting are also more likely to have larger disparities between rich and poor households. In other words, richer households within poorer states tend to fare relatively better whereas poor households experience much worse outcomes. A similar association was observed between prevalence of child underweight across states and rich-poor gap within states. Yet, there was no systematic association between prevalence level and rich–poor gap at the state level for wasting. These findings indicate that targeting the poor can provide greater improvements in anthropometric outcomes particularly in the states with high prevalence levels. Also, with the exception of wasting, this indicates that poverty plays a major role in determining the prevalence of anthropometric failure.

Does Economic Growth Help in Reducing Child Undernutrition?

The shortcomings of a lopsided economic growth and the demerits of a trickle-down approach to health and development are strikingly apparent (Dreze and Sen 1989; Dreze and Sen 2013). Although studies have emphasised on the enabling role that economic growth offers in accelerating reductions in child undernutrition, it is puzzling that the unprecedented macroeconomic growth since 1991 has not transformed the nutritional well-being of children (Joe et al 2016; Subramanyam et al 2011). While high-income states generally have lower prevalence of anthropometric failure, it is worth noting that short term trends in economic growth do not share any significant association with anthropometric improvements (Figure 2). The Pearson correlations for the observed associations were also insignificant. Importantly, this is no anomaly as economic growth has failed to register a positive association with child nutrition improvements across several countries (Vollmer et al 2014). It is argued that economic growth, in general, has not been accompanied by a notable increase in developmental spending by government or substantial reductions in poverty outcomes (Joe et al 2016). Nevertheless, there exists an enormous scope for growth-mediated strategy. This as a prerequisite, however, requires effective measures to enhance equity in the distribution of resources with specific allocations for the poor and the marginalized. Among other things, this implies increased developmental spending for nutrition and nutrition-related sectors, including interventions designed for community awareness and behaviour change.

How important are Maternal Correlates?

Mother's health during pregnancy leaves an indelible imprint on child health and nutrition including life-long effects on physical and mental growth. Thus, investments in maternal nutrition is envisaged as a robust pathway to overcome the intergenerational cycle of child undernutrition in India (Victoria et al 2008). It is well-established that the risk for stunting and underweight outcomes are significantly higher among children with lower maternal stature and maternal education (Corsi, Mejía-Guevara and Subramanian 2016; Kim et al 2017). Figure 3 from a study based on NFHS-2006 data by Corsi, Mejía-Guevara and Subramanian 2016 shows significantly higher effect of maternal covariates on stunting and underweight. More specifically, the odds of being stunted was highest for children with short maternal stature followed by lack of maternal education. In addition, children from mothers with low BMI had significantly higher odds of experiencing underweight (figure 3).

Further, Table 2 shows that the prevalence of child stunting was almost twice among illiterate mothers (50.7%) than those having higher education (27.2%). Similarly, the prevalence of child stunting among short-heighted mothers (below 145 cm) was two-times that of relatively taller ones (above 155 cm). These factors were amongst the strongest covariates explaining variations in child undernutrition in India. This was further confirmed through a series of multilevel logistic regressions with anthropometric failures (i.e. stunting, wasting and underweight) as binary outcomes and maternal covariates as explanatory variables (Table 3). The model was mutually adjusted for demographic and socioeconomic factors such as age, sex, and wealth-index, place of residence, caste and religious affiliations. The regression estimates suggest that compared to tall mothers (165+ cm), children with short maternal heights (below 145 cm) run a four-time higher risk of stunting [odds ratio 4.0, 95% CI: 3.80; 4.20] and three-fold increased risk of underweight [OR 3.34, 95% CI: 3.17; 3.51]. Higher maternal education also displayed a similarly robust effect in diminishing the risk of undernutrition.

Prioritizing nutritional interventions for pregnant women and lactating mothers under the POSHAN Abhiyaan is laudable, but the task would remain incomplete if integration with vital developmental sectors such as education, food security and health system is unaddressed. Programmatic data on distribution of maternal height and other key covariates can provide first-hand access to information on local priorities for policy interventions. Integration of antenatal care features with an understanding of pregnancy and undernutrition

risks can allow careful identification of high-risk cases that can be allayed through appropriate programmatic support. These innovative aspects in programme implementation have been widely acknowledged, but hitherto been neglected when the programmes were required to integrate such atomistic information. Partly, such apathy is attributable to resource constraints (both financial and capacities), but in part is due to lacking intent of the development community including the households and the indifference among grass-root level functionaries.

Why Safe Sanitation Matters?

Access to improved sanitation and drinking water facilities are accorded high priority as influential determinants of child health and nutrition (Spears et al 2013, Rah et al 2015, Padhi et al 2015). Households with access to improved sanitation facilities are less exposed to the risk of faecally-transmitted diseases and have reduced odds of experiencing adverse nutritional outcomes (Chambers and Madeazza 2013). Figure 4a reveals lower prevalence of anthropometric failures among households with improved sanitation facilities (stunting 30.9% and underweight 28.3%) compared to others (stunting 44.9% and underweight 42.2%). Further, it is evident from figure 4b that the prevalence of child stunting among households with unsafe stool disposal practice is significantly higher (42.3 percent) compared to those who practice safe stool disposal (30.4 percent). Similarly, the proportion of underweight children is also larger among households who do not practice safe disposal techniques (39.6 percent).

These findings reiterate the role and relevance of promoting safe sanitation and hygiene practices in curbing the problem of child undernutrition. This also is an area that requires greater inter-sectoral coordination and convergence across at least four line-departments, including water supply and sanitation department, public works department, local self-governments, and health department. Local programme managers are well-equipped to assess the role of the respective departments in influencing access to these services. Besides, data on nature of convergence requirements, liabilities and failures in discharge of basic public services can improve governance by fixing accountability across concerned departments and authorities.

Which Age Group has the highest Burden of Child-Undernutrition?

The demographic composition of the child population is a critical factor for target achievements. Figure 5 presents information on anthropometric failures across three age categories (0-5 months, 6-23 months, and 24-59 months). It is apparent that the prevalence of stunting shows systematic age-related increments. For instance, stunting prevalence among children aged 0-5 months is 19.7% but is almost twice for the age group 6-23 months (37.1%) and even more than double for the age group 24-59 months (42.0%). Further, the distribution reveals that more than two-third of the stunted children are aged 2 years and above (Figure 6). In other words, only about one third of the stunted children are in their first 1000 days whereas a larger chunk of stunted children is in their second 1000 days.

The implications are two-fold: First, this reiterates the need to understand the causative factors that lead to sharp increment in anthropometric failure among children progressing from 6 months to 2 years. These insights can be used to develop strategies that can arrest such accelerated shortfall in physical growth standards of Indian children. While the doctrine of "first 1000 days" is central for nutrition interventions, complementary longitudinal studies in Indian context are necessary to supplement programmatic insights for averting anthropometric failure among infants and young children in the first 1000 days. Second, it is also important to address the recovery potential or catch up among older children (Martorell et al 1994, Leroy et al 2015; Scrimshaw 1968). In particular, it is critical to take cognizance of the conditions and requirements that can both reduce the risk of nutritional failure as well as enhance the scope for reversal among older children. While the policy advocacy to target malnutrition in the first 1000 days of life is presumably due to steep declines in anthropometric Z-scores after the age of 24 months (Victora et al, 2009), anthropometric failures can continue, reverse or newly occur throughout the entire childhood. In this regard, the positive story of adopted Indian children in Sweden can motivate the need for strengthening maternal and child nutrition and health care across the entire age spectrum (Proos 2009, Proos et al 1992). This longitudinal study found that most of the stunted children at arrival in Sweden experienced the fastest catch-up growth and within 2 years the heights were nearly the same in both stunted and non-stunted children. Given the evidence that undernutrition can be corrected among older children, a sole focus on the first 1000 days may not lead to desired progress at the population level. Much of these improvements are likely to be associated with contextual factors including household wealth and living

environment. Nevertheless, policymaking can contribute through an enabling environment for effective programme implementation and multi-sectoral convergence.

Do Girls Experience a Greater Burden?

Gender differentials in health outcomes is a disconcerting fact for several Indian states. Incidentally, child undernutrition is one of the indicators where gender differentials are minimal (Table 4). In this regard, table 4 presents the prevalence of anthropometric failures across gender and birth order. The stunting prevalence among first born male and female child was 34.6 percent and 32.1 percent respectively. About 32.5 percent of first-born boys and 30.5 percent of first-born girls were estimated to be underweight. Even among second born children, no noticeable gender differentiatials were observed as stunting among second born boys and girls was estimated to be 37.7 and 37.8 respectively. A similar pattern was observed across all birth-order and sex stratification. Moreover, no significant gender difference in the prevalence estimates was observed even after adjusting for birth-order of the child. A few studies have also shown that girls were not shorter than boys in India (Tarozzi 2012). Nevertheless, it is argued that similarity in height of girls and boys actually reflects discrimination against girls and that the latter should have better anthropometric indicators (Coffey & Spears 2018, Jayachandran & Pande 2017). Although much of these discussions are based on population-wide observations, it is likely that these outcomes are shaped by household environment and a range of other sociocultural and contextual factors. For instance, the reason(s) for a girl being undernourished and a boy being undernourished can substantially differ across households and the truth can be conveniently obscured by a bird's eye view. Policies and programmes determined by such population-level view can encounter realities that may contrast the general perceptions regarding gender bias or its obverse. The only effective strategy to unravel such deeply engrained practices is to strengthen data and analytical skills at the local level to devise context-specific strategic inference and programmatic course corrections.

How Large is the Burden Among the Poor and the Marginalised?

Poverty and economic backwardness are perhaps the strongest markers of nutritional deprivation. Table 5 shows that every second child from the poorest households (lowest

wealth quintile) is stunted (51.5%) and underweight (48.5%). Stunting prevalence among the lowest wealth quintile is 2.3 times higher than the highest wealth quintile. The rich-poor gap in underweight outcomes is also intact in both absolute and relative terms. A glance at quintile-specific prevalence reductions between 2005-06 and 2015-16 shows that the middle groups have experienced higher declines than the extremes. The poorest households thus not only suffer from a higher burden but are further disadvantaged because of slower improvements. These findings invariably call for an equity-centric approach to reduce child undernutrition in India by emphasizing more on nutritional requirements of the most vulnerable and marginalised groups (Carrera et al 2012). Programmatic investments across poorest sections can provide higher nutritional returns and accelerate the declines in child stunting and underweight. Notably, this warrants nuanced understanding of local realities and structural barriers that potentially isolate the poor from accessing nutrition-specific benefits and services. Secondary data, including NFHS, can provide an overview of the situation but are not well-equipped to delve into such intricacies. In fact, this is a huge opportunity for programme managers to develop customized data that can have far-reaching implications for nutrition interventions across such geographies.

The discourse on economic backwardness is often corroborated by evidence on such deprivations among various social groups identified on the basis of caste and religious affiliations. Scheduled castes and tribes (SC-ST) as well as Muslim households are usually identified with disproportionately higher burden of adverse developmental outcomes. Since social disparities are an intrinsic feature of Indian society, numerous policy efforts are envisaged and implemented to achieve equitable progress. The key to success in target achievement is in arriving at solutions to the historical challenges of socioeconomic marginalization that delimit effectiveness of policies and programmes (Mamgain & Diwakar 2012, Thorat & Sadana 2009). While policymaking takes cognizance of marginalized groups, particularly the poor and the backward communities (such as scheduled castes and tribes, SCST), it is critical to adopt an intersectional perspective to understand the intricacies and barriers. It is observed that the interlocking nature of these group identities have significant implications as an interacting process whereby multiple axes of deprivation get combined to aggravate the problem and intensify distributional inequalities (Joe et al 2013, Majumdar & Subramanian 2001). This development divide, however, persists and significant disparities are evident across disadvantaged groups when cross-classified by place of residence, social group affiliations and poverty status (Table 6). In 2015-16, rural areas had 1.3 times (1.5

times) higher prevalence of stunting (severe stunting) than urban areas. Similar differentials were observed for SCST group where the prevalence of stunting (severe stunting) was 1.2 times (1.3 times) higher than other social groups (non-SCST). The largest differentials were observed among the poor and non-poor where the prevalence stunting (severe stunting) among the disadvantaged group was 1.7 times (2.1 times) higher. In 2015-16, RPSCST group displayed the highest prevalence of stunting (49%) which is 1.8 times higher than that of the most advantaged UNPO group (27%). With a ratio differential of 2.3, the disparity between RPSCST and UNPO was worse in case of severe stunting. Irrespective of place of residence and poverty status, every second children in the intersectional groups involving SCST individuals was stunted and every fifth children was severely stunted.

These findings suggest that areas with high concentration of SC-ST community may require concerted engagements. However, there is little novelty about this proposition as concerns regarding placement of nutritional programmes and political economy of policy making are already identified as important reasons for limited success of important nutritional policies and programmes (Balarajan & Reich 2016). Yet, it is likely that treating the entire SC-ST community as a homogenous entity may not be appropriate from a programmatic perspective. In-depth analysis of prevalence patterns and determinants at the local level are necessary to aid policymaking on this vital aspect. For instance, it is likely that the plight of the marginalised and backward households in urban areas may get ignored because of an exclusive focus on the rural geographies. This may be the consequence of urban apathy in programmes even as there are notable variations in distribution of child undernutrition across social groups in urban areas. The current empirical discourse, however, is bereft of such analytical focus and insights.

CIAF: Is there an Alternative Approach for Policy Targeting?

Equitable progress through efficient targeting is a hallmark of policy precision and strategic planning. The identification and prioritization of aspirational districts as potential targets for such developmental programmes is a governance innovation that can assume salience over customary strategies. In this context, certain fairly basic but important data innovations can provide invaluable insights to aid policy implementation within districts. Examining the entire spectrum of anthropometric failure can offer a much-needed targeting perspective. The resource requirements and nature of interventions will vary with the number, type and

composition of nutrition failure. For instance, adopting Svedberg's (2000) Composite Index of Anthropometric Failure (CIAF) for identification of priority districts and interventions can be more informative than uni-dimensional indicators (such as stunted or not, underweight or not, and wasted or not). The CIAF is a broad definition of undernutrition whereby a child will be categorized as undernourished if he or she experiences anthropometric failure in any of the three dimensions (stunting or underweight or wasting). Whereas, from a policy perspective, it is critical to prioritize the situation where children are simultaneously experiencing all three failures (stunting and underweight and wasting). While the concept may require refinements for programmatic relevance, it nevertheless offers deep insights on the dynamics of burden across geographies and socioeconomic groups.

In this regard, Table 7 provides three clear insights. First, every second child (below 5 years) in India suffers some form of anthropometric failure (either single or combined). Second, between 2005-06 and 2015-16, the highest reductions were observed among children experiencing double failures (stunting/underweight or wasting/underweight). Finally, about 7% of children suffer from all three failures which reflects the severity of deprivation. The implications are as follows: Mutually exclusive categorization of anthropometric failure highlights the magnitude of joint failures or the worst situations. This can be a criterion for identification of priority districts based on patterns, distribution and observed improvements of these six different failures with greater focus on districts depicting high burden of joint anthropometric failures. Besides, in the absence of poverty statistics at the district level, undernutrition prevalence in terms of joint failure provides a much-needed perspective on nutrition planning in keeping with the pro-poor nature of policymaking. A more precise way to understand the burden single, double and triple anthropometric failures among children is depicted in figure 7.

Why Focus on Villages?

The NITI Aayog has identified 117 districts as 'Aspirational Districts' based on low-performance in five main areas i.e. Health and Nutrition, Education, Agriculture and Water Resources, Financial Inclusion, Skill Development and Basic Infrastructure (NITI Aayog 2018). This has led various stakeholders to focus on 'aspirational districts' both from research and policy perspective. However, we find that there are significant intra-district variations in health and nutrition outcomes and bulk of these variations are accounted by

village-level factors. Table 9 presents the variance partition coefficients (VPCs) based on a four-level logistic regression model (i.e. state, district, village and individual) for stunting, wasting and underweight. An overwhelming 58.9% (43.8%) of the overall variation in stunting (underweight) was attributable to the villages. This clearly highlights that effective targeting needs to go a step further and focus on villages for programmatic achievements. Further, Map 4, 5 and 6 presents district-wise distribution (Standard Deviation) of child stunting, wasting and underweight, respectively, across villages in India for 2016. The estimates show relatively higher inter-village variation in stunting and underweight than inter-district variation. In addition, inequality in stunting prevalence across villages was negatively associated with stunting prevalence, implying that districts with high prevalence have few villages where the failures are significantly agglomerated. The priority should be both on allocation of greater resources toward poor performing villages irrespective of the district-level averages. In other words, prioritizing village as ultimate unit of target can be effective for both governance as well as faster progress towards reductions in child undernutrition.

Conclusion and Key Messages

Given the unprecedented policy attention on child undernutrition, this paper provides critical insights on a range of issues that directly concerns the implementation of the POSHAN Abhiyaan. We argue that the POSHAN targets are far from modest and can prove to be a daunting task given the slow pace of improvements in anthropometric failure in India. Low-performing states have considerable potential to achieve rapid reductions if basic socioeconomic determinants of child undernutrition are addressed. Poverty and inequalities leave an indelible imprint on the nutritional landscape. The strong connection between poverty and anthropometric failure (especially the multiple ones) suggests that one needs to view this as a "household" exposure and not merely from a "maternal and child" lens. Thus, focusing on poorer households both with nutrition-specific interventions (e.g., adequate macro and micro nutrients) and nutrition-related (e.g., livelihood programs that alleviate poverty, infrastructure programs focused clean water and sanitation) are important. There is a scope for the donor community and the governmental efforts to converge here.

The huge intra-state disparities among the rich and the poor is evidence of the fact that, irrespective of developmental context, the rich are better equipped to overcome the

challenges of food and nutrition security. These findings call for states to actively support developmental policies that bring about improvements in household socioeconomic status and contextual environment. Additionally, increasing public investments in maternal and child health as well as female education and empowerment are central for accelerating improvements in nutritional outcomes. The importance of such conscious efforts increases manifold because of the observed non-response between short-run economic growth and nutritional well-being. Further, our analysis reveals major gaps in analytical support that are necessary to strengthen programme design and implementation. In particular, the dearth of longitudinal studies in India on understanding the slide in nutritional well-being during the first 1000 days is a critical concern and deserves utmost priority. Similarly, comprehending gender differential from programmatic data is critical to overrule the possibility of gender bias that otherwise is being masked by national and state-level averages. In conclusion, we argue for precision targeting to enable effective delivery and monitoring of policies and programmes. The Aspirational District programme is one such effort but given the huge intra-district variability it is reasonable to take it a step further to the villages/wards to support intra-district programme implementation. This invariably calls for strengthening data collection and analytical capacities of programme managers and health functionaries to address the diverse programmatic needs within the districts and at the same time unravel intricacies that otherwise remain obscured in customary enquiries.

References

Black, R. E., Alderman, H., Bhutta, Z. A., Gillespie, S., Haddad, L., Horton, S., ... & Walker, S. P. (2013). Maternal and child nutrition: building momentum for impact. The Lancet, 382(9890), 372-375.

Black, R. E., Morris, S. S., & Bryce, J. (2003). Where and why are 10 million children dying every year?. The Lancet, 361(9376), 2226-2234.

Carrera, C., Azrack, A., Begkoyian, G., Pfaffmann, J., Ribaira, E., O'Connell, T., ... & Sharkey, A. (2012). The comparative cost-effectiveness of an equity-focused approach to child survival, health, and nutrition: a modelling approach. The Lancet, 380(9850), 1341-1351.

Chalasani, S., & Rutstein, S. (2014). Household wealth and child health in India. Population studies, 68(1), 15-41.

Corsi DJ, Mejía-Guevara I, Subramanian S (2016) Risk factors for chronic undernutrition among children in India: Estimating relative importance, population attributable risk and fractions. Social Science & Medicine 157: 165-185.

Drèze, J., & Sen, A. (1989). Hunger and public action. Oxford University Press on Demand.

Drèze, J., & Sen, A. (2013). An uncertain glory: India and its contradictions. Princeton University Press.

Hong, R., & Mishra, V. (2006). Effect of wealth inequality on chronic under-nutrition in Cambodian children. Journal of Health, Population and Nutrition, 89-99.

Hong, R., Banta, J. E., & Betancourt, J. A. (2006). Relationship between household wealth inequality and chronic childhood under-nutrition in Bangladesh. International Journal for Equity in Health, 5(1), 15.

Jayachandran, S., & Pande, R. (2017). Why are Indian children so short? The role of birth order and son preference. American Economic Review, 107(9), 2600-2629.

Joe, W., Rajaram, R., & Subramanian, S. V. (2016). Understanding the null-to-small association between increased macroeconomic growth and reducing child

undernutrition in India: role of development expenditures and poverty alleviation. Maternal & Child Nutrition, 12, 196-209.

Joe, W., Rajaram, R., & Subramanian, S. V. (2016). Understanding the null-to-small association between increased macroeconomic growth and reducing child undernutrition in India: role of development expenditures and poverty alleviation. Maternal & child nutrition, 12, 196-209.

Kanjilal, B., Mazumdar, P. G., Mukherjee, M., & Rahman, M. H. (2010). Nutritional status of children in India: household socio-economic condition as the contextual determinant. International Journal for equity in Health, 9(1), 19.

Mwageni, E., Masanja, H., Juma, Z., Momburi, D., Mkilindi, Y., Mbuya, C., ... & de Savigny, D. (2005). Socio-economic status and health inequalities in rural Tanzania: evidence from the Rufiji demographic surveillance system. Measuring Health Equity in Small Areas-Findings from Demographic Surveillance Systems". Hampshire, England: Ashgate Publishing Limited.

NITI Aayog. (2017). Nourishing India: The National Nutrition Strategy, Government of India, New Delhi.

Padhi, B. K., Baker, K. K., Dutta, A., Cumming, O., Freeman, M. C., Satpathy, R., ... & Panigrahi, P. (2015). Risk of adverse pregnancy outcomes among women practicing poor sanitation in rural india: a population-based prospective cohort study. PLoS medicine, 12(7), e1001851.

Proos, L. A. (2009). Growth & development of Indian children adopted in Sweden. Indian Journal of Medical Research, 130(5), 646-50.

Proos, L. A., Hofvander, Y., Wennqvist, K., & Tuvemo, T. (1992). A longitudinal study on anthropometric and clinical development of Indian children adopted in Sweden: II. Growth, morbidity and development during two years after arrival in Sweden. Upsala Journal of Medical Sciences, 97(1), 93-106.

Rah, J. H., Cronin, A. A., Badgaiyan, B., Aguayo, V. M., Coates, S., & Ahmed, S. (2015). Household sanitation and personal hygiene practices are associated with child stunting in rural India: a cross-sectional analysis of surveys. BMJ open, 5(2), e005180.

Som, S., Pal, M., & Bharati, P. (2007). Role of individual and household level factors on stunting: A comparative study in three Indian states. Annals of Human Biology, 34(6), 632-646.

Spears, D., Ghosh, A., & Cumming, O. (2013). Open defecation and childhood stunting in India: an ecological analysis of new data from 112 districts. PloS one, 8(9), e73784.

Subramanian, S. V., Mejía-Guevara, I., & Krishna, A. (2016). Rethinking policy perspectives on childhood stunting: time to formulate a structural and multifactorial strategy. Maternal & child nutrition, 12, 219-236.

Subramanyam, M. A., Kawachi, I., Berkman, L. F., & Subramanian, S. V. (2011). Is economic growth associated with reduction in child undernutrition in India?. PLoS Medicine, 8(3), e1000424.

Subramanyam, M. A., Kawachi, I., Berkman, L. F., & Subramanian, S. V. (2010). Socioeconomic inequalities in childhood undernutrition in India: analyzing trends between 1992 and 2005. PLoS One, 5(6), e11392.

Subramanyam, M. A., Kawachi, I., Berkman, L. F., & Subramanian, S. V. (2011). Is economic growth associated with reduction in child undernutrition in India?. PLoS medicine, 8(3), e1000424.

Thang, N. M., & Popkin, B. M. (2003). In an era of economic growth, is inequity holding back reductions in child malnutrition in Vietnam?. Asia Pacific Journal of Clinical Nutrition, 12(4).

Vollmer, S., Harttgen, K., Kupka, R., & Subramanian, S. V. (2017). Levels and trends of childhood undernutrition by wealth and education according to a Composite Index of Anthropometric Failure: evidence from 146 Demographic and Health Surveys from 39 countries. BMJ global health, 2(2), e000206.

Woelk, G., & Chikuse, P. (2000, September). Using demographic and health surveys (DHS) data to describe intra country inequalities in health status: Zimbabwe. In EQUINET Conference, Mid-Rand South Africa (pp. 12-15).

Zere, E., & McIntyre, D. (2003). Inequities in under-five child malnutrition in South Africa. International journal for equity in health, 2(1), 7.

Table 1: Prevalence of Anthropometric Failures in Children below 5 years across States, India, NFHS, 2006 and 2016

State	Stunting (%)		Underweight (%)		Wasting (%)	
	2006	2016	2006	2016	2006	2016
Andhra Pradesh	42.7	31.4	32.7	32.2	12.3	17.4
Arunachal Pradesh	42.8	29.3	31.9	19.4	15	16.9
Assam	46.1	36.2	36.4	29.8	13.6	17
Bihar	55.7	48.4	56.1	43.9	27.3	20.9
Chhattisgarh	53.8	37.6	47.7	37.7	20.1	23.1
Delhi	42.7	32.1	26.9	27.3	16.1	15.5
Goa	25.1	20	24.8	23.7	14	21.8
Gujarat	51.5	38.3	44.7	39.4	18.6	26.5
Haryana	45.4	34	39.7	29.5	19.5	21.2
Himachal Pradesh	38.3	26.4	36.3	21.6	19.5	13.9
Jammu and Kashmir	35.5	27.7	25.7	16.8	14.6	12.2
Jharkhand	49.8	45.5	57.1	47.8	32.6	28.9
Karnataka	43.6	36.3	37.6	35.1	17.8	25.9
Kerala	24.6	20	22.7	16.2	15.8	15.7
Madhya Pradesh	49.8	41.9	59.9	42.8	35.3	25.8
Maharashtra	46.3	34.2	36.7	35.9	16.3	25.5
Manipur	35.5	28.8	22.2	13.7	9	6.9
Meghalaya	55.3	44	49.3	28.9	31.1	15
Mizoram	39.9	27.9	20	11.9	8.8	6
Nagaland	39.1	28.5	25.5	16.8	13.3	11.3
Odisha	45	34.1	40.9	34.3	19.6	20.4
Punjab	36.5	25.8	24.6	21.6	8.9	15.7
Rajasthan	44.1	39.1	40.4	36.6	20.5	23
Sikkim	37.7	29.4	20	14.1	9.9	14.3
Tamil Nadu	31.5	27.2	30	23.8	21.7	19.7
Tripura	35.9	24	39.4	24	25	16.7
Uttar Pradesh	56.5	46.3	42.3	39.5	14.9	17.9
Uttarakhand	44.7	33.9	38.1	26.8	18.8	19.5
West Bengal	44.3	32.7	38.6	31.6	16.8	20.2
All	48.0	38.4	42.5	35.7	19.8	21.0

Table 2: Prevalence of Child Anthropometric Failures by Maternal Covariates, India, NFHS 2016

Background Characteristics	Stunting (%)	Underweight (%)	Wasting (%)
Mother's BMI			
BMI < 18.5	45.8	47.8	26.7
BMI 18.5-25.0	38.1	34.2	20.4
BMI > 25	27.0	21.7	14.2
Mother's Education			
Illiterate	50.7	46.8	22.7
Primary	43.4	40.1	21.3
Secondary	34.4	32.6	20.9
Higher	27.2	25.7	19.5
College	20.8	18.9	17.9
Mother's Height			
160+ cm	21.6	20.8	18.5
155-159.9 cm	27.9	26.6	20.1
150-154.9 cm	36.3	33.4	20.7
145-149.9 cm	45.4	42.7	22.2
Less than 145 cm	57.1	51.7	22.5
All	38.4	35.8	21.0

Table 3: Multilevel Logistic Regression Estimates Regarding Association between Child Anthropometric Failures and Maternal Covariates, NFHS 4

Characteristics	Stunting		Wasting		Underweight	
	OR	95% CI	OR	95% CI	OR	95% CI
Mother's Height						
160+ cm®	1.00	-	1.00	-	1.00	-
155-159.9 cm	1.40***	[1.34;1.47]	1.06***	[1.01;1.12]	1.31***	[1.25;1.38]
150-154.9 cm	1.91***	[1.83;2.00]	1.11***	[1.06;1.17]	1.73***	[1.65;1.81]
145-149.9 cm	2.66***	[2.55;2.78]	1.18***	[1.13;1.24]	2.35***	[2.25;2.46]
Less than 145 cm	4.00***	[3.80;4.20]	1.25***	[1.18;1.32]	3.34***	[3.17;3.51]
Mother's BMI						
BMI < 18.5®	1.00	-	1.00	-	1.00	-
BMI 18.5-25.0	0.80***	[0.79;0.82]	0.76***	[0.74;0.78]	0.64***	[0.63;0.65]
BMI > 25	0.63***	[0.61;0.65]	0.54***	[0.51;0.56]	0.43***	[0.42;0.45]
Mother's Education						
Illiterate®	1.00	-	1.00	-	1.00	-
Primary	0.94***	[0.91;0.97]	0.95***	[0.91;0.98]	0.93***	[0.90;0.96]
Secondary	0.84***	[0.81;0.86]	0.95***	[0.92;0.98]	0.86***	[0.83;0.88]
Higher	0.74***	[0.71;0.78]	0.92***	[0.88;0.96]	0.77***	[0.74;0.80]
College	0.65***	[0.62;0.69]	0.92***	[0.87;0.97]	0.67***	[0.64;0.71]

Note: The Odds Ratios are derived from logistic regression model adjusted for child's age, sex, birth-order, household wealth quintiles, social group and religion. * *p-value< 0.10; ** p-value < 0.05; *** p-value < 0.01*

Table 4: Anthropometric Failures among Indian children (Below 5 years): Conditional comparisons by birth order and sex, NFHS 2016

Categories	N	N (%)	Stunting (%)	Wasting (%)	Underweight (%)
First Born Boy	49817	36.95	34.3	21.3	32.5
First Born Girl	46395	34.41	32.1	19.5	30.5
Second Born Boy (with elder brother)	8770	6.50	37.7	24.1	35.9
Second Born Boy (with elder sister)	9176	6.81	37.8	25.2	34.7
Second Born Girl (with elder brother)	8147	6.04	35.1	22.0	32.5
Second Born Girl (with elder sister)	8312	6.16	36.5	22.3	32.5
Third Born Boy (with 2 elder brothers)	430	0.32	37.2	33.5	40.0
Third Born Boy (with 2 elder sisters)	739	0.55	33.9	30.4	37.2
Third Born Girl (with 2 elder brothers)	401	0.30	35.0	25.1	35.7
Third Born Girl (with 2 elder sisters)	631	0.47	31.5	28.7	37.5
Third Born Boy (with 2 mixed siblings)	946	0.70	33.1	27.9	37.1
Third Born Girl (with 2 mixed siblings)	865	0.64	28.6	26.8	32.4
Fourth Born Boy (with 3 elder brothers)	8	0.01	95.7	0	95.7
Fourth Born Boy (with 3 elder sisters)	19	0.01	41.7	59.3	42.7
Fourth Born Girl (with 3 elder brothers)	11	0.01	31.7	12.3	22.9
Fourth Born Girl (with 3 elder sisters)	31	0.02	44.7	17.3	28.2
Fourth Born Boy (with all mixed siblings)	71	0.05	35.3	27.2	50
Fourth Born Girl (with all mixed siblings)	70	0.05	42.1	24.9	34.9
All	134839	100	34.2	21.5	32.3

Note: The above sample (N = 134839) are children with information on their own anthropometry and gender as well as information on their siblings. This constitutes about 51.9% of the total children measured in NFHS4. The remaining (N = 124788) children had older siblings outside of the last 5 years window and hence their anthropometry and sex is not available.

Table 5: Prevalence of Child Anthropometric Failures by Household Wealth Quintiles, India, NFHS 2006 and 2016

Wealth Quintiles	Stunting (%)		Underweight (%)		Wasting (%)	
	2006	2016	2006	2016	2006	2016
First Quintile	59.9	51.5	56.7	48.7	25.1	24.2
Second Quintile	54.4	43.5	49.4	40.4	22.1	21.8
Third Quintile	48.8	36.5	41.5	33.3	18.9	20.1
Fourth Quintile	40.8	29.2	33.6	27.4	16.5	19.3
Highest Quintile	25.6	22.2	19.7	20.2	12.7	17.9
Absolute Difference (Q1-Q5)	34.3	29.3	37.0	28.5	12.4	6.3
Relative Difference (Q1/Q5)	2.3	2.3	2.9	2.4	2.0	1.4

Table 6: Prevalence of stunting and severe stunting among Children (below 5 years) across intersectional groups, India 2006 and 2016

Unidimensional Groups	Stunting (%)		Severe Stunting (%)	
	2006	2016	2006	2016
Rural	50.7	41.2	25.7	17.9
Urban	39.9	31.0	17.7	11.9
SCST	54.0	43.1	28.2	19.2
Non-SCST	45.5	36.2	21.8	14.9
Poor	54.8	44.4	28.9	19.6
Non-Poor	34.2	26.1	12.9	9.3
Intersectional Groups				
RPSCST	58.4	49.0	32.3	23.3
RPO	47.0	34.3	22.4	12.7
RNPSCST	56.3	47.4	30.6	22.0
RNPO	40.3	30.3	16.6	10.7
UPSCST	59.2	45.6	35.8	20.8
UPO	45.1	33.6	17.8	12.9
UNPSCST	59.3	46.8	31.7	20.4
UNPO	34.9	27.3	14.9	10.0
All	48.0	38.5	23.7	16.4

Note: Rural-Poor-SCST (RPSCST), Rural-Non-Poor-SCST (RNPSCST), Rural-Poor-Others (RPO), Rural-Non-Poor-Others (RNPO), Urban-Poor-SCST (UPSCST), Urban-Non-Poor-SCST (UNPSCST), Urban-Poor-Others (UPO), Urban-Non-Poor-Others (UNPO)

Table 7: Anthropometric Failures among Children (below 5 years), India, NFHS, 2016

Anthropometric Failures	Rural		Urban		India	
	2006	2016	2006	2016	2006	2016
Conventional Approach						
Any Stunting (%)	50	41	39	31	48	38
Any Wasting (%)	21	21	17	20	20	21
Any Underweight (%)	46	38	34	29	43	36
Svedberg's Approach						
Stunting Only (S) (%)	14	14	15	12	15	13
Wasting Only (W) (%)	2	3	2	2	2	3
Underweight Only (U) (%)	4	6	5	7	4	6
Stunting and Underweight Only (SU) (%)	26	20	18	14	25	18
Underweight and Wasting Only (UW) (%)	7	8	6	8	7	8
Stunting, Underweight and Wasting (SUW) (%)	10	7	6	5	9	7
Single Failure (S & U & W)	20	23	22	21	21	22
Combined Failure (SU &UW & SUW)	43	35	30	27	41	33
Any Failure (S/U/W)	63	58	52	48	62	55
No Failure	37	42	48	52	38	45

Table 8: Variance Components Model (4 level) for Child Anthropometric Failures, India, NFHS 2016

	Stunting			Underweight			Wasting		
	Var (95% CI)	VPC		Var (95% CI)	VPC		Var (95% CI)	VPC	
State (level-4)	0.09 (0.04, 0.14)	22.9%	2.4%	0.20 (0.10, 0.30)	38.1%	5.3%	0.10 (0.05, 0.16)	20.6%	2.7%
District (level-3)	0.07 (0.06, 0.08)	18.2%	1.9%	0.09 (0.08, 0.11)	17.4%	2.4%	0.12 (0.10, 0.14)	24.4%	3.2%
PSU (level-2)	0.23 (0.21, 0.24)	58.9%	6.2%	0.23 (0.22, 0.25)	43.8%	6.1%	0.28 (0.26, 0.29)	55.4%	7.3%
Individual (level-1)	3.29		89.6%	3.29		86.1%	3.29		86.8%

Note: Sample size for different outcomes: Stunting, Underweight, Wasting: N_{ij} = 225,002, N_j = 28,164

Figure 1: Scatter Plot for Child Anthropometric Failures and Absolute Rich-Poor Gap Within States, India, NFHS 2016

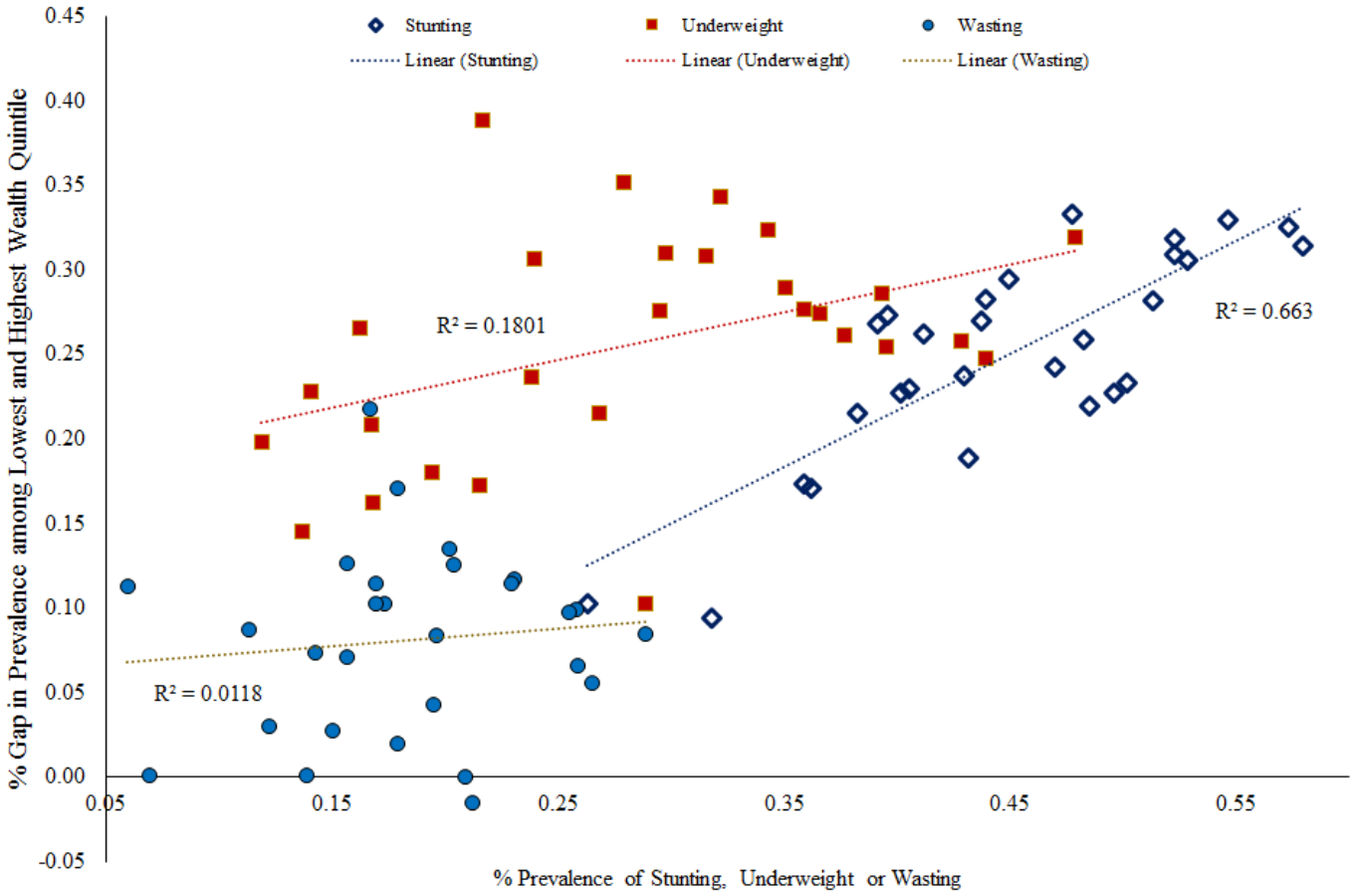


Figure 2: Scatter Plot for Average Annual Change in Child Anthropometric Failures and PCNSDP, Indian States, NFHS, 2006 and 2016

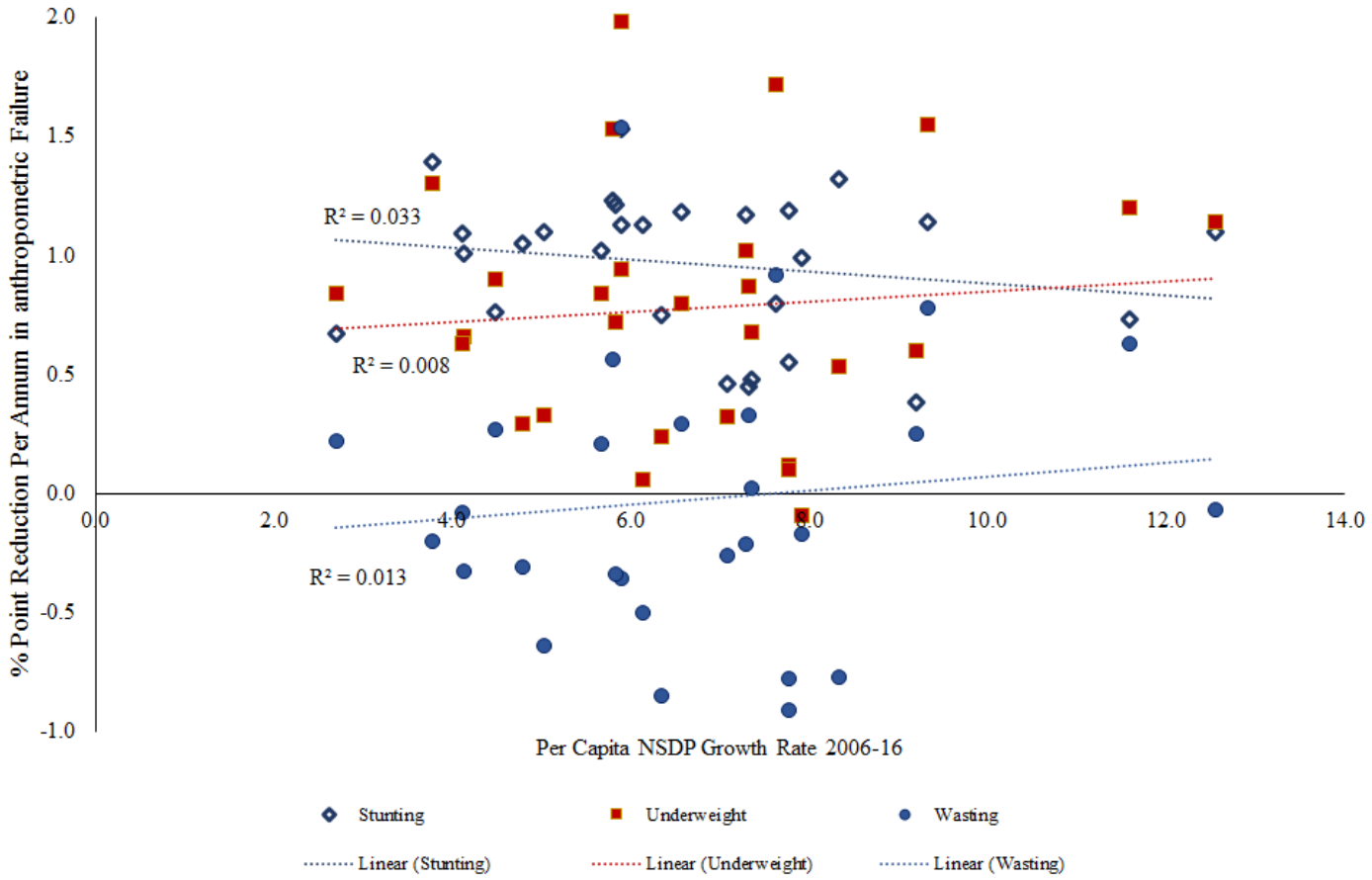
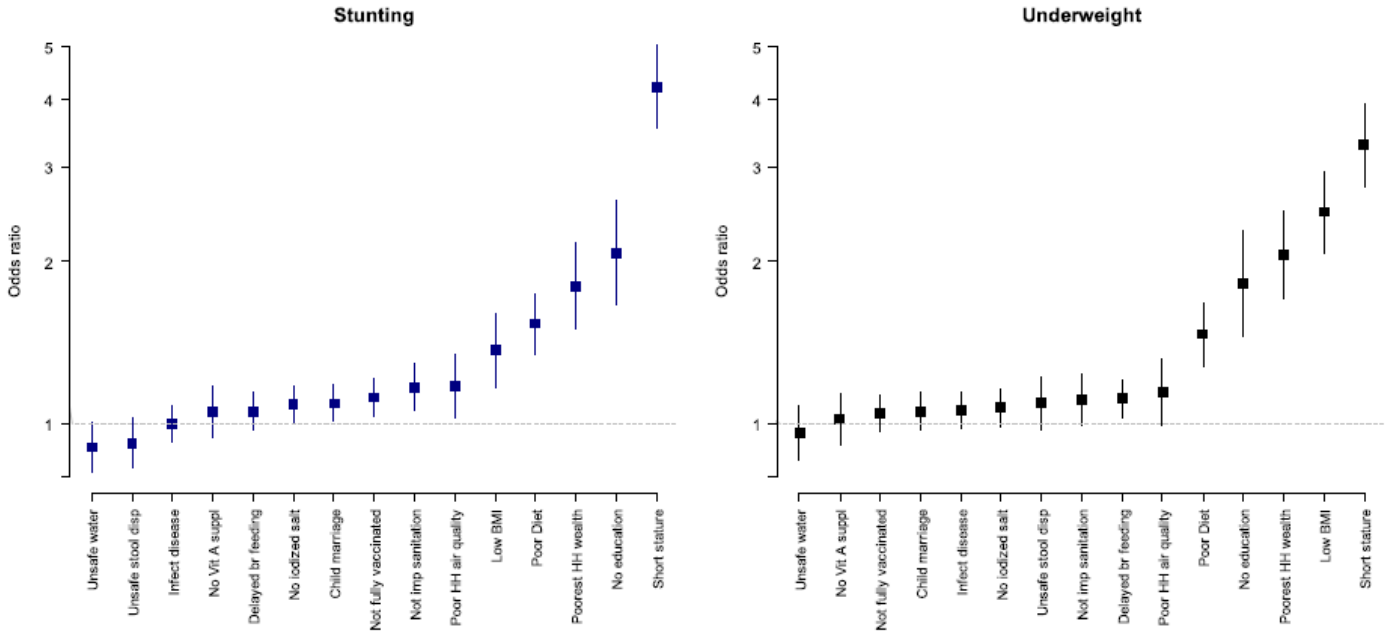


Figure 3: Relative Ranking of Risk Factors in terms of adjusted effect size on stunting and Underweight, Odds Ratio and 95% Confidence Intervals



Source: Corsi, D. J., Mejía-Guevara, I., & Subramanian, S. V. (2016). Risk factors for chronic undernutrition among children in India: Estimating relative importance, population attributable risk and fractions. *Social Science & Medicine*, *157*, 165-185.

Figure 4: Prevalence of Child Anthropometric Failures by type of Sanitation Facility, India, NFHS, 2016

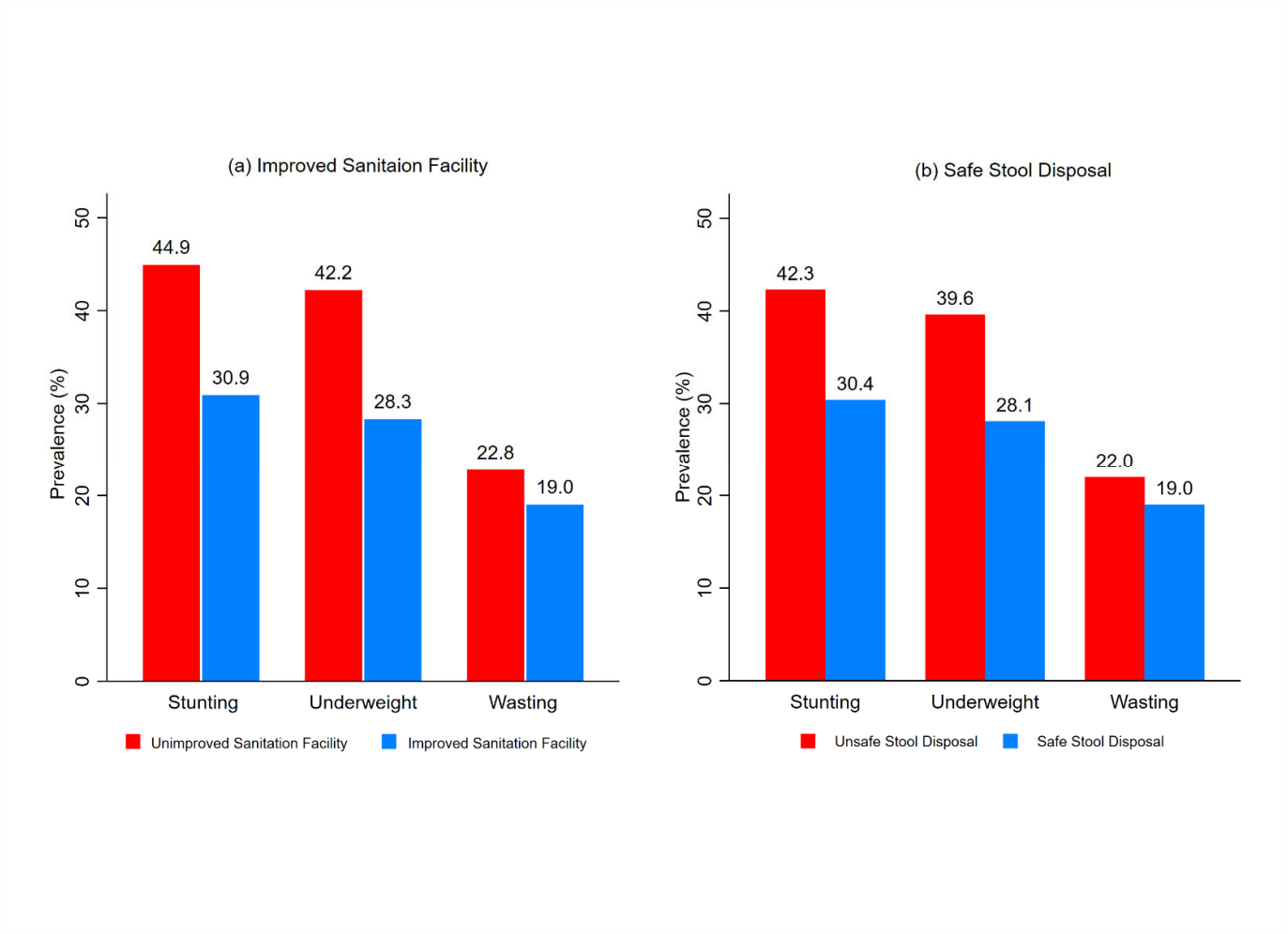


Figure 5: Prevalence of Anthropometric Failures among Children by broad Age-groups, India, NFHS, 2016

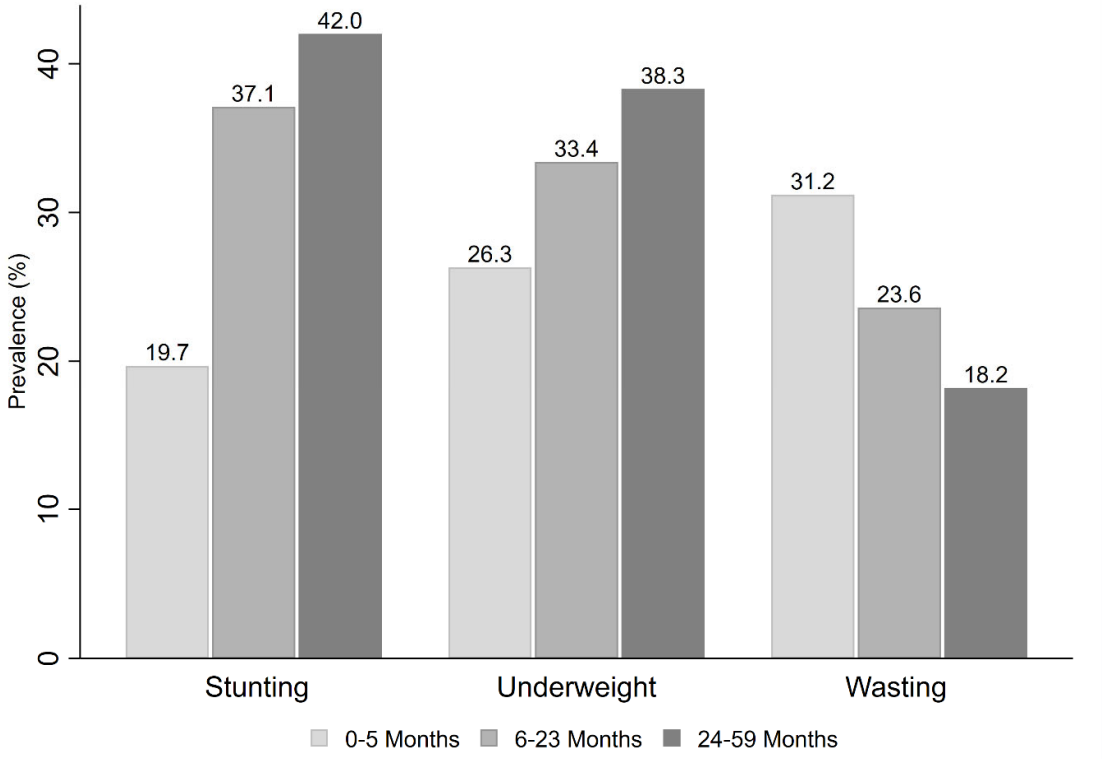


Figure 6: Distribution of Stunted, Wasted and Underweight Children by Age groups, India, NFHS 2016

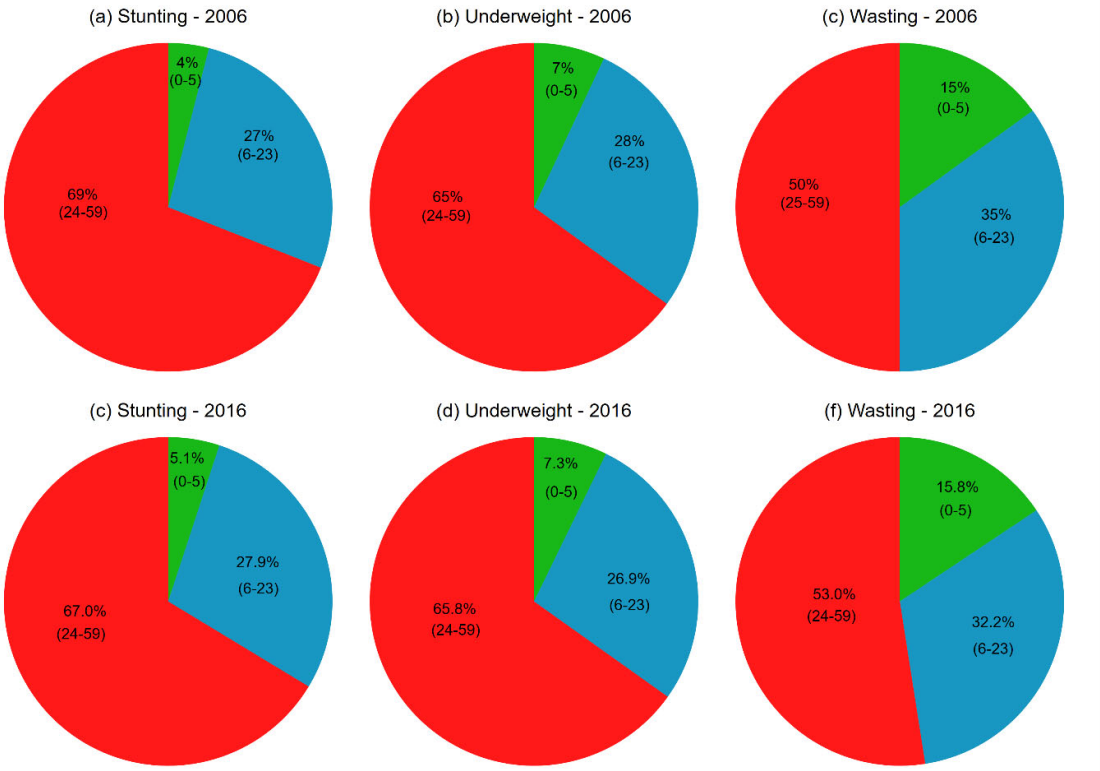
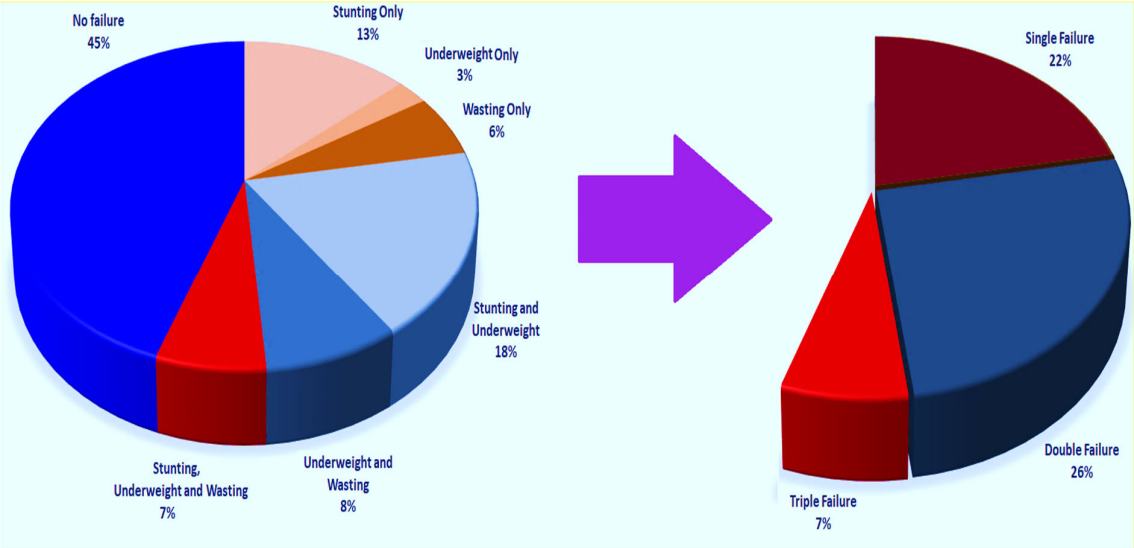
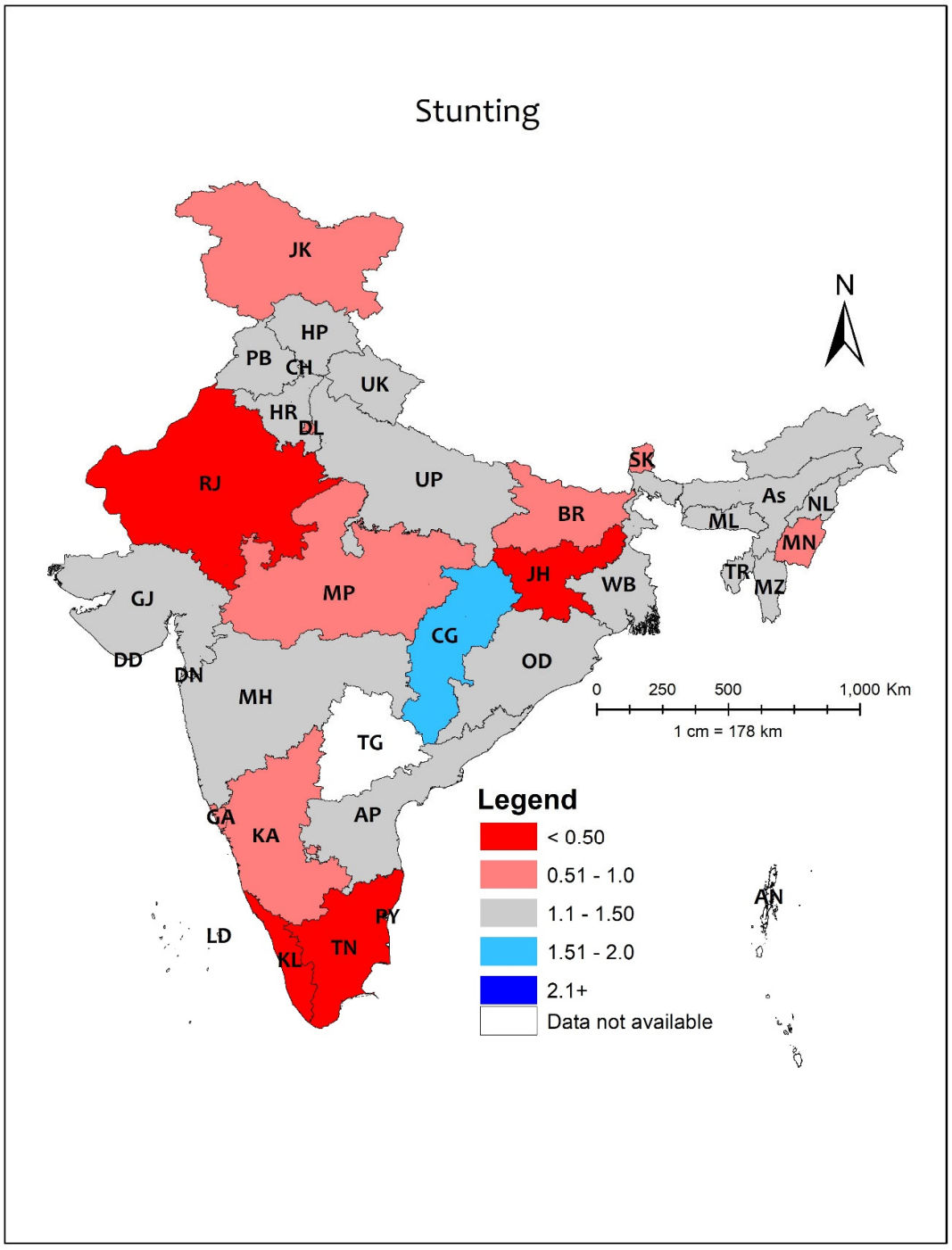


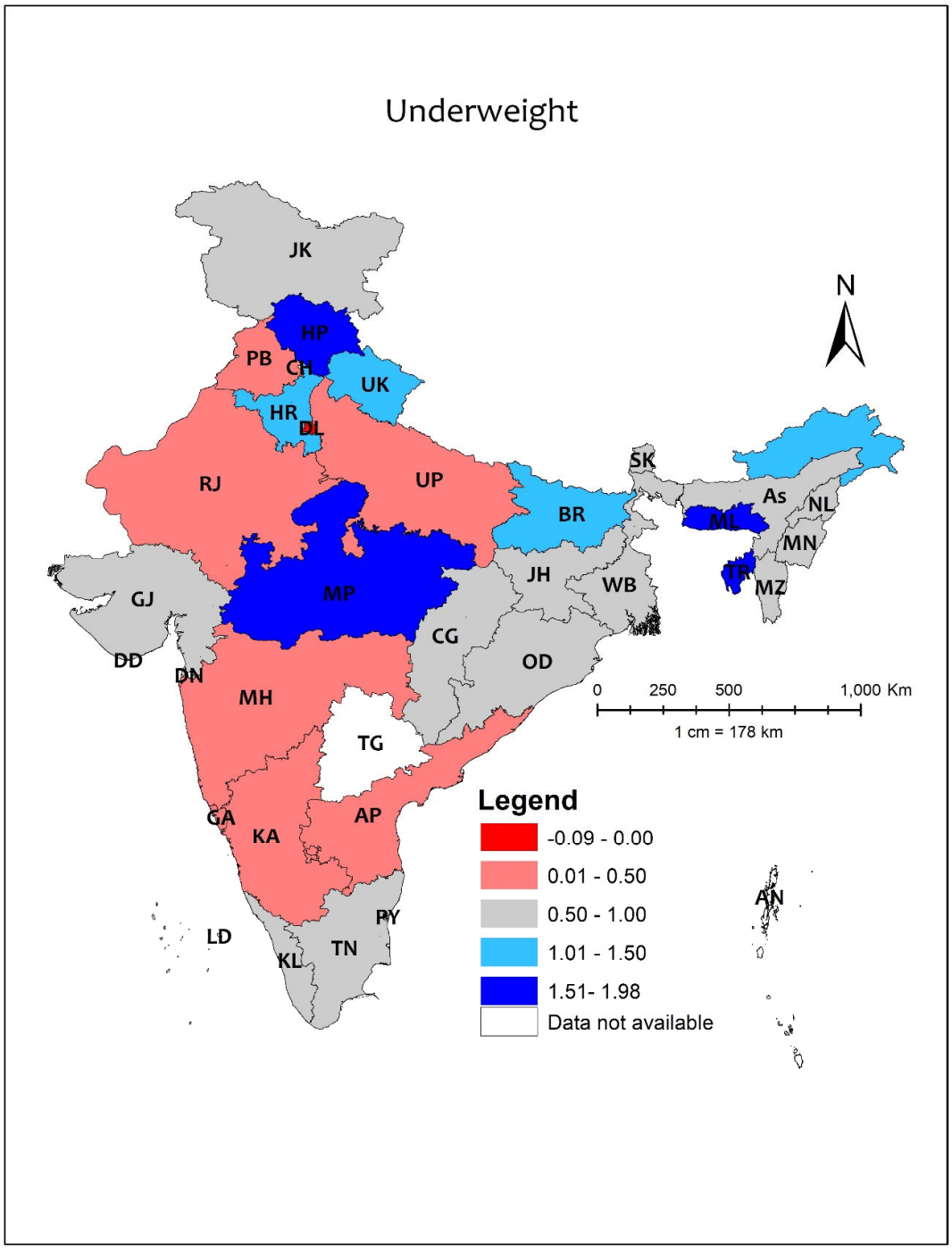
Figure 7: Prevalence of Single , Double and Triple Anthropomteric Failure in India, NFHS 2015-16



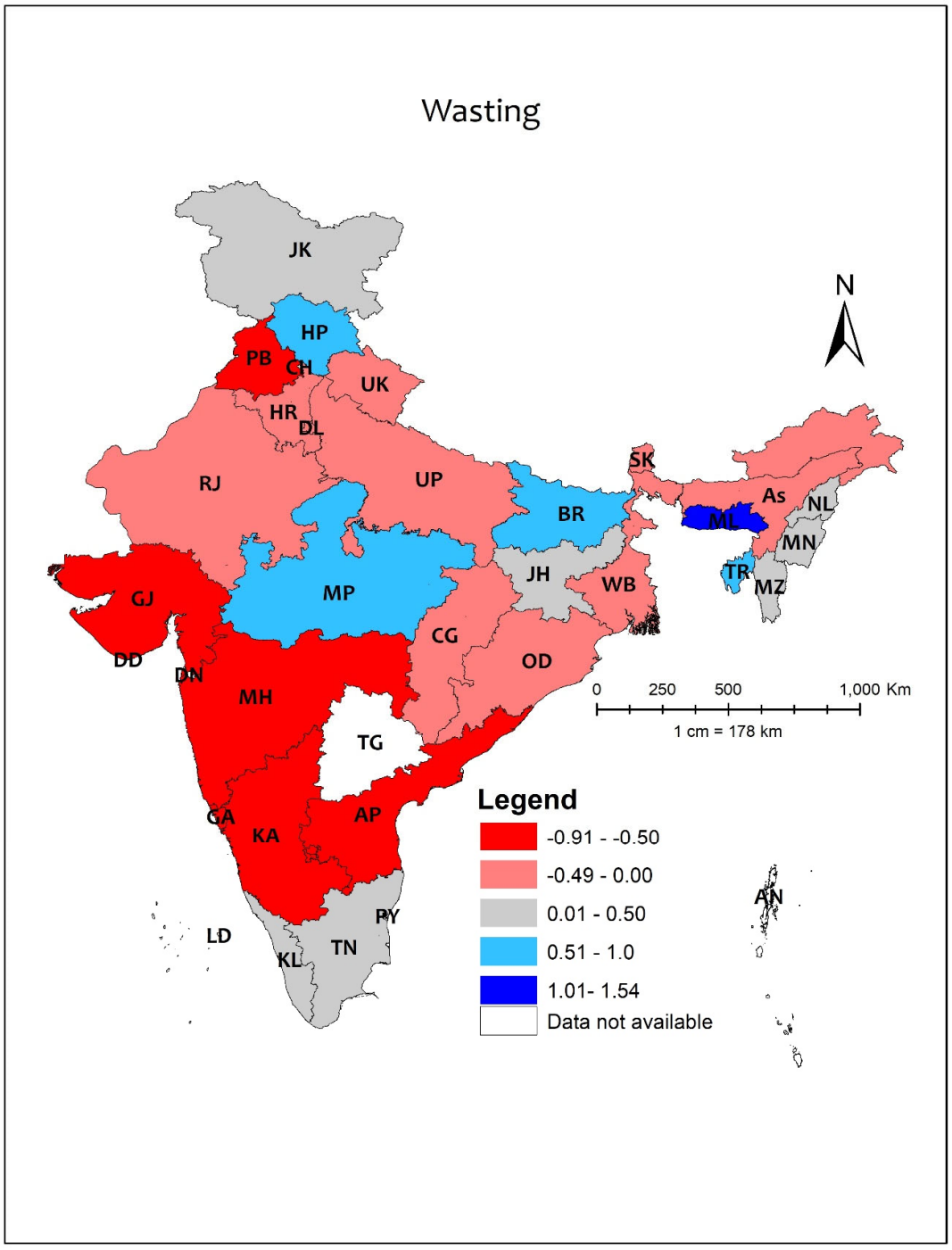
Map 1: Average Annual Change (in Percentage Points) in the prevalence of Child Stunting (below 5 years) during 2006 to 2016 across States, India, NFHS 2016



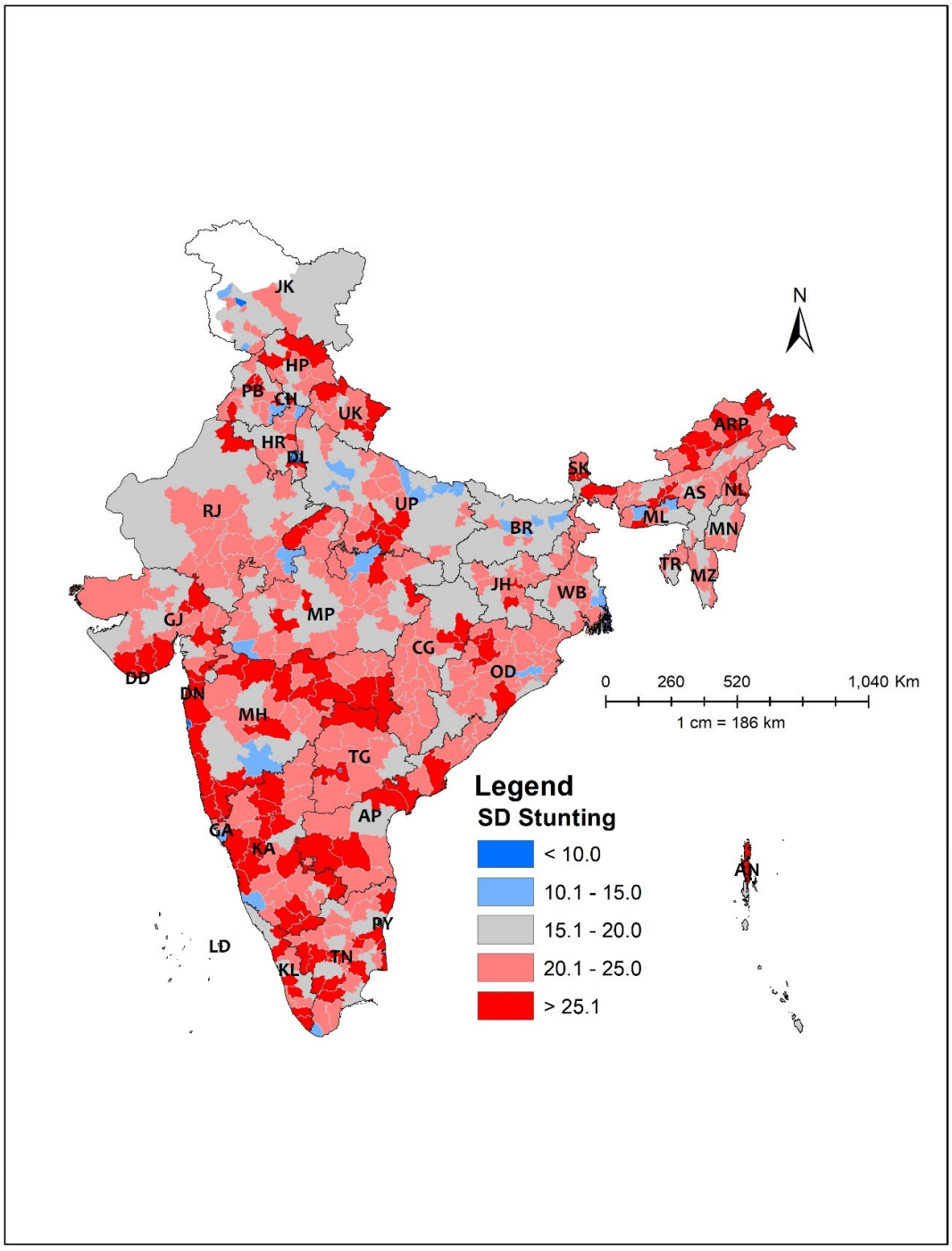
Map 2: Average Annual Change (in Percentage Points) in the prevalence of Child Underweight (below 5 years) during 2006 to 2016 across States, India, NFHS 2016



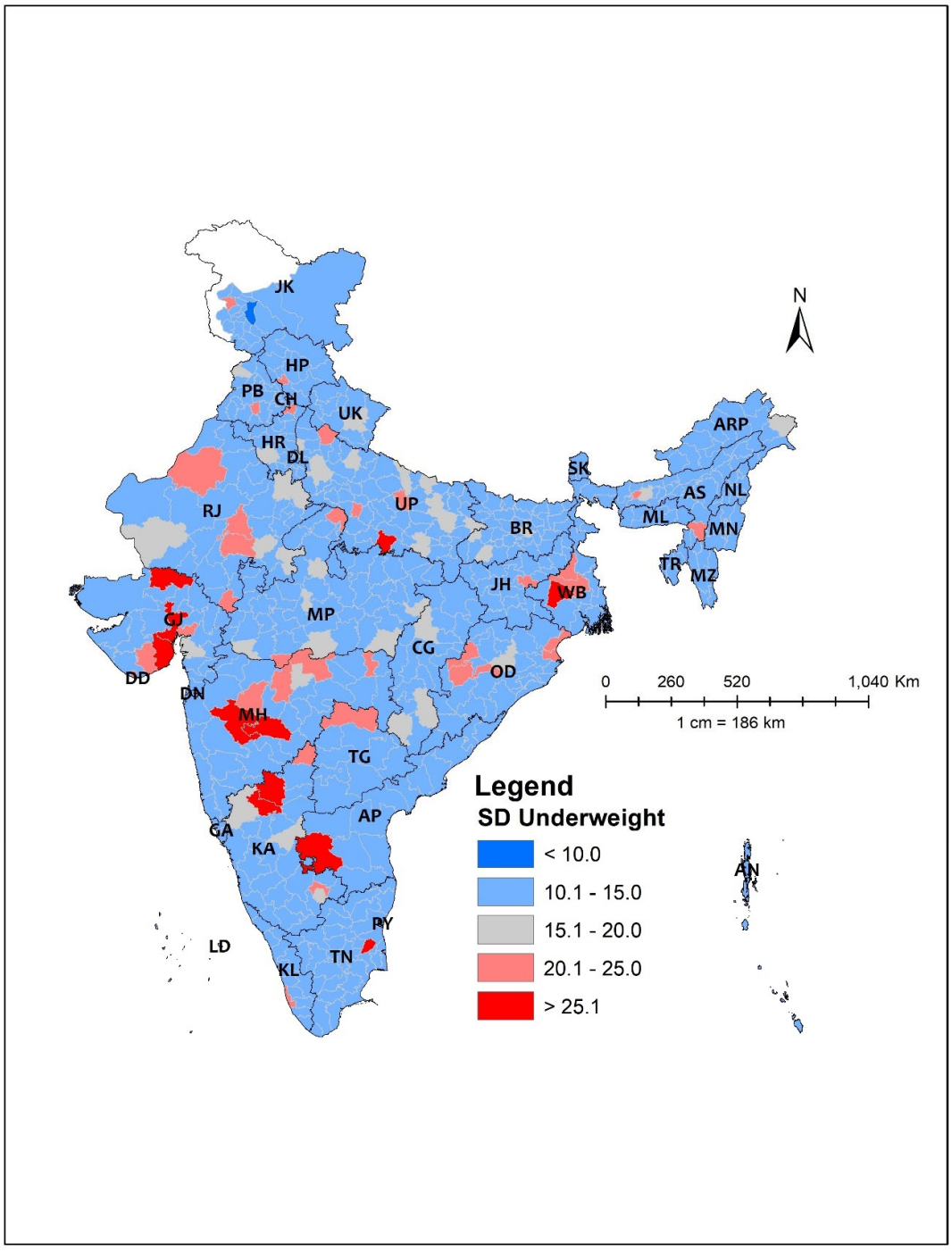
Map 3: Average Annual Change (in Percentage Points) in the prevalence of Child Wasting (below 5 years) during 2006 to 2016 across States, India, NFHS 2016



Map 4: Standard Deviation showing distribution of Child Stunting (below 5 years) across Villages by Districts, Rural India, NFHS 2016



Map 5: Standard Deviation showing distribution of Child Underweight (below 5 years) across Villages by Districts, Rural India, NFHS 2016



Map 6: Standard Deviation showing distribution of Child Wasting (below 5 years) across Villages by Districts, Rural India, NFHS 2016