



Analysis of NITI AAYOG (National Institution for Transforming India) Health Index Report on the Ranking of States and Union Territories: Round 1 (2014-2016)-V1

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Research Article

Volume 6 Issue 2

Received Date: July 14, 2022

Published Date: October 12, 2022

DOI: 10.23880/phoa-16000215

Abstract

India has committed to adopting the Sustainable Development Goals (SDGs) for ending poverty, protecting the planet, and ensuring prosperity for all to be fulfilled by year 2030. Goal 3 of SDGs is about ensuring healthy lives with promoting well-being for all. National Institution for Transforming India- (NITI) Aayog had started the Health Index initiative for achieving desirable health outcomes. The key objective of the whole exercise is to track development on health, to develop healthy competition and cross learning among states and UTs. Health Index Scores and rankings are generated to assess Incremental Performance (year-to-year progress) and Overall Performance of state/UT for achievement of health-related Sustainable Development Goals (SDGs) as well as Universal Health Coverage (UHC). This novel study was a cross-sectional retrospective observational epidemiological study. The Health Index consists of a set of indicators in the domains of Health Outcomes, Governance and Information, and Key Inputs/Processes. Health Outcomes are assigned the highest weight, indicators were selected on the basis of their importance and availability of reliable data at least annually from pre-existing data sources such as the Sample Registration System (SRS), Civil Registration System (CRS) and Health Management Information Systems (HMIS). Data on indicators is included for Index calculations only after validation by the IVA.

Keywords: Health Index, Niti Aayog, Incremental Performance, Annual Incremental Performance, Index Score

Abbreviations: AHPI: Association of Healthcare Providers (India); ANC: Antenatal Care; ANM: Auxiliary Nurse Midwife; ART: Antiretroviral Therapy; BCG: Bacillus Calmette-Guérin; CCU: Cardiac Care Unit; CHC: Community Health Centre; CIPS: Centre for Innovation in Public Systems; CMO: Chief Medical Officer; CRS: Civil Registration System; SCS: Section Caesarean Section; DH: District Hospital; DPT: Diphtheria Pertussis and Tetanus; EAG: Empowered Action Group; ENT: Ear-Nose-Throat; GBD: Global Burden of Disease; FLV: First Level Verification; FRU: First Referral

Unit; Hb: Hemoglobin; HIV: Human Immunodeficiency Virus; HMIS: Health Management Information System; HRMIS: Human Resources Management Information System; IDSP: Integrated Disease Surveillance Programme; IMR: Infant Mortality Rate; INR: Indian Rupees; IVA: Independent Validation Agency; ISO: International Organization for Standardization; IT: Information Technology; JSSK: Janani Shishu Suraksha Karyakram; JSY: Janani Suraksha Yojana; LBW: Low Birth Weight; L Form IDSP: Reporting Format for Laboratory Surveillance; MCTS: Mother and Child Tracking

System; MCTFC: Mother and Child Tracking Facilitation Centre; MIS: Management Information System; MMR: Maternal Mortality Ratio; MO: Medical Officer; MoHFW: Ministry of Health and Family Welfare; NA: Not Applicable; NABH: National Accreditation Board for Hospitals and Healthcare Providers; NACO: National AIDS Control Organization; NCDs: Non-communicable Diseases; NE: North-Eastern; NFHS: National Family Health Survey; NHM: National Health Mission; NHP: National Health Policy; NITI: National Institution for Transforming India; NMR: Neonatal Mortality Rate; NQAS: National Quality Assurance Standards; OPV: Oral Polio Vaccine; ORGI: Office of the Registrar General and Census Commissioner, India; OOP: Out-of-Pocket; PCPNDT: Pre-Conception and Pre-Natal Diagnostic Techniques; P Form IDSP: Reporting Format for Presumptive Surveillance; PHC: Primary Health Centre; PLHIV: People Living with HIV; RRC-NE: Regional Resource Centre for North Eastern States; RNTCP: Revised National Tuberculosis Control Programme; RU: Reporting Unit; SBR: Still Birth Rate; SC: Sub-Centre; SDGs: Sustainable Development Goals; SDH: Sub-District Hospital; SLV: Second Level Verification; SRB: Sex Ratio at Birth; SRS: Sample Registration System; SN: Staff Nurse; SNO: State Nodal Officer; TA: Technical Assistance; TB: Tuberculosis; TERI: The Energy Research Institute; TFR: Total Fertility Rate; U5MR: Under-Five Mortality Rate; USAID: United States Agency for International Development; UTs: Union Territories.

Introduction

Background/Rationale

India has committed to adopting the Sustainable Development Goals (SDGs) for ending poverty, protecting the planet, and ensuring prosperity for all to be fulfilled by year 2030. Goal 3 of SDGs is about ensuring healthy lives with promoting well-being for all. National Institution for Transforming India- (NITI) Aayog had started the Health Index initiative for achieving desirable health outcomes. India's improvement in life expectancy, maternal and child mortality, reducing fertility, are falling short on several national and global targets. There are variations across States and Union Territories of India in their health needs and systems performance. NITI Aayog aims to bring change in population health by spirit of co-operative and competitive federalism; NITI Aayog measures the annual performance of States and Union Territories (UTs), and rank States and UTs on the basis of incremental change. Healthy States and union territories can make India able to reap demographic dividend is the key motto. In year 2017 the NITI Aayog with the Ministry of Health and Family Welfare (MoHFW) and the World Bank initiated an annual Health Index for knowing Performance and Incremental Performance across all 36 states and UTs. NITI Aayog has been mandated as the nodal

agency responsible for attaining the commitments under the SDGs. It was necessary to develop a tool for measuring outcomes in the health sectors to provide feedback to all stakeholders on what we have set out to achieve, deviations, if any, to be pointed out in time to ensure necessary correction. It is true that summarizing the complexities and condensing it in an Index has limitations. Health Outcomes Index seeks to capture the annual progress of States and Union Territories (UTs) through 3 varieties of indicators – Outcomes, Governance and Processes. The NITI Aayog works in collaboration with the Ministry of Health and Family Welfare, with technical assistance from the World Bank.

Objectives

Aim: To promote a co-operative and competitive spirit amongst the States and UTs to rapidly bring about transformative action in achieving the desired health outcomes. The key objective of the whole exercise is to track development on health, to develop healthy competition and cross learning among states and UTs. Health Index Scores and rankings are generated to assess Incremental Performance (year-to-year progress) and Overall Performance of state/UT for achievement of health-related Sustainable Development Goals (SDGs) as well as Universal Health Coverage (UHC).

Objectives

1. To develop a composite Health Index based on key health indicators.
2. To ensure States' participation and ownership.
3. Transparency by using an independent validation of data by an independent agency.
4. To generate Health Index scores and rankings for the States and UTs.

Methods

Study Design

This novel study was a cross-sectional retrospective observational epidemiological study. The Health Index consists of a set of indicators in the domains of Health Outcomes, Governance and Information, and Key Inputs/ Processes. Health Outcomes are assigned the highest weight, indicators were selected on the basis of their importance and availability of reliable data at least annually from pre-existing data sources such as the Sample Registration System (SRS), Civil Registration System (CRS) and Health Management Information Systems (HMIS). Data on indicators is included for Index calculations only after validation by the IVA. A composite Index is calculated as a weighted average of various indicators, for a base year (BY) and a reference year (RY). The change in the Index score of each State from the base

year to a reference year is the annual incremental progress of each State. States and UTs were grouped in 3 categories to ensure comparison among similar entities, namely 21 Larger States, 8 Smaller States, and 7 UTs.

Setting

For calculation of Index values and ranks, data was submitted online and validated by an Independent Validation Agency (IVA). The States were previously sensitized about the

process for data submission through workshops and mentor agencies (Table 1). Data was submitted by participants States and UTs through online portal hosted by NITI Aayog and data from pre-existing sources in the public domain was pre-entered. After validation of data by an IVA it was used as an input into automated generation of Index values and ranks on the web-portal. The data was verified by IPE Global, an IVA prior to computing the Index and ranks for all States and UTs of India.

Agency	States
United States Agency for International Development (USAID)	Uttar Pradesh, Uttarakhand, Odisha, Chhattisgarh, Punjab, Himachal Pradesh, Bihar,
Regional Resource Centre for North Eastern States (RRC-NE)	Jharkhand, Rajasthan, Madhya Pradesh, Haryana, Chandigarh, West Bengal
Centre for Innovation in Public Systems (CIPS)	Assam, Meghalaya, Arunachal Pradesh, Mizoram, Manipur, Nagaland, Sikkim, Tripura
The Energy Research Institute (TERI)	Andhra Pradesh, Telangana Delhi

Table 1: List of mentor agencies.

This novel study was the first of its kind which was conducted over a period of eighteen months. The World Bank, experts in statistics and health systems, public health, and economics were consulted for the development of the Index. The States and UTs participated for finalization of the indicators/variables, workshops for sharing the methodology, process of data submission.

Participants

All states and UTs of India were participants. Multiple

stakeholders as discussed above contributed to the Index development: The various Index was developed by NITI Aayog with help of World Bank, States and UTs, the Ministry of Health and Family Welfare (MoHFW), domestic and international sector experts and other development partners. Categorization of States and UTs for ranking were based on the size, and administration. The States were ranked in three categories, namely Larger States, Smaller States and UTs [1] (Table 2).

Category	Number of States and UTs	States and UTs
Larger States	21	Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand, West Bengal
Smaller States	8	Arunachal Pradesh, Goa, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura
Union Territories	7	Andaman & Nicobar, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Delhi, Lakshadweep, Puducherry

Table 2: Categorization of States and UTs.

This categorization was adopted due to the following reasons:

1. The SRS data on health outcomes (NMR, U5MR, TFR and SRB) were not available for 8 Smaller States and 7 UTs,
2. Reliable estimates for these outcome indicators/variables based on raw data obtained from SRS for the Smaller States and UTs could not be derived due to

statistically small sample size and insufficient number of events.

Variables

The main criteria for inclusion of indicators/variables were the availability of reliable data with at least an annual

frequency. The output Index is a weighted composite Index based on indicators/variables in 3 fields: (1) Health Outcomes; (2) Governance and Information; and (3) Key Inputs/Processes. Each domain was assigned a weight based on its importance. The indicator values are scaled from 0 to 100 for generating composite Index scores and performance rankings for base year (BY) (2014-15) and RY (reference

year) (2015-16). The annual incremental progress made from BY to RY is used to generate incremental ranks. Table 3 shows the number of indicators/variables in each domain and sub-domain along with weights, while Table 4 provides the detailed Health Index with indicators/variables, their definitions, data sources, and specifics of base and reference years.

Domain	Sub-domain	Larger States		Smaller States		Union Territories	
		Number of Indicators/variables	Weight	Number of Indicators/variables	Weight	Number of Indicators/variables	Weight
Health Outcomes	Key Outcomes	5	500	1	100	1	100
	Intermediate Outcomes	6*	300*	6*	300*	5*	250*
Governance and Information	Health Monitoring and Data Integrity	1	70	1	70	1	70
	Governance	2	60	2	60	2	60
Key Inputs/Processes	Health Systems/Service Delivery	10	200	10	200	10	200
TOTAL		24	1130	20	730	19	680

*The data for indicator no. 1.2.6 related to out of pocket expenditure was available only for 2015-16 and hence was used to calculate independently the RY Index and rank.

Table 3: Health Index: Summary.

Data Sources/M Measurement

The Health Index consists of 24 indicators/variables

related to Health Outcomes, Governance and Information, and Key Inputs/Processes Table 4 provides Health Index-indicator details and data sources.

S.No.	Indicator	Definition	Data Source	BY & RY	Remarks
DOMAIN 1 - HEALTH OUTCOMES					
Sub-domain 1.1 - Key Outcomes (Weight: Larger States - 500, Smaller States & UTs - 100)					
1.1.1	Neonatal Mortality Rate (NMR)	Number of infant deaths of less than 29 days per thousand live births during a specific year.	SRS [pre-entered]	BY: 2014 RY: 2015	Indicators/variables 1.1.1,
1.1.2	Under-five Mortality Rate (U5MR)	Number of child deaths of less than 5 years per thousand live births during a specific year.	SRS [pre-entered]	BY: 2014 RY: 2015	1.1.2, 1.1.3, and 1.1.5 are not
1.1.3	Total Fertility Rate (TFR)	Average number of children that would be born to a woman if she experiences the current fertility pattern throughout her reproductive span (15-49 years), during a specific year.	SRS [pre-entered]	BY: 2014 RY: 2015	applicable for category of
1.1.4	Proportion of Low Birth Weight (LBW) among newborns	Proportion of low birth weight (<=2.5 kg) newborns out of the total number of newborns weighed during a specific year born in a public health facility.	HMIS	BY: 2014 RY: 2015	Smaller

1.1.5	Sex Ratio at Birth (SRB)	The number of girls born for every 1,000 boys born during a specific year.	SRS [pre-entered]	BY: 2014 RY: 2015	States and UTs
Sub-domain 1.2 - Intermediate Outcomes (Weight: Larger & Smaller States - 300, UTs - 250)					
1.2.1	Full immunization coverage	Proportion of infants 9-11 months old who have received BCG, 3 doses of DPT, 3 doses of OPV and one dose of measles against estimated number of infants during a specific year.	HMIS	BY: 2014-15 RY: 2015-16	
1.2.2	Proportion of institutional deliveries	Proportion of deliveries conducted in public and private health facilities against the Number of estimated deliveries during a specific year.	HMIS	BY: 2014-15 RY: 2015-16	
1.2.3	Total case notification rate of tuberculosis (TB)	Number of new and relapsed TB cases notified (public + private) per 100,000 population during a specific year.	Revised National Tuberculosis Control Programme (RNTCP) MIS, MoHFW [pre-entered]	BY: 2015 RY: 2016	
1.2.4	Treatment success rate of new microbiologically confirmed TB cases	Proportion of new cured and their treatment completed against the total number of new microbiologically confirmed TB cases registered during a specific year.	RNTCP MIS, MoHFW [pre-entered]	BY: 2014 RY: 2015	
1.2.5	Proportion of people living with HIV (PLHIV) on antiretroviral therapy (ART)	Proportion of PLHIVs receiving ART treatment against the number of estimated PLHIVs who needed ART Treatment for the specific year.	Central MoHFW Data [pre-entered]	BY: 2014-15 RY: 2015-16	Indicator not applicable for Category of UTs.
1.2.6	Average out-of-pocket expenditure per delivery in public health facility (in INR)	Average out-of-pocket expenditure per Delivery in public health facility (in INR).	National Family Health Survey (NFHS)-4 [pre-entered]	RY: 2015-16	Indicator applicable only for reference year ranking. Not considered for generating incremental performance scores/ranks or drawing comparison between base and reference years scores/ranks.
DOMAIN 2 - GOVERNANCE AND INFORMATION					
Sub-domain 2.1 - Health Monitoring and Data Integrity (Weight: 70)					
2.1.1	Data Integrity Measure: a. Institutional deliveries b. ANC registered within first trimester	Percentage deviation of reported data from standard survey data to assess the quality/ integrity of reported data for a specific period.	HMIS and NFHS-4	BY & RY: 2015-16 (NFHS) BY & RY: 2011-12 to 2015-16 (HMIS)	The NFHS data was available only for RY and the data for this was repeated for the BY and reference year.

Sub-domain 2.2 – Governance (Weight – 60)					
2.2.1	Average occupancy of an officer (in months), combined for following three posts at State level for last three years 1. Principal Secretary 2. Mission Director (NHM) 3. Director (Health Services)	Average occupancy of an officer (in months), combined for following posts in last three years: 1. Principal Secretary 2. Mission Director (NHM) 3. Director (Health Services)	State Report	BY: April 1, 2012-March 31, 2015 RY: April 1, 2013-March 31, 2016	
2.2.2	Average occupancy of a full-time officer (in months) for all the districts in last three years - District Chief Medical Officers (CMOs) or equivalent post (heading District Health Services)	Average occupancy of a CMO (in months) for all the districts in last three years.	State Report	BY: April 1, 2012- March 31, 2015 RY: April 1, 2013-March 31, 2016	
DOMAIN 3 – KEY INPUTS/PROCESSES					
Sub-domain 3.1 – Health Systems/Service Delivery (Weight – 200)					
3.1.1	Proportion of vacant healthcare provider positions (regular + contractual) in public health facilities	Vacant healthcare provider positions in public health facilities against total sanctioned healthcare provider positions for following cadres (separately for each cadre) during a specific year: a. Auxiliary Nurse Mid-wife (ANM) at sub-centres (SCs) b. Staff nurse (SN) at Primary Health Centres (PHCs) and Community Health Centres (CHCs) c. Medical officers (MOs) at PHCs d. Specialists at District Hospitals (Medicine, Surgery, Obstetrics and Gynaecology, Paediatrics, Anaesthesia, Ophthalmology, Radiology, Pathology, Ear-Nose-Throat (ENT), Dental, Psychiatry)	State Report	BY: As on March 31, 2015 RY: As on March 31, 2016	Indicator definition
3.1.2	Proportion of total staff (regular + contractual) for whom an e-payslip can be generated in the IT-enabled Human Resources Management Information System (HRMIS).	Availability of a functional IT-enabled HRMIS measured by the proportion of staff (regular + contractual) for whom an e-payslip can be generated in the IT-enabled HRMIS against total number of staff(regular + contractual) during a specific year.	State Report	BY: As on March 31, 2015 RY: As on March 31, 2016	

3.1.3	a. Proportion of specified type of facilities functioning as First Referral Units (FRUs) b. Proportion of functional 24x7 PHCs	Proportion of public sector facilities conducting specified number of C-sections* per year (FRUs) against thenorm of one FRU per 500,000 population during a specific year. Proportion of PHCsproviding all stipulated healthcare services** round the clock against the norm of one 24x7 PHC per 100,000 population during a specific year.	State Report on number of functional FRUs, MoHFW data on required number of (FRUs State Report on number of functional 24x7 PHCs, MoHFW data on required number of PHCs	BY: 2014-15 RY: 2015-16 BY: 2014-15 RY: 2015-16	Indicator definition modified
3.1.4	Proportion of districts with functional Cardiac Care Units (CCUs)	Proportion of districts with functional CCUs [with desired equipment (ventilator, monitor, defibrillator, CCU beds, portable ECG machine, pulse oxymeter etc.), drugs, diagnostics and desired staff as per programme guidelines] against total number of districts.	State Report	BY: As on 3/31/2015 RY: As on 3/31/2016	
3.1.5	Proportion of ANC registered within first trimester against total registrations	Proportion of pregnant women registered for ANC within 12 weeks of pregnancy during aspecific year.	HMIS	BY:2014-15 RY: 2015-16	
3.1.6	Level of registration of births	Proportion of births registered under CivilRegistration System (CRS) against the estimated number of births during a specific year.	Civil Registration System (CRS) [pre-entered]	BY: 2013 RY: 2014	
3.1.7	Completeness of IDSP reporting of P and L forms	Proportion of Reporting Units (RUs) reporting in stipulated time period against total RUs, for Pand L forms during a specific year.	Central IDSP, MoHFW Data [pre-entered]	BY: 2014RY: 2015	
3.1.8	Proportion of CHCs withgrading above 3 points	Proportion of CHCs that are graded above 3 points against total number of CHCs during a specific year.	HMIS	BY: 2014-15 RY: 2015-16	

3.1.9	Proportion of public health facilities with accreditation certificates by a standard quality assurance program (NQAS/NABH/ISO/AHPI)	Proportion of specified type of public health facilities with accreditation certificates by a standard quality assurance program against the total number of following specified type of facilities during a specific year. 1. District hospital (DH)/Sub-district hospital (SDH) 2. CHC/Block PHC	State Report	BY: As on March 31, 2015 RY: As on March 31, 2016	
3.1.10	Average number of days for transfer of Central NHM fund from State Treasury to implementation agency (Department/Society) based on all tranches of the last financial year	Average time taken (in number of days) by the State Treasury to transfer funds to implementation agencies during a specific year.	Centre NHM Finance Data#[pre-entered]	BY: 2014-15 RY: 2015-16	

*Criteria for fully operational FRUs: SDHs/CHCs - conducting minimum 60 C-sections per year (36 C-sections per year for Hilly and North-Eastern States except for Assam); DHs - conducting minimum 120 C-sections per year (72 C-sections per year for Hilly and North-Eastern States except Assam).

**Criteria for functional 24x7 PHCs: 10 deliveries per month (5 deliveries per month for Hilly and North-Eastern States except Assam) # Centre NHM Finance data include the RCH exi-pool and NHM-Health System Strengthening exi-pool data (representing a substantial portion of the NHM funds) for calculating delay in transfer of funds.

Table 4: Health Index: Indicators/variables, definitions, data sources, base and reference years.

Bias

Grouping the states according to size was not enough. The researcher feels that population density/ per capita income/ literacy rate/ health workforce/ corruption-scand index etc. should be included for ranking states.

Study Size

All states and UTs of India were participants. Table 5 shows study period

Sr No.	Step/Activity	2016	2017-18										
		Jun-Nov	Dec	Jan	Feb	Mar-Apr	May	Jun	Jul	Aug	Sep-Oct	Nov-Jan	
1	Development of the Index												
2	Regional workshops with States												
3	Mentorship to States and submission of data on portal												
4	Validation of data and validation workshops with States												
5	Refinement of the Index												
6	Index and rank generation												
7	Report and dissemination of ranks												

Table 5: Study period

Quantitative Variables

See table 4

Statistical Methods

Methodological details of constructing the Index-Computation of Index scores and ranks

After validation of data by the IVA, data was used for the Health Index score calculations. Indicator value was scaled, based on the nature of the indicator, for positive indicators, where higher the value, better the performance, the scaled value (Si) for the indicator, with data value as Xi, was calculated as follows:

Scaled value (Si) for positive indicator = $(X_i - \text{Minimum value}) \times 100 / (\text{Maximum value} - \text{Minimum value})$

For negative indicators where lower the value, better the performance (e.g. NMR, U5MR,) scaled value was calculated as follows:

Scaled value (Si) for negative indicator = $(\text{Maximum value} - X_i) \times 100 / (\text{Maximum value} - \text{Minimum value})$

The minimum and maximum values of each indicator were ascertained based on the values for that indicator across States within the grouping of States (Larger States, Smaller States, and UTs) for that year. Indicator value lies between the ranges of 0 to 100; e.g. the State with the lowest institutional deliveries will get a scaled value of 0, while the State with the highest institutional deliveries will get a scaled value of 100. For a negative indicator such as NMR, the State with the highest NMR will get a scaled value of 0, while the one with the lowest NMR will get a scaled value of 100. Accordingly, the scaled value of other States will lie between 0 and 100 in both cases. Based on these scaled values (Si), a composite Index score was calculated for the base year and reference year by application of the weights using the formula:

Composite Index = $(\sum W_i * Si) / (\sum W_i)$ --Where W_i is the weight for i th indicator

The composite Index score has been used for generating overall performance ranks. The difference between the composite Index score of reference and base years was the annual incremental performance. The ranking is primarily based on the incremental progress, however, rankings based on Index scores for the base year and the reference year

performance calculated to provide the overall performance of the States and UTs.

Results

Overall performance for the BY (2014-15), the composite Health Index ranged from 28.14 in Uttar Pradesh to 80 in Kerala. In the RY2015-16, Uttar Pradesh at 33.69 was poorest performing State, and Kerala best performing State. The top five States in the RY based on the composite Index score are Kerala (76.55), Punjab (65.21), Tamil Nadu (63.38), Gujarat (61.99), and Himachal Pradesh (61.20). On the other end, Uttar Pradesh (33.69) scored the lowest preceded by Rajasthan (36.79), Bihar (38.46), Odisha (39.43), and Madhya Pradesh (40.09). Among the 21 Larger States, only five States Punjab, Andhra Pradesh, Jammu & Kashmir, Chhattisgarh and Jharkhand improved their position from base to reference year. Jharkhand and Jammu & Kashmir States moved up by four positions in the ranking, Punjab improved its performance in the ranking by three positions; Andhra Pradesh and Chhattisgarh have shown modest improvement –up by one position. The rankings of Maharashtra, Madhya Pradesh, Bihar, Rajasthan, and Uttar Pradesh did not change between base and reference years. Kerala continued to be at the top position while remaining States fell in ranking by 1-2 positions.

Descriptive Data

Taking into account importance, availability (at least annually) of reliable data, 28 indicators/variables were included first. The availability and quality of data for all States was reviewed and 23 indicators/variables were retained and five indicators/ variables were dropped for calculating the performance in the base and reference years. However, Index scores and ranks for the RY were also calculated independently, based on 24 indicators/variables including an additional indicator on out-of-pocket expenditure, as the data for this was available only for 2015-16. Once the data was accepted by the IVA, the ranks were automatically generated by the portal hosted by the NITI Aayog. To ensure accuracy the indices and ranks were also manually calculated and cross-checked with the results from the portal and the final values were certified by the IVA.

Outcome Data

See Tables 6-17.

Most Improved Improved No Change Deteriorated Most Deteriorated Not Applicable



States	1.1.1 NMR (per '000 live births)		1.1.2 U5MR (per '000 live births)		1.1.3 TFR*		1.1.4 LBW (percentage)		1.1.5 SRB (no. of girls born for every 1,000 boys born)		
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY	
Andhra Pradesh	26	24	40	39	2	2	5.62	6.73	919	918	
Assam	26	25	66	62	2	2	18.2	16.7	918	900	
Bihar	27	28	53	48	3	3	6.7	7.22	907	916	
Chhattisgarh	28	27	49	48	3	3	11.6	12.2	973	961	
Gujarat	24	23	41	39	2	2	10.6	10.5	907	854	
Haryana	23	24	40	43	2	2	14.6	14.9	866	831	
Himachal Pradesh	25	19	36	33	2	2	8.66	12.6	938	924	
Jammu & Kashmir	26	20	35	28	2	2	6.33	5.93	899	899	
Jharkhand	25	23	44	39	3	3	7.81	7.42	910	902	
Karnataka	20	19	31	31	2	2	10.8	11.5	950	939	
Kerala	6	6	13	13	2	2	10.8	11.7	974	967	
Madhya Pradesh	35	34	65	62	3	3	14.2	14.1	927	919	
Maharashtra	16	15	23	24	2	2	14.6	13.7	896	878	
Odisha	36	35	60	56	2	2	20.1	19.2	953	950	
Punjab	14	13	27	27	2	2	5.95	6.88	870	889	
Rajasthan	32	30	51	50	3	3	27.4	25.5	893	861	
Tamil Nadu	14	14	21	20	2	2	10.5	13	921	911	
Telangana	25	23	37	34	2	2	6.11	5.7	919	918	
Uttar Pradesh	32	31	57	51	3	3	11.7	9.6	869	879	
Uttarakhand	26	28	36	38	2	2	7.77	7.26	871	844	
West Bengal	19	18	30	30	2	2	15.5	16.5	952	951	
States	1.2.1 Full immunization (percentage)		1.2.2 Institutional deliveries (percentage)		1.2.3 TB case notification rate (per100,000 population)		1.2.4 TB treatment success rate (percentage)		1.2.5 PLHIV on ART (percentage)		1.2.6 OOP expenditure (in INR)#
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY	RY
Andhra Pradesh	97.58	91.62	53	87	136	145	90.4	88.5	72	76	2138
Assam	84.10	88.00	73	74	122	123	85.4	86.2	59	65	3210
Bihar	82.10	89.73	53	57	72	84	89	89.7	31	37	1724
Chhattisgarh	85.81	90.53	60	65	128	138	88.2	89.1	47	53	1480
Gujarat	90.26	90.55	91	98	170	193	88.5	88.9	50	52	2136
Haryana	82.54	83.47	81	80	165	172	86	87.5	52	52	1503
Himachal Pradesh	94.90	95.22	68	67	210	207	89.7	89.6	79	80	3329

Jammu & Kashmir	89.80	100.0	81	81	74	72	87.6	88.3	89	96	4192
Jharkhand	80.82	88.10	61	67	100	108	89.8	90.9	36	39	1476
Karnataka	92.30	96.24	77	79	100	105	83.3	84.7	83	89	3893
Kerala	95.50	94.61	96	93	87	139	86	87.5	62	67	6901
Madhya Pradesh	74.26	74.78	63	65	143	164	89.7	90.3	53	61	1387
Maharashtra	98.55	98.22	89	85	155	164	83.9	84.2	83	88	3487
Odisha	88.03	85.32	75	73	106	99	87.4	88.9	28	33	4225
Punjab	96.08	99.64	83	82	137	136	86.9	87.2	77	85	1890
Rajasthan	78.95	78.06	75	74	139	143	90.4	90.3	42	46	3052
Tamil Nadu	85.54	82.66	86	82	113	125	82.3	85.4	82	87	2496
Telangana	100.0	89.09	59	85	113	123	90	89.6	72	76	4020
Uttar Pradesh	82.88	84.82	44	52	123	137	88.2	87.5	51	58	1956
Uttarakhand	91.77	99.30	64	63	145	138	85.5	86	63	65	2399
West Bengal	100.0	95.85	80	81	93	93	86.4	86.5	31	36	7782

Table 6: Larger States: Health Outcomes domain indicators base and reference years. **The data shown in grey color is for 'not applicable' category wherein the States with TFR ≤ 2.1 (replacement level fertility) in both base and reference years are not considered for incremental change. #Data for this indicator is available and used only for reference year and hence this indicator comes under 'not applicable' category.

States	2.1.1.a Data Integrity: Institutional deliveries (percentage)		2.1.1.b Data Integrity: First trimester ANC registration (percentage)		2.2.1 Average occupancy: State-level 3 key posts (in months)		2.2.2 Average occupancy: CMOs (in months)	
	BY**	RY	BY**	RY	BY	RY	BY	RY
Andhra Pradesh	23.53	23.53	15.42	15.42	17.7	17.51	12.8	13.22
Assam	0.25	0.25	21.16	21.16	10.17	12.11	7.92	7.95
Bihar	18.21	18.21	16.33	16.33	15	13.01	17.62	11.88
Chhattisgarh	22.34	22.34	25.9	25.9	11.39	11.4	21.88	25.4
Gujarat	0.68	0.68	2.06	2.06	20.22	20.71	18.68	18.09
Haryana	4.62	4.62	19.08	19.08	13.8	11.21	13.43	12.56
Himachal Pradesh	12.72	12.72	7.3	7.3	11.38	12.39	13.86	10.5
Jammu & Kashmir	12.42	12.42	13.5	13.5	22.8	13.81	11.72	11.77
Jharkhand	7.95	7.95	53.48	53.48	12.98	12	11.19	11.46
Karnataka	21.22	21.22	8.2	8.2	6.85	6.49	14.83	13.23
Kerala	3.71	3.71	24.86	24.86	21.84	12.02	16.47	11.72
Madhya Pradesh	23.09	23.09	9.19	9.19	10.75	16	18.14	17.62
Maharashtra	1.16	1.16	5.61	5.61	10.86	15.74	12.25	15.64
Odisha	13.82	13.82	22.09	22.09	11.07	12.01	9.97	13.95

Punjab	12.41	12.41	9.97	9.97	20	20.42	9.12	10.19
Rajasthan	12.44	12.44	18.43	18.43	19	22.02	12.26	11.94
Tamil Nadu	10.92	10.92	22.75	22.75	11.94	16.51	6.85	7.29
Telangana	21.06	21.06	15.8	15.8	8.71	7.81	11.72	11.19
Uttar Pradesh	36.59	36.59	0.92	0.92	9.62	19.64	11.57	14.15
Uttarakhand	14.93	14.93	10.77	10.77	10.65	10.35	11.63	13.93
West Bengal	2.12	2.12	42.44	42.44	22	28.02	10.29	14.1

** Same data has been used for base and reference years due to overlapping periods of NFHS-4. Hence this indicator comes under 'not applicable' category.

Table 7: Larger States: Governance and Information domain indicators base and reference years.

States	3.1.1.a Vacancy: ANMs at SCs (percentage)		3.1.1.b Vacancy: SNs at PHCs and CHCs (percentage)		3.1.1.c Vacancy: MOs at PHCs (percentage)		3.1.1.d Vacancy: Specialists at DHs (percentage)		3.1.2 E-payslip (percentage)	
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY
Andhra Pradesh	20.6	15.7	17.3	20.5	18	12.8	40.6	30.41	59.6	58.65
Assam	10.9	8.99	4.57	8.95	19.9	17.8	62.9	41.72	0	0
Bihar	67.9	59.3	86.2	50.3	63.6	63.6	65	60.58	0	0
Chhattisgarh	12.4	9.23	44.3	37.3	41.8	45	78	77.68	0	0
Gujarat	17.1	28.1	37.7	36.5	39.8	32	51	55.5	35.6	35.61
Haryana	9.66	15.2	46	43.2	38.6	25.4	0	0	0	0
Himachal Pradesh	12.6	9.87	21.5	27.2	16.2	21.7	NA	NA	3.32	8.07
Jammu & Kashmir	17.7	10.3	42.9	27.5	34.9	30.2	24.5	22.22	0	0
Jharkhand	19.6	19.7	71.8	74.9	45.3	48.7	55.4	50.32	0	0
Karnataka	27.9	22.6	45.2	26	13.4	11.5	20.9	21.53	48.89	49.35
Kerala	4.88	4.49	5.54	5.3	5.59	5.86	22.2	21.48	88.61	100
Madhya Pradesh	8.58	14.2	36.5	33.5	57.8	58.3	50.6	50.98	0	0
Maharashtra	8.25	9.46	16.7	15.7	16.8	17	19.5	30.34	66.55	67.6
Odisha	0	0	0	0	23.2	26.9	43.5	19.04	75.79	75.79
Punjab	7.17	8.48	36.2	34	9.83	7.77	21.7	47.72	0	0
Rajasthan	36.1	19.2	48.1	47.3	14.9	14.9	41.5	45.77	0	0
Tamil Nadu	11.8	16	21.8	19.1	7.56	7.58	17.9	16.73	84.62	84.72
Telangana	20.2	18	12.8	12.8	22.3	22.3	59.8	54.81	0	0
Uttar Pradesh	14.1	0	1.89	1.89	36.8	26.7	35.7	32.41	0	0
Uttarakhand	15.5	16.9	13.1	20	37.2	12.2	38.3	60.33	0	0
West Bengal	2.16	0.77	25.7	9.7	48.4	41.2	23	20.18	81.78	81.23

States	3.1.3.a Functional FRUs (percentage)		3.1.3.b Functional 24x7PHCs (percentage)		3.1.4 Districts with functional CCUs (percentage)		3.1.5 Proportion of first trimester ANC (percentage)		3.1.6 Level of birth registration (percentage)			
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY		
Andhra Pradesh	48.5	57.6	33.2	29.2	53.9	53.9	64.4	74.38	98.5	100		
Assam	67.7	72.6	170	177	0	0	77.2	80.55	97.7	100		
Bihar	12.5	11.5	70.9	73.6	0	0	51.4	55.47	57.4	64.2		
Chhattisgarh	21.6	23.5	36.5	40.4	3.7	3.7	60	74.6	87.8	100		
Gujarat	32.2	43	27.8	31.5	57.7	48.5	73.6	74.91	100	95		
Haryana	52.9	51	73.6	77.6	19.1	19.1	57.7	62.2	100	100		
Himachal Pradesh	107	121	5.8	5.8	91.7	91.7	78.6	81.39	100	93.1		
Jammu & Kashmir	180	196	53.6	45.6	18.2	27.3	54.4	52.95	71.8	75.5		
Jharkhand	15.2	22.7	33	33	0	0	33.7	36.36	77.7	82		
Karnataka	106	116	78.1	69.2	43.3	43.3	72.8	71.22	96	97.8		
Kerala	121	121	0	0	64.3	64.3	81	80.63	100	100		
Madhya Pradesh	44.8	49.7	58.4	56.5	9.8	9.8	61.5	63.79	84.1	82.6		
Maharashtra	31.1	32.4	48	46.7	22.9	22.9	63.6	66.82	100	100		
Odisha	61.9	65.5	30	30	3.33	3.33	68.5	75.75	93.9	98.5		
Punjab	138	142	35.7	26.4	63.6	63.6	71.2	73.01	100	100		
Rajasthan	23.4	29.2	67.3	68	2.94	70.6	58.5	60.66	98.4	98.2		
Tamil Nadu	129	123	54.2	35	56.3	56.3	92.7	94.35	100	100		
Telangana	80	80	27	27	0	0	61.3	55.9	100	95.6		
Uttar Pradesh	15.3	15.8	17.9	17.4	0	0	51.2	48.72	68.6	68.3		
Uttarakhand	100	95	56.4	54.5	0	0	59.1	62.47	76.6	86		
West Bengal	45.4	49.2	5.7	5.91	76.9	76.9	73	77	92.8	92.5		
States	3.1.7 IDSP reporting of P form (percentage)		3.1.7 IDSP reporting of L form (percentage)		3.1.8 CHC grading (percentage)		3.1.9 Quality accreditation DH-SDH (percentage)		3.1.9 Quality accreditation CHC-PHC (percentage)		3.1.10 Fund transfer (no. of days)	
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY
Andhra Pradesh	94	99	94	99	1.02	37.2	0	0	0	0	97	127
Assam	92	88	92	88	4.64	31.1	0	0	0	0	97	242
Bihar	83	88	83	87	0	20.3	27.2	27.2	2.36	1.52	135	40
Chhattisgarh	77	84	66	82	3.23	47.7	0	0	0	0	79	57
Gujarat	96	95	98	96	10.3	49.4	6.35	2.99	1.24	0.6	58	24
Haryana	89	84	90	88	10.1	22	0	0	0	0	27	42
Himachal Pradesh	41	66	35	62	2.53	5.06	0	1.37	0	0	102	47
Jammu & Kashmir	66	80	61	75	7.14	61.9	0	0	0	0	97	107
Jharkhand	69	73	68	72	1.55	54.4	0	0	0	0	140	67
Karnataka	82	95	82	94	25.3	31.3	0	0.53	0	0	122	139

Kerala	94	96	93	96	NA	0.44	10	10	5.07	6.52	80	107
Madhya Pradesh	81	80	82	80	8.98	57.2	0	0	0.29	0.57	35	41
Maharashtra	71	79	72	76	16.7	38.5	0	0	0.27	0.27	140	66
Odisha	66	83	63	74	9.81	22.8	15.3	15.3	0	0	24	59
Punjab	77	73	93	85	12	26.7	0	0	0	0	98	78
Rajasthan	59	73	57	68	3.19	54.5	0	0	0	0	71	48
Tamil Nadu	70	90	72	87	NA	76.1	0.74	4.29	7.27	4.94	56	50
Telangana	94	97	94	95	0	11.6	0	0	0	0	70	287
Uttar Pradesh	64	42	70	57	4.53	44.1	0	0	0	0	30	93
Uttarakhand	88	93	84	93	1.67	8.33	0	0	0	0	97	27
West Bengal	65	78	72	80	3.49	53.7	0	0	0	0	71	51

Table 8: Larger States: Key Inputs/Processes domain indicators base and reference years.

States	1.1.4 LBW (percentage)		1.2.1 Full immunization (percentage)		1.2.2 Institutional deliveries (percentage)		1.2.3 TB case notification rate (per 100,000 population)		1.2.4 TB treatment success rate (percentage)		1.2.5 PLHIV on ART (percentage)		1.2.6 OOP expenditure (in INR)#
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY	RY
Arunachal Pradesh	5.79	6.55	60.6	65	56	56.5	186	183	88	86	18.7	28.2	6474
Goa	16.7	15.6	91.3	95.2	91.3	92.5	127	131	86	87	70.9	72.8	4836
Manipur	3.9	3.53	94.4	96.3	74.9	73.5	82	81	85	83	54	63.9	10076
Meghalaya	8.19	7.65	96.4	93.3	59.6	62.1	170	137	82	86	98.7	100	2892
Mizoram	4.73	4.65	100	100	100	96.3	183	186	87	91	96.7	100	4327
Nagaland	4.1	3.89	61.9	63.9	57	58.1	173	139	91	72	63.8	73.8	5834
Sikkim	6.78	7.76	74.1	74.4	72	70.2	222	241	79	77	32.5	33.5	2509
Tripura	10.6	11.1	87.4	84.3	78.5	79.4	195	61	89	89	23.1	5.8	4412

Table 9: Smaller States: Health Outcomes domain indicators base and reference years. #Data for this indicator is available and used only for reference year and hence this indicator comes under 'not applicable' category.

States	2.1.1.a Data Integrity: Institutional deliveries (percentage)		2.1.1.b Data Integrity: First trimester ANC registration (percentage)		2.2.1 Average occupancy: State-level 3 key posts (in months)		2.2.2 Average occupancy: CMOs (in months)	
	BY**	RY	BY**	RY	BY	RY	BY	RY
Arunachal Pradesh	1.36	1.36	5.62	5.62	19.85	13.87	19.29	17.5
Goa	5.01	5.01	23.74	23.74	14.84	21.69	15	12
Manipur	2.87	2.87	28.19	28.19	13.29	21.02	18.64	17.31
Meghalaya	13.44	13.44	10.56	10.56	19.99	19.25	15.49	14.76
Mizoram	22	22	18.71	18.71	11.12	9.77	20.51	25.98

Nagaland	54.79	54.79	107.87	107.87	11.61	7.25	17.43	19.94
Sikkim	29.16	29.16	26.76	26.76	24	24.02	31.5	25.52
Tripura	3.35	3.35	10.89	10.89	11.99	10.87	14.32	17.26

Table 10: Smaller States: Governance and Information domain indicators base and reference years.

States	3.1.1.a Vacancy: ANMs at SCs (percentage)		3.1.1.b Vacancy: SNs at PHCs and CHCs (percentage)		3.1.1.c Vacancy: MOs at PHCs (percentage)		3.1.1.d Vacancy: Specialists at DHs (percentage)		3.1.2 Epsaylip (percentage)			
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY		
Arunachal Pradesh	2.07	22.37	4.05	28.78	9.38	38.75	87.55	89.11	45.89	38.75		
Goa	24.75	30.1	12.54	11.68	31.11	14.22	42.71	39.7	0	0		
Manipur	20.57	29.89	5.08	18.98	42.76	42.76	47.67	47.67	0	0		
Meghalaya	19.56	20	30.9	31.05	31.85	35.67	29.28	29.73	0	0		
Mizoram	11.33	16.07	6.11	6.11	31.58	38.1	15.22	15.22	0	0		
Nagaland	7.8	11.01	0	0	26.89	27.36	0	0	0	0		
Sikkim	0	0	61.96	61.96	0	0	34.38	34.38	0	0		
Tripura	15.37	38.9	22.2	0	17.03	2.06	NA	NA	0	0		
States	3.1.3.a Functional FRUs (percentage)		3.1.3.b Functional 24x7 PHCs (percentage)		3.1.4 Districts with functional CCUs (percentage)		3.1.5 Proportion of first trimester ANC (percentage)		3.1.6 Level of birth registration (percentage)			
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY		
Arunachal Pradesh	100	133.3	21.43	42.86	0	0	38.66	36.99	100	100		
Goa	100	100	0	6.67	0	0	57	58.74	100	100		
Manipur	83.33	66.67	41.38	65.52	0	0	59.07	63.23	100	100		
Meghalaya	83.33	100	166.7	180	0	0	32.24	32.07	100	100		
Mizoram	150	100	190.9	136.4	11.11	11.11	72.26	73.61	100	100		
Nagaland	150	125	165	165	0	9.09	46.8	35.83	100	100		
Sikkim	100	200	166.7	216.7	0	0	77.81	79.89	79.9	74.1		
Tripura	42.86	57.14	124.3	116.2	0	0	62.75	61.85	91.4	81.7		
States	3.1.7 IDSP reporting of P form (percentage)		3.1.7 IDSP reporting of L form (percentage)		3.1.8 CHC grading (percentage)		3.1.9 Quality accreditation DH-SDH (percentage)		3.1.9 Quality accreditation CHC-PHC (percentage)		3.1.10 Fund transfer (no. of days)	
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY
Arunachal Pradesh	43	82	33	77	0	0	5	5	0	0	98	143
Goa	65	79	67	88	25	75	0	0	0	0	149	154
Manipur	35	63	32	38	0	29.41	12.5	12.5	0	0	199	258
Meghalaya	62	84	63	82	3.7	7.41	0	0	0	0	216	38

Mizoram	51	48	74	58	0	0	0	0	0	0	140	177
Nagaland	80	79	61	65	0	0	0	0	0	0	101	213
Sikkim	91	97	86	100	0	0	0	0	0	0	68	153
Tripura	75	97	61	94	0	0	0	0	0	0	118	69

Table 11: Smaller States: Key Inputs/Processes domain indicators base and reference years.

UTs	1.1.4 LBW (percentage)		1.2.1 Full immunization (percentage)		1.2.2 Institutional deliveries (percentage)		1.2.3 TB case notification rate (per 100,000 population)		1.2.4 TB treatment success rate (percentage)		1.2.6 OOP expenditure (in INR)#
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY	RY
Andaman & Nicobar Islands	16.13	17.17	84.62	100	76.21	80.2	157	139	85.5	91.5	1258
Chandigarh	22.49	20.77	92.3	93.58	100	100	300	305	89.5	85.6	2357
Dadra & Nagar Haveli	34.7	29.39	75.48	77.06	88.2	87.09	138	133	85.2	86.3	471
Daman & Diu	16.91	24.37	85.04	79.67	75.29	72	146	166	83.1	79.5	1581
Delhi	20.85	21.43	90.88	96.21	79.41	80.6	337	348	86.2	86.7	8719
Lakshadweep	4.85	5.56	100	100	76.44	85.4	61	35	86.7	91.3	4580
Puducherry	18.48	15.5	73.93	77.6	100	100	95	103	88.5	89.2	1999

Table 12: Union Territories: Health Outcomes domain indicators base and reference years.

UTs	2.1.1.a Data Integrity: Institutional deliveries (percentage)		2.1.1.b Data Integrity: First trimester ANC registration (percentage)		2.2.1 Average occupancy: State-level 3 key posts (in months)		2.2.2 Average occupancy: CMOs (in months)	
	BY**	RY	BY**	RY	BY	RY	BY	RY
Andaman & Nicobar Islands	18.05	18.05	2.84	2.84	26	15.01	25.49	17.43
Chandigarh	57.98	57.98	27.88	27.88	10.8	12.01	15.53	15.55
Dadra & Nagar Haveli	15.11	15.11	22.12	22.12	14.4	14.41	18	18.01
Daman & Diu	17.43	17.43	15.27	15.27	20.4	21.02	36	36.03
Delhi	10.76	10.76	27.77	27.77	13.7	9.63	15.82	16.72
Lakshadweep	29.35	29.35	12.19	12.19	26.77	26.79	NA	NA
Puducherry	90.52	90.52	48.82	48.82	21.96	19.98	23.05	25.32

** Same data has been used for base and reference years due to overlapping periods of NFHS-4. Hence this indicator comes under 'not applicable' category.

Table 13: Union Territories: Governance and Information domain indicators base and reference years.

UTs	3.1.1.a Vacancy: ANMs at SCs (percentage)		3.1.1.b Vacancy: SNs at PHCs and CHCs (percentage)		3.1.1.c Vacancy: MOs at PHCs (percentage)		3.1.1.d Vacancy: Specialists at DHs (percentage)		3.1.2 Epayslip (percentage)			
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY		
Andaman & Nicobar Islands	7.84	7.84	7.5	7.45	36.4	36.4	100	100	0	0		
Chandigarh	31.3	29.4	6.2	6.19	69.2	69.2	0	0	60	61.3		
Dadra & Nagar Haveli	0	0	4.9	4.88	16.7	16.7	18.18	18.18	0	0		
Daman & Diu	13.6	11.9	2.4	0	7.14	7.14	38.24	47.06	0	0		
Delhi	4.88	19.8	32	40.75	8.33	14.2	38.74	40.21	0	68.8		
Lakshadweep	0	0	0	0	0	0	76.47	76.47	0	0		
Puducherry	7.23	8.73	1.2	2.38	12.8	12.8	23.36	20.56	80.7	78.4		
UTs	3.1.3.a Functional FRUs (percentage)		3.1.3.b Functional 24x7 PHCs (percentage)		3.1.4 Districts with functional CCUs (percentage)		3.1.5 Proportion of first trimester ANC (percentage)		3.1.6 Level of birth registration (percentage)			
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY		
Andaman & Nicobar Islands	0	0	500	500	0	0	77.84	76.94	97.2	71.9		
Chandigarh	150	150	0	0	0	0	49.63	36.79	100	100		
Dadra & Nagar Haveli	100	100	100	133.3	0	0	47.27	84.77	71.8	65.1		
Daman & Diu	100	100	50	50	0	0	47.32	49.26	98.4	76.4		
Delhi	91.2	100	0.6	0.6	90.9	90.9	34.74	33.69	100	100		
Lakshadweep	100	100	0	0	100	100	74.88	73.24	60	59.5		
Puducherry	300	200	0	0	25	25	45.53	39.54	100	100		
UTs	3.1.7 IDSP reporting of P form (percentage)		3.1.7 IDSP reporting of L form (percentage)		3.1.8 CHC grading (percentage)		3.1.9 Quality accreditation DH-SDH (percentage)		3.1.9 Quality accreditation CHC-PHC (percentage)		3.1.10 Fund transfer (no. of days)	
	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY	BY	RY
Andaman & Nicobar Islands	12	50	5	21	0	0	0	0	0	0	147	78
Chandigarh	84	78	93	88	100	100	0	0	0	0	68	35
Dadra & Nagar Haveli	100	91	100	89	0	NA	0	0	0	0	64	62
Daman & Diu	100	75	86	75	0	0	0	0	0	0	76	0
Delhi	40	57	42	56	0	0	1.8	8.9	0	0	92	89
Lakshadweep	0	0	0	0	0	0	0	0	0	0	143	0
Puducherry	82	90	77	88	25	25	0	0	0	0	101	55

Table 14: Union Territories: Key Inputs/Processes domain indicators base and reference years.

Main Results

Other Analyses

SRS-related indicators/variables estimates such as NMR were not available for Smaller States and UTs, these estimates could not be generated due to the insufficient sample size. In the Larger States category, MMR were not available separately for 08 states, previously four undivided States, and also for Himachal Pradesh and Jammu & Kashmir. In the case of Still Birth Rate (SBR), the IVA reported that data was unreliable. In case of proportion of pregnant women age 15-49 years who are anaemic, data on the appropriate denominator was not available in the HMIS. Proportion of people living with HIV (PLHIV) on ART excluded for the UTs since no ART centre was available in four UTs. NHM funds utilized by the end of 3rd quarter, data were not valid. Central data was used for a few indicators/variables such as PLHIV on antiretroviral therapy (ART), 'average number of days for transfer of central NHM funds from State Treasury to implementation agency' and 'completeness of IDSP reporting of P and L forms'. The NFHS-4 data for out-of-pocket expenditure on drugs and diagnostics incurred per delivery in public health facilities was used in the RY Index. However, for the BY, this

data was not available and could therefore not be factored in for generating BY ranks or incremental ranks or drawing comparisons between the base and reference years.

Discussion

Key Results

There is a large gap in overall performance of States and UTs, overall performance ranged widely between 33.69 in Uttar Pradesh to 76.55 in Kerala. Similarly, among Smaller States, the Index score for overall performance varied between 37.38 in Nagaland to 73.70 in Mizoram, and among UTs this varied between 34.64 in Dadra & Nagar Haveli to 65.79 in Lakshadweep. Among the Larger States (table-15), Jharkhand, Jammu & Kashmir, and Uttar Pradesh are the top three in terms of annual incremental performance, while Kerala, Punjab, and Tamil Nadu ranked on top in terms of overall performance. In terms of incremental performance top three are Jharkhand (up 6.87 points), Jammu & Kashmir (up 6.83 points) and Uttar Pradesh (up 5.55 points). Jharkhand, Jammu & Kashmir, and Uttar Pradesh showed the maximum gains in improvement of health outcomes from base to RY.

Kerala	76.55 80	-3.45	1	21
Punjab	62.02 65.21	3.19	2	6
Tamil Nadu	63.28 63.38	0.1	3	15
Gujarat	61.99 63.28	-1.29	4	19
Himachal Pradesh	61.20 62.12	-0.92	5	17
Maharashtra	60.09 61.07	0.98	6	10
Jammu & Kashmir	53.52 60.35	6.83	7	2
Andhra Pradesh	57.75 60.16	2.41	8	7
Karnataka	58.70 59.73	-1.03	9	18
West Bengal	57.87 58.25	0.38	10	13
Telangana	54.94 55.39	0.45	11	12
Chhattisgarh	48.63 52.02	3.39	12	5
Haryana	46.97 49.87	-2.9	13	20
Jharkhand	38.46 45.33	6.87	14	1
Uttarakhand	45.22 45.32	-0.1	15	16
Assam	43.53 44.13	0.6	16	11
Madhya Pradesh	38.99 40.09	1.1	17	9
Odessa	39.23 39.43	0.2	18	14
Bihar	34.70 38.46	3.76	19	4
Rajasthan	34.55 36.79	2.24	20	8
Uttar Pradesh	28.14 33.69	5.55	21	3
20 30 40 50 60 70 80 Overall Performance Index Score		-4 0 4 8	Overall Reference Year Rank	Incremental Rank
<ul style="list-style-type: none"> • Base Year (2014-15) • Reference Year (2015-16) 		Incremental Change		

Table 15: Larger States: Incremental scores and ranks, with overall performance from base year to reference year and ranks.

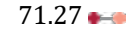


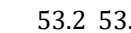

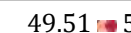




Mizoram	71.27  73.7	2.43	1	4
Manipur	50.6  57.78	7.18	2	1
Meghalaya	51.4  56.83	5.43	3	3
Sikkim	53.2  53.39	-0.19	4	5
Goa	46.46  53.13	6.67	5	2
Arunachal Pradesh	49.51  50.6	-1.09	6	6
Tripura	43.51  48.35	-4.84	7	7
Nagaland	37.38  45.26	-7.88	8	8
30 40 50 60 70 80 Overall Performance Index Score		-10 0 10	Overall Reference Year Rank	Incremental Rank
<ul style="list-style-type: none">  Base Year (2014-15)  Reference Year (2015-16) 		Incremental Change		

Table 16: Smaller States: Incremental scores and ranks, with overall performance from base year to reference year and ranks

Among Smaller States (Table-16), Manipur ranked first in terms of annual incremental performance and second in

terms of overall performance. Mizoram (73.70) followed by Manipur (57.78) are the best overall performers.


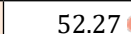
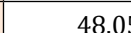


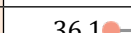
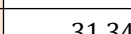
Lakshadweep	56.23  65.79	9.56	1	1
Chandigarh	52.27  57.49	-5.22	2	6
Delhi	48.05  50.02	1.97	3	4
Andaman & Nicobar Islands	46.18  50	3.82	4	2
Pondicherry	46.54  47.48	0.94	5	5
Daman & Diu	36.1  44.77	-8.67	6	7
Dadra & Nagar Haveli	31.34  34.64	3.3	7	3
30 40 50 60 70 Overall Performance Index Score		-10 -5 0 5 10	Overall Reference Year Rank	Incremental Rank
<ul style="list-style-type: none"> • Base Year (2014-15) • Reference Year(2015) 		Incremental Change		

Table 17: Union Territories: Incremental scores and ranks, with overall performance from base year to reference year and ranks

Among UTs (Table 17), Lakshadweep showed both the highest annual incremental performance as well as the best overall performance

third of the States declined in their Health Indices in the RY as compared to the BY. Tables 18-21 provide a categorization of States and UTs based on the level of annual incremental performance and the overall performance.

The incremental measurement shows that about one-

Not improved	Least improved	Moderately improved	Most improved
Sikkim		Mizoram	Manipur
Arunachal Pradesh	-		Goa
Tripura Nagaland			Meghalaya

Table 19: Categorization of Smaller States on incremental performance and overall performance.

Not improved	Least improved	Moderately improved	Most improved
Uttarakhand	Madhya Pradesh	Bihar	Jharkhand
Himachal Pradesh	Maharashtra	Chhattisgarh	Jammu & Kashmir
Karnataka	Assam	Punjab	Uttar Pradesh
Gujarat	Telangana	Andhra Pradesh	
Haryana	West Bengal	Rajasthan	
Kerala	Odisha, Tamil Nadu		

Table 20: Categorization of Larger States on incremental performance and overall performance.

Not improved	Least improved	Moderately improved	Most improved
Chandigarh	Delhi	Andaman and Nicobar Islands	Lakshadweep
Daman and Diu	Puducherry	Dadra and Nagar Haveli	

Table 21: Union Territories: Incremental performance from base to RY- Categorization.
Union Territories: Overall performance in RY- Categorization.

The indicators/variables where most States and UTs need to focus include vacancies in key staff, establishment of functional district Cardiac Care Units (CCUs), quality accreditation of public health facilities, and institutionalization of Human Resources Management Information System (HRMIS). Additionally, almost all Larger States need to focus on improving the Sex Ratio at Birth (SRB).

Note: Overall Performance: The States are categorized on the basis of RY Index score range: Front-runners: top one-third (Index score > 62); Achievers: middle one-third (Index score between 48 and 62), Aspirants: lowest one-third (Index score <= 0), 'Least Improved' (incremental Index score between 0.01 and 2), 'Moderately Improved' (incremental Index score between 2.01 and 4), 'Most Improved' (incremental Index score > 4.0).

Limitations

There is need for making outcome data available for smaller states, updated outcomes for non-communicable diseases and financial protection, robust programmatic data for continuous monitoring, were important issues, could not be addressed optimally in this first round.

Limitations of the Index

1. Non-availability of acceptable quality of data on an annual basis.
2. Paucity and uneven availability of private sector data in the HMIS.

3. Analytical tools could not be used to derive domain-specific weights.
4. For SRS data was available only for Larger States.

Interpretation

The Health Index score ranking is the first attempt at establishing an annual systematic tool for measurement of performance across States and UTs of health parameters. The results provide an important insight into the areas in which States have improved, stagnated or declined which will help in better targeting of interventions.

Generalizability

The States and UTs rank differently on performance, States and UTs at lower levels of the Health Index (lower levels of development of their health systems) are at an advantage in notching up incremental progress over States with high Health Index score. For example, Kerala ranks on top in terms of overall performance and at the bottom in terms of incremental progress mainly as it had already achieved a low level of Neonatal Mortality Rate (NMR) and Under-five Mortality Rate (U5MR) and replacement level fertility, leaving limited space for any further improvements.

References

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