



POLICY NOTE

FINANCING NUTRITION IN INDIA: COST IMPLICATIONS OF THE NUTRITION POLICY LANDSCAPE 2019-20

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KEY FINDINGS

India should have spent at least **₹38,571 crore** in 2019-20, across Union government ministries and State government departments to fully finance a set of core direct nutrition interventions (DNIs), at scale. In 2020-21 and beyond, spending on nutrition will need to be benchmarked at least at this level, or beyond, unless target populations or unit costs for key interventions change substantially.

A bulk of this investment should have been for the Integrated Child Development Services (ICDS) Supplementary Nutrition Program (SNP) interventions for adolescent girls out-of-school, pregnant women, lactating mothers, children aged 6 months to 3 years¹, and malnourished children amounting to an annual allocation of **₹20,796 crore**. This estimate is based on the new unit cost norms announced in 2017.

Maternity Benefits – the Pradhan Mantri Matru Vandana Yojana (PMMVY), launched in 2017, and the Janani Suraksha Yojana (JSY) would have cost **₹9,260 crore** in 2019-20 assuming the norms of coverage for 1 live birth for PMMVY.

KEY ASKS

Cost of delivering key interventions vary across states due to differing state capacity, geography and terrain, and supply constraints. Therefore, **there should be a focus on determining local state-wise unit costs** to be more precise in estimating budgetary requirements.

Data on allocations and expenditures for these core DNIs is currently not available in a comprehensive and disaggregated manner. It would be **useful to benchmark these cost requirements with current data on allocations and expenditures** for these core DNIs. This exercise would enable better planning, budgeting, and decision-making to ensure maximum possible coverage.

INTRODUCTION

Outcomes of malnutrition such as stunting, anaemia, wasting, and low birth weight have remained persistently high in India (Menon et al. 2017). As part of India's national strategy to address malnutrition and associated risks, a number of nutrition interventions are being implemented. These include nutrition-specific interventions such as the provision food supplements, Iron and Folic Acid (IFA) supplementation during pregnancy, breastfeeding (BF) promotion, vitamin A supplementation in early childhood, and food supplementation, as well as nutrition sensitive interventions such as access to clean water, sanitation, etc.

At the Union government level, these interventions are delivered primarily through two Centrally Sponsored Schemes (CSSs) – the Integrated Child Development Services (ICDS) and the National Health Mission (NHM) operating within the Ministry of Women and Child Department (MWCD) and the Ministry of Health and Family Welfare (MoHFW), respectively.

In 2017, the Government of India (GoI) announced five major policies and strategies that could have implications for India's performance on nutrition indicators in the coming years, as listed below:

1. The **Pradhan Mantri Matru Vandana Yojana (PMMVY)**, a conditional cash transfer scheme that promises each Indian woman ₹5,000 across three instalments for her first-born child to partially compensate her for wage losses and promote health-seeking behavior. This program may have a beneficial effect on the demand for essential nutrition interventions (Raghunathan et al. 2017).

¹While SNP is provided to 3-6 year old children as well, this note focusses on early childhood interventions..

2. **An increase in the unit cost norms** for interventions provided under the **Supplementary Nutrition Program (SNP)** of ICDS. The Cabinet Committee on Economic Affairs (CCEA) approved an increase in unit costs and recommended the annual indexation of these to account for inflation². This reform is a positive step for higher coverage and quality of food delivered through the ICDS system (Menon et al. 2016).
3. The **identification of aspirational districts** across states and Union Territories (UTs) under the 'Transformation of Aspirational Districts' program aims to expeditiously improve the socio-economic status of 117 districts from across 28 states. The selection is based on a **composite index** of the **NITI Aayog** and prevalence of stunting from the National Family Health Survey-4 (2015-16). At least one district has been selected from each state and UT so that the action taken in the selected district can be emulated in other districts as well.
4. The launch of **POSHAN Abhiyaan**, which aims to holistically address the prevalence of malnutrition in India through the use of technology for real-time growth monitoring and tracking women and children, convergence of all nutrition related schemes, behavioural change including through Information Education and Communication, community based events and Jan Andolan (people's campaign), training, and capacity-building of functionaries. Specifically, the scheme focuses on achieving the following targets:-

Table 1: POSHAN Abhiyaan Targets

Indicator	Target
Prevent and reduce stunting in children (0- 6 years)	From 38.4 per cent (as per the fourth round of the National Family Health Survey (NFHS-4) to 25 per cent by 2022.
Prevent and reduce undernutrition (underweight prevalence) in children (0-6 years)	By 6 percentage points at a reduction rate of 2 per cent per annum
Reduce the prevalence of anaemia among young children (6-59 months)	By 9 percentage points at a reduction rate of 3 per cent per annum
Reduce the prevalence of anaemia among women and adolescent girls in the age group of 15-49 years	By 9 percentage points at a reduction rate of 3 per cent per annum
Reduce Low Birth Weight (LBW)	By 6 percentage points at a reduction rate of 2 per cent per annum

5. As part of the POSHAN Abhiyaan, Gol launched the **Anemia Mukh Bharat (AMB)** program to strengthen the existing mechanisms and foster newer strategies for tackling anemia. The AMB strategy has been designed to reduce prevalence of anemia by 3 percentage points per year among children, adolescents and women in the reproductive age group (15–49 years), between the year 2018 and 2022.

The Union government had approved a three-year budget of ₹9,046 crore commencing from Financial Year (FY) 2017-18 to 2019-20 for POSHAN Abhiyaan. The scheme aims to reach more than 10 crore beneficiaries³, covering all states and districts in a phased manner.

Despite these interventions, coverage remains variable, due to implementation challenges, and capacity, and financing gaps (Menon et al. 2017, Chakrabarti et al. 2019). For instance, while the percentage of stunted children (0-4 years old) was below 20 per cent in the erstwhile state of Jammu and Kashmir, Goa, and Tamil Nadu, it was over 40 per cent in Bihar and Meghalaya (Comprehensive National Nutrition Survey, 2016-2018).

This Policy Note aims to estimate the potential costs to deliver at scale (i.e, 100 per cent coverage) for a core set of direct nutrition interventions (DNIs) for the year 2019-20.

²However, as per an RTI response received by Accountability Initiative in January 2020, these unit costs had not been increased as per inflation.

³POSHAN Abhiyaan launch information, https://icds-wcd.nic.in/nnm/NNM-Web-Contents/UPPER-MENU/AboutNNM/PIB_release_NationalNutritionMission.pdf.

LITERATURE REVIEW

This study carries forward critical studies that costed for nutrition interventions. Horton et al. (2010) aimed to provide costs for 13 direct nutrition interventions at scale which demonstrated effectiveness in many countries by reducing child mortality, improving nutrition outcomes, and protecting human capital. Similarly, Bhutta et al. (2013), estimated the total additional annual cost involved in scaling up access for ten direct nutrition interventions in 34 focus countries. This was carried forward by Menon et al. (2016) and Chakrabarti et al. (2017), who undertook the above exercise for only India. It is this body of work that has been adapted to this policy note.

Various groups have also adapted the costing method used by Menon et al. (2016). These include authors from Research for Development (R4D) who have written on nutrition financing including trends and gaps⁴. This study was conducted for Rajasthan. Furthermore, Joe et al. (2017) costed for core direct nutrition interventions and provided comparable benefit-cost ratios, also for Rajasthan. Two things that set this study apart are the inclusion of benefits and the inclusion of time costs for the mother as well.

While obtaining localised unit costs has been difficult, Jha et al. (2020) provide a costing framework for public services, drawing on an ethnographic study and a cost analysis of 17 early childhood care and education (ECCE) models covering private, public and non-profit sectors in India. Additionally, the same authors and others from the Centre for Budget and Policy Studies (CBPS) have conducted research on costs and revenues for ECCE in India⁵.

Studies have been conducted to isolate costs of specific interventions out of the set of core interventions. For instance, Chatterjee et al. (2018) costed for immunization across different geographies in India, detailing out variations. Multi-country studies (Brenzel et al. 2015) and reviews of cost-effectiveness (Munk et al. 2019) have also been conducted to provide rich matter on costing for immunization.

In addition, some micro-studies have also been conducted to assess costs of specific interventions. For instance, Goudet et al. (2018) conducted a cost-utility study of adding a community-based prevention and treatment for acute malnutrition intervention to ICDS standard care for children in Mumbai slums. Other studies include analysing Information and Communications Technology (ICT) intervention in Bihar (Borkum et al. 2015).

Lastly, many researchers have contributed towards analysing budgets and expenditures for nutrition interventions. As an example, Singh et al. (2019) analyse gaps in expenditure and financial bottlenecks in the functioning of NHM in Purnea, Bihar. Similarly, researchers from the Accountability Initiative at the Centre for Policy Research have collected and analysed budgetary allocations and approvals, fund releases, and expenditures for several CSSs including ICDS and NHM⁶.

This note attempts to build on the past work, by undertaking a costing study for core direct nutrition interventions. The nutrition interventions covered in this note include behaviour change communication (BCC) or counselling, food supplements under SNP, micronutrients and deworming interventions, other health interventions such as immunization, inpatient treatment of children with Severe Acute Malnutrition (SAM), and maternity benefit cash transfers. Where possible, estimates available from other studies have been used in the absence of government unit costs. This is described briefly in the section on limitations.

METHODS

We adapted the costing methods used by Menon et al. (2016) and Chakrabarti et al. (2017), while updating all unit costs based on latest available data. We carried out the following steps to calculate the cost of providing interventions at full coverage:

1. Described each intervention to be costed.
2. Defined the target population of each intervention.

⁴Results for Development, Policy Brief. Available online at: <https://www.r4d.org/wp-content/uploads/Rajasthan-Nutrition-Financing-Policy-Brief-2016-17.pdf>.

⁵Centre for Budget and Policy Studies, Bangalore, Report. Available online at: http://cbps.in/wp-content/uploads/Report-3_ECCE-Models-Cost-Resources-1.pdf.

⁶Budget Briefs, Accountability Initiative. Available online at: <https://accountabilityindia.in/budget-briefs/>.

3. Estimated the size of the target population in 2019 for each intervention by using the natural growth rate to update population figures year-on-year, state-wise. We used birth rates from Sample Registration System (SRS) 2019 to estimate the number of births, which provides an estimate of the number of pregnant women.
4. Specified the platform or channel(s) through which each intervention or activity would be delivered.
5. Obtained local unit cost data from relevant sources within India or from comparable programmatic settings in South Asia. Unit costs, however, are not uniform across states. We applied a standard pan-India unit cost for interventions for which state-wise data was unavailable (supplementary nutrition, counselling, etc.). We inflated the unit costs of health interventions using the consumer price index. For cash transfers and supplementary nutrition, unit costs used were available for 2017 from the GoI, and remain unchanged.
6. For each intervention, we multiplied the target population size by the relevant unit cost to arrive at a total cost of implementing each intervention at full coverage. The researchers defined “full coverage” as 100 percent of the target population, except in the case of treatment of severe acute malnutrition, which was set to 80 per cent (Horton et al. 2010).

Table 2 lists out the interventions covered as well as the ministries responsible. Food supplementation interventions and PMMVY are currently in the domain of MWCD. Micronutrients currently fall within the purview of MoHFW, whereas counselling is jointly delivered by MWCD and MoHFW.

Table 2: Mapping nutrition-related interventions

Stage	Intervention	Ministry	Source
Counselling Interventions			
Pregnancy	Counselling during pregnancy	MWCD+MoHFW	Khan et al. 2014
0 - 6 months	Counselling for breastfeeding (0-6 months)	MWCD+MoHFW	Khan et al. 2014
6 - 72 months	Counselling for CF and WASH	MWCD+MoHFW	Khan et al. 2014
Food Supplement Interventions			
Pre-Pregnancy	Food supplements for adolescent girls	MWCD	Ministry of Women and Child Development, 2017
Pregnancy	Food supplements for pregnant women	MWCD	Ministry of Women and Child Development, 2017
0 - 6 months	Food supplements for lactating women	MWCD	Ministry of Women and Child Development, 2017
6 - 36 months	Food supplements for children	MWCD	Ministry of Women and Child Development, 2017
6 - 36 months	Food supplements for malnourished children	MWCD	Ministry of Women and Child Development, 2017
Micronutrient and Deworming Interventions			
Pre- Pregnancy	IFA for adolescent girls	MoHFW	National Health Mission (PIP 2018-19)
Pre- Pregnancy	Deworming for pregnant women	MoHFW	National Health Mission (PIP 2018-19)
Pregnancy	IFA for pregnant women	MoHFW	National Health Mission (PIP 2018-19)
Pregnancy	Calcium for pregnant women	MoHFW	National Health Mission (PIP 2018-19)
Pregnancy	Deworming for pregnant women	MoHFW	National Health Mission (PIP 2018-19)

Stage	Intervention	Ministry	Source
0-6months	IFA for adolescent girls	MoHFW	National Health Mission (PIP 2018-19)
0-6months	Calcium for lactating women	MoHFW	National Health Mission (PIP 2018-19)
6-36 months	Iron supplements for children (6-60 months)	MoHFW	National Health Mission (PIP 2018-19)
6-36 months	Deworming for children (12-60 months)	MoHFW	National Health Mission (PIP 2018-19)
6-36 months	Vitamin A supplements for children (6-60 months)	MoHFW	National Health Mission (PIP 2018-19)
Health Interventions			
Pregnancy	Insecticide treated bed nets (ITNs)	MoHFW	UNICEF 2013
0 - 6 months	Immunization (0-60 months)	MoHFW	Chatterjee S, Das P, Nigam A, et al 2018
0 - 6 months	ORS and therapeutic zinc supplements for treatment of diarrhoea (2-60 months)	MoHFW	National Health Mission (PIP 2018-19)
6-36 months	Treatment of children with SAM at Nutrition Rehabilitation Centres	MoHFW	Operational guidelines on facility based management of children with severe acute malnutrition, 2011
Maternity Benefit Cash Transfers			
Pregnancy	Conditional cash transfer- JSY	MoHFW	National Health Mission Website
0 - 6 months	Conditional cash transfer- PMMVY	MWCD	Ministry of Women and Child Development, 2017

Note: CF= Complementary Feeding; IFA= Iron and Folic Acid; JSY= Janani Suraksha Yojana; ORS= Oral Rehydration Salts; PIP= Program Implementation Plan; PMMVY= Pradhan Mantri Matru Vandana Yojana; SAM= Severe Acute Malnutrition; WASH= WATER, Sanitation and Hygiene

LIMITATIONS

There are, however, a few limitations to this study:

1. Unit costs are not available locally, or state-wise for several components. Given India's federal structure, there is substantial variance in the cost of delivering key interventions across states. These can be due to differing state capacity, geography and terrain, and supply constraints. For instance, a number of states run their own schemes and significantly enhance unit costs for SNP. In the absence of this data, pan-India unit costs in this note are an under-estimation for SNP.
2. There are no updated costs for counselling. While counselling has indeed picked pace across the country with the launch of POSHAN Abhiyaan, there are no updated unit costs for the same and we have thus had to rely on estimates from Bangladesh from 2014.

3. Estimating costs at full (100 per cent) coverage may overestimate the amount the government needs to invest. This is because it also includes costs for those who may not need these interventions either due to self-financing or other reasons.
4. This study excludes several costs:
 - a. ICDS-CAS acts as a job aid, and in that sense its costs should be absorbed into the unit costs of each intervention. Since ICDS-CAS was not functional across India at the time of preparing this note, and data on unit costs across states are unavailable, these costs have been excluded from the study.
 2. This study also excludes personnel costs, honoraria, and salaries for certain components such as food supplements, micronutrients, and maternity benefits. Similarly, time costs have been excluded for many interventions including micronutrients and deworming interventions, food supplements, etc. A detailed list of what is included and excluded in the costs of each intervention in this note has been given in Table 3.
 - c. This note has been restricted to universal interventions, and while states provide several entitlements and additional funds, those have been excluded.

Table 3: Unit costs: what is included and excluded

Intervention	Source	Includes	Excludes
Counselling Interventions			
Counselling during pregnancy	Khan et al. 2014	Costs related to: <ul style="list-style-type: none"> · Personnel, · Training, · Home visits, · Beneficiary time, · Mass media campaigns, and · Monitoring. 	India specific costs, costs for community based events, and CAS costs.
Counselling for breastfeeding (0-6 months)	Khan et al. 2014		
Counselling for CF and WASH	Khan et al. 2014		
Food Supplement Interventions			
Food supplements for adolescent girls	MWCD, 2017	Unit costs for food provision only.	Costs related to: <ul style="list-style-type: none"> · Personnel, · Time spent, · Logistics and supply, · State specific schemes, · Administration, · Fuel and utensils, · Monitoring costs, and · Quality testing.
Food supplements for pregnant women			
Food supplements for lactating women			
Food supplements for children			
Food supplements for malnourished children			
Micronutrient and Deworming Interventions			
IFA for adolescent girls	National Health Mission (PIP 2018-19)	<ul style="list-style-type: none"> · Unit costs of drugs; · Transport and warehousing costs apportioned. 	Costs related to: <ul style="list-style-type: none"> · Administration, · Personnel, · Incentives to FLWs, · Monitoring, and · Time spent.
Deworming for adolescent girls			
IFA for pregnant women			
Calcium for pregnant women			
Deworming for pregnant women			
IFA for lactating women			

Intervention	Source	Includes	Excludes
Calcium for lactating women			
Iron supplements for children (6-60 months)			
Deworming for children (12-60 months)			
Vitamin A supplements for children (6-60 months)			
Health Interventions			
Insecticide treated bed nets (ITNs)	UNICEF 2013	Unit cost of bed net.	Costs related to: <ul style="list-style-type: none"> · Administration, · Personnel, · User costs, · Monitoring, and · Time spent.
Immunization (0-60 months)	Chatterjee et al. 2018	Costs related to: <ul style="list-style-type: none"> · Procurement, · Transport and storage, · Distribution, · Training, · Monitoring, and · Platforms (CBE, VHSND, TV and radio advertisements). 	Time costs.
ORS and therapeutic zinc supplements for treatment of diarrhoea (2-60 months)	National Health Mission (PIP 2018-19)	<ul style="list-style-type: none"> · Unit costs of drugs; · Transport and warehousing costs apportioned. 	Costs related to: <ul style="list-style-type: none"> · Administration, · Personnel, · Incentives to FLWs, · Monitoring, and · Time spent.
Treatment of children with SAM at Nutrition Rehabilitation Centres	Operational guidelines on facility based management of children with severe acute malnutrition, 2011	<ul style="list-style-type: none"> · Fixed costs (building, ward, medical, and kitchen equipment), and · Variable costs (medical supplies, personnel costs, kitchen supplies, maintenance costs) 	Costs related to: <ul style="list-style-type: none"> · Administration, · Personnel, · Incentives to FLWs, · Identifying children with SAM, · Transport, · Beneficiary time, · Monitoring, and · State specific additions.
Maternity Benefits			
Conditional cash transfer- JSY	National Health Mission Website	Cash transfer amount.	Costs related to: <ul style="list-style-type: none"> · Administration, · Personnel, · Incentives to FLWs, and · Monitoring.
Conditional cash transfer- PMMVY	MWCD, 2017		

FINDINGS

The study found that with 2019 population estimates, India should have spent at least **₹38,571 crore** in 2019-20, across Union and State governments, and across ministries and departments to fully finance a set of core Direct Nutrition Interventions (DNIs), at scale (see Table 2 for details on the DNIs). The remainder of the note is structured as follows. The next section looks at the disaggregated costs across interventions. This is followed by a breakdown of costs by the ministry responsible and a state-wise costing. In the following section, variations in cost estimates due to changes in assumptions have been presented. Finally, the last section provides a short summary of the implications of the cost analysis along with recommendations for the policy-makers.

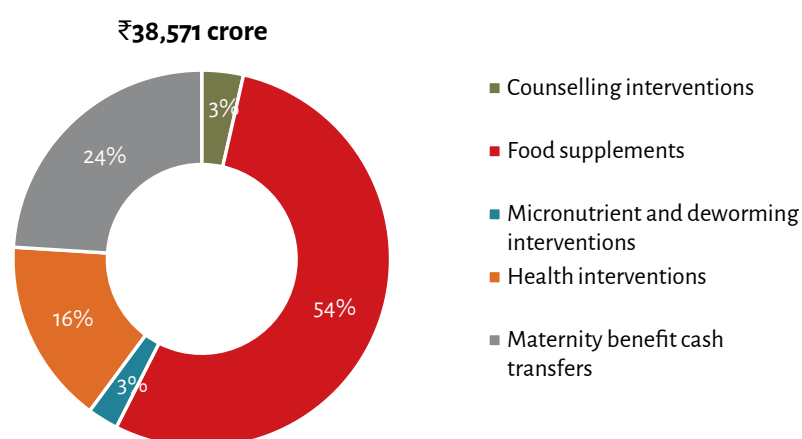
Intervention-wise Costs

We estimated that in 2019-20:

- To deliver counselling at scale, **₹1,373 crore** (\$200 million) was required (Figure 1). This included counselling for the promotion of breastfeeding, complementary feeding, and water, hygiene and sanitation practices. Of all categories, BCC interventions costed the least.
- To provide food supplements at scale, **₹20,796 crore** (\$3.03 billion) was required. This included supplementary food for adolescent girls out-of-school, pregnant women, lactating mothers, children aged 6 months to 3 years, and additional rations for severely underweight children.
- For maternity benefit cash transfers at scale, **₹9,260 crore** (\$1.35 billion) was required. It was to be delivered under two conditional cash transfer schemes – PMMVY (**₹6,637 crore**) and JSY (**₹2,623 crore**).
- For the distribution of micronutrient supplements and deworming tablets at scale, **₹1,019 crore** (\$148 million) was required. This included IFA and deworming for adolescent girls, pregnant women, and lactating mothers; deworming for pregnant women; vitamin A, IFA, zinc, and deworming for children.
- For health interventions at scale, **₹6,123 crore** (\$892 million) was required. This included immunization of children (**₹3,542 crore**), providing insecticide treated bed nets to pregnant women (**₹146 crore**), treatment of severely malnourished children at Nutrition Rehabilitation Centres (NRC) (**₹2,403 crore**), and drugs for treatment of diarrhoea for children (**₹31 crore**).

Disaggregated costs of delivering the core set of nutrition interventions are shown in Figure 2. Interventions for children (6 to 36 months) costed the most (**₹22,131 crore**), followed by interventions for lactating mothers and children below 6 months (**₹8,499 crore**), interventions for pregnant women (**₹7,291 crore**), and adolescent girls (**₹649 crore**).

Figure 1: Total annual costs of delivering nutrition interventions at scale by program

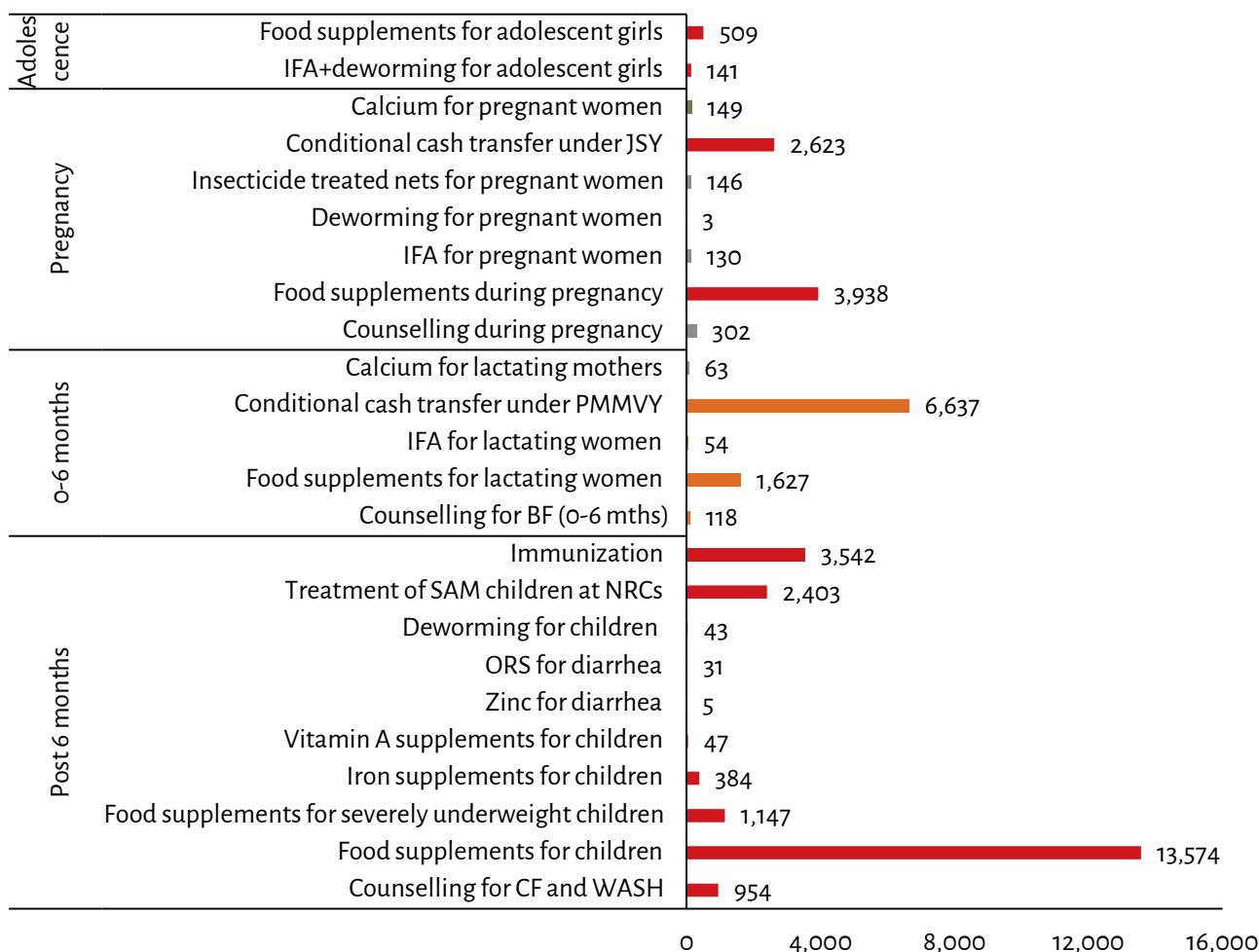


Source: Authors' estimates after updating the methodology used by Chakrabarti et al. (2017).

The costliest interventions were food supplements for children (6 to 36 months), cash transfers under PMMVY, and supplementary food for pregnant women. The lowest costs were for deworming for pregnant women, and zinc and oral rehydration salts (ORS) for children (6 to 36 months).

Among these interventions, several have low costs with high returns and should be prioritized (Bhutta et al. 2013). These include counselling for care and nutrition during pregnancy, breastfeeding, complementary feeding and hygiene practices, micronutrient supplementation and deworming for adolescents, women and children, and insecticide-treated nets for pregnant women in malaria-endemic areas.

Figure 2: Annual costs of delivering nutrition interventions at scale, in ₹ crore



Source: Authors' estimates after updating the methodology used by Chakrabarti et al. (2017).

At the Union government level, the responsibility of designing and implementing these interventions rests with the MoHFW and/or MWCD. Disaggregated costs for each intervention by the Line Ministry are shown in Figure 3. Of the total costs, a majority (71 per cent) were under the ambit of the MWCD amounting to ₹27,432 crores. MoHFW accounted for 25 per cent or ₹9,765 crores. The remaining costs were the joint responsibility of both MoHFW and MWCD amounting to ₹1,352 crores or 4 per cent of the total costs.

A breakdown of the types of interventions under each Ministry shows that a majority of the MWCD's costs were towards supplementary nutrition for children (6-36 months), while the majority of MoHFW's costs were for immunization.

Figure 3: Annual costs of delivering nutrition interventions by ministry

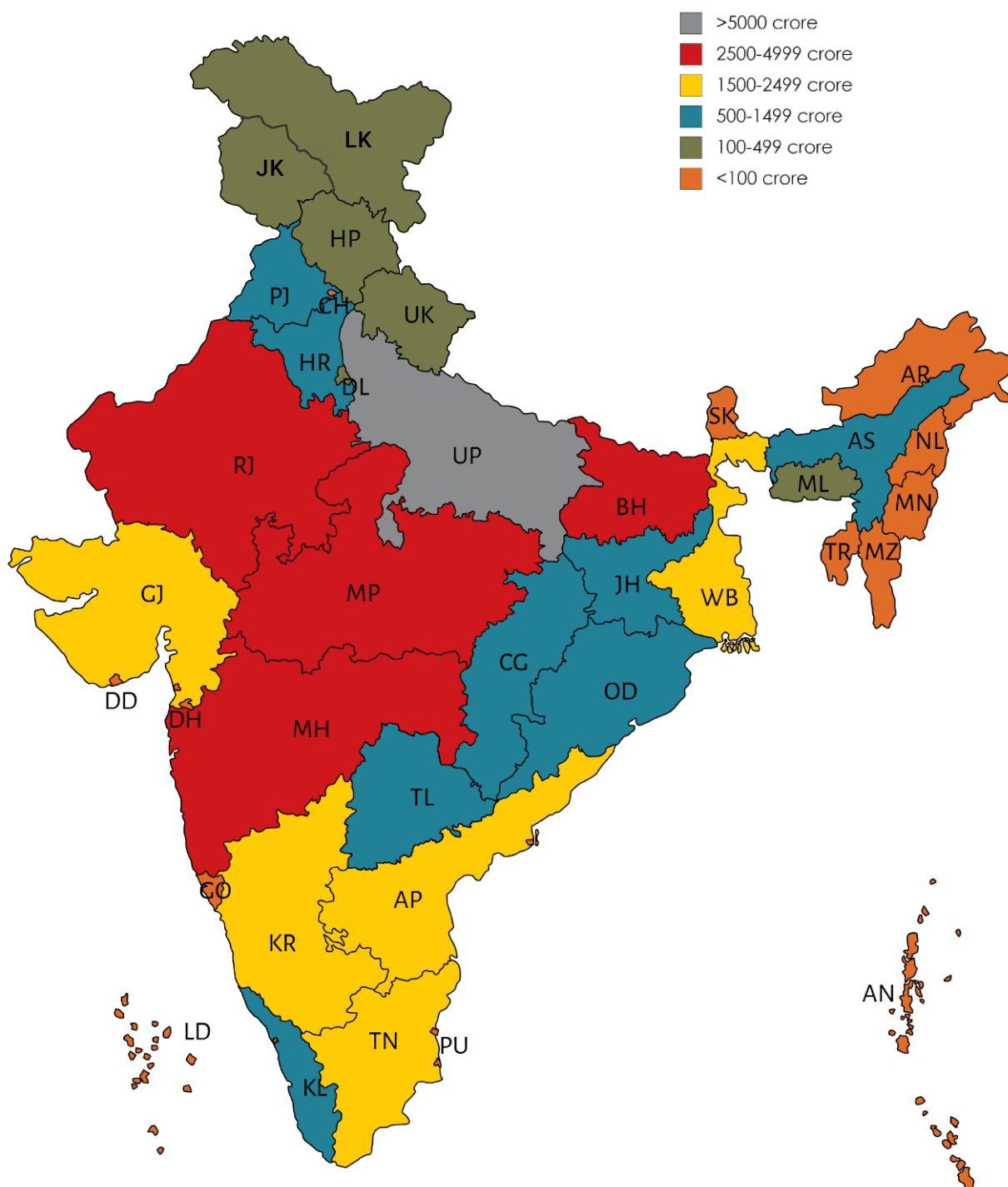


Source: Authors' estimates after updating the methodology used by Chakrabarti et al. (2017).

Costs by Program and State

Costs required to deliver these nutrition interventions varied widely across states in India based on the population size and current extent of coverage (Figure 4). Uttar Pradesh and Bihar, owing to their high population of children under 5 years and high degrees of wasting, stunting, and underweight children required the highest allocations. Similarly, states like Maharashtra, Madhya Pradesh, Rajasthan, and West Bengal required large allocations. Therefore, while allocating investments to different states, it is crucial to take into consideration their population levels and the prevalence of undernutrition, both of which contribute to the cost of delivering nutrition interventions in these states.

Figure 4: Annual costs required to deliver nutrition interventions at scale, by state, in crore ₹



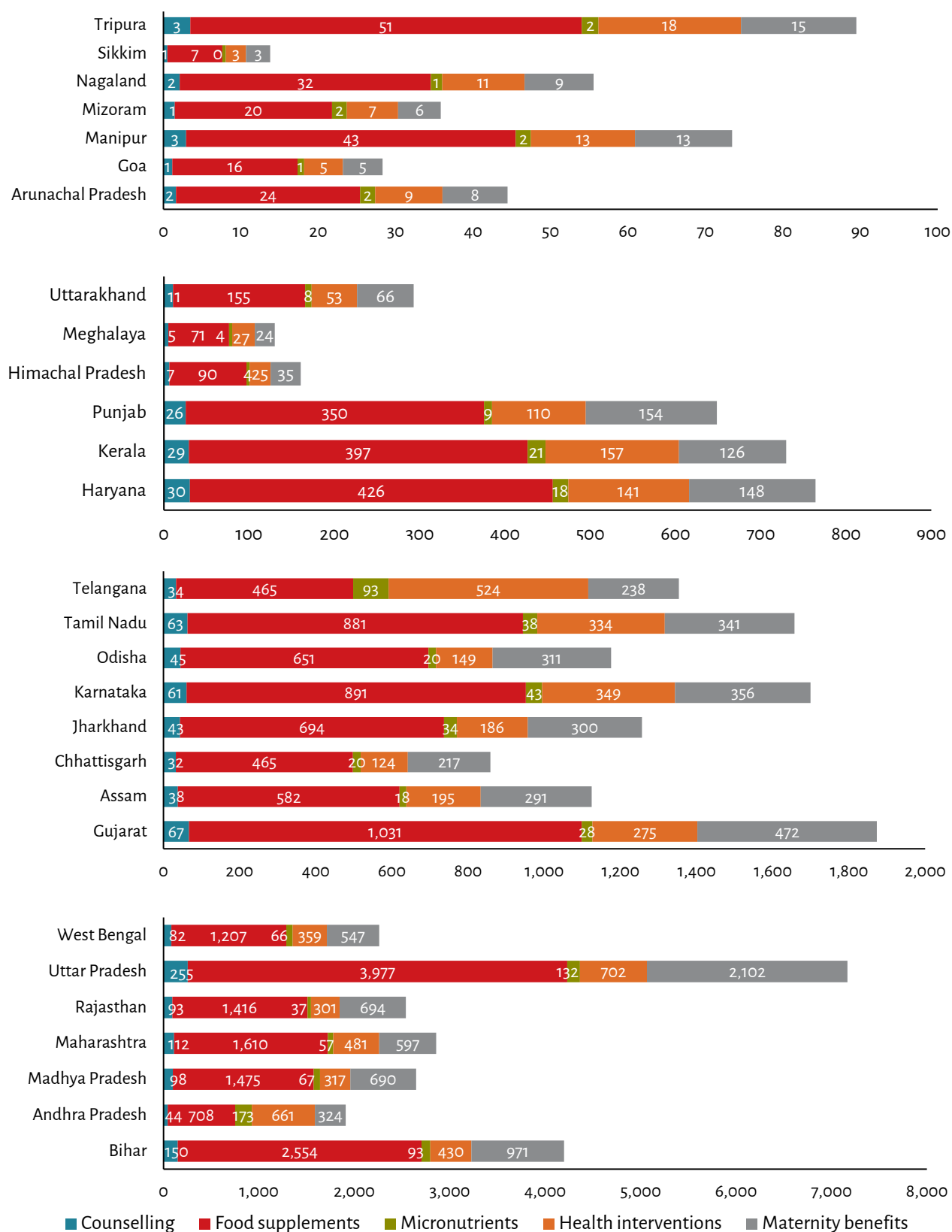
Source: Authors' estimates after updating the methodology used by Chakrabarti et al. (2017).

Note: AN = Andaman and Nicobar Islands; AP = Andhra Pradesh; AR = Arunachal Pradesh; AS = Assam; BH = Bihar; CG = Chhattisgarh; CH = Chandigarh; DD = Daman and Diu; DH = Dadra and Nagar Haveli; DL = Delhi; GJ = Gujarat; GO = Goa; HP = Himachal Pradesh; HR = Haryana; JH = Jharkhand; JK = Jammu and Kashmir; KL = Kerala; KR = Karnataka; LD = Lakshadweep; LK = Ladakh; MH = Maharashtra; ML = Meghalaya; MN = Manipur; MP = Madhya Pradesh; MZ = Mizoram; NL = Nagaland; OD = Odisha; PJ = Punjab; PU = Puducherry; RJ = Rajasthan; SK = Sikkim; TL = Telangana; TN = Tamil Nadu; TR = Tripura; UK = Uttarakhand; UP = Uttar Pradesh; WB = West Bengal

Disclaimer: This map is for illustrative purposes only and does not represent a political stand by CPR-AI or IFPRI POSHAN on the territory of India.

In Figure 5, these overall state-wise costs are further disaggregated into the program type for each intervention.

Figure 5: Annual costs of delivering nutrition interventions at scale, by program and state, in crore ₹



Source: Authors' estimates after updating the methodology used by Chakrabarti et al. (2017).

VARIATION IN COSTS

The costs presented in this note may vary based on different unit costs, the addition of other components, change in population targets, and so on. Some examples have been presented below.

1. SNP for children (6 to 36 months) alone accounted for 39 per cent of the total cost of all interventions covered in this study. If this is expanded to include SNP for 3-6 year olds it would have accounted for an additional **₹20,136 crore**.
2. We have assumed that only 80 per cent of children with SAM can be provided treatment at an NRC facility. If coverage was at 100 per cent, an additional **₹600 crore**, or a total of **₹3,004 crore** would have been required.
3. PMMVY only covers first born children. Many states including Tamil Nadu (under the Muthulakshmi Reddy Maternity Benefit Program) and Odisha (under the Mamata Scheme) provide coverage up to two live births. It would have cost an additional **₹4,140 crore** to provide PMMVY benefits for second-born children.
4. If the number of IFA tablets for pregnant women and lactating mothers were to be used as per AMB denominators, while keeping unit costs same, the total cost would have increased by **₹251 crore**.

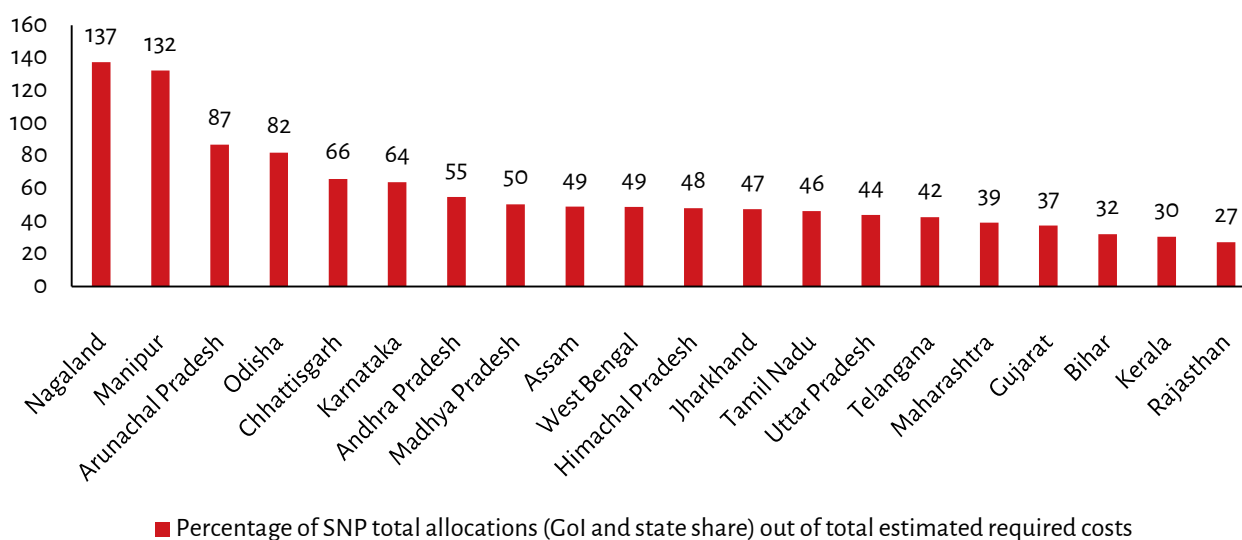
REQUIRED AMOUNTS VERSUS ALLOCATED AMOUNTS

One direct use of estimated costs is to compare them with allocations by Union and State governments. Under SNP of ICDS, as previously mentioned, food supplements are given to pregnant women, lactating mothers, children in the age group of 6-72 months, and adolescent girls who are out-of-school. Financing for SNP is shared between the Union and State governments in a 50:50 ratio for large states and UTs with legislatures, 90:10 ratio for hilly states, and is borne 100 per cent by the Union government in UTs without a legislature. For each state, the total allocations for SNP have been estimated assuming that the state contributed its share as well. These estimated figures have been calculated as proportion of required allocations. This method doesn't account for states adding extra funds over and above their share, nor does it include states providing SNP services to beneficiaries not mandated by the ICDS, such as Karnataka providing hot cooked meals to pregnant women and lactating mothers.

In FY 2019-20, the estimated allocations (based on GoI allocations and share) stood at **₹17,648 crore**. This is 44 per cent of the required allocations, which were **₹40,423 crore**.

There is variation across states. While some of the North East Region (NER) states such as Nagaland and Manipur (both over 100 per cent) seem to be costing for their requisite target population, states such as Uttar Pradesh (44 per cent), Bihar (32 per cent), and Rajasthan (27 per cent) are not (Figure 6).

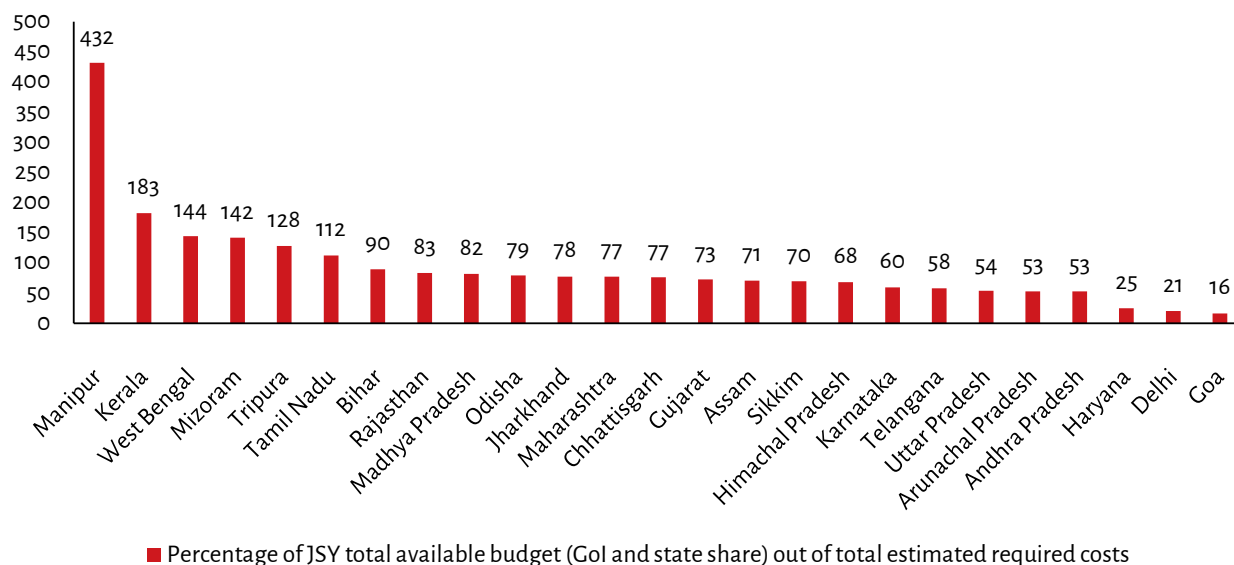
Figure 6: SNP estimated allocations out of required allocations stood at 44 per cent in 2019-20



Source: (1) Authors' estimates after updating the methodology used by Chakrabarti et al. (2017). (2) SNP allocations from ICDS APIP 2019-20.

Gaps also exist for the two maternity benefit schemes which formed the second highest costs among the core DNIs costed. For JSY, the approved budget in FY 2019-20 stood at **₹1,942 crore**, or 74 per cent of the amount required i.e. **₹2,623 crore**. As with food supplements, there is variation across states. While the JSY approved budget in Manipur was four times the required amount, it was less than 50 per cent in Haryana, Delhi, and Goa (Figure 7).

Figure 7: JSY total approved budgets out of required allocations stood at 74 per cent in 2019-20



Source: (1) Authors' estimates after updating the methodology used by Chakrabarti et al. (2017). (2) JSY total available budget from RTI response by MoHFW dated 3 January 2020.

Similarly, while budgets required (or costs estimated) for PMMVY were **₹6,636 crore**, the Union governments allocation for FY 2019-20 stood at **₹2,500 crore**. Even assuming that states contributed their shares (about 40 per cent), the total allocations would have stood at approximately **₹3,500 crore** – 47 per cent lower than the required amount.

Data on allocations for other interventions such as health interventions and counselling is hard to obtain, as allocations are spread across several line items and are hard to segregate as they overlap with other programme costs. Similarly, data on releases and expenditures is not available for all components.

IMPLICATIONS

Our analysis indicates that there are large inter-state and inter-district variabilities, across programs and ministries, in the estimated costs of delivering a core set of nutrition interventions at scale.

The costs provided here can be used by policy-makers for planning and budgeting. The objective of budgeting is estimating revenues required and likely expenditures, as well as determining future funding needs. Cost estimates can contribute to a more informed debate on resource allocation priorities (WHO, 2003), and help make choices clearer for policymakers.

Furthermore, costing studies can assist policy-makers plan for the composition and evolving needs of interventions. It is possible that some interventions are phased out in the future, or the component-mix and resource-mix requires change. To this end, cost estimates can prove to be a useful tool for policy-makers (Borkum et al. 2015).

RECOMMENDATIONS

Based on our findings, we offer the following policy-focused recommendations:

1. India should have spent at least ₹38,571 crore in 2019-20, across Union and State government budgets, and

across ministries and departments to fully finance a set of nutrition interventions, at scale. In 2020-21 and beyond, spending on nutrition will need to be benchmarked at least at this level, or beyond, unless target populations or unit costs for key interventions change substantially.

2. States should prioritize the rapid scale-up of low-cost interventions, such as counselling for care and nutrition during pregnancy, breastfeeding, complementary feeding and hygiene practices, micronutrient supplementation and deworming for adolescents, women and children, and insecticide-treated nets for pregnant women in malaria-endemic areas. These interventions are likely to have high benefit-cost ratios.
3. PMMVY required an allocation of **₹6,637 crore** annually to cover all first-born children in India. This program has the potential to boost the demand for essential nutrition interventions.
4. ICDS Supplementary Nutrition Program interventions for adolescent girls out of school, pregnant women, lactating mothers, and children aged 6 months to 3 years, required an annual allocation of **₹20,796 crore**. This estimate is based on the new unit cost norms announced in 2017.

The Government of India, which is a signatory to the World Health Assembly (WHA) resolutions on global nutrition targets, is responsible for ensuring that India meets these targets and is attempting that through the POSHAN Abhiyaan. Convergence across ministries and departments is a key part of nutrition and health interventions, as specified in Table 1. All interventions mentioned in this note which are typically covered under ICDS and NHM, as well as those covered under POSHAN Abhiyaan require multiple ministries and departments to work together. The goal is to provide all interventions at mentioned in this note to women and children. While progress has been slow (Menon et al. 2019), we recommend that both Union and State governments focus on improving convergence.

Data on allocations and expenditures for these core DNIs are currently not available in a comprehensive and disaggregated manner for all interventions. For what is available, we find that gaps exist. Moving forward, it would be useful to benchmark these cost requirements with current data on allocations and expenditures for these core DNIs. This exercise would enable better planning, budgeting, and decision-making to ensure maximum possible coverage.

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ASSUMPTIONS AND METHODOLOGY

S. No.	Activity	Assumptions and Methodology
1	POPULATION	Population for 2019 has been estimated by using 2011 census population figures and updating those year-on-year using annual natural growth rates (SRS).
2		Natural Growth Rate for 2014 was unavailable, so it was estimated by averaging the natural growth rate of previous year (2013) and the subsequent year (2015). Natural Growth Rate for 2018 was unavailable and the 2017 figures have been used.
3		The data for "Girls (11 to 14 years) out of school" has been taken Lok Sabha Unstarred question number 3636, answered on 16 March 2018. Available online at: http://164.100.24.220/loksabhaquestions/annex/14/AU3636.pdf .
4		Birth order data was from SRS 2017 (latest available), using national averages for union territories.
5		The number of pregnant women is the same as the number of live births.
6		The number of 0-6 month old children and 6-12 month old children was obtained by dividing the number of 0-1 year olds by two.
7	UNIT COST	Counselling costs same as those used in Menon et al. (2016), derived from original research in Khan et al. (2014) (converted from dollars at the rate of 62 rupees per dollar).
8		Supplementary Nutrition costs have been calculated as per 2017 guidelines. We have included supplements for pregnant women, lactating mothers, children aged 6 months to 6 years, malnourished children aged 6 months to 6 years, and adolescent girls out-of school. Food supplements (6-12 months) - ₹8/day x 25 days a month x 6 months = 1,200 Food supplements (12-36 months) - ₹8/day x 25 days a month x 12 months = 2,400 Food supplements (pregnancy) - ₹9.5/day x 25 days a month x 6 months = 1,425 Food supplements (lactation) - ₹9.5/day x 25 days a month x 6 months = 1,425 Food supplements for malnourished children - ₹12/day x 25 days a month x 3 months = 900 Food supplements for 3-6 year olds - ₹8/day X 25 days a month X 12 months = 2,400 Adolescent Girls (11-14 years out of school) - ₹9.5/day x 25 days a month x 6 months = 2,850 However, this assumes norms are set including transport and other related costs.
9		For estimating the costs for micronutrients and deworming, drug unit costs and warehousing and transport costs have been included. These costs are sourced from most recent SPIP available on NHM website. If data was unavailable, the most recent ROP has been used instead. To estimate transport costs, the proportion spent on drugs relevant to our interventions of total drug costs was multiplied with total drug warehousing and transport costs.

S. No.	Activity	Assumptions and Methodology
		<p>This assumes that a higher proportion of total money spent on a particular drug also leads to higher proportion of warehousing and transportation costs. This is somewhat true in the sense that the expensive drugs are mostly the ones that are distributed in glass bottles (eg: Vitamin A syrups) therefore requiring more space and care while the inexpensive ones are generally tablets requiring less space. However, this assumption may not hold everywhere.</p>
10		<p>Immunization Costs: Costs from Chatterjee S, Das P, Nigam A, et al. Variation in cost and performance of routine immunization service delivery in India. <i>BMJ Glob Health</i> 2018;3:e000794. Doi:10.1136/bmjgh-2018-000794. The study lists costs for 7 states, and then list out other states which will follow the same costing schedule. States in similar regions were clubbed together, following the method used in the paper. Costs include transport, storage, and so on. Costs for fully immunizing one beneficiary in 2019 were arrived at by inflating the immunization costs in 2017 using MOSPI General Consumer Price Index figures for December 2017 and June 2019.</p>
11		<p>Annualized costs of running a 10-bedded NRC were used. This accounts for annualized fixed costs, and annual variable costs. We assume a stay of 10 days, as per guidelines. We also assume that the NRC functions 365 days a year, and is occupied throughout. Costs from operational guidelines on Facility Based Management of Children with Severe Acute Malnutrition, published by MoHFW under NRHM in 2011. MOSPI General Consumer Price Index was used to estimate costs of running an NRC in June 2019.</p>
12		<p>Insecticide treated nets for pregnant women in highly-endemic areas (Orissa, Assam, West Bengal, Chhattisgarh, Jharkhand, Andaman and Nicobar Islands, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Puducherry, Sikkim, Tripura). We used a standard costs of ₹300 (same as IFPRI costing note 2018).</p>
13		<p>We have used the following guidelines for each of the drug-based interventions:</p> <ol style="list-style-type: none"> 1. IFA for pregnant and lactating women - 180 during pregnancy and 180 after birth (6 months after pregnancy). 2. IFA and deworming for adolescent girls - 1 IFA tablet per week i.e. 52 IFA tablets per year and 2 deworming (Albendazole) tablets per year. 3. Iron supplements for children - 1 ml biweekly i.e. 104 ml per year or approximately 2.08 bottles of 50 ml. 4. Vitamin A syrup - 1 ml every year for children aged 0-12 months and 2 ml every six months for children of age 12-60 months. 5. Deworming for children 12-59 months- 2 times a year. 6. Zinc for Diarrhoea for 2-59 months - used prevalence rates of Diarrhoea from NFHS-4, and used guidelines for dosage (We assume that 1 tablet = 20mg). 7. ORS - Assume that each sachet contains 4.4 grams which makes 200 ml of ORS solution. Furthermore, we assume that each child needs ORS for 4 days, 3 times a day. Amount for each age group has been taken from guidelines, and prevalence of Diarrhoea for various age groups from NFHS 4.

S. No.	Activity	Assumptions and Methodology
14		<p>Maternity benefits in India are delivered through two conditional cash transfers:</p> <ol style="list-style-type: none"> 1. PMMVY - For estimating the total beneficiaries under PMMVY, the total number of live births was multiplied with first order births from SRS 2016. Then the number of beneficiaries was multiplied with the benefit amount (₹5,000). 2. JSY - States were divided into high performing and low performing states based on guidelines. Each category was split into rural and urban. For high performing states, the proportion of SC/ST/or BPL households was calculated for rural and urban areas, using NFHS 4 raw data. Along with these figures, the number of pregnant women was used to estimate the number of women eligible. This was multiplied by the amount transferred per birth (₹1,000).
15	GENERAL	ICDS-CAS costs are not included in this costing study.

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