



# Institute for Health Metrics and Evaluation

## Data Release Information Sheet

### ***Data summary***

Project name: Access, Bottlenecks, Costs, and Equity (ABCE) project in Andhra Pradesh and Telangana

Date of release: March 27, 2018

#### Summary:

This dataset is from the Access, Bottlenecks, Costs, and Equity (ABCE) project in Andhra Pradesh and Telangana, jointly conducted by the Public Health Foundation of India (PHFI) and the Institute for Health Metrics and Evaluation (IHME). The dataset provides information at the facility-year level. Data include information on services offered, expenditure, revenue, personnel by category, and other variables related to facility operations. In total, a nationally representative sample of 98 facilities were surveyed. Data were collected through interviews of health providers, direct observation of facility areas, and assisted observation of facility resources. These data can be linked to patient-level information from the ABCE Patient Exit Interview Survey using the unique facility identifier.

#### Relevant publications:

Institute for Health Metrics and Evaluation (IHME), Public Health Foundation of India (PHFI).  
*Assessing Facility Capacity, Costs of Care, and Patient Perspectives: Andhra Pradesh and Telangana.*  
Seattle, WA: IHME and New Delhi: PHFI, 2018.

### **Acknowledgments**

#### Collaborating organizations:

- Institute for Health Metrics and Evaluation (IHME)
- Public Health Foundation of India (PHFI)
- Indian Institute of Public Health, Hyderabad
- Andhra Pradesh and Telangana state government and district officials

#### Funding institution:

- Bill & Melinda Gates Foundation

Suggested Citation: Institute for Health Metrics and Evaluation (IHME), Public Health Foundation of India, Indian Institute of Public Health, Hyderabad (IIPHH). Access, Bottlenecks, Costs, and Equity (ABCE) project in Andhra Pradesh and Telangana, India: ABCE Health Facility Survey 2013. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2018.

### ***File inventory***

| <b>File name</b>  | <b>Description</b>   | <b>Date Finalized</b> |
|---|--|-----------------------|
| IHME_ABCE_IND_AP_TG_2013_FACILITY_DATA_Y2018M03D27.CSV          | Public use survey dataset – CSV format                               | March 27, 2018        |
| IHME_ABCE_IND_AP_TG_2013_FACILITY_DATA_Y2018M03D27.DTA          | Public use survey dataset – DTA format                               | March 27, 2018        |
| IHME_ABCE_IND_AP_TG_2013_FACILITY_CODEBOOK_Y2018M03D27.CSV      | Codebook, with descriptions of all variables included in the dataset | March 27, 2018        |
| IHME_ABCE_IND_AP_TG_2013_FACILITY_QUESTIONNAIRE_Y2018M03D27.PDF | Health Facility Questionnaire  | March 27, 2018        |
| IHME_ABCE_IND_AP_TG_2013_FACILITY_INFO_SHEET_Y2018M03D27.PDF    | Data release information sheet                                       | March 27, 2018        |

### ***Data structure***

The data are structured in such a way that each row represents a facility-year (i.e., the variable “year” in each row corresponds with a given fiscal year).

### ***Methodological statement***

#### **Data collection**

Data from health facilities in Andhra Pradesh and Telangana were collected with the ABCE Facility Survey from January to July 2013 by research associates (RAs) hired by PHFI. All data were collected with DatStat, which allows for survey adaptation and customization based on respondent answers. All collected data went through a thorough verification process between IHME, PHFI, and the ABCE field team. Following data collection, the data were methodically cleaned and re-verified, and securely stored in databases hosted at IHME and PHFI.

All instruments used for the ABCE project in Andhra Pradesh and Telangana are available through IHME’s Global Health Data Exchange (GHDx): <http://ghdx.healthdata.org/record/india-andhra-pradesh-and-telangana-access-bottlenecks-costs-and-equity-project-2013>.

#### **Sampling/population**

To construct a nationally representative sample of health facilities in Andhra Pradesh and Telangana, a two-step stratified random sampling process was used. Districts, from which facilities would be drawn, were selected using three strata to maximize heterogeneity: proportion of full immunization in children

aged 12-23 months as an indicator of preventive health services; proportion of safe delivery (institutional delivery or home delivery assisted by skilled person) as an indicator of acute health services; and proportion of urban population as an indicator of overall development. The districts were grouped as *high* and *low* for urbanization based on median value, and into three equal groups as *high*, *medium* and *low* for the safe delivery and full immunization indicators.

Eight districts were selected randomly from each of the various combinations of indicators, and in addition the capital district was selected purposively. Facilities were sampled from each selected district across the range of platforms identified in Andhra Pradesh and Telangana. In India, sampled health facilities included district hospitals, area hospitals, community health centres, primary health centres, and sub health centres.

A total of 9 districts were selected through the county sampling frame, and 98 facilities from those districts participated through the facility sampling frame:

- One district hospital
- One area hospital for each sample district hospital
- Two community health centres for each sampled area hospital
- Two primary health centres for each sampled community health centre
- One sub health centre for each sampled primary health centre

| Facility type                  | Final sample |
|--------------------------------|--------------|
| District hospital              | 8            |
| Area hospital                  | 10           |
| Community health centre        | 16           |
| Primary health centre          | 32           |
| Sub health centre              | 32           |
| <b>Total health facilities</b> | <b>98</b>    |

### Data processing and cleaning

Data were processed and appended together. All feedback gathered through the collection and verification process was incorporated into the dataset. Clear data entry-errors and skip patterns were removed. Generally, facilities that answered N/A to questions were treated as zeros while facilities that answered “don’t know” or “refuse to answer” were treated as missing data. Several variables were identified to clean more extensively (Annex 1). These variables were reviewed by comparing the difference between totals and subcomponents collected in the data as well as ratio outlier detection, among other methods. For a list of assumptions applied to these variables, please contact IHME.

The other variables in this dataset have not been analyzed or examined in detail beyond removing skip patterns and apparent data-entry issues.

## **Inclusion of administrative data**

Public health facilities in Andhra Pradesh and Telangana rarely provide information about expenditure toward medical supplies and pharmaceuticals. Instead, medical supplies and pharmaceuticals are often paid for through central sources, such as the national or state government.

### ***Pharmaceutical expenditures***

State ministry data from 2007 to 2012 have been added to supplement the pharmaceutical expenditure reported by the facility, to capture expenditure exchanged above the facility level. Since vaccines were distributed from central agencies, the expenditure on vaccines was calculated based on the number of doses stored or administered.

## **Imputation and constructed variables**

Missing values in the following variables have been filled in using the Amelia II package in R (Honaker et al. 2011) using lags and leads of two years. The model was run 50 times, and the final dataset includes the median values over these 50 runs. All variables were imputed at the same time.

The model used to fill in missing values was chosen through out-of-sample validation to compare model fit with other viable models; ultimately, the model that minimized the root mean square error (RMSE) across all variables was chosen. This strategy was consistent across all ABCE countries and states. For each variable, there is a corresponding variable with the prefix “*i\_*”, which indicates an imputed value.

The complexity of imputation for such a large dataset prevented researchers from successfully imputing missing values for the over 1,500 variables in the ABCE dataset. As a result, we imputed all major outputs, expenditures, and personnel, but excluded many subcategories of outputs and expenditures.

## **Known data-quality issues**

To date, the variables pertaining to inpatient visits, outpatient visits, births, immunization doses, personnel totals, and expenditure totals have received the most scrutiny and review by ABCE research team members. Outliers involving other variables have yet to be thoroughly examined in such detail.

The ABCE Facility Survey structure varies slightly across countries and Indian states. Therefore, some variables used for the ABCE project in Andhra Pradesh and Telangana may not be directly comparable to those used in other ABCE countries and Indian states.

The expenditures reported with these data include any expenditure at the facility level as well estimates of expenditure through central government agencies. Expenditure data do not include the cost of donated pharmaceuticals or medical supplies and equipment.

Facility outputs were collected using forms that facilities use to record patient volumes and services provided. This method of recordkeeping can introduce some inconsistencies between outputs. For instance, for a small number of facilities, the number of family planning visits was higher than the total

number of inpatients recorded. For certain outputs such as inpatient visits and expenditure subcomponents, the totals were more reliable than the subcomponents, so the subcomponents may not add up to the total. For other outputs, the subcomponents were more reliable than the total reported.

Some facilities included in the sample had inadequate data for a subset of variables. There were instances where all five years of a certain output or expenditure category had to be imputed. These values are less reliable than the imputation results from facilities where at least one year of data has been reported. You can identify these cases if the variable has “**all\_imp\_**” preceding its name and the variable you are interested in is 1. If a value has been imputed, note that the total will not be the sum of the subcomponents.

## Codebooks

Variable names and labels can be found in the Excel file “**IHME\_ABCE\_IND\_AP\_TG\_2013\_FACILITY\_CODEBOOK\_Y2018M03D27.CSV.**” Each codebook contains variable names pertaining to a given module of the survey. You will also find indicators of which variables have been imputed, supplemented with any additional information and variables generated by IHME. Any variable with “**fy**” in the name varies over the five-year panel of the data, whereas variables without “**fy**” in the name do not vary and were measured at only a single point in time.

## Public Use Dataset Notes

This is a public use dataset. The data have been de-identified. Variables determined to contain identifiable private information, or potentially identifiable private information, for health facilities, health workers, and/or other individuals have been removed in accordance with IHME’s microdata release protocol. The protocol’s determination for variables that constitute identifiable private information is based primarily on [HIPAA’S De-identification Standard](#).

## Excluded Modules

The following modules are not included in the public use dataset:

- Module 6b: ART Facility Outputs
- Module 7: HIV/AIDS Care

## Citations

Honaker J, King G, Blackwell M. Amelia II: A program for missing data. *Journal of Statistical Software*. 2011: 1-47.

## ***Additional Information***

### **Terms and Conditions**

<http://www.healthdata.org/about/terms-and-conditions>

### **Contact information**

To request further information about the ABCE project in India or in other countries, please contact IHME:

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These files may be updated periodically, so we appreciate hearing feedback or additional information about how these data are being used.

### **Annex 1. Variables that have been cleaned, imputed, or both for the ABCE project in Andhra Pradesh and Telangana**

| <b>Variable name</b> | <b>Variable description</b>  | <b>Cleaned</b> | <b>Imputed</b> |
|----------------------|--|----------------|----------------|
| <b>Expenditure</b>   |  |                |                |
| te_fy_tot            | Total expenditure  | X              |                |
| atq_fy_1             | Total administrative and training expenditure                                  | X              | X              |
| nm_fy_1              | Total non-medical expenditure  | X              | X              |
| iu_fy_1              | Total infrastructure expenditure   | X              | X              |
| mse_fy_1             | Total medical supplies and equipment, pharmaceuticals, and vaccine expenditure | X              | X              |
| ps1_fy_1             | Total expenditure on personnel   | X              | X              |
| ps2_sal_fy_1         | Total expenditure on salaries  | X              |                |
| <b>Personnel</b>     |  |                |                |
| pers_fte_fy_1        | Total personnel  | X              |                |
| Doctors_fy           | Total # of doctors   | X              | X              |
| Nurses_fy            | Total # of nurses  | X              | X              |
| Paramed_fy           | Total # of other medical personnel   | X              | X              |
| Nonmed_fy            | Total # of non-medical personnel   | X              | X              |
| <b>Outputs</b>       |  |                |                |
| opc_fy               | # of outpatient visits   | X              | X              |
| ipc_fy               | # of inpatient visits  | X              | X              |
| Births_fy            | # of deliveries  | X              | X              |
| Opcv_fy              | # of immunization doses  | X              | X              |
| <b>Inputs</b>        |  |                |                |
| fac_beds             | # of beds  | X              | X              |