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Reducing Child Malnutrition in Maharashtra, India

In November 2013, Dr. Víctor Aguayo was entering his second month as the United Nations Children's Fund (UNICEF)'s regional nutrition adviser in South Asia, after having served as chief of UNICEF's Child Nutrition and Development Program in India for five years. Under Aguayo, the prevalence of stunting among children under two years of age had decreased from 39% in 2006 to 22.8% in 2012 in Maharashtra State, the second-most-populous state in India.[1]

Now Aguayo was responsible for UNICEF's maternal and child nutrition programs in Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka and wanted to help them achieve similar results. He felt that it was important to synthesize and disseminate Maharashtra's lessons. How did Maharashtra achieve such a marked reduction in stunting in less than ten years?

Overview of India

India was the second-most-populous and seventh-largest country in the world, with 1.27 billion people living in its 3.29 million square kilometers in 2013. Pakistan bordered India to the northwest; China to the north; Nepal, Bhutan, Bangladesh, and Myanmar to the northeast; the Arabian Sea to the southwest; and the Bay of Bengal to the southeast (see **Exhibit 1** for a map showing India and its states). The country was divided into 29 states, 7 territories, and 1 national capital region.

Keri Wachter, Julie Rosenberg, Robbie Singal, and Rebecca Weintraub prepared this case for the purposes of classroom discussion rather than to illustrate either effective or ineffective health care delivery practice.

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History

The Mughal Dynasty ruled India from the 16th through the early 19th century, when Britain established dominance through the trade conquests of the British East Indies Company. Nonviolent resistance to British colonialism ensued, led by the Indian National Congress and its famed leader, Mohandas Gandhi.[2] India gained independence in 1947 and in 1950 instituted a parliamentary democracy. The States Reorganization Act of 1956 defined state borders to align with ethnic and linguistic subgroups.

Demographics

In 2011, 80.5% of India's population identified as Hindu, 13.4% as Muslim, 2.3% as Christian, and 1.9% as Sikh.[2] The country had 15 official languages. Hindi was the most common language, spoken by 41% of the population; other languages varied by region.[2]

Of married women, 52.5% usually participated in household decisions, and 37.2% had experienced spousal violence. In 2005, the fertility rate was 2.68 children per woman, decreasing to 2.5 in 2011.

India's Right of Children to Free and Compulsory Education Act of 2009–2010 provided eight years of quality elementary education to every child 6–14 years of age. In 2005, approximately 71% of children attended primary school and 51% of secondary-age children attended secondary school.[3] Among secondary school–aged children, 57% of males and 46% of females attended school.[3] To improve enrollment, attendance, retention, and the nutritional status of primary school children, the Government of India launched the Midday Meal Scheme in 1995. The program expanded to upper primary school children in 2008.[3]

Economy and Infrastructure

From independence through the early 1990s, India's centrally governed economy faced strict regulations and slow growth. With its foreign debt the third highest in the world at USD 72 billion in 1991, India liberalized its economic policies to attract domestic and foreign investment capital, and its economy grew an average of 7% per year from 2007 to 2011. In 2013, India had the tenth-highest gross domestic product (GDP) in the world.[4] The country faced a positive outlook for long-term growth attributable to its young population and low dependency ratio, its increasing integration within the global economy, and its promising savings and investment rates (see **Exhibit 2** for socioeconomic and demographic indicators of India).[2]

In 2012, nearly half of the labor force worked in agriculture, which comprised 17.4% of the national GDP. The service sector, which included telecommunications, software and information technologies, construction, tourism, education, and health care jobs, employed 31% of the population; industrial labor employed 20%; 8.8% was unemployed. Approximately 30% of India's population lived below the poverty line.[2]

Food Production

In the 1960s, India's reliance on agricultural imports and its growing population inspired new government programs to increase food production.[5] One of these, the Green Revolution, provided farmers high-yield seed, chemical fertilizer, improved irrigation, and agricultural education. By the 1990s, India was self-sufficient in food grain production. It later became the world's second-largest producer of rice and wheat. Decades after the Green Revolution started, however, it became clear that high-yield seed that demanded much more water and soil nutrients had depleted easily accessible and affordable supplies,

costing farmers and the environment greatly. Beyond grains, other major agricultural products included oilseed, cotton, jute, tea, sugarcane, lentils, onions, and dairy.

India's public food distribution system aimed to provide people living below the poverty line with essential commodities such as wheat, rice, sugar, and kerosene. The central government procured, stored, and transported the public goods, while state governments identified families below the poverty line, allocated and distributed the goods, established and supervised "fair price shops" for distribution, and issued ration cards. Due to corruption, mismanagement, and inefficiencies, the programs did not reach the country's poor, despite the abundant supplies. In 2012, the *New York Times* called the public distribution system a "paradox of plenty."[6]

Health in India

The majority of households in India (65%) in both urban and rural areas mostly used the private health care sector, while one-third of households relied on the public sector (see **Exhibit 3** for health and epidemiologic indicators of India).[3,7]

Government, private companies, and community-based organizations offered various health insurance options. In 2013, approximately 243 million people were covered by government-sponsored health insurance and 55 million by private insurance.[8] The government-sponsored insurance scheme, launched in April 2008, covered inpatient care for up to five members of families below the poverty line. The Government of India covered 75% of the scheme, and state governments covered the remainder. In 2012, out-of-pocket health expenditures accounted for 57.6% of total health expenditure and 86% of private health expenditure.

India's public health system followed a three-tier structure. The primary tier had three types of institutions, predominantly located in rural areas: sub-centers, primary health centers, and community health centers. Sub-centers provided basic pharmaceuticals to treat minor injuries or illness, serving 5,000 people each. One female auxiliary nurse midwife and one multipurpose male health worker (not medically trained) rotated through and supported six sub-centers. The national Ministry of Health and Family Welfare oversaw and supported health workers who oversaw the sub-center staff.[9] Each primary health center was responsible for providing curative and preventive services for an area of 30,000 people with a medical officer, a team of 14 paramedics, and 4–6 beds. The state-level Ministries of Health oversaw the community health centers, which were each responsible for 100,000 people and employed four medical specialists (a surgeon, a physician, a gynecologist, and a pediatrician) and 21 paramedical staff (see **Exhibit 4** for structure of the health system). Each was equipped with 30 beds, an operating table, x-ray machine, labor room, and laboratory facilities and received referrals from four smaller primary health centers. The secondary tier of the public health system had district and sub-district hospitals. The third tier had tertiary-care hospitals primarily located in urban areas.

The Government of India launched the National Rural Health Mission (NRHM) in 2005 to improve access to effective public health services, including reducing child and maternal mortality, preventing and controlling communicable and non-communicable disease, stabilizing the population, improving gender equality, and promoting healthy lifestyles. Primary health centers carried out NRHM programs—including immunizations, malarial treatment, referral of pregnant women to HIV testing, bringing critically ill children to the hospital, and implementation of newborn home-based care.[10] The NRHM recruited local residents to serve as community health workers, called Accredited Social Health Activists (ASHAs). ASHAs were trained in 5–7 modules over the course of several months and paid per service.

Nutrition in India

Nutrition was measured using four types of indicators: anthropometry, biochemical tests, clinical signs, and assessments of dietary intake. Anthropometric measurements were the most ubiquitous. This method compared various physical measurements—including height, weight, mid-upper arm circumference, and body mass index (BMI)—to those of a reference population and monitored individual growth over time (see **Exhibit 5** for glossary of nutrition definitions). In 2006, the World Health Organization updated its international child growth standards, first published in the 1970s following a six-year study on 8,000 children in Ghana, Brazil, India, Norway, Oman, and the United States. The standards included indicators such as weight-for-age (used to measure the prevalence of underweight), height-for-age (used to measure the prevalence of stunting), and weight-for-height (used to measure the prevalence of wasting), BMI, and key motor development milestones such as sitting, standing, and walking.[11]

India adopted the World Health Organization's child growth measures in 2008. Before these measures were adopted in 2006, almost half of India's under-5 children were stunted, or too short for their age; 20% were wasted, or too thin for height; and 43% were underweight, with some states, including Madhya Pradesh, Jharkhand, and Bihar, faring worse than others in terms of underweight children.[12] Children in rural areas were more likely to be undernourished; yet even in urban areas, one-third of children were underweight.[3]

Women and Child Welfare in India

India's Ministry of Women and Child Development (WCD) played a complementary and supplementary role to ministries and programs focused on education, economics, and rural development. WCD ran the Integrated Child Development Services (ICDS), which was started in 1975 to address the health, nutrition, and pre-school education needs of children under six. ICDS services were provided through ICDS centers, or *anganwadis* ("courtyard shelters")—based on the idea that quality child care could be provided through local, low-cost facilities and resources.[13] Some states provided supplemental nutrition through ICDS to children, pregnant women, and nursing mothers. Each ICDS worker was responsible for approximately 150 children. The cost of ICDS was approximately USD 10–22 per child per year. Central and state governments and the World Bank funded the program. Children showing signs of malnutrition were referred to a primary care center, then the rural hospital, district hospital, or medical college and specialty care hospitals as needed. The Government of India universalized ICDS in 2005.

Anganwadi Workers

Female community members who served on the front line in delivery of ICDS—known as *anganwadi* workers—received a monthly honorarium of USD 67.50 to provide care to newborns, under-6 children, and pregnant and nursing mothers through food supplements, immunizations, non-formal education, and medical check-ups alongside medical officers.[14] In 2011, 1.26 million *anganwadi* centers were operating in India. The *anganwadi* supervisor, known as the *Muhkya Sevika* ("Lady Supervisor"), provided guidance and support to 10 *anganwadi* workers. The supervisor made sure assessments of children were carried out correctly and properly recorded.[14]

ASHAs were expected to work with *anganwadi* workers to organize health days once or twice per month and educate mothers and caregivers about the importance of nutrition, hygiene, and immunizations.

United Nations Children's Fund (UNICEF)

In 1946, the United Nations created the United Nations Children's Fund (UNICEF) to provide food, clothing, and health-related support to European children who were affected by World War II. UNICEF

began working in India in 1949. By 1963, UNICEF had launched its first nutrition-specific project in collaboration with the WHO and FAO in India. In the 1980s, UNICEF shifted its focus from relief efforts to comprehensive childhood development.[15] In 2012, the organization worked in 155 countries worldwide and employed 11,500 people who administered nearly 2 billion immunizations across 96 countries (see **Exhibit 6** for UNICEF expenditure and revenue by source in 2012).

UNICEF was a key partner in the global Scaling Up Nutrition movement, launched in 2012 as "a global movement to unite governments, civil society, the United Nations, donors, businesses and researchers in a collective effort to improve nutrition." UNICEF adopted a life-cycle approach to malnutrition—intervening at all stages of life to improve the nutritional status of both the child and the mother; it followed the "Triple A" guide: *assess* the problem, *analyze* its causes, and take *action*. There was emphasis on pregnant women, nursing mothers, and children in the first three years of life.

Country offices employed project officers who designed, implemented, monitored, and evaluated UNICEF-supported programs.[16]

Overview of Maharashtra State

In 2011, Maharashtra was the second-most-populous state in India, its 112.4 million people comprising 9.3% of India's total population.[1] Maharashtra's urban population was 45.2% in 2012, 14 percentage points above the national average.[17] Spanning 308,000 square kilometers in Western India, Maharashtra consisted of 36 districts, six revenue divisions, and three major cities—Mumbai, Pune, and Nagpur (see **Exhibit 7** for map of Maharashtra's divisions and districts). The prevalent religion was Hinduism (82%) followed by Islam (15%). Marathi was the official state language, but English and Hindi were spoken widely.[18]

Maharashtra State had been part of Bombay State, a larger province established by the British, until 1960. When the state split, Bombay, a port city with major maritime traffic and commerce resulting from the 19th-century cotton and opium boom, remained part of Maharashtra. Bombay was renamed Mumbai in 1996.

Economy and Infrastructure

In 2011, Maharashtra ranked fifth out of all states in the Indian Human Development Index.[19*] In 2011–2012, Maharashtra's GDP was INR 11,99,548 crore (USD 237.5 billion), the highest of any Indian state, contributing 14.4% to the country's GDP.[19] Its annual growth was strong. The industrial and service sectors contributed 87.1% to the state's income, while agriculture, forestry, and fisheries contributed 12.9%.[19]

Agriculture employed over 50% of the workforce in 2001.[20] Maharashtra was the first state to implement the Maharashtra Employment Guarantee Scheme to guarantee anyone over the age of 18 a job in a rural area, typically doing unskilled manual work for minimum wage in water conservation, soil conservation, land development, afforestation, and roadwork. In 2011, unemployment averaged 2.8%, with 4.7% of females and 2.0% of males unemployed.[21] About 25% of the state's population lived below the poverty line.

Maharashtra spent INR 12,993 crore (USD 2.6 billion) on primary school, INR 9,735 crore (USD 2 billion) on secondary school, and INR 1,585 crore (USD 325 million) on higher secondary education in 2011.

*Calculated by the United Nations Development Program using key development indicators such as education and safe drinking water, reduction in malnutrition, reduction in income poverty, and preservation of human rights, cultural liberty, and political freedom.

That year, 16.1 million children enrolled in primary school, of which 7.5 million benefited from the Midday Meal Scheme.[19] Literacy in 2012 was above the national average.[19]

In 2013, Maharashtra had 243,000 km of roadwork that connected 99% of the villages and the highest installed capacity of electricity and generation of electricity in the country. About 57% of households had a television, and 69% of households had access to a telephone or mobile phone.[19] Approximately 30% of the population owned or had access to a motorized vehicle.[11]

Socioeconomic and Demographic Indicators of Maharashtra[†]

INDICATOR		YEAR
Population (thousands)	112,374	2011
Urban population (%)	45	2011
% population ages 0–6	11.4	2011
GDP per capita in USD	1,230	2010
% living below poverty line	25	2011
Literacy (total)	83.7	2013
Work participation rate (total, male, female)	44, 56, 31.1	2011
Average household size	4.7	2013

Health in Maharashtra

The top 10 causes of death in Maharashtra from 2001–2003[‡] were cardiovascular disease (22.9%), respiratory disease (8.8%), perinatal conditions (7.3%), malignant and other neoplasms (6.4%), tuberculosis (6.2%), diarrheal disease (6.1%), accidental injuries (5.1%), respiratory infections (4.3%), senility (4.1%), and other ill-defined conditions (4.1%).[22] In 2012, maternal mortality was 87 per 100,000 live births, the second lowest in India.[23] In 2013, infant mortality was 24 out of 1,000 births, surpassing the Millennium Development Goal of under 28 by 2015; and under-5 mortality was 26 out of 1,000, surpassing the target goal of under 42 by 2015.[24]

The Maharashtra State Department of Public Health managed Maharashtra's public health system, which followed the national three-tier structure. In 2013, there were 10,580 sub-centers in Maharashtra, 1811 primary health centers, 363 community health centers, and 23 district hospitals.[25] Sub-center services addressed family welfare, maternal and child health, immunizations, nutrition, and communicable disease control. There was a shortage of personnel and facilities at all levels of the public health system.[26]

Nutrition

The National Family Health Survey 2005–2006 examined data by state. Feeding practices in Maharashtra for children aged 6–9 months were below the national average: 48% of children aged 6–9 months in Maharashtra received solid or semisolid food and breast milk, compared with the national

[†] Compiled by case writers using data from the Government of India's 2011 Census, World Bank, National Health Mission Ministry of Health and Family Welfare, and India National Family Health Survey NFHS-3, and the District Level Household and Facility Survey-4, 2012–2013.

[‡] Most recent data as of 2013.

average of nearly 56%. Rates of exclusive breastfeeding in infants under six months of age and a minimum diverse diet in children 6–23 months were also suboptimal. Malnutrition was more prevalent in rural versus urban areas, but the most prominent differences were seen between non-educated and well-educated respondents.

The Comprehensive Nutrition Survey of Maharashtra 2012 for under-2 children later reported stunting prevalence was 22.8%; wasting, 15.5%; and underweight, 21.8%. The District Level Household and Facility Survey 2012–2013 for under-5 children reported stunting prevalence was 30%; wasting, 34.1%; and underweight, 38.7%. While underweight increased slightly between 2006 and 2012, it was still lower than the 2002 prevalence of 43.6% (see **Exhibit 8** for child nutrition indicators by age in 2006 and 2012). Child-feeding practices remained subpar, and women's health and access to health services were improving (see **Exhibits 9–11** for more on child-feeding trends, the status of women, and related economic indicators in Maharashtra in 2013).

Basic Nutrition Indicators of Maharashtra State 2006 and 2012[§]

INDICATOR	2006 (unless noted)	2012 (unless noted)
Infant mortality (per 1,000 live births)	38	24 (2013)
Life expectancy (years; female, male)	68.19, 65.31 (2000)	72.5, 68.9 (2011)
Stunting (% under 2 years old)	39	22.8
Wasting (% under 2 years old)	19.9	15.5
Severe acute malnutrition (%)	9.8	4.7
Low birth weight (%)	22	20
Underweight (%, under 2 years old)	29.6	21.8
Coverage of vitamin A (%, under 3 years old)	74.9 (2008)	76.6

The Roots of Change

In September 2001, 14 children died of causes related to malnutrition in the Aurangabad division of Maharashtra, approximately 370 kilometers from Mumbai. The local media, who kept a close eye on the area, took note and published articles asking, "What is the government doing?" Politicians descended on Aurangabad, as did UNICEF representatives.

Ramani Venkatesan, who held a degree in economics and had 20 years of experience in the Indian Administrative Services, had recently been appointed divisional commissioner to supervise all government offices in the eight districts comprising Aurangabad division. He had a variety of administrative duties, including revenue collection, development activities, urban management, food distribution systems, judicial administration, and others. Improving primary education standards and reducing child malnutrition were his leading priorities. "None of us knew what to do," one team member recalled.

[§] Data compiled by case writers using data from the Government of India's 2011 Census, the Government of Maharashtra's 2002 Human Development Report, World Bank, and India's National Family Health Survey-3, and the Comprehensive Nutrition Survey in Maharashtra, 2012.

Ramani called together leaders from all eight districts to look at the health center data. None of the children who died had ever been weighed or measured. While the national census showed 1.9 million under-6 children in the Aurangabad division, 67% of those children were registered at clinics, and 1 million—or 52% of total children—were weighed regularly. "We realized we didn't know our denominator," recounted a UNICEF nutrition specialist.

Taking Action: Aurangabad Pilot

In 2002, Ramani launched a pilot program with technical and financial support from UNICEF known as the Malnutrition Removal Campaign, or Marathwada Initiative. The pilot aimed to (1) survey, register, and weigh 100% of children under age six in the Aurangabad division, (2) classify them into one of five categories based on their nutritional status (normal, or grades I–IV of malnourishment as classified by the Indian Academy of Pediatrics), (3) refer acutely malnourished children to medical facilities, and (4) counsel mothers on feeding and care practices. Two UNICEF specialists, Ramani, and four additional government officers led the efforts. Ramani found 7,000 donated weighing scales sitting in a warehouse in Mumbai and brought them to the division. "Normally, the state government decides how to distribute donations. They hadn't made a decision. So I told UNICEF, 'Why don't we commandeer all of it?'" There was no resistance. As he explained, "I had a slight advantage, as the chief minister was from our area."

Two officers and four staff from Ramani's office helped with data collection for the malnutrition project in addition to their regular duties. They liaised with 14,000 *anganwadi* centers and reported to Ramani. They had one computer and shared a vehicle. While they were provided training, they received no extra pay for these tasks. This team was considered the "monitoring unit."

UNICEF brought the technical knowledge as well as financial support for vehicles, computers, and trainings. The Mission team organized workshops with field-level health workers and supervisors from both the Ministry of Health and Family Welfare and the Ministry of Women and Child Development and reinforced skills such as proper weighing and the maintenance of child growth charts. Ramani visited the *anganwadi* centers and primary health centers approximately every two months. His team visited them every week.

By December 2004, 1.7 million under-6 children had been registered, and 91% were being weighed monthly. Over 22,000 *anganwadi* workers were trained. The increased screening led to a 50% increase in malnourished children detected—from just over 7,500 to 10,500 within three months of completing universal weighing. The media started reporting the high numbers. Ramani confronted the press: "The moment you start doing that, my officers will underreport figures. Instead, you need to highlight our increased reporting, essential to understanding the real extent of the problem of malnourished children and to fuel real change."

A few media outlets reported Ramani's progress. Most reporters shifted their focus to ongoing "hunger deaths" in Nandurbar, a hilly tribal area in northern Maharashtra, which were an eerie echo of deaths in Aurangabad years earlier. The media reports generated public outcry and public interest litigation against the government. "Everybody went up in arms against the government. The government shook," recalled a UNICEF staff member. The chief minister of Maharashtra called a meeting with policy makers, NGOs, academia, and UNICEF, which resulted in a state-level steering committee to address infant mortality rates and death due to malnutrition. The committee recommended an independent mission to address malnutrition.

The Mission

Government protocol did not permit an India Administrative Officer to remain in the same post for more than 3–4 years. So, in 2004, Ramani was transferred to Mumbai, the capital of Maharashtra, to serve as a state policymaker. Maharashtra did not have a state plan to reduce malnutrition. The Health Department saw nutrition-related child mortality as a social issue under the auspices of the Department of Women and Child Development, while the Department of Women and Child Development saw it as a health issue (see **Exhibit 12** for organogram of Ministries). Ramani's colleague, Rajlakshmi Nair, UNICEF's nutrition specialist, reflected, "People without nutrition experience believed malnutrition happened only because of poverty and lack of access to food. We would say—it's beyond poverty. It's feeding and caring practices, essential nutrition interventions, water and sanitation access ..."

Ramani and UNICEF colleagues shared the challenges and outcomes of the Aurangabad pilot with the state government in 2004. Dividing the 2002–2004 UNICEF budget by the total number of children reached, they determined it cost 38 rupees [USD 0.65] per child. "Very viable and scalable," said a UNICEF staff member. The chief minister suggested that Ramani lead a mission to catalyze activity across sectors to address an urgent issue; participation would be "a mandate from the top political authority," as Ramani later wrote.[27]

In March 2005, the Government of Maharashtra approved the Rajmata Jijau Mother-Child Health and Nutrition Mission "to reduce the incidence of malnutrition in children under age six in rural (both tribal and non-tribal) and urban areas" for five years (see **Exhibit 13** for Government Resolution establishing the Mission). The Mission, the first of its kind in the country, was headquartered in Aurangabad, near the heart of the most vulnerable districts. Its initial focus would be on grades III and IV malnutrition, with a special focus on the health, nutrition, and immunization of the 0–3 age group. Supplementary aims included the improvement of care practices for newborns, mothers, and teenage girls. The Mission hoped to eventually transfer management of these issues to community leaders.

As Nair recounted, the Mission "didn't have an independent budget for implementation. It looked at programming among different ministries—Agriculture, Health, and Women and Child Development—and brought them together for a common agenda, which is unlike most government systems. Government systems usually have silos."

Ramani and local officials believed the baseline data on malnutrition was unreliable and decided not to set incidence targets. They focused instead on making nutrition data "accessible, high quality, and used for improved programming," reflected a UNICEF staff member. "There's a huge load of data that goes to the Government of India, but no one looks at it. Our point was that somebody should be looking at the data," said Ramani.

UNICEF was named the Mission's technical and financial partner, providing an annual budget of INR 2 crore (USD 342,000) for operations, including salaries, travel, workshops, and supplies. Ramani explained, "You submit your budget to UNICEF, and after that the money is yours. With government funding, the problem is that the money may not come when you need it, due to complicated financial procedures or because of top-level changes in the Ministry."

Phase I of the Mission

Ramani Venkatesan staffed the Mission with nine team members he had worked with previously, including scientists, educators, and administrators. "It's not that we were experts on the subject. We had implemented for two to three years. The main thing we had was passion and motivation, and that could be

hard to find in new people," said Ramani. The Mission relied on outside expertise such as the Breastfeeding Promotion Network of India to develop programs and collaborated with government, including the 125,000 auxiliary nurse midwives and ICDS frontline functionaries in Maharashtra. While Mission staff worked together to make decisions, Ramani had final sign-off.

The government formed three committees to review and advise the Mission. The chief minister, with representatives from the Health, Women and Child, Tribal, Agriculture, Social Welfare, and Rural Development ministries, led the state-level steering committee. The minister of Women and Child Development led the Monitoring and Implementation Committee, and the chief secretary led the third committee. This was the first time any cross-ministerial collaboration had occurred in Maharashtra. The Mission sent monthly reports to all committee leaders and to UNICEF. "The Mission involved the Health Department in its activities from the start, from the health minister and secretary to the doctors at the primary health centers and the auxiliary nurse-midwives," said Ramani. "A program like the vitamin A deworming drive could not have been as successful without active endorsement from the very top."

The Mission identified the five rural districts with the highest incidence of malnutrition in the state—Thane, Nasik, Nandurbar, Amravati and Gadchiroli—where it would scale lessons from the Aurangabad pilot, including training and motivating frontline functionaries, putting a strong monitoring system in place, and engaging stakeholders in efforts to reduce malnutrition.

Simultaneously, a national family health survey commissioned by the Ministry of Health and Family Welfare and conducted by the International Institute of Population Sciences came out. The survey showed almost half of children under five nationally did not receive complementary foods by eight months, and half were malnourished. Stunned, Neerja Chowdhury, a senior political journalist, talked to a group of national politicians in Delhi, India's capital, from parties on both the left and right, and they decided to see the situation firsthand. UNICEF helped with logistics, and the group paid surprise visits to village clinics, most of which they found closed.

Upon returning to Delhi, the politicians held informal meetings. The cross-party collaboration was unusual. They eventually invited others to join and called their group the Citizens Alliance against Malnutrition. The Citizens Alliance positioned child malnutrition as a high political priority, without which India could not dream of becoming an economic power. They advocated for nutrition missions in all the states. "In the morning in parliament they'd be slugging it out about some issue, and in the afternoon they were sitting side by side, making a case for nutrition," recalled Chowdhury.

Initial Activities

The Mission promoted accurate local data collection to understand the full picture by training ICDS and health workers at the district, block, and village levels. We encouraged "fact-finding versus fault-finding," Ramani explained. "We stressed the importance of getting all children registered. Then, the priority was to get all children weighed or measured, then do the grading. After you've done the grading, you can then decide what action you should take. The advantage is you start cutting down the number you've got to focus on."

Ramani wanted the workers to feel responsible for every mother and child in their communities. He recounted:

> We told the frontline workers, "If we find later on that children were not weighed and were malnourished or died because they were not covered, you're going to be accountable." That ensured that there was some attempt to bring the numbers up towards 85–90%. It can't ever reach 100%, but there were actually times my Mission team would go to the *anganwadi* center to confirm how many children were there, gather all the

children, and do a head count to make sure that everyone was reporting accurately. We wanted to make sure we were seeing the truth.

Ramani knew that smaller, remote hamlets could be overshadowed by other parts of the large districts that were doing well. Mission staff suggested that ICDS data—whose records came from *anganwadi* centers—and primary health center data—collected by auxiliary nurse midwives—should cover the same geographic areas and be cross-checked. This would also allow better coordination between health centers and ICDS personnel. "Most importantly," wrote Ramani, "It was hoped that this improved coordination would be reflected in better planning of delivery of health services in the primary health center area … with a specific focus on severely malnourished children."[27]

The Mission staff observed variation in data collection within districts and was concerned about inconsistent service delivery; they learned that nearly half of all under-6 children in the five districts did not undergo regular medical examinations.[27] The Mission worked to fill field-level vacancies in these areas to ensure monthly weighing goals were met.

Within about a year, the Mission had expanded its work to address 10 additional districts most at risk for severe malnutrition. The Mission introduced the "star competition" to recognize field workers and promote quality performance when unable to provide monetary rewards (see **Exhibit 14** for a description of the star competition).

Interventions

The Mission lobbied for provision of additional weighing scales and distribution of growth charts and involved communities in the weighing and measuring activities. Field workers assisted in developing large growth charts they could lay on the ground. They gathered families with young children around the charts, and had mothers place each under-6 child on the region of the chart that corresponded to his or her age and weight. Children within the normal range stood on a green region. The yellow or red areas of the chart indicated a child was moderately to severely malnourished (see **Exhibit 15** for photos of the community growth charts).

The Mission highlighted to families the need to add complementary solid or semi-solid food between ages six and eight months, by reviving a traditional practice—*Annaprashan*, a religious ceremony that involved offering a child food in the seventh month. The team renamed the practice the "half-yearly birthday."

Other Mission programs included the medical treatment of children with congenital ailments, blood-testing units for sickle cell anemia, hypothermia prevention kits, development of vegetable gardens, and a deworming and vitamin A drive every six months.

New Treatment Methods

In 2007, the Mission developed protocols to manage severely malnourished children. With guidance from UNICEF, it asked the health department to help fund Child Development Centers. The centers were medical facilities that hosted severely malnourished under-6 children and their mothers for 21 days of treatment and monitoring as well as health education for mothers. The National Rural Health Mission, part of the Ministry of Health, agreed to fund some centers, and the Tribal Development Department funded others. Ramani reflected, "I think the major advantage was having health secretaries whom I had worked with previously and considered friends. I was able to really sell the idea to them. Child Development Centers would never have gotten off the ground if we hadn't got a lot of funding from the National Rural Health Mission and the Tribal Development Department."

By 2008, the Mission was training ICDS and health workers across all 33 districts in the state in how to effectively implement and manage Child Development Centers. They also provided "health training" to ensure workers knew how to classify the nutritional status of children according to the India Academy of Pediatrics grading standards; "training for trainers" to ensure mothers at the CDCs were receiving information about evidence-based nutrition and feeding practices; "nutrition training" to ensure families had healthy recipes incorporating food that could be sourced locally and snacks that could be prepared for off-hours of hunger (soya laddoos, groundnut laddoos, rawa soya biscuits, etc.); and "monitoring training" to ensure that any child returning home from a CDC was monitored for 26 weeks, with monthly weight reports emailed directly to the Mission.

In August 2008, the Government of India adopted new growth standards developed by the World Health Organization. Maharashtra switched from the Indian Academy of Pediatrics grading system to the WHO classification system, which widened the parameters of malnutrition. This resulted in a greater number of children, previously classified as grade III or IV, being categorized as having moderate acute malnutrition (MAM) or severe acute malnutrition (SAM; see **Exhibit 5** for definitions).

Again, the media cast the increase in malnutrition in a negative light. Ramani explained the numbers: "If I say your particular weight is normal, and then we change the standards and I say you're abnormal, you're the same person, nothing has changed. You're still alive, but you move from normal to abnormal. Now, that doesn't mean suddenly we have a worse public health problem." Ramani saw the change as an opportunity to capture a greater swath of vulnerable children.

Still, the Mission needed a cost-effective way to address the increase in children classified as severely undernourished. They hatched the concept of the Village Child Development Center—a model similar to Child Development Centers that did not require mothers and children to leave their homes and villages and cost the Ministry of Health 25% less per referral than a Child Development Center. The Women and Child Development Department funded a second field worker in all health centers in 20 high-risk districts to help manage the new treatment.

Reporting

The Mission reported survey efficiency; weighing efficiency; percentage of children showing normal growth per month; and percentages of children with various stages or grade of malnutrition from each district to the chief secretaries and head of state every month. It also posted the numbers on its public website. A new GIS mapping system provided monthly, time series data about block-level nutritional data, which the district and state level officials reviewed regularly. Ramani specifically alerted the chief secretary to any areas that were lagging. The chief secretary would follow up with a letter to the district notifying it of the data collection status and informing leaders that this would impact their job performance review. Ramani also had the option to comment on their performance.

Quarterly district-level progress reports were presented at government meetings in the form of a large color-coded map, displayed on a screen, showing each area as red, yellow, or green (see **Exhibit 16** for maps showing progress over time). Ramani explained, "If you are the political representative for an area, you will say, 'Oh, my God! I'm in that red area.' And all your colleagues and the chief minister will be looking at you and will ask, 'What's the problem in your area?' [You'll] say, 'Okay, I must do something about it.'"

By 2010, it was clear the Mission had made inroads in strengthening community awareness and political action around malnutrition. The Mission's work extended across the whole state; Child Development Centers, which had seen 11,000 children since 2007, and Village Child Development Centers, which had expanded to 220 facilities in three districts, had brought together the Health and Women and

Child Development Ministries and were showing promising impact on child nutritional status. The Village Child Development Center's success depended on rigorous monitoring of a child's height and weight growth over the 30-day period. The *anganwadi* worker took these measurements each week; if the child did not improve after the first week, the worker reported the child's food and medicine intake to the medical officer, who could take further action. In each of the three districts—Pune, Beed, and Nandurbar—more than 50% of the children were upgraded from a MAM or SAM status after 30 days.[27] With added responsibilities, a*nganwadi* workers were motivated by the Star Competition and other incentives to achieve their goals of improving survival. They had taken it upon themselves to create a "one fistful" program in which small food donations were collected and distributed house by house in poor areas.

Ramani said, "It's not really a question of success or failure. It's how long we can maintain nutrition on center stage."

Renewal

The Mission team comprised the director general, director of training, director of monitoring, deputy director of health, assistant director of nutrition, consultant for infant and young child nutrition, research officer for management information system, and a few office support staff. On September 18, 2010, the chief minister called a government meeting to decide whether to support the Mission for another five years.

It was difficult to know how the Mission's interventions impacted the overall prevalence of severely and moderately acute malnourished children. While the raw data in the monthly progress reports from ICDS showed improvement of malnutrition grades in the past five years, it also showed deep fluctuations across districts and years (see **Exhibit 17** showing variation in metrics by district). There was some resistance to renewal from bureaucrats who wanted to focus on other issues.

Vandana Krishna, secretary of Women and Child Development, presented data showing that undernutrition in Maharashtra was still prevalent in the first two years of life—a crucial time for children's development that set the course for their health and nutrition in future years. "The most important factors that lead to malnutrition include inadequate knowledge about the benefits of exclusive breastfeeding and complementary feeding practices and the role of micronutrients, and the lack of time women have available for appropriate infant care practices and their own care during pregnancy," Krishna explained. She emphasized this was an unmet need in Maharashtra, based on the recent national family health data on stunting, wasting, and underweight indicators (the lowest nutritional status of a child's life was reached 24 months after birth), in addition to Health Management Information Systems (MIS) data showing nearly half of all mothers had low body mass indexes and high rates of anemia.[27]

Nutrition Mission Phase II

The Government Resolution of November 12, 2010, renewed the Mission but shifted its focus to preventing undernutrition during the "first 1,000 days" of a child's development—between conception and two years of age.

In 2011, Ramani Venkatesan left the Mission to pursue consulting work, and Vandana Krishna became the director general. Most Mission team members maintained their positions. "Krishna provided excellent and committed leadership with sound understanding of subject and issue," said a UNICEF nutrition specialist. As Krishna described it:

> I set priorities and decide the Mission's course of action. If the chief minister or minister had time to set nutrition priorities, the situation would be different. I am free to set priorities and goals, which I do in

> consultation with UNICEF or by looking at global evidence. The entire nutrition initiative is left to me by default, not because I'm the only leader who can, but because no one else has time to go into the depth of nutrition-related issues.

The Mission and ICDS leadership worked together on training workshops, empowerment or counseling of mothers, and inculcating proper child-care practices. In communicating with ICDS, "We try to be careful," said Krishna. "Our role is like a person walking a tightrope. We have to be very careful not to criticize them or to step on their turf. It's like a diplomat's job. We work with them, but at the same time we don't interfere with their administrative work. We are there to support ICDS and train its workers with their permission." The Mission and ICDS leadership generally avoided discussing administrative or programmatic issues related to food distribution under ICDS; they did not talk about the construction of *anganwadi* buildings, recruitment of *anganwadi* workers and how to fill vacancies, nor the ICDS food budget and unspent balances.

Of the ICDS workers' six responsibilities, providing supplementary food and preschool education in the *anganwadi* center were traditionally considered the most important. Other services—making household visits to families with children under six years old and training mothers or guardians in care and feeding practices—were "the most neglected but the most important," explained Krishna. She began to set up workshops to personally train *anganwadi* workers and mothers about feeding practices and nutrients from local foods. Limited by the lack of trainers, she used videoconferencing technology and training videos to reach thousands across nearly all of Maharashtra's districts. Over time, Krishna realized that a vital role for the Mission was to listen and disseminate knowledge about gaps in current feeding practices of mothers and share with policy makers. She explained:

> In our mission, we don't get carried away in compiling outcome data because that would take up all of our time and energy. We concentrate on capacity building, developing models for mothers' group meetings, reaching out to mothers, and telling them what to do. We sit in groups and talk, rather than ask the workers to send this report or that report. Often block- or district-level officers pressure workers to show better performance—perhaps through underreporting the actual incidence of underweight children. Our role is to guide the workers on how to provide care and how to detect what is wrong with a child. If, despite their efforts, the child is not gaining weight or eating well, maybe the worker doesn't know what to do. We guide them in diagnosing the real problem. That is a big gap in the government system.

Under Krishna, the Village Child Development Centers continued to expand. "It is well appreciated," said the former director of that National Rural Health Mission. "Many states have visited, and they have governments thinking about it. I've presented it at the national level, and many states have started this new model for tackling malnutrition." In 2014, 35,000 Village Child Development Centers had been implemented and nearly 200,000 children treated. An independent nutrition survey report conducted in 2012–2013 showed Village Child Development Centers reduced severe wasting from 14% to 7% and wasting from 21% to 15%. "Village Child Development Centers save lives," reported a UNICEF specialist.

Surveys

In 2012, seven years after the launch of the Mission and with USD 300,000 from UNICEF, the Government of Maharashtra commissioned an independent survey to assess the nutritional status of children under two in the state. Rajlakshmi Nair reflected, "We have anecdotes, stories, but that does not go well in an international community. You have to say that this is an answer, that it has impact on nutritional outcomes. It's difficult to prove." Another UNICEF leader said:

> The survey was a risk. We hired a third party. The Government of Maharashtra said, "We need to know where we are. Have we made progress in the last five years? If we haven't, what is next?" The risk was not

only for government; it was for UNICEF as well. The entire group will hear you threw away money. There was fear. But at the same time, we felt that so much work had happened—something would have improved.

The International Institute for Population Sciences (IIPS), the organization that had conducted three rounds of the National Family Health Survey in India as well as the District Level Household and Facilities Surveys, worked with UNICEF to align the questionnaire with international standards; IIPS decided itself on the methodology, data collection, data analysis, and final report.

The chief minister of Maharashtra released a brief fact sheet of the Comprehensive Nutrition Survey on November 5, 2012. Stunting in under-2 had decreased from 39% in 2005–2006 to 23% in 2012. Wasting had decreased from 19.9% to 15.5%, and underweight decreased from 29.6% to 21.8%. Severe stunting decreased from 15% to 8%. Improvements were seen in antenatal care, breastfeeding and complementary feeding practices, and the use of iodized salt.[28] Nair reflected, "When the results came in, we saw stunting reduced by 16 percentage points. I said, 'Am I looking at the right data?'"

The full report was officially released in November 2013 in a high-profile meeting that brought together top government officials, members of parliament across parties, corporate leaders, the media, filmmakers, secretaries, NGOs, academics, and activists who had been critics of the state. Together, they celebrated what had worked in Maharashtra and discussed the next steps. The chief minister introduced the "Five-Point Agenda" to outline the state's nutrition aims over the next five years: to reduce anemia among adolescent girls by half, reduce the incidence of low birth weight by half, raise rates of timely initiation of breastfeeding and exclusive breastfeeding for children 0–6 months, raise rates of minimum dietary diversity for children 6–24 months, and ensure universal access to effective therapeutic feeding for all children suffering from severe acute malnutrition by 2017. The chief minister also pinpointed 16 tribal areas most in need of attention.

The Maharashtra University of Health Sciences responded quickly to the five-point agenda by modifying the syllabus and curriculum of training for teachers in pediatrics, community medicine, and gynecology to reflect the agenda's goals. Dr. Mrudula Phadke, a pediatrician and Mission adviser in charge of the curriculum changes, remarked:

> We still have a long way to go. The Mission has done magic on nutrition-specific indicators—complementary feeding and timely breastfeeding. But we have not been able to control wasting, mainly because we have not been able to take care of nutrition-sensitive indicators such as clean water, sanitation, and hygiene to prevent diarrheal disease, as well as immunization of the child—the measles immunization has yet to come up to the mark as we want to.

Meeting participants decided to launch the Maharashtra Alliance Against Malnutrition modeled after the national Citizens Alliance. The Tata Corporation, which aimed to support nutrition, sanitation, and agriculture research in India—cosponsored the Alliance. Nair reflected, "We may have political differences, but there's a common platform that brings us all together. That's children and that's malnutrition."

Next Steps

In late 2013, the Government of India introduced new policy that required corporations to allocate 2% of profits to the social sector. Corporations in Maharashtra wanted to support the successful Mission. "It may not remain a Mission by 2015—it may move to an Alliance, anchored by [corporate sponsors] because of the 2% of business profits going back to the social sector … We will strengthen partnerships and build systems and technology that will be cutting-edge," said Nair.

Neerja Chowdhury, whom colleagues described as having the ear of many politicians and the media, said, "Today, malnutrition is becoming an issue in the country. If the finance minister opens his budget, the first line has malnutrition. I was telling Vandana Krishna, 'Let Maharashtra invite other states to see what it has been able to do to reduce stunting.'"

Back in Nepal, Víctor Aguayo, UNICEF's regional Advisor for South Asia, reflected on the November nutrition meeting in India: "The chief minister is very glad that the results are telling us that we have made progress. However, he also understands that the next 20% reduction is going to be more difficult than the previous one." The state government, UNICEF, and their partners had clearly garnered momentum around the long-standing, chronic issue of malnutrition in Maharashtra. How could Aguayo help guide them through the next 20% reduction? And, was it possible to support other states and countries to achieve similar success? What had enabled Maharashtra to be so successful?

Exhibit 1 *Map of India and States*

Source: Nations Online Project (nationsonline.org).

Exhibit 2 *Basic Socioeconomic and Demographic Indicators of India*

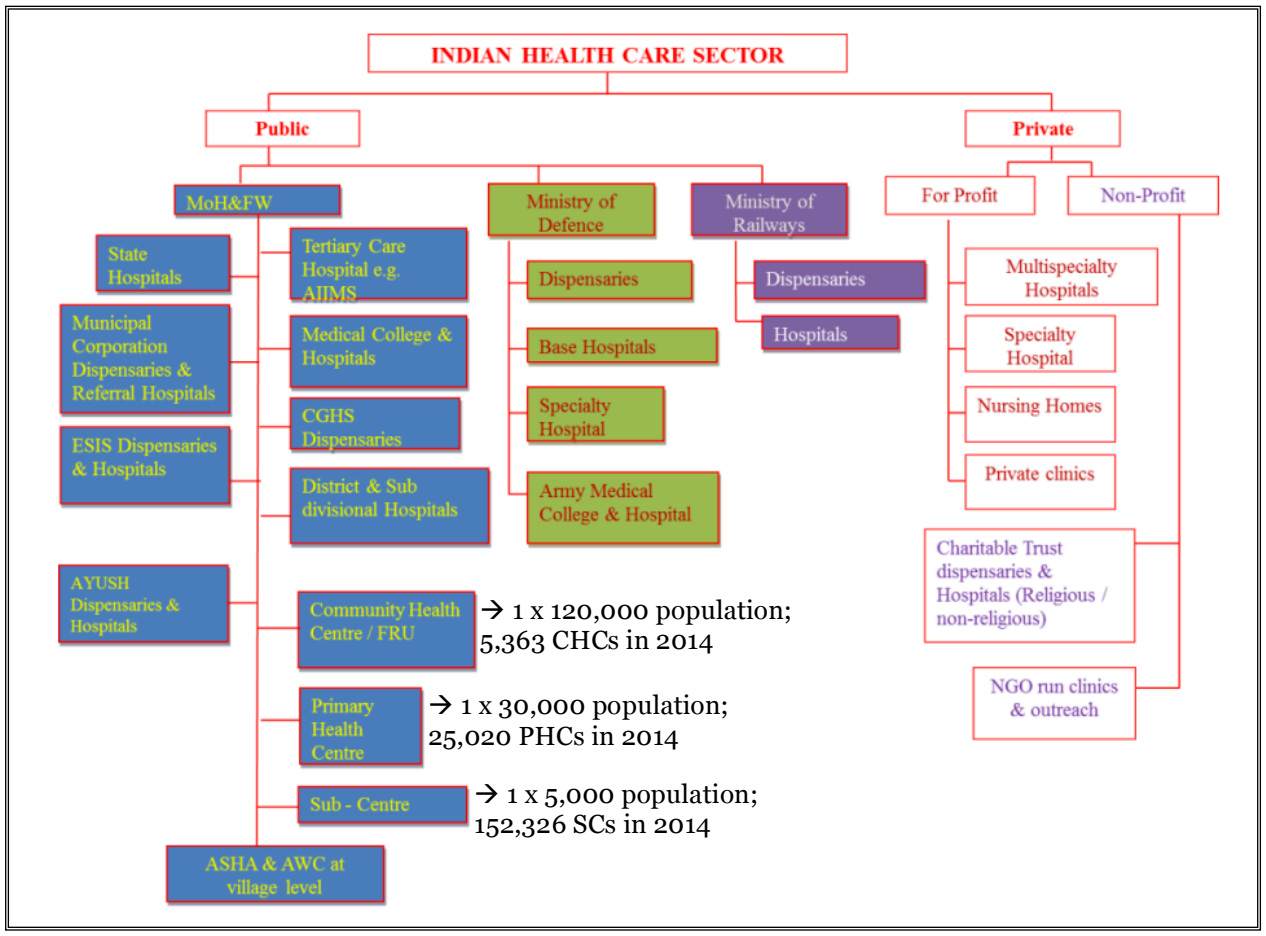
INDICATOR		YEAR
UN Human Development Index ranking	135 out of 187	2013
Population (thousands)	1,236,345	2014
Urban population (%)	32	2013
Drinking water coverage (%)	92.6	2012
Poverty rate (% living under USD 1.25 per day)	23.6	2012
Gini index	33.6	2012
GDP per capita in PPP (constant 2005 international dollar)	3,340.6	2012
GDP per capita in constant 2005 USD	1,165	2013
Literacy (total, female, male)	74.0, 65.5, 82.1	2011

Exhibit 3 *Health System and Epidemiologic Indicators of India*

INDICATOR		YEAR
Average life expectancy at birth (total, female, male)	66.3, 68.1, 64.6	2013
Maternal mortality ratio (per 100,000 live births)	200	2013
Under–five mortality rate (per 1,000 live births)	56	2013
Infant mortality rate (per 1,000 live births)	44	2013
Vaccination rates (% of DTP3 coverage)	73	2012
Undernourished (%)	17	2012
Adult (15–49 years) HIV prevalence (per 100,000)	300	2012
HIV antiretroviral therapy coverage (%)	50	2012
Tuberculosis prevalence (per 100,000)	176	2012
DOTS coverage (%)	100	2007
Malaria cases (per 1,000)	19.7	2011
Government expenditure on health as % of total government expenditure	9.4	2012
Government expenditure on health per capita (international dollars, USD)	52.0, 20.2	2012
Total health expenditure per capita (international dollars, USD)	157, 61	2012
Physician density (per 10,000)	7	2012
Nursing and midwifery density (per 10,000)	17	2011
Number of hospital beds (per 10,000)	7	2011

Source: Compiled by case writers using data from United Nations, UNICEF, United Nations Development Program, World Bank World Development Indicators, International Monetary Fund, and the United Nations Educational, Scientific and Cultural Organization, and the World Health Organization.

Exhibit 4 *Structure of India's Health System*



Sources: Growth Analysis—Swedish Agency for Growth Policy Analysis, 2013. http://www.tillvaxtanalys.se/download/18.5f097bc113eacc3d6d5140/1369033657507/direct_response_2013_04.pdf.
National Rural Health Mission, 2014. http://nrhm.gov.in/nrhm-components/health-systems-strengthening/infrastructure.html.

Exhibit 5 *Glossary of Nutrition Definitions*

Underweight: Weight for age is more than 2 standard deviations below the WHO Child Growth Standards median.*

Stunting: Height for age is more than 2 standard deviations below the WHO Growth Standards median; a result of long-term nutritional deprivation.

Wasting: Weight for height is more than 2 standard deviations below the WHO Child Growth Standard median; a symptom of acute undernutrition.

Low birth weight: A weight at birth of less than 2,500 grams (5.5 pounds).

Overweight: Weight for height is above 2 standard deviations from the median of the WHO Child Growth Standards.

Moderate acute malnutrition (MAM): Children between the ages of 6 and 59 months who are between the -2 and -3 standard deviation for weight for height (wasting) score.

Severe acute malnutrition (SAM): children who are between the ages of 6 and 59 months and have a weight for height (wasting) score 3 standard deviations below the median, have a mid-upper-arm circumference less than 115 mm, or the presence of bilateral edema.

Severe chronic malnutrition (**SCM)**. Calculated with the Z-score defined as a height-for-age index less than –3 standard deviations from the mean weight of a reference population of children of the same height and/or having edema.

Early initiation of breastfeeding: Breastfeeding during the first few days after delivery; provides essential nutrients to the baby that helps boost its immune system.

Exclusive breastfeeding: Feeding the baby only breast milk for the first six months of life; recommended for proper growth and development.

Complementary feeding: Introducing safe and adequate complementary food from the age of six months onward; it is recommended that a child continue breastfeeding as well until two years of age.

Vitamin A supplementation: During the first five years of life, two vitamin A doses fully protect from vitamin A deficiency. Vitamin A is necessary to support immune system response.

Iron supplementation: Helps reduce the prevalence of anemia (including iron deficiency), particularly among women and young children.

Universal salt iodization: A safe, cost-effective, and sustainable strategy to ensure sufficient intake of iodine by all. Recommended in all countries with iodine deficiency, the most common cause of preventable mental impairment.

Home fortification: Sprinkling a mixture of vitamins and minerals (which are supplied in powdered form in single-serving sachets) over any semisolid food before consumption.

Large-scale fortification: Adding micronutrients to staple foods, complementary foods, and complements in their respective production sites. Very common with iron, zinc, folic acid, and other B vitamins.

Grades I–IV: The Indian Academy of Pediatrics standards classified child nutritional status using grades I–IV, based on weight for age. In 2008, the WHO created new standards that changed the metric from "grades" to "stages," such as SAM. Children previously classified as Grades III or IV would be classified as MAM or SAM under the WHO system.

*The new WHO Growth Standards were different from the Indian Academy of Pediatrics (IAP) standards that were based on unisex tables from predominantly formula-fed Northern European infants and classified children below the third percentile in weight as underweight. The new WHO standards were based on data collected from predominantly breastfed infants in heterogenous populations in developed and developing countries.

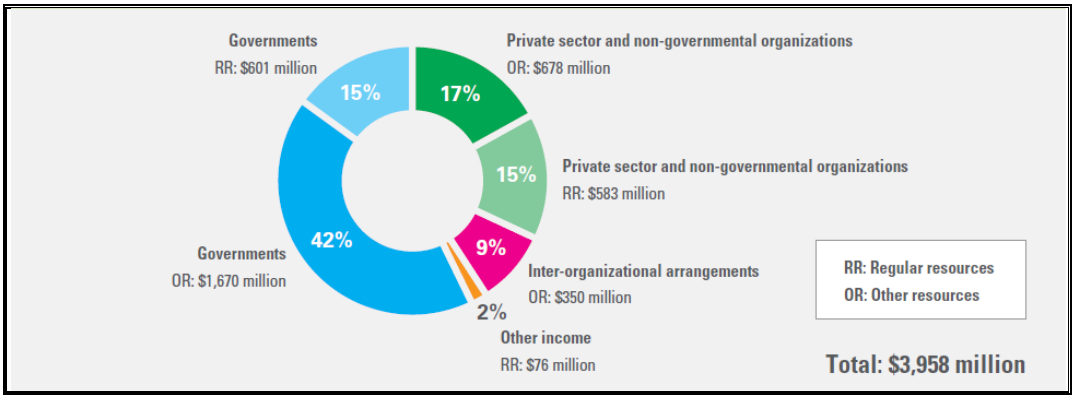
Source: WHO and UNICEF: Improving Child Nutrition Report April 2013; UNICEF: Review of National Legislation for Universal Salt Iodization: South Asia and East Asia and the Pacific March 2013; WHO: Multiple micronutrient powders for home (point of use) fortification of foods in pregnant women: a systematic review 2011.

Exhibit 6 *UNICEF Expenditure and Revenue in 2012*

Expenditure by Category, 2012 (in millions of USD)

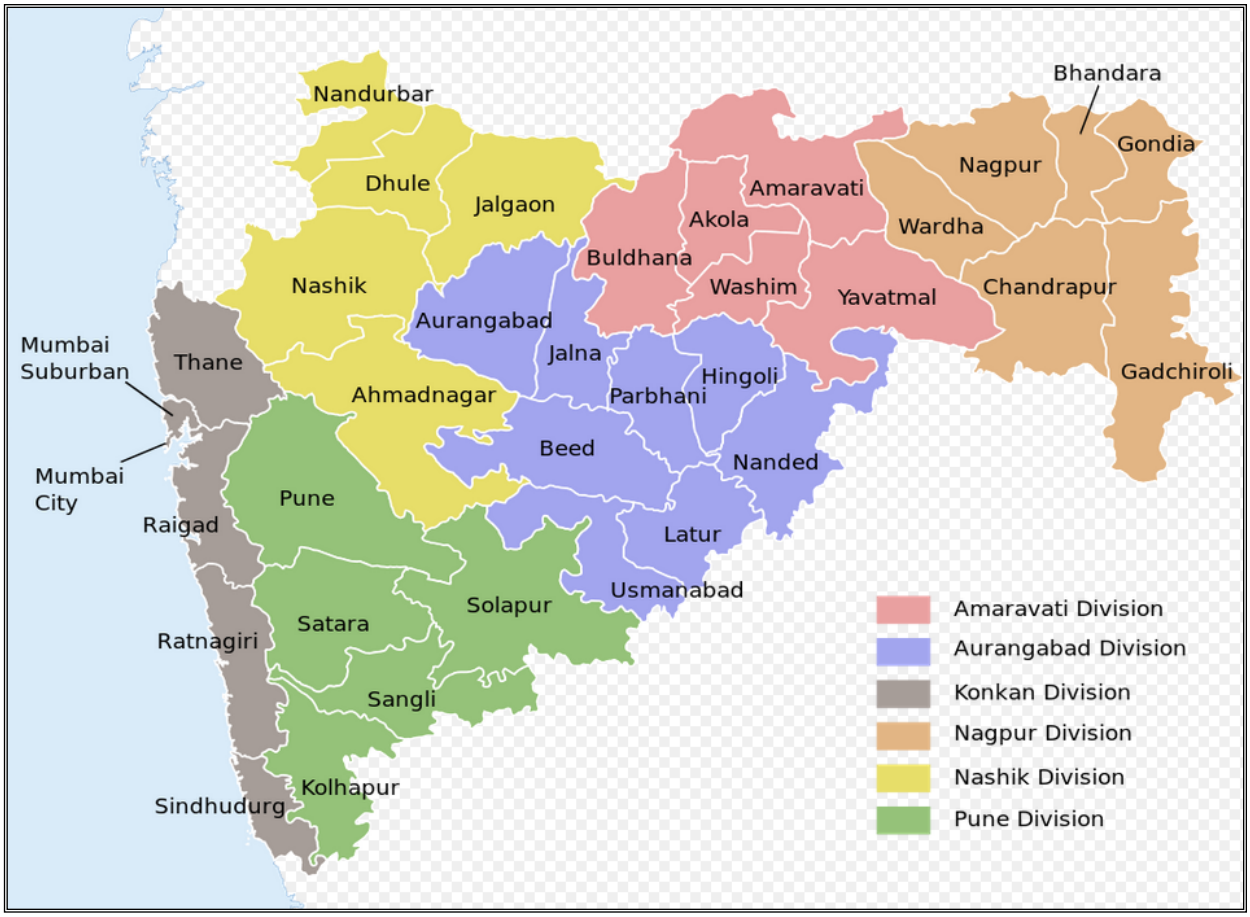
Budget category	Total
Development	**3,416**
Programme	3,292
Development effectiveness	124
Management	**322**
Special purpose (including private fundraising and partnerships)	**127**
United Nations development coordination	**2**
Total expenditure	**3,866**

Revenue by Funding Type, 2012 (in USD)



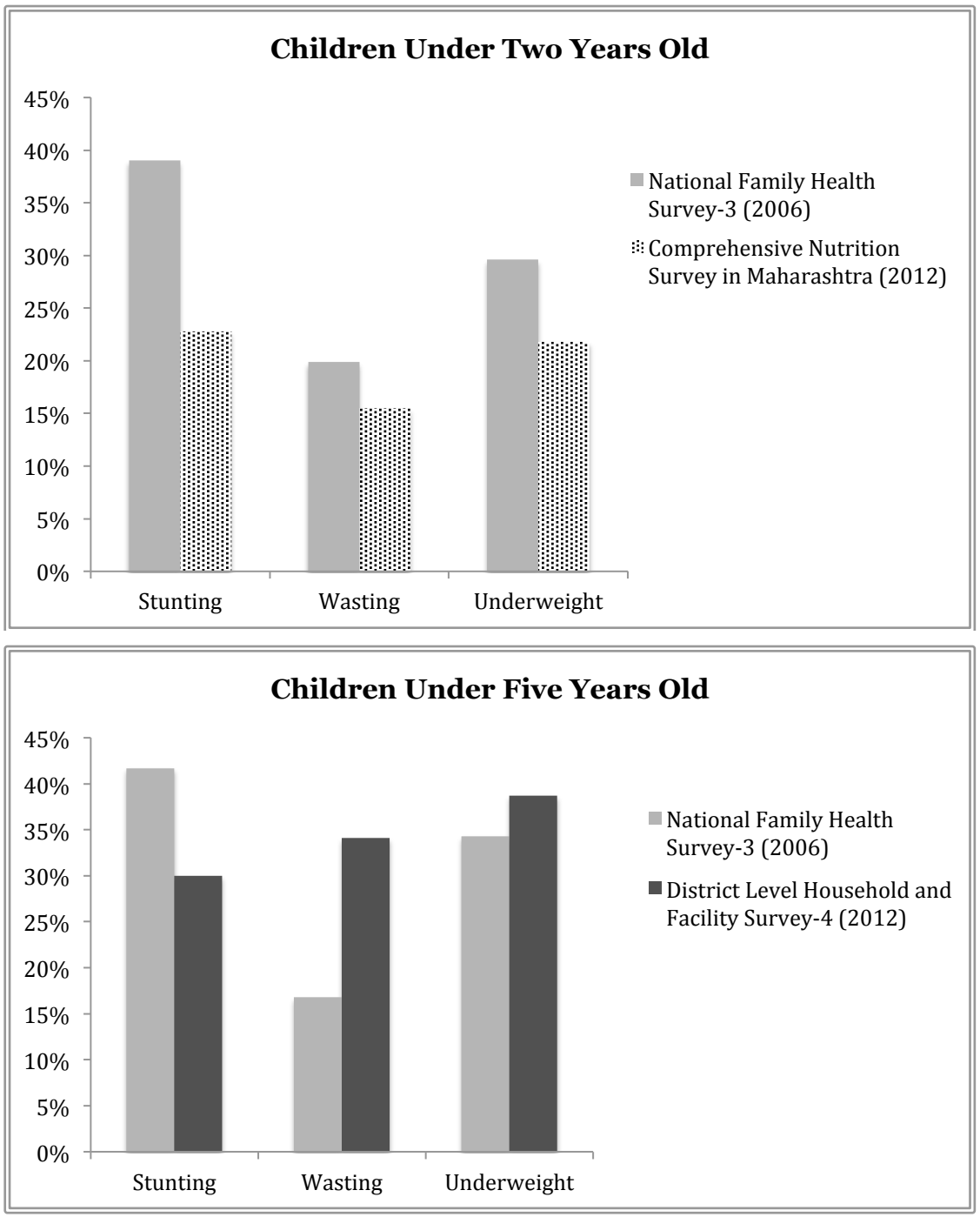
Source: http://www.unicef.org/mena/MENA-UNICEF-AnnualReport2012_8July2013.pdf.

Exhibit 7 *Map of Maharashtra's Divisions and Districts*



Source: "Maharashtra Divisions Eng" by Maharashtra_locator_map.svg: User:PlaneMadderivative work: Kaajawa (talk) - Maharashtra_locator_map.svg. Licensed under CC BY-SA 3.0 via Wikimedia Commons, http://commons.wikimedia.org/wiki/File:Maharashtra_Divisions_Eng.svg#mediaviewer/File:Maharashtra_Divisions_Eng.svg.

Exhibit 8 *Child Nutrition Indicators in Maharashtra by Age Group, 2006 and 2012*



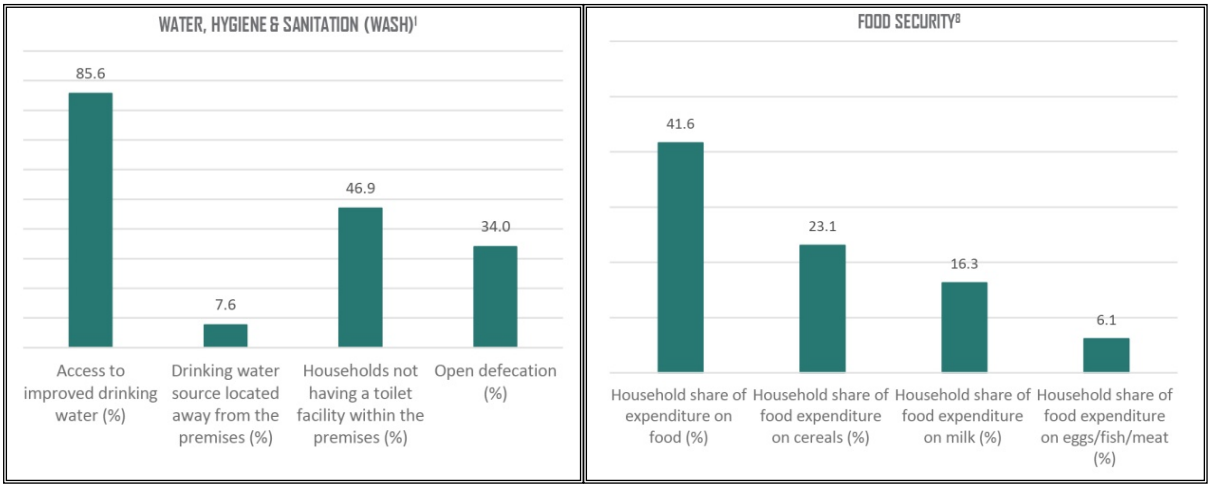
Notes: The National Family Health Survey-3 collected data on under-2 and under-5 children in 2006. The Comprehensive Nutrition Survey in Maharashtra collected data on under-2 children in 2012; and the District Household and Facility Survey-4 collected data on under-5 children in 2012. The International Institute for Population Sciences conducted all three surveys. Definitions: *stunting*: Too short for age; *wasting*: too thin for height; *underweight*: too thin for age.

Sources: National Family Health Survey, 2005–06 (NFHS 3); Comprehensive Nutritional Survey in Maharashtra, 2012 (CNSM); District Level Household and Facility Survey, 2012 (DLHS).

Exhibit 9 *Trends in Women's Nutrition, Status, and Access to Health Services in Maharashtra, 2013*

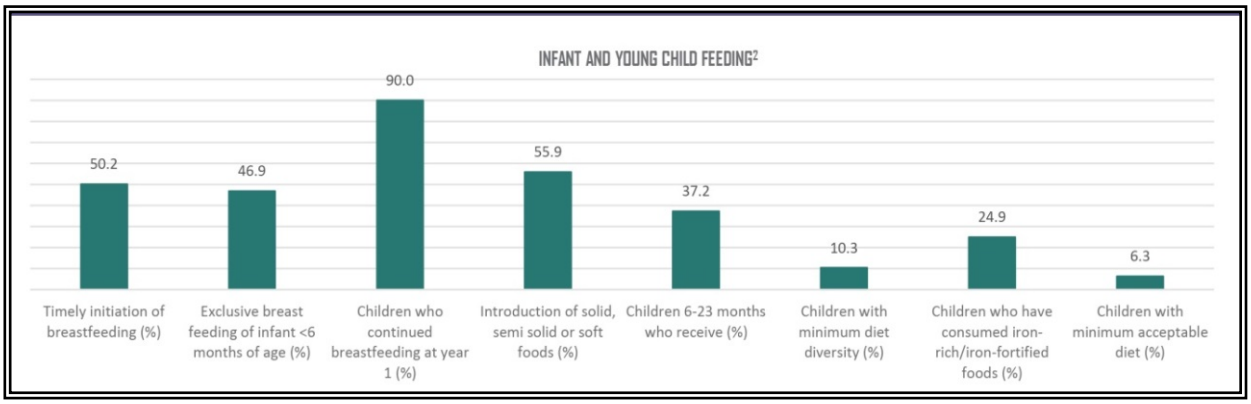
Source: Abhilasha Vaid, International Food Policy and Research Institute; Moutushi Majumder, Public Health Foundation of India, 2015.

Exhibit 10 *Water, Sanitation, and Food Security in Maharashtra, 2013*



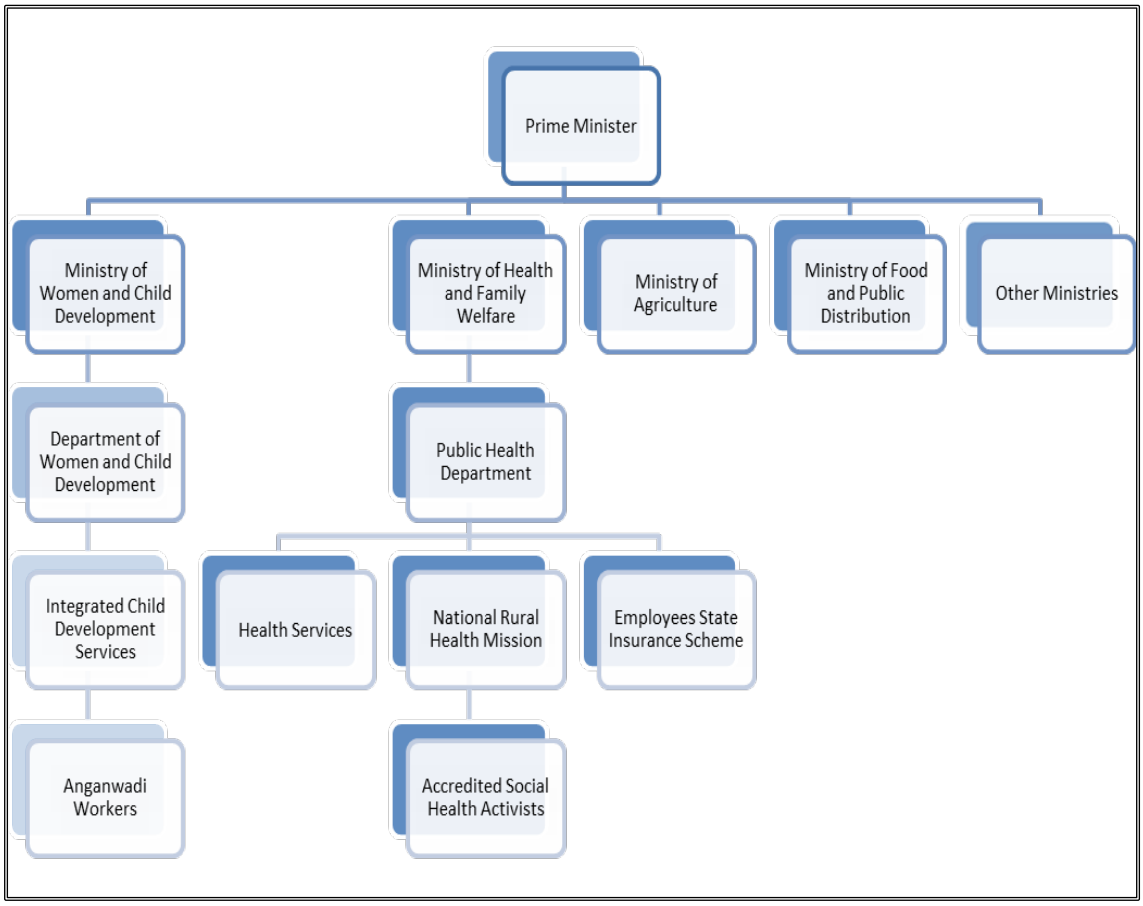
Source: Abhilasha Vaid, International Food Policy and Research Institute; Moutushi Majumder, Public Health Foundation of India, 2015.

Exhibit 11 *Trends in Child Feeding Practices in Maharashtra, 2013*



Source: Abhilasha Vaid, International Food Policy and Research Institute; Moutushi Majumder, Public Health Foundation of India, 2015.

Exhibit 12 *Organogram of Country-Level Ministries*



Source: Case writers, 2014.

Exhibit 13 *Selections from the Maharashtra Government Resolution Establishing the Rajmata Jijau Mother-Child Health and Nutrition Mission*

Government of Maharashtra
Department of Women & Child Development
G.R. NO. 1CD 2005/CR 5/D 5 dated 11 March 2005

Subject: Establishment of the Rajmata Jijau Mother-Child Health and Nutrition Mission

1) The objective behind setting up the Mission is to reduce the incidence of malnutrition in the under-6 children age group in rural (both tribal and non-tribal) and urban areas.

2) The primary focus is to reduce Grade-III and IV malnutrition in under-6 children with the following supplementary aims:
   a) Special focus on antenatal care for expectant (especially low-weight and anemic) mothers and children in the 0-3 age group in respect of immunisation, nutrition and health care access (thereby concentrating on the period from the time of conception {minus 9 months} to 3 years).
   b) Reducing Grade-I and II malnutrition in under-6 children through the ICDS and increasing the proportion of normal weight children, with emphasis on ECCE.
   c) Assisting the Public Health Department in training and sensitization programmes in the implementation of pilot schemes of the IMNCI and HBNC in specific PHC areas in selected districts of the state.
   d) Giving special attention to the education of adolescent girls to reduce the incidence of child marriages, promoting spacing between two issues and developing social awareness on various issues aimed at reducing the severity of malnutrition.
   e) Publicizing the activities of the Mission through the media in order to promote a social movement through community participation in measures to reduce the incidence of malnutrition with the ultimate aim of seeking to transfer the responsibility for tackling malnutrition from the government to civil society.

3) The components of the action programme to achieve the aims of the Mission are:
   a) Increasing survey efficiency (both within and outside the ICDS area)
   b) Increasing weighing efficiency (both within and outside the ICDS area)
   c) Grading children in normal and different grades of malnutrition
   d) Preparing AWC-wise lists of Grade 3 & 4 children
   e) Monthly medical checkup of Grade 3 & 4 children
   f) Six monthly medical checkup of all under-6 children
   g) Increasing registrations of pregnant women and nursing mothers
   h) Regular medical checkups of pregnant women and nursing mothers
   i) Expert medical examination and treatment of women and children
   j) Regular reviews at different levels to achieve the Mission's objectives

…

11) The role of local government bodies being crucial for the achievement of the Mission's objectives, their responsibilities are as follows:
   a) Obtain support of elected officials for reducing under-6 child malnutrition. The Mission's work would thereby be promoted through public participation and a people's movement.
   b) Aim at reducing malnutrition through making financial provisions in the local body budgets for medicines, AWC buildings, building awareness through public education and publicity and other essential items.
   c) Review implementation of the Mission's activities by bringing these as agenda items in meetings of statutory and subject committees and honouring good work done by institutions, non-officials, officers and employees in carrying out the Mission's activities.

12) The Department of Women & Child Development will be the nodal department for the Mission. The assessment of the Mission's work will be carried out by an independent agency.

13) Reduction of child malnutrition in the State being a significant policy initiative of the Government of Maharashtra, it is expected that officers and employees of all concerned departments and elected officials and office bearers of all local government bodies will make all efforts and render all cooperation in helping the Mission achieve its objectives.

Source: V. Ramani, Making a difference: The Mission approach to reducing childhood malnutrition, 2014.

Exhibit 14 *Description of the Star Competition*

Important points in the circular dated 14 July 2005 of the Mission
Subject: Role of star competition in reducing malnutrition

1. The star competition is being promoted to aim at completely removing severe (Grade III & IV) under-6 child malnutrition in every anganwadi in the state of Maharashtra. It would be operated at all levels – AWC, health sub-centre, Anganwadi supervisor beat, PHC, ICDS project, district and revenue division.
2. Monthly ranking of performance at the different unit levels (AWW, PHC, etc.) would be the basis for assessing the star certification status of that unit.
3. The appropriate star certification would be awarded based on achievement in the respective area of operation of the following objectives: (i) 100% survey efficiency; (ii) at least 95% weighing efficiency; (iii) 100% monthly/quarterly medical check-up; (iv) maintenance of separate lists of children with congenital/severe diseases.
4. The norms for star certification (in the respective areas of operation) are as follows:

Star number	Norm
One Star -- ☆	No under-6 child in Grade IV
Two Star -- ☆ ☆	No under-6 child in Grade III & IV
Three Star -- ☆ ☆ ☆	No under-6 child in Grades II, III & IV
Four Star -- ☆ ☆ ☆ ☆	No under-6 child in Grades I, II, III & IV
Five Star -- ☆ ☆ ☆ ☆ ☆	No under-6 child in Grades I to IV and no under-19 mother

5. Children suffering from congenital diseases or other serious ailments would be separately listed and treated on priority basis. Their numbers would be excluded in considering the number of children in the different nutrition grades.
6. Star certification would be reflected in the annual assessment of the concerned employee. A "two star" classification would earn a "very good" remark and a "three star to five star" classification would see the employee being graded "outstanding".

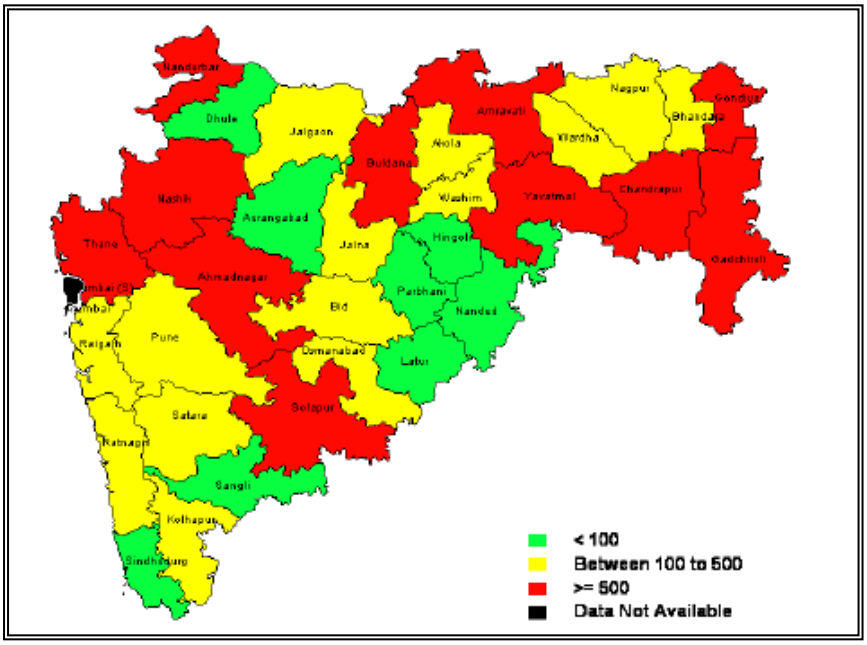
Source: V. Ramani, Making a difference: The Mission approach to reducing childhood malnutrition, 2014.

Exhibit 15 *Photos of Community Growth Chart*

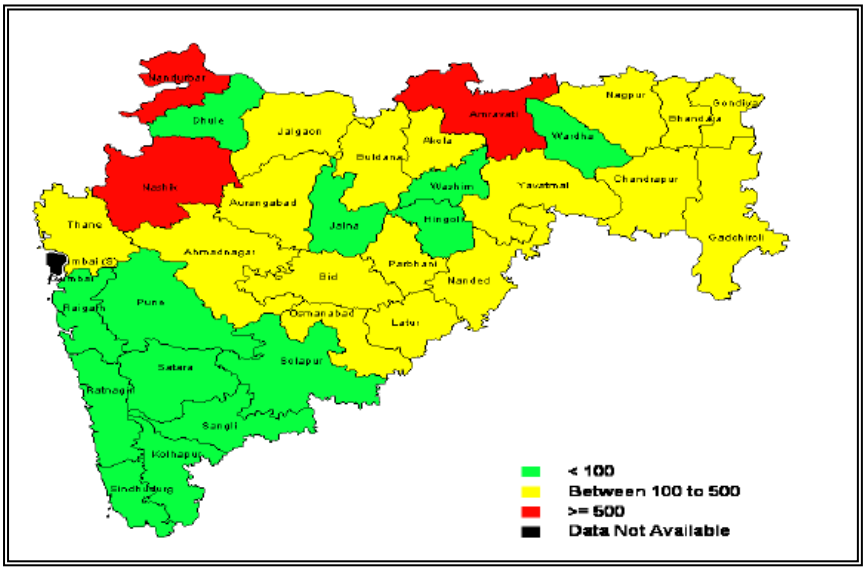
Source: V. Ramani, Making a difference: The Mission approach to reducing childhood malnutrition, 2014.

Exhibit 16 *Map of Progress over Time in Reducing Children with Grades III and IV Nutritional Status, Maharashtra*

April 2005



March 2010



Source: Rajmata Jijau Mother-Child Health and Nutrition Mission, Aurangabad. From V. Ramani, Making a difference: The Mission approach to reducing childhood malnutrition, 2014.

Exhibit 17 *Variance in Metrics Across Districts*

District	Survey month & year	AWW report (%)				Mission evaluation (%)			
		Normal	Grade-I	Grade-II	Grade-III+IV	Normal	Grade-I	Grade-II	Grade-III+IV
Amravati	Oct-07	42.64	40.37	15.09	1.91	38.41	40.4	16.68	4.51
Ahmednagar	Mar-08	60.46	32.07	7.08	0.39	49.29	36.66	11.97	2.09
Thane	Jul-08	49.78	39.21	10.76	0.26	38.05	39.56	19.86	2.52
Jalgaon	Aug-08	47.02	42.66	10.16	0.17	39.11	37.57	20.82	2.5
Pune	Aug-08	60.98	33.25	5.69	0.08	58.16	31.6	9.41	0.83
Nagpur	Sep-08	54.69	37.48	7.52	0.31	43.77	38.84	13.99	3.4
Yavatmal	Sep-08	43.97	43.34	12.22	0.46	33.67	37.93	24.59	3.8
Dhule	Oct-08	50.27	40.89	8.68	0.16	42.36	38.25	16.88	2.51
Nanded	Oct-08	48.68	41.84	8.83	0.65	39.05	38.39	19.1	3.45
Sangli	Oct-08	65.92	29.53	4.24	0.31	56.33	32.29	10.09	1.29
Satara	Oct-08	77.89	17.6	4.41	0.1	54.8	34.94	9.13	1.12
Nandurbar	Apr-09	39.97	42.93	16.48	0.61	25.98	39.02	27.98	7.02
Chandrapur	May-09	53.17	40.74	6.09	0	36.18	40.65	20.63	2.54
Total sample		52.3	37.71	9.57	0.43	41.8	37.54	17.58	3.08

Source: Rajmata Jijau Mother-Child Health and Nutrition Mission (2008–2009). From V. Ramani, Making a difference: The Mission approach to reducing childhood malnutrition, 2014.

Severe Malnutrition Statistics (Yearly High and Low)- Select Districts										
Year	2005 -2006		2006 -2007		2007 -2008		2008 -2009		2009 -2010	
District	High	Low	High	Low	High	Low	High	Low	High	Low
Amravati	2356 (Oct-05)	1269 (Apr-05)	1888 (Jun-06)	1227 (Mar-07)	2052 (Aug-07)	1031 (Aug-08)	1405 (Aug-08)	732 (Feb-09)	1297 (Sep-09)	685 (Mar-10)
Chandrapur	1528 (Apr-05)	868 (Mar-08)	1123 (Jul-06)	877 (Apr-06)	1106 (Jun-07)	492 (Mar-08)	557 (Sep-08)	246 (Mar-09)	290 (Jun-09)	106 (Mar-10)
Latur	164 (Nov-05)	59 (Jun-05)	458 (Jan-07)	118 (May-06)	802 (Jul-07)	471 (Dec-07)	569 (Sep- 08)	365 (Feb-09)	456 (Jun-09)	285 (Mar-10)
Nandurbar	2346 (Sep-05)	1482 (Apr-05)	1960 (Aug-06)	1193 (Mar-07)	1451 (Aug-07)	663 (Mar- 08)	847 (Aug-08)	465 (Feb-09)	1923 (Sep-09)	710 (Apr-09)
Salapur	1020 (May-05)	139 (Mar-06)	101 (Jan-07)	19 (Jun-06)	234 (Aug-07)	60 (Apr-07)	246 (Jun-08)	93 (Jan-09)	211 (Jun-09)	96 (Mar-10)

Source: V. Ramani, Making a difference: The Mission approach to reducing childhood malnutrition, 2014.

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