DHIS 2 manual for the Interactive Scorecard App

Applicable to version 0.1

Scorecard App team

in collaboration with HISP UiO, HISP Uganda & HISP Tanzania

October 2019
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October 2019

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1 About this guide

The BNA App implementation is a collective effort and has been developed by the development team and users. While the guide strives to be complete, there may be certain functionalities/topics which have been omitted or which have yet to be documented. This section explains some of the conventions which are used throughout the document.

DHIS2 is a browser-based application. In many cases, screenshots have been included for enhanced clarity. Shortcuts to various functionalities are displayed such as Data element “>” Data element group. The “>” symbol indicates that you should click Data element and then click Data element group in the user interface.

Different styles of text have been used to highlight important parts of the text or particular types of text, such as source code. Each of the conventions used in the document are explained below.

### Note

A note contains additional information which should be considered or a reference to more information which may be helpful.

### Tip

A tip can be a useful piece of advice, such as how to perform a particular task more efficiently.

### Important

Important information should not be ignored, and usually indicates something which is required by the application.

### Caution

Information contained in these sections should be carefully considered, and if not heeded, could result in unexpected results in analysis, performance, or functionality.

### Warning

Information contained in these sections, if not heeded, could result in permanent data loss or affect the overall usability of the system.

Program listings usually contain some type of computer code. They will be displayed with a shaded background and a different font.

Commands will be displayed in bold text, and represent a command which would need to be executed on the operating system or database.

Links to external web sites or cross references will be displayed in blue text, and underlined like this.

1.1 Intended Audience

This guide is intended to be used by users who can have administrative privilege to do system setup, and who have are capable of doing some technical setup of interventions, indicators and sharing of objects related to BNA app.
2 Introduction and Usage

2.1 Scorecard and demo server

2.1.1 Introduction to scorecard

In public health setting such as Ministries of Health, scorecard offers a useful and standardized method for analysis with traffic lights color codes, combining related indicators into one table.

A scorecard can gives an overall view of the performance of a health program such as a vaccination program, highlighting successes, weaknesses, and areas for improvement.

There are two ways to create a scorecard: you can use:

- The Scorecard app, as explained in this guide, or
- The Pivot Table app, as explained in dhis2 website here: https://www.dhis2.org/node/243

This guide focuses mainly on the scorecard application, as explained below; The difference between the two, is that the scorecard app is tuned for advanced scorecard analysis and is developed and maintained by HISP Community developers, while the Pivot Table App is for basic scorecard analysis and is developed and maintained by the Dhis2 core team. With both scorecard app and pivot table app, you can download and use your scorecard offline and share it on the DHIS2 dashboard. With a scorecard app, you have more advanced control and power to easily create and analyse multiple elements and dimensions in your data. Additionally the scorecard app gives an opportunity to cascade your analysis by including bottleneck indicators in the scorecard dashboard as well as analyses your data with broad spectrum of visualization tools, such as pivot table, charts and maps.

![RMNCAH Scorecard](image_url)
2.1.2 About demo server and scorecard meta-data

DHIS2 Scorecard team maintains a demonstration server at https://scorecard-dev.dhis2.org/demo. This is by far the easiest way to try out Scorecard application in DHIS2.

2.1.2.1 Using DHIS2 Demo server

To use the scorecard demo server you will have to login into the server, you can use the login credentials that are displayed on the login page to login and explore the amazing features of the scorecard app.

2.1.2.2 Scorecard metadata

The Scorecard borrows its meta-data from the general DHIS2 data source and uses this to create a data store for ease of analysis. Scorecard metadata such as indicators and indicator groups are managed using the DHIS2 Indicator maintenance App. The Scorecard App is also integrated with function maintenance App, used to create custom indicators. Custom Indicators are indicators whose definition and calculation cannot easily be created using the Indicator maintenance app in the DHIS2.

2.2 Installing scorecard

Scorecard application is completely free and open source, and it is available on DHIS2 app store (https://play.dhis2.org/appstore), download the latest scorecard application with long term support.

To install any application into DHIS2, requires superuser privilege, make sure your account has necessary authorities to install the application, or contact DHIS2 support team for acquisition of account with privileges for installation of apps.

NOTE

Interactive scorecard supports all versions of DHIS2 from 2.25 going upward, It can run in lower versions with limited functionalities and with no support for fixing any issues.

There are two ways of installing interactive scorecard into your DHIS2 instance.

2.2.1 Installation from within DHIS2

This installation approach is the most direct, but only available on DHIS2 running version 2.28 and above.

Step 1:

Simply open Apps management by clicking on Apps search menu or apps icon on the top bar to locate Apps Management, click to bring down list of apps, or search “Apps Management”. Open the Apps management to go to apps listing See figure below:
Step 2:

Once Apps management is open, go to Apps store panel, accessible on the left navigation menu, a list of online applications for installation will show up, look for interactive scorecard.

Once found, click install to install the application. When done installing, the interactive scorecard will be accessible from the search menu.

NOTE
This step is only successful if you have an internet connection and your DHIS2 instance is accessible online.

2.2.2 Installation from DHIS2 App store website

This approach of installing DHIS2 requires visiting DHIS2 App store website, downloading a zip file of the latest stable build of scorecard app, and manually installing it into DHIS2.

This approach is recommended for all DHIS2 instances running on version 2.27 and below.

NOTE
Ensure that you have good and stable internet connection to download the zip file.

**Apps listing in DHIS2 App Store**

Step 1: Downloading the compatible version from app store

Once on DHIS2 App store, locate interactive scorecard application, and click it to get the list of available versions of the scorecard. Pick the most latest version of the scorecard and download a zip file of the latest build into your local hard disk.

**List of versions and supported version of DHIS2**

```
<table>
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<tr>
<th>Download</th>
<th>Version</th>
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<th>Max DHIS version</th>
<th>Uploaded</th>
</tr>
</thead>
<tbody>
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<td>2.2</td>
<td>2.25</td>
<td>2.26</td>
<td>8/19/2017</td>
</tr>
</tbody>
</table>
```
2 Introduction and Usage

Step 2: Uploading the app into DHIS2

Click on Apps search menu or apps icon on the top bar to locate Apps Management, click to bring down list of apps, or search “Apps Management”.

Open Apps management to see and manage list of installed applications on DHIS2, Interactive scorecard app can be installed by clicking the upload icon.

Once installed, interactive scorecard application will be enlisted under standard apps.
When done installing, interactive scorecard will be accessible from the search menu. If scorecard doesn't appear on your menu, it may be not visible for one of the two issues.

### 2.2.3 Installation Access credentials/Permissions.

While scorecard application may be installed in your DHIS2 instances, you may not have necessary permissions to view it. In such cases communicate with DHIS2 moderator or DHIS2 support team for the application to be assigned to one of your user roles.

### 2.2.4 Installation not successful.

Scorecard application will not be visible in your application, if it's either not yet installed in your DHIS2 instance or installation process failed for technical reasons.

Most common failure to install, results from misconfiguration of read/write permissions of the installation folder on the server hosting dhis2. Misconfiguration of permission can also result from denial of ability to delete an installed application.

To resolve this, back-end access of DHIS2 is required, to assign proper ownership and read-write permission of the folder for holding installed apps.

**NOTE**

Location of folder for installed apps varies depending on the version of DHIS2 Installation.

1. From version 2.27 going down, the folder for installed apps is located in [DHIS2_HOME]/apps
2. From version 2.28 and above, the folder for installed apps is located in [DHIS2_HOME]/files/apps

For more information on how to create and install applications on DHIS2 please visit https://www.dhis2.org/how-to-create-find-install-apps

### 2.3 Opening and browsing scorecards

Scorecard application can be found in the Apps menu, if scorecard application is not yet installed in your DHIS2 instance or installation has issues, refer to the installation instruction (Chapter 2) of this documentation for further guidance.

#### 2.3.1 Opening of scorecard application

Open scorecard by locating it in Apps search menu or apps icon on the top bar, click to bring down list of apps, or search “scorecard”.

*Scorecard application on apps menu.*
Once open, scorecard application will bring list of created scorecards, or when no scorecard exists, a step by step instruction on how to create scorecard.

NOTE
If scorecard application is taking too long to load, and you’re not on a slow network, make sure you have cleared your browser cache.

Scorecard makes good use of cached files for better offline experience, as a result, when installing higher version, scorecard may use older version of cached files and thus break down while loading.

Figure 3.1-B: Scorecard application in a continuous state of loading.

2.3.2 Clearing application cache

Approaches to clear application cache and browser interface, vary from browser to browser, but the common standard keyboard shortcut for all browsers is “CTRL+SHIFT+DELETE”.

Accessing interface for clearing browser cache can be done via the following approaches:

- Google chrome: Go to the menu icon on the top right corner, and click it to open, go to more tools menu, and choose “Clear browsing data”. Once interface is open, Make sure “Clear the following items from” is set to “The beginning of time”.
- Mozilla Firefox: Go to the menu icon on the top right corner, and click it to open, go to Library, and go to History, and choose “Clear recent history”. Once interface is open, Make sure “Time range to clear” is set to “Everything”, and “Details” option is expanded to show all details options. Once on the clear browsing data or recent history, tick “Cache”, “Cookies”, “Hosted app data” or “Offline Website data”. To clear all cached files, cookies and locally stored data by scorecard.
NOTE
These will also clear all cache information and cookies from other websites you've visited in your browser.

Clear browsing data

- Browsing history
  4,167 items (and more on synced devices)
- Download history
  151 items
- Cached images and files
  334 MB
- Cookies and other site data
  This will sign you out of most websites.
- Passwords
  434 passwords (synced)

CANCEL  CLEAR BROWSING DATA

Google chrome interface for clearing browser cache

Mozilla firefox interface for clearing browser cache
2.3.3 Browsing the scorecard application

Once a scorecard application is open, it will display a list of all scorecards the user has permission to access. Items are by default displayed with list view, showing three items at a time, with pagination to access more scorecards. All scorecards are sorted by names in ascending order.

To locate scorecard, use the search panel to search by name or description of the scorecard, search will locate all favorites user have access to and list them sorted in ascending order.

2.3.4 Display/Listing of scorecards

There are three standard types of scorecard listings to allow navigation and traversing through long list of scorecards

2.3.4.1 List view

This is the default listing scorecard, displaying three items per page, while providing pagination options to move between pages.
2.3.4.2 Card view

This displays all scorecards without pagination in multiple rows with two columns throughout, allowing vertical navigation of scorecards.

2.3.4.3 Thumbnail view

This displays all scorecards without pagination in multiple rows with one column throughout, allowing more detailed view of each single scorecard.
2.4 Analysis with scorecard

Once the scorecard is open, you can analyze the data visualized by the scorecard through different dimensions using various components offered by the scorecard app.

2.4.1 Navigating the scorecard

For analysis purposes the scorecard app allows you to

- Switch between organization units and period types
- Switch between layouts on the fly
- Show and Hide some components and data
- Print and Download scorecard
- Sort by data values in ascending and descending orders
- Performing Trend and Bottleneck analysis

All explained in this chapter.
2.4.2 Drill down analysis

Scorecards support drill down analysis from scorecard rows, where row headers can be clicked to reveal lower level of analysis. By default scorecard lists organization units in rows and data in columns, thus default drill down analysis accessible to user is by organization units.

Data in columns can be moved to rows with drag and drop layout change, thus supporting drag and drop on indicators in rows, where organization units will be moved to columns.

**NOTE**

Drill down on indicators is only supported for indicators with related indicators assigned to them.

2.4.2.1 Drill down analysis by Organization units

In order to drill down across organization unit levels just click the name of the children organization level and the scorecard of the particular organization unit will appear under the row of that organization.

2.4.2.2 Drill down analysis by Data

In order to drill down across data, indicators names/headings needs to be on the rows of the scorecard, this can be achieved by drag and drop of indicators heading from columns to rows and clicking of row headers(indicator names) to drill down.

Among use cases of drill down analysis by indicators includes mapping of performance from bottleneck chart to scorecard.
Mapping of performance indicators from bottleneck chart to scorecard

Only indicators with related indicators will support drill down analysis, thus only indicators with related indicator analysis icon will have drill down capability showing the related indicators on lower level, if any of the lower level indicators also have related indicators assigned to them, drill down can proceed further down.

With utilization of scorecard layout change feature (see scorecard layouts chapter) and support related indicator analysis through related indicators analysis by individual indicator selections, when viewing the scorecard at a parent level, you can drill down to see scorecard of children levels.

Drill down analysis by indicators

2.4.3 Organization unit selection

The Scorecard app allows you to make organization unit selections based on groups, levels and user organization units, these are known as selection modes.

All organization unit selections types begin with clicking the select option button that displays the selected organization unit. Then click the branching icon.
2.4.3.1 Selection by levels

From the selection mode dropdown menu click “Select Level” then navigate to the button on the right that reads “Select Organization Unit Levels”, from the dropdown list of Levels, you can then make your selections by clicking the desired levels to view on your scorecard.
2.4.3.2 Selection by groups

From the dropdown menu that appears click “Select Group” then navigate to the button on the right that reads “Select Organization Units Group”, from the dropdown list of Groups, you can then make your selections by clicking the desired groups to view on your scorecard.

![Selection of org unit by groups](image)

Selection of org unit by groups

2.4.3.3 Selection by user organization unit

From the dropdown menu that appears click “Select Organization Unit” then navigate to the button on the right that reads “Select Organization Unit”, from the dropdown list, you can then make your selections with respect to your organization by clicking the desired option unit to view on your scorecard.
Selection of org units by user orgunit

2.4.4 Period selection

The scorecard app allows you to make period selections for fixed periods, relative periods and extended relative periods.

All period selections types begin with clicking the select option button that displays the starting period. Then clicking on the period type select option button which lists all the period types.
2.4.4.1 Fixed period selections

To select fixed periods, start by selecting a period type from the period type list. You can then select periods from the list of available periods.

2.4.4.2 Relative period selections

To select relative periods start by selecting a period type from the period type list. You can then select periods from the list of available periods.
2.4.4.3 Extended relative periods

Extended relative periods are relative periods that do not ship out with the dhis2 by default. These extended relative periods include: Quarters this year, Quarters last year, Months this year and Months last year.

To select extended relative periods start by selecting a period type from the period type list. You can then select the extended relative periods from the list of available periods.

2.5 Scorecard layouts, headers and legends

2.5.1 Layout change with drag-n-drop

When viewing the scorecard you can change layout by simply clicking at column labels(text), and dragging it to a row heading.

This also works when dragging a row heading to a column heading.
Layout before change of rows to columns with drag and drop

NOTE
Dashed lines indicate the drag and drop zones.

Layout after change of rows to columns with drag and drop
2.5.2 Scorecard header

The scorecard header appears on the top of scorecard. To create custom header and add additional branding, see chapter 9.2.1 “Branding scorecard header”.

The scorecard header is by default composed with the Scorecard Title, the selected Organization Unit(s) and the selected period(s)

NOTE
Scorecard header can be branded from basic text with bold, color and font type, to full blown customized header with national flags, pictures and other branding supported with HTML5.

2.5.3 Scorecard legend

The scorecard legend is displayed under the scorecard header. By default all scorecard will start with legend displayed.

The scorecard legend gives meaning on the colors displayed on the scorecard visualization.

NOTE
Gray color for Not Applicable (N/A) is used when values falls out of range of the minimum and maximum of existing color code classes.

White color code is used when there's no value (returned results are empty/null not zero)

Important

Error loading data is among the errors that can be notified on the legend, this error can happen when viewing a scorecard which any the data selection made has been deleted in the system. Thus it should be noted that the scorecard app requires data selections that exist in the dhis2 system and deleting data selection involved in scorecards shall lead to an error.
2.5.4 Column headers, hints and tool-tips

Column headers appear on top of every column. By default, a column header is the conventional name of the particular data selection.

NOTE

The most common errors are internal server errors or failed network operations while loading data, oftenly abbreviated with error codes (409, 404, 502, etc.). Check with your system administrator on indicators and the server setup to resolve the errors.

Tooltips appear when you hover on the cells that have deviated from the previous period selection. The tooltip will brief on the previous value, the deviation and the minimum value that makes a deviation count as significant.

Figure 5.4-A: The column header of a scorecard with hints.
### 2.6 Additional options

Scorecard application allows user to Customize the look of scorecard. add numbering, ranking, hide/show legend, average column and row.

Scorecard options can be modified in the viewing or the creation interfaces by clicking the “Options” button.

Options are divided in three sections: Show/Hide, Best/Worst and Average.
The available settings that can be regulated from within the options menu

NOTE
To keep options permanently visible, click on the options button, this will keep options menu permanently accessible for changes, click again on options to close it when leaving the menu.

2.6.1 Hide/show legend

To show the legend, make sure the Legend checkbox is checked.

To hide the legend, make sure the Legend option is unchecked.

Figure 6.1-A: The legend displaying on top of the scorecard

2.6.2 Hide/show item number

To show the item number, make sure the Item Number checkbox is checked.

To hide the item number, make sure the Item Number option is unchecked.
The Item Number column displaying on the scorecard

NOTE
Item number is always ascending following the current column used for sorting, which will contain up/down arrow indicating column used for sorting in ascending/descending order.

2.6.3 Hide/show empty rows

To show empty rows, make sure the Empty Rows checkbox is checked.

Figure 6.3-A: Scorecard with empty row on organization units

To hide the empty rows, make sure the Empty Rows option is unchecked.

Figure 6.3-B: Scorecard with hidden empty rows

2.6.4 Hide/show average row/column

To show average row or average column, make sure the Average Column or Average Row checkbox, respectively is checked.
The average column displaying on the scorecard

To hide average row or average column, make sure the Average Column or Average Row checkbox, respectively is unchecked.

NOTE
Average columns may not always make sense depending on set of indicators under display, it only make sense mostly when values are of the same nature or range, e.g. percentage or client counts.

2.6.5 Hide/show below/above average

To show below average or above average performance, make sure the below average or the above average checkbox, respectively is checked.

To hide below average or above average performance, make sure the below average or the above average checkbox, respectively is unchecked.

NOTE
The Average values used is by default to sort scorecard rows for hiding/showing above and below average are based on column used for sorting(sorted column), if sorted column is organization unit, average column is used.
### 2.6.6 Show top ten/five/three

To show top ten/five or three performance, make sure the ten/five or three checkbox, respectively is checked.

To hide top ten/five or three performance, make sure the below average or the above average checkbox, respectively is unchecked.

<table>
<thead>
<tr>
<th>Search for organization</th>
<th>MC 4th week coverage (%)</th>
<th>MC 5th week coverage (%)</th>
<th>MC 6th week coverage (%)</th>
<th>MC 7th week coverage (%)</th>
<th>MC 8th week coverage (%)</th>
<th>MC 9th week coverage (%)</th>
<th>MC 10th week coverage (%)</th>
<th>% Above average coverage (%)</th>
<th>% Below average coverage (%)</th>
<th>% 5 min late (%)</th>
<th>% 15 min late (%)</th>
<th>% 30 min late (%)</th>
<th>% 60 min late (%)</th>
<th>% 1+ hour late (%)</th>
<th>% Total late (%)</th>
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<td>Fruit Ballet</td>
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<tr>
<td>Horse Dance</td>
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<td>Stone Dance</td>
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</tr>
<tr>
<td>Maple Point</td>
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<td>91.9</td>
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<td>91.9</td>
</tr>
</tbody>
</table>

#### NOTE

Top ten/five/three is based on sorted column, which by default is organization unit column.

### 2.6.7 Download Scorecard

You can download the scorecard in excel format by clicking the “Excel” button. This shall download the scorecard in csv format and you can perform any desired operations on an excel file handling application offline. The “excel” button can be spotted on top of the scorecard header next to the edit button.

#### A collapsed excel button for downloading.

#### An expanded download to excel button.

### 2.6.8 Print Scorecard

To print the scorecard simply click the Print button.
A collapsed print button.

An expanded print button.

Downloading a scorecard.

NOTE
To hide headers and footer containing page url or page name, and get colored PDF document.

- On Chrome browsers, Expand “More settings” and untick headers and footer, choose destination printer to “Save as PDF” to download colored PDF document.
- On Firefox, open “Options” tab and set header and footer to “– blank–”, choose destination printer to “Print to file” to download colored PDF document.

2.7 Context menu

The scorecard app offers two types of context menu for quick access of additional features and scorecard capabilities. The two context menu includes:

1. Column context menu (accessible via headers)
2. Cell context menu (accessible via cells)

The column context menu can be accessed by right clicking on a column header, and a cell context menu can be accessed by right clicking on a particular cell.

2.7.1 Further analysis by entire column

From the Column context menu, clicking “Further Analysis” opens a modal with a pivot table visualizing the data of the column.

The column context menu when viewing a scorecard
A modal with a pivot table visualizing the data of the column

Navigation within the further analysis modal is explained in Chapter 8.

**NOTE**

Further analysis by entire column uses entire selections in rows, by default selection in rows are organization units.

2.7.2 Sort asc/desc by column

From the Column context menu, clicking “Sort Asc” will sort the data with respect to the ascending order of the column content and an arrow pointing downwards shall display next to the column name to signify that the values decrease going down the column.

Similarly, clicking the “Sort Desc” will sort the data with respect to the descending order of the column content and an arrow pointing upwards shall display next to the column name to signify that the values increase going down the column.
### 2.7.3 Best/worst by columns (top 10,5,3)

From the Column context menu, you can view the Best performers by choosing Top 3,5,10.

Similarly, you can view the Worst Performers by choosing Last 3,5,10.

#### Sorting by ascending order of the second column

A scorecard displaying the top three performing organization units
2.7.4 Hide/show column

To Hide a column, simply right click on the column head and click Hide.

*Hiding a column by using the column context menu*

If there are any hidden columns, to show them right click on the column head and the context menu will have have a “show all” option.

*Showing all columns of a scorecard.*

2.7.5 Further Analysis by cell

From the cell context menu, clicking “Further Analysis” opens a modal with a pivot table visualizing the data of the cell.

*The column context menu when viewing a scorecard*

2.7.6 Trend analysis by cell

On the cell context menu, you can analysis the trend of the data for the last 3, 6, 12 months, last 4 quarters or the last 5 years by clicking trend analysis and picking a period of interest.
2.7.7 Related Indicators analysis by cell

From the cell context menu, if an indicator has related indicators then you will see an option that allows you to perform related indicators analysis. Further explanation on related indicators analysis can be found in Chapter 12.

2.8 Further analysis

As hinted earlier the further analysis menu can be access via the context menu. This chapter explains deeply on the operation that can be performed in the further analysis module.

2.8.1 Related indicators analysis

On the Interactive Scorecard if a data selection support related indicators analysis and option to perform related indicator analysis will be visible when performing further analysis. Clicking the Related indicator analysis button will display a chart of the indicators related to the data selections.

To show chart labels click on the chart labels checkbox which appears below the period selection box.
Related indicators analysis of the ANC 1-3 Drop out rate; for ANC Coverage from 1st visit to 4th visit

Related indicators analysis charts can be downloaded. For more information about downloading and printing charts on the scorecard app refer to chapter 8.6.3.

CAUTION

Related indicators currently only support single period selection, as with multiple period selection, indicator relation lose its meaning for its use cases.

2.8.2 Pivot table analysis

Pivot table further analysis, visualizes the data in tabular manner. You can switch between organization unit and periods but also you can change the table layout.
Pivot table analysis on the ANC 1 Coverage column

2.8.3 Chart analysis

Chart further analysis, visualizes the data in graphical manner. You can switch between organization units and periods but also you can change the chart layout and switch between various chart types (i.e. bar chart, stacked bar chart, line chart etc.).

Chart analysis on the ANC 1 Coverage column using the combined chart analysis
2.8.4 Map analysis

Map further analysis, visualizes the data on map. You can switch between organization unit and periods but also you can switch between various base maps that your data would be drawn on base layer. Currently supported base layers includes Map surfer, OSM Dark, Topography Maps, Earth Imagery, OSM Black and White, OSM Hot and Stamen Toner.

Map analysis on the ANC 1 Coverage column using topographic base map

2.8.5 Data dictionary

When performing further analysis, you can open the data dictionary for the data selection item of the column/cell by clicking the info button.
2.8.6 Operations on Further analysis

You can perform more operations within the further analysis module, such as downloading scorecard, printing it or switching of layout.

2.8.6.1 Layout selection

On further analysis you can change layout for pivot table by drag-n-drop across filters, row dimensions, and column dimensions.

Similarly, you can change layout for chart by drag-n-drop across filters, category (y-axis content), and series (the x-axis content) dimensions.

Panel for switching the further analysis pivot table layouts across filters, column and row dimensions (dragging data selections from row dimensions to column dimensions)
2.8.6.2 Downloading data of the pivot table further analysis

You can download the column or cell data observed during further analysis by pivot table into excel format by clicking the “Excel” button located on the bottom of the further analysis button. This shall download the data in csv format and you can perform any desired operations on an excel file handling application offline.
2 Introduction and Usage

2.8.6 Operations on Further analysis

2.8.6.3 Downloading and printing of chart on further analysis

To print or download the further analysis chart, clicking on the chart context menu this will give options for downloading the further analysis chart.

To download just pick a file format of interest and click on it to initiate download.

To print simply click the word “Print”.

Download pivot table data into csv format.
To hide headers and footer containing page url or page name, and get colored PDF document.

- On Chrome browsers, Expand “More settings” and untick headers and footer, choose destination printer to “Save as PDF” to download colored PDF document.
- On Firefox, open “Options” tab and set header and footer to “–blank–”, choose destination printer to “Print to file” to download colored PDF document.

### 2.9 Creating and managing scorecard

Scorecard can be created via creation interface, which is accessible to “create” button on the top right corner while on home/listing page.

Click “create”, to open scorecard creation interface. If not on home page, to access create button from any page, go back to home/listing page.

### Interface for creating scorecard

Once on the scorecard creation interface, scorecard can be created quickly in three simple steps

1. Labeling and branding of scorecard
2. Selecting data for the scorecard
3. Managing layout and saving

#### 2.9.1 Labeling/Branding scorecard

Labeling of scorecard involves and branding involves filling in three main fields.

- Name, used for future search
- Description, used for detailed/deep search
- Custom header, for branding by placing banner on top of scorecard
2.9.1.1 Labeling of scorecard

Start by labeling scorecard with name and description, that can be done by entering title and description of scorecard on the middle left side of the scorecard. Title and description of scorecard are mandatory fields to allow proper description of scorecard as well as allowing search in the future.

Figure 9.1.1-A: Section for labeling of scorecard with name and description.

NOTE
Scorecard can not be saved without name and description filled in.

2.9.1.2 Branding of scorecard

Branding of scorecard is optional, by default scorecard uses name as heading of the scorecard, which will be displayed on top of scorecard, custom header field is available to allow more advanced customization and tailoring of scorecard.

Custom header, uses what you see is what you get (WYSIWYG) interface to allow complex designs of headers supporting formatting of texts, alignments and insertion of images.

To edit custom header, locate “customize header” button, on the top center of the scorecard, where header of scorecard will be displayed.

Create a new scorecard

Button for customizing of scorecard header with WYSIWYG
2.9.2 Choosing your data selections

To choose type of data in your scorecard simply locate the section next to title and description for selecting type of metadata, choosing group and picking metadata of interest.

Select all indicators/data elements/reporting rates/program indicators/event data items/ custom functions of your choices, to insert them in scorecard columns.

Selection of score-card is simplified, what you see is what you get interface, with real-time simulation of scorecard layout.

Basic selection operations includes:

- Select an item to add it, or un-select to remove if from scorecard columns
- Drag and drop an item from the data selection to scorecard columns to add
- Click trash/delete icon on “Cell customization” area to remove it from scorecard columns

Data selections for scorecard

Scorecard supports all data selections available in analytics applications, and supports more, such as custom functions. Among the supported metadata selections includes:

- Indicator selection, selection of indicators is done by available groups
- Data element selection, selection of data elements is done by available groups
Data Sets selection, selections in data sets includes, Reporting rates, Reporting rates on time, Actual reports submitted, Actual reports submitted on time, Expected reports
Program indicator selections, selection of program indicators is done by available programs
Event data items, selection of data items is done by available programs
Custom functions, selection of custom functions is done by available functions

2.9.2.1 Standard analytics data selections

Standard analytics data selections are the selections available by default on all DHIS2 analytics tools, such as pivot table, visualizer and GIS. These includes indicators, data elements, data set, program indicators and event data items. All standard data sections, depend on the data sources, thus possible period selections for given data selections should always be taken into consideration

NOTE
Selection of data items who's reporting frequency is smaller than default period selection of the scorecard will cause the given indicators to always return empty(e.g. Monthly scorecard will always return empty on indicators from quarterly data source)

2.9.2.2 Functions selections

Functions selections are extended analytics calculations supporting a more open-ended logic of computation, such as logical operations, predictors and other complex analytics use cases. To create functions to work with scorecard download, download function maintenance application from this link: https://play.dhis2.org/appstore/app/dXX2Fk6jwCX Functions makes use of pure good old JavaScript(vanilla JavaScript) logic to do calculations purely on the browser, without the need for server, this is accomplished by execution of JavaScript codes that expects period and data selections and return standard DHIS2 analytics results.

Functions comprises of three key building blocks

1. Input/Selection parameters. Function expects standard DHIS2 periods and organization units selections.

2. Computation logic. This is an open-ended workspace for writing of calculation logic to work on given period and organization unit selections, computation logic is usually classified into rules dimensions, thus allowing one function to support different use cases by defining multiple rules that will control the computation logic. Possibilities are limitless, among major operations done includes

   1. Fetching data from aggregate and event analytics and modifying results with custom logic, and reformat the results back in standard analytics format.
   2. Fetching data from existing sql Views, performing custom logics and formatting results in standard analytics format
   3. Fetching data from other DHIS2 API endpoints(such as data-value and events api) and other data sources(including external sources), performing custom logic and formatting results in standard analytics format.

3. Output/Returned analytics. This is the end-result output from functions, formatted in standard analytics format, to allow compatibility with standard DHIS2 analytics applications.
To support open-ended support for any level of complexity, function maintenance application has been developed, to allow any developer with basic JavaScript knowledge to quickly develop custom calculations either not supported natively by DHIS2 or to allow developer to work-around limitations or miscalculations from standard analytics.

Main requirements for developing functions includes:

- Basic web programming knowledge with JavaScript (jQuery is an advantage)
- Understanding of DHIS2 Web API and analytics
- A working installation of Functions maintenance application. When a function maintenance application is installed for the first time, it creates five standard functions with generic use cases as example functions to allow reuse of codes to create other functions. The auto created functions will also be listed in functions selection list.

**NOTE**
The six generic functions that comes standard with functions maintenance, are auto generated if no function exists in the system.

### 2.9.3 Managing layouts and saving

Once done with scorecard data selection process, a list of all selections will be appearing as columns on the scorecard layout area. Scorecard will be in its most basic layout, and is ready to be saved. Among the layout standards observations includes:

- All columns are grouped in single default group. Group label for default single group is not displayed for simplicity.
- Values, colors and arrows for each column are auto-generated. Values are auto generated to provide real-time what you see is what you get (WYSIWYG).
- Column labels picks default name of the selected metadata, labels can be changed, see section “Customization of cells” section of this documentation.

![Standard layout of scorecard, with what you see is what you get interface](image)

#### 2.9.3.1 Changing layout of scorecard

To change scorecard layouts, simply click on column labels(text), to select column to move, then simply drag and drop that column to a new position.
Rearranging column order of a scorecard by drag and drop

NOTE
Click area for drag and drop feature is only active with the text inside the header field, clicking outside the text doesn't activate the click area.

### 2.10 Customizations and editing of scorecard

You customize scorecard via the create/edit interface. Customization involves giving scorecard custom headers, grouping cells, setting up the starting period and organization unit of scorecard, setting access privilege to users and groups, adding custom labels and legend colors.

#### 2.10.1 Access sharing settings

The scorecard give user to set sharing who has access to their scorecard and the privilege (view only/edit) to the particular group of people that the share with.

Scorecard sharing can be done through the access sharing select option box, by clicking an image representing a privilege for a group of interest.

When a privilege has been chosen for a group the color of the icon of the privilege will change to blue.
Access sharing privilege setting settings across user groups

**CAUTION**

Sharing settings from 2.28 going back is only implemented on the interface, access control is not strictly enforced, it is for simplicity in management of scorecards only.

**NOTE**

User groups appearing on the access sharing list should exist in the user groups that are were created in the “Users” app.

### 2.10.2 Startup period and organization unit selection

To set the startup period selection, head over to the period type select option button and click it, this lists all the period types, from which you can select the desired period type and then add the period range from the available list into the selected list.

In order to set the startup organization unit selection, head over to the organization unit select option button and click it, this lists the organization units in hierarchical order.

More details on how to select the org units can be found under Organisation unit selection in the Analysis with the scorecard chapter.
2.10.3 Grouping of cells in scorecard

Grouping of cells in scorecard can be achieved in two steps.

• Creation of a group
To create a group click the word “Add” will appear on the rightmost column and a new group will be created.

You can give the group a name by editing the words “New Group”

“Add” Icons that enable user to create a new group and data selections to the group

Placeholder (default name) of new group can be replaced with a desired group name

• Adding data selections into the group

To add data selections into a group, make sure the group has been selected (has a gray background/fill color) then follow the procedures to make data selection as explained under Choosing your data selections in Chapter 9.

To delete a cell grouping just click the trash icon next to the group name.
2.10.4 Customization of cells

The scorecard app, gives user the ability to customize cells by giving them the tools that enable them to choose:

- whether to display the color legends
- what colors to display on the scorecard and their cut point values
- the effective gap
- what labels display on the columns (headings of data selections)

### Cell Customization section on the scorecard app

#### 2.10.4.1 Column & cell labels

The scorecard app allows the user to customize the column/cell labels.

By default, the column label is the name of the data selection. To customize the column label, edit the value on the box adjacent to the words “Label”
# 2.10.4.2 Cell Effective (Minimum) gap

To set the effective gap value of increase/decrease write the number in the input box adjacent to the words “effective gap” and save changes.
2.10.4.3 Cell cut-of points range

To set the effective cell cut-of points range for a data selection (column), edit the min – max values under the legend information of the data selection.

<table>
<thead>
<tr>
<th>Name</th>
<th>ANC 2 Coverage</th>
<th>Label</th>
<th>ANC 2 Coverage</th>
<th>Weight</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Gap:</td>
<td>5</td>
<td></td>
<td>Display arrows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High is good</td>
<td>✔</td>
<td></td>
<td>Show Colors:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE
Minimum of upper class should be equal to the maximum of lower class, no gap should be left between classes, to leave open ended upper limit for topmost class and lower limit for lowest class use dash “-“. The classification of values between intervals behaves as follow: - Lowest and middle classes, values limit range from lower limit inclusive, to upper limit exclusive(excluding upper limit itself, i.e. value equal to upper limit will be accounted in next upper class) - Highest class, values limit range from both lower and upper limit inclusive(i.e. values of both lower and upper limit will be accounted in the same class, upper limit won't be excluded)

The ranges are automatically generated evenly between 1 and 100 range, divided by total number of classes(default is three).

2.10.4.4 Display effective gap arrows

To display effective gap arrows of increase/decrease make sure the checkbox adjacent to the “Display arrows” label is ticked. To hide effective gap arrows simply make sure the check box is unticked.
Opting to show effective gap arrows

2.10.4.5 Show legend colors

To show legend colors make sure the checkbox adjacent to the “Show Colors” label is ticked. To hide Legend colors simply make sure the check box is unticked.
2.10.5 Stack two cells in single column

To pair two cells in one single column, add one of the data items of interest scorecard in, click it and make sure it is grayed (to indicate that it is the active data selection), then on data selection area navigate to the second data item of interest and right click on it and select pair with current.

*Clicking “Pair With Current” stacks the active data selection to the new data selection*
PHU delivery rate (by ANC1) / PHU delivery rate (by expected pregnancies)

42.1  40.2

31.7  41.9

34.7  30.7

*Column stacking demonstration with the PHU delivery rate (by ANC1) against the PHU delivery rate (by expected pregnancies)*
2.10.6 Color codes for cut-off points

The scorecard application allows you to customize the color code for cut-off points by changing the existing color codes or by creating new color codes and defining their range.

To change an existing color code, navigate to the legend definition section, click on the color of interest and pick another color from color picker.

Legend Definition

- #008000: Target achieved / on track
- #ff0: Progress, but more effort required
- #f00: Not on track
- #d3d3d3: N/A
- #fff: No data

New Legend

- #fff: Type to add new definition here
To change color code of an existing legend color.

Target achieved / on track

Min | Max
---|---
67 | 100

To change the value of the cut-off points for a color code.
To add a new color code definition, navigate to the "New legend" section. To define color of legend click button on the left and pick color from the color picker.

**WARNING**
Adding new color definition resets all defined value ranges for all indicators back to default range (i.e. ranging from 1 - 100 divided evenly by new number of classes). Always revisit all indicators after adding/removing classes to update new class ranges based on new classes.

2.10.7 Additional labels

The scorecard app allows the user to add additional labels that will appear under the organization unit. Such labels can be used for variety of purposes, common usage includes:

- Source of indicator

---

**Additional labels**

Approved by:

Date

Signature

The additional labels section showing a listing of the additional labels
2.11 Related Indicators Analysis in DHIS2

This chapter focuses on utilization of scorecard indicators to perform related indicators analysis, related indicators analysis can be used for a wide range of use cases, among them being causality analysis (also referred to as the bottleneck analysis).

While this documentation will delve into the use case of related indicators for bottleneck analysis, this chapter shall introduce you to the basics of bottleneck analysis and how to use the related indicators feature for any suitable/relevant use case.

Bottleneck analysis is a systematic way to look at the main determinants of effective coverage for selected interventions to identify problem areas and purposely act on them.

There are six coverage determinants, from supply to demand side that analyze where health system bottlenecks exist. A bottleneck is a loss of system efficiency.

<table>
<thead>
<tr>
<th></th>
<th>Pujehun</th>
<th>Tonkolili</th>
<th>Western Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>112</td>
<td>96.7</td>
<td>94.3</td>
</tr>
<tr>
<td></td>
<td>▲</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td></td>
<td>90.6</td>
<td>82.3</td>
<td>92.8</td>
</tr>
</tbody>
</table>

*The Added Additional labels appearing on the scorecard.*
The six coverage determinants, from supply to demand side which analyze where health system bottlenecks exist

The combination of bottlenecks identified determines the quality, and hence the effectiveness, of coverage in any given setting.

2.11.1 Measuring Determinants

Among the modifications made on the efforts to adapt the Tanahashi approach for use in Marginal Budgeting for Bottlenecks tool in the 21st Century include focusing determinants of effective coverage.

Each determinant was analogous to a Tanahashi stage that leads towards the goal of effective coverage. In addition, ‘availability’ was divided into two determinants: availability of commodities and availability of human resources.

Ultimately the combination of bottlenecks identified determines the quality, and hence the effectiveness, of coverage in any given setting.

This modified model was easier for practitioners to use since it reflected the types of data that were available and permitted the identification of bottlenecks through a step-wise approach that evaluates six determinants of the effectiveness of coverage of an intervention:

1. Availability of essential health commodities
2. Availability of human resources
3. Accessibility of distribution points for the interventions
4. Initial utilization of interventions
5. Continuity/completeness in the continuous utilization of interventions
6. Quality of interventions delivered.
The first three determinants focus mainly on supply side constraints, while the final three focus largely on demand side barriers.

Block diagram grouping the Measuring Determinants in three categories and detailing the relationship between the six determinants of the effectiveness

While there are many national policies and guidelines for effective interventions to reduce maternal and child mortality, these interventions do not always reach those who need them most due to bottlenecks within and outside the health system.

The scorecard app allows for the user to add related indicators to an indicator so that they may inspect the impact of the relating indicators by further analysis. The next subchapter explains how the use can do this.
2 Introduction and Usage

2.11.2 Related indicators

In scorecard related indicators are associated with scorecard indicators, and can be added to scorecard indicators on the indicator cell customization area. Related indicators are used sometimes as minimal drop in support for bottleneck analysis.

The relations between indicators in scorecard and indicators for analysis are initiated in the edit interface.

NOTE

Related indicators like scorecard indicators, can be any existing metadata in DHIS2, from data elements, indicators, reporting rates, program indicators, event data items as well as functions. If required metadata is missing it has to be created.

To add related indicators to a data selection, click the data selection and navigate to the column customization section and click on the Related indicators button.
2 Introduction and Usage

2.11.2 Related indicators

Selection of related indicators

Related indicators in chart visualization, can be implemented in two simple visualizations, this includes

1. Multiple indicators per determinant, using determinant as a group, with indicators names for each bar and determinant name as group in the chart x-axis.
2. Individual indicator per determinant, where one determinant have one indicator

2.11.2.1 Individual indicator selections

For individual indicator selection in related indicators for scorecard, if the related indicators belong to a group of the same context, then they can be added as individual indicators.

Making selections of related indicators on the data selection section

In related indicators analysis, where each determinant have single indicator for measurement, individual indicator selection is the best choice for data analysis.

Among use cases of individual indicator selection includes causality analysis across six measurement determinants to assess potential fluctuation of trends across determinants (notice each determinant have one indicator used).
Causality analysis fluctuation of trends across the six measurement determinants

To add individual related indicator selections, click “Use Individual Items” and make your data selections.

When a selection is made a card will appear to right with the name of the Indicator, the display name, baseline and target. Also a real-time related indicators chart shall be displayed on the bottom.

Display Name, Baseline and target can be edited.
Selection of individual indicator selections together with a real-time related indicators chart

2.11.2.2 Grouped indicator selections

For grouped indicator selection, if the related indicators belong to different groups, then they should be added as group indicators.

In related indicator analysis, where one determinant can have multiple indicators, grouped indicator selection is the best choice for analysis, where determinants can be created as groups and indicators can be inserted to given determinants.

2.11.2.2.1 Managing groups

To add group related indicator selections, click “Use Groups”. There are two ways of creating grouped indicators:

• Generating groups
• Manually creating group

For grouped indicator analysis following standard built-in determinants, determinant groups can be auto-generated by clicking “Generate Groups” button which will generate determinant groups ready for inserting indicator per each determinant.

The generate groups button

To create a group manually, click the “Add Group” button
The add group button

To make data selections to the groups, first click the group click on the group name then click the data selection of interest on the data selections section.

A group of related indicators

You can sort/rearrange indicators within a group by dragging them from their current position to a destination position.

Sorting of indicators by dragging and drop

To delete data selections click the trash icon on the Group Title then click the tick icon.
CAUTION
The deleting process is irreversible and deleting a group will delete all the data selections that have been made to the group of the group as well.

2.11.2.2 Managing labels of grouped indicators

When a selection is made a card will appear to right within its group with the name of the Indicator, the display name, baseline and target. Display Name, Baseline and target can be edited.
2.11.2.2.3 Color coding indicator by their groups

The related indicator groups are color coded so as the user can easily distinguish between indicators of different groups. The color codes can also be changed by simply clicking the color bar above the group name input box, and selecting a color of interest.

Selection of color scheme for indicator selections that belong to a group

2.11.2.2.4 Real-Time Related Indicators Chart

When a selection is made a real-time sample related indicators chart shall be displayed on the bottom of the section.
Selection of grouped indicator selections together with a real-time related indicators chart

2.11.3 Action tracker on Bottleneck analysis

2.11.3.1 Introduction

The Action Tracker is a mechanism through which decision makers and actors track progress in implementing priority interventions designed to address root causes of bottlenecks in RMNCH performance at different levels of the health system from national, regional, district and sub-district level. The action tracker represents an important tool for documenting and assessing progress towards implementation of locally owned and led solutions to RMNCH performance issue.

The action tracker is part of coverage, and bottleneck analysis that utilizes DHIS2’s analytical features to track and assess national and sub-national level performance for purposes of improving health service delivery.

2.11.3.2 How to track action in DHIS2

Performance on interventions is reviewed through Quarterly District Review Meetings (QDRM), mid-term or annual programme reviews to assess progress, identify bottlenecks, their causes and suggest possible solutions/actions to address gaps at district, health sub-district and facility levels.

To ensure effective and efficient service delivery, these actions/solutions are monitored/tracked on a routine basis, and designated persons within the District Health Management Team (DHMT) provide updates/progress on prospective actions. Routine monitoring of actions/solutions to bottlenecks on various interventions is done in consultation with other District Health Teams (DHT) and other national and development stakeholders. Once actions are agreed upon, documentation and reporting follows which can be done either using the DHIS2 system or district activity monitoring log books.

2.11.3.3 How to setup event capture for action tracking

The current setup in the DHIS2 is based on a demo concept planned to be progressively improved to create linkages with scorecards and related indicators analysis features. The tool is currently implemented as a single event without registration using DHIS2 event capture tools.
The demo App is setup on the scorecard-dev instance at https://scorecard-dev.dhis2.org with the username and password provided on the login page.

### 2.11.3.4 How to use event capture for data entry of action tracker

#### 2.11.3.4.1 Browsing event capture

To browse the action tracker demo app, access the scorecard-dev instance with your login, at the main menu page, search for “Event capture”

---

*How to browse event capture*

Using the event capture app;

1. Use the organizational unit tree to drill down to district level

2. You will notice that selection in the registering window changes to the selected organization unit

3. If there are more than one program, use the drop down window to select the preferred program
Listing showing tracked action with event capture

4. Click on the register button to begin

5. Select the “Report date” window to begin entering data

2.11.3.4.2 Data entry with Action tracker

Data entry in the action tracker is based on identified bottlenecks in health service delivery at sub-national level, their root causes and planned actions. The bottlenecks are classified using Tanahashi’s six determinants of coverage. To begin data entry;
1. Select the category of the issue identified and the root causes

2. State if any reviews have been done regarding the issue, progress and the responsible persons to follow-up

3. Click on the “Save and Add New” buttons to save the issue for follow-up

4. Click on the “Cancel” button to return to the list of bottlenecks and actions.
2.11.3.4.3 Data Review and editing

Using the Event capture app, data on the bottlenecks, root causes and actions can be reviewed, printed and edited. This is important especially during follow-up on progress of actions as stated and discussed in previous sub-national level review meetings.

To edit a record,

1. Click on the record to access the record edit menu

2. The data will open in an edit window, edit the record by stating the actions taken to avert bottleneck, also state the progress
This chapter provides high level guidance for implementation of scorecard and Bottleneck Analysis (BNA) who audience include District Health Management Teams (DHMT), Ministry of Health (MoH), Implementing and Development Partners in health. This text aims to guide any country or organization using DHIS2 for their aggregate reporting at multiple levels of the system and also implementing individual records using event capture, action tracker and Dhis2 tracker.
2 Introduction and Usage

2.12.1 Overview

Effective and timely use of HMIS data by managers at all levels of health system is critical to inform and improve health service delivery. HMIS dashboards have the potential to enhance the use of data for decision making and planning, by displaying information for managers in an accessible and actionable manner. Managers who have competing demands and limited time, resources and training to conduct data analysis, are often left to organize HMIS data themselves, making HMIS a less user-friendly and effective tool than it might be otherwise.

Building data visualization features that reflect a systematic theory of change / workflow within the DHIS2 software allows end users to effectively use data for action. Scorecards and Bottleneck analysis dashboards in DHIS2 help users to produce meaningful visualizations to identify low performing districts, monitor high impact interventions that are lagging behind and pinpoint bottlenecks to effective health service delivery including identification of root causes and solutions, with the aim of guiding operational planning, tracking progress and performance over time and strengthening accountability for better results.

The scorecard was initially introduced by ALMA (Africa Leaders Malaria Alliance) as a monitoring and accountability tool to boost malaria control efforts and track progress against malaria indicators. A number of countries adopted the tool at country level to implement the RMNCAH (Reproductive, Maternal, Newborn, Child and Adolescent Health) scorecard to enhance accountability and transparency. However inadequate linkages with the HIS (timely data availability) caused delays on effective program monitoring.

The innovation here is the integration of the scorecard functionalities within DHIS2 through a specialized dashboard that not only helps to track progress but also provides tools to perform in-depth analysis, to identify causes of lack of performance in order to drive actions.

2.12.2 Planning implementation of scorecard and bottleneck analysis

2.12.2.1 Defining strategy

The scorecard is an effective tool to enhance accountability and track progress and actions towards health and nutrition outcomes. The scorecard uses tracer indicators for reproductive, maternal, newborn, child and adolescent health interventions to monitor progress national and global targets. It displays data on table using different color coding (green to red) and arrows to show the direction of progress over the monitoring period (quarter, semester or annual). The scorecard alerts program managers and decision makers to be aware of areas which continuously record low performance and lack of progress as well as those needing more attention and actions.
Example of standard scorecard for RMNCAH.

The bottleneck analysis consists of a structured analysis of the determinants of coverage for key reproductive, maternal, newborn, child and adolescent health interventions. It’s based on Tanahashi’s Health Service Coverage Evaluation methodology [Tanahashi, T. “Health Service Coverage and its Evaluation.” Bulletin of the World Health Organization. 56: (2): 295-305. 1978], which examines supply, demand and quality determinants that contribute to effective intervention coverage. The analysis looks at six determinants of coverage across the supply, demand and quality determinant categories which include:

1. Availability of Essential Commodities
2. Availability of Trained Human Resources
3. Geographic Access
4. Initial Utilization
5. Continuous Utilization
6. Effective Coverage

It aims at understanding root causes of weak effective coverage by analyzing supply and demand side indicators to identify obstacles or bottlenecks hindering high effective coverage. Specific strategies and actions could be taken to address the causes in order to mitigate or remove bottlenecks. Below and illustration graphic showing bottleneck analysis using the interactive scorecard.
2.12.2.2 Identify stakeholders and motivations

It's good to take a look at the main motivations of the stakeholders and how to mitigate risks resulting from potential diverging interests.

- Central MoH Departments such as M&E & Planning often are the main stakeholders for standardisation and specification of indicators and IT Systems
- Central IT departments have a general interest over (often locally controlled) technology choices and ownership, hardware and software purchases. They are often dealing with network and hardware issues but lack experience dealing with complex web-based architectures and data exchanges.
- Specialized disease programs are often under pressure to deliver very program specific indicators, both for their own management but also responding to donor driven approaches. They may also feel more comfortable controlling their proper IT system to be sure their needs are prioritized.
- Specialized functional areas (such as Human Resources, Logistics, Hospital Management) are often in a sandwich position, having to cater to the information needs of several different stakeholders, while trying to achieve operational efficiency with limited resources.

By identifying who is interested to provide or utilize the data, the lead implementers can start to form a project team to inform the design and implementation. One method for characterizing stakeholders involves grouping interested parties by their functional roles.

2.12.2.3 Opportunities and challenges

Key to the successful implementation of the scorecards and Bottleneck analysis is a buy-in from national and subnational level stakeholders including ALMA that has been very instrumental in the support and implementation of the RMNCAH scorecard. At the Ministry of health, consensus needs to be reached on who will monitor and follow-up the implementation. At the district level, the DHT (District Health Team) and other facility and community level staff need to be included in the implementation process.

Scorecard and Bottleneck analysis implementation need to make use of existing national infrastructure and performance management systems. Countries where DHIS2 is being used for reporting national health indicators find this process a bit easier for implementing scorecards because most of the indicators required for scorecards are already captured /collected and aggregated in the HMIS.
Existing challenges, for example data availability in existing DHIS2 system, follow-up on routine district review meetings to address bottlenecks and corresponding actions, may hamper analysis and use of the scorecards and Bottleneck analysis tools. These challenges would have to be addressed in an inclusive rather than exclusive process. Other challenges including availability of infrastructure and support at district level need to be addressed by putting in place mechanisms that ensure sustainability of the process.

2.12.3 Identify user and system specifications

Identify the different thematic areas for the different scorecards, this should be guided by the different health programs in a country or project. Reproductive Health, Maternal, Neonatal and Child Health, etc. could have different indicators and scorecards. Additionally specifying the frequency of reporting, the lowest level of data analysis should also be specified. This may also be determined by the DHIS2 reporting frequencies implemented by the existing national or parallel system.

2.12.3.1 Defining interventions

Identification and inclusion of interventions into a scorecard should be aligned with national priorities, as reflected in national plans and strategies. In practice RMNCAH indicators cover the full continuum care.

Country experiences have shown that effective selection of indicators is guided by an inclusive process involving all stakeholders in addition to the ability of the HMIS to capture the most relevant indicators for program monitoring.

Experience has shown that an average of 20 tracers indicators is a best balance to keep the scorecard manageable.

It's important to set up a core working team to oversee the whole process and decide on indicators. This core team should encompass all those directly concerned on program implementation and monitoring.

2.12.3.2 Identify Data sets and data elements

The core team will ensure that the national database contains required data elements for program monitoring. It should be part of their role to decide on the revision of HMIS data collection tools in order to reflect program management needs.

2.12.3.3 Indicator selection and definitions

- Constitute a technical team to define indicators for key interventions for the scorecard (definitions, numerators and denominators including source - data elements) including potential indicator categories such as Maternal and Newborn Health, Child Health, Nutrition, health Systems, etc.
- For each intervention to include on the scorecard, identify and define related determinants of coverage indicators for supply, demand and quality using the determinants framework (refer to annex 1). These indicators will constitute the cornerstone of the Bottleneck analysis.
- Document and map selected indicators with data elements/program indicators (See annex l)
• Customize both scorecard and Bottleneck analysis indicators in DHIS2; defining indicators types, numerators and denominators.

**NOTE**
Most of the Bottleneck analysis indicators may not be reported in DHIS2 such as commodities and human resources so integration and interoperability between systems may be required, refer chapter 12.4 for more details on interoperability considerations.

### 2.12.3.4 Document user stories

Collecting user stories from the national and subnational level plays a key role in documenting and deciding workflow processes for scorecards and BNA.

This process may include the DHT and other facility and community level staff directly responsible for implementing and monitoring health interventions.

Documenting the process of data collection, aggregation and analysis, will help to streamline implementation of scorecards and BNA.

### 2.12.4 Consideration for integration and interoperability

In many countries a national HMIS is often the first system to be rolled out to a large number of facilities and to manage a large number of data on a monthly or quarterly basis. When countries start to develop their health system architecture further, DHIS2 often will be connected to some other systems. This connection is done directly through a simple script, which automates a data transfer.

We talk of a 1:1 connection because it is limited to two systems. In the case of an LMIS/HMIS integration, one LMIS (e.g. openLMIS as is the case in Tanzania) will transfer data to DHIS2 as defined in the script. In case a second logistics system would want to transfer data to DHIS2 (e.g. commodity data for a specific disease program), a second script would have to written, to perform this task. These two scripts would then run independently from another, resulting in two separate 1:1 connections.

This hands-on approach often represents a first step and is one of the most common use cases on the way to an interoperable openHIE architecture.

DHIS2 can assume different roles in interoperability scenarios. A common interoperability scenarios is for DHIS2 to receive aggregate data from an operational system, in which case the operational system adds up the transactions before passing it on to DHIS2. However, DHIS2 may to a certain extent also be configured to store detailed transactional data, receiving it from external systems or through direct data entry in DHIS2.

On this basis we try making a comparative overview, comparing aggregate DHIS2 data management with data management of external specialized system. This can serve as a rough orientation, but is not static since both the capabilities of DHIS2 and its interpretation by implementers are broadening with almost each release.
<table>
<thead>
<tr>
<th>Area</th>
<th>Aggregate DHIS2</th>
<th>External specialized systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics</td>
<td>Aggregate data, e.g. end-of-month facility stock levels can be send through DHIS2. DHIS2 can produce simple stock level and consumption reports.</td>
<td>Supply chain management systems can track detailed stock movements (receiving, return, transfer, destruction) and record details such as production batch numbers. At HQ level, SCM systems typically create forecasting, replenishment and elaborate control reports.</td>
</tr>
<tr>
<td>Finance</td>
<td>Aggregate data, e.g. on total expenditure or cash level can be send through DHIS2. DHIS2 can produce simple finance overview reports, e.g. on remaining budgets.</td>
<td>Finance management systems allow fully traceable recording of financial transactions according to legal requirements, including budgeting, transfers, cancellations, reimbursements etc. Multi-dimensional tagging of transactions allows for analytical reports.</td>
</tr>
<tr>
<td>Patient tracking</td>
<td>Disease or program related data are collected by DHIS2, DHIS2 Tracker also allows a simplified longitudinal view on medical records, including patient history and multi-stage clinical pathways.</td>
<td>Specialized hospital management systems can cover and optimize complex workflows between different departments (e.g. reception, payment counter, wards, OPD, IPD, laboratory, imaging, storeroom, finance and HR administration, medical device maintenance, etc.).</td>
</tr>
<tr>
<td>Human Resource</td>
<td>Human resource related indicators are collected through dhis2, for example planned positions and vacancies per facility.</td>
<td>A specialized HR management system can track detailed status information and changes for a Health Worker (accreditation, promotion, sabbatical, change of position, change of location, additional training, etc.). It comes with pre-designed reports for both operational oversight and planning.</td>
</tr>
</tbody>
</table>
2.12.4.1 Steps for successful data and system integration

The purpose of this chapter is to provide a methodology for implementers to create and support a DHIS2 integration scenario. The guide is based on the best practices and lessons learned from field experiences. The guide advocates for a country driven, iterative, and agile approach that begins with collecting user stories and functional requirements.

The guide is intended as a framework that can be adapted to the specific context of each country. The content describes specific examples for each step detailing user stories, data specifications, job aids and checklists to guide the use of the reference implementation software. The implementation process includes the following steps:

Step 1: Identify Stakeholders and Motivations for Improved Facility Data

Step 2: Document Facility Registry Specifications and User Stories

Step 3: Set Up Initial Instance

Step 4: Identify Gaps & Iterative Development via User Testing

Step 5: Scaling the Registry Implementation

Step 6: Provide Ongoing Support

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Step 5</th>
<th>Step 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholders &amp; Motivations</td>
<td>Document Specifications</td>
<td>Set Up Initial Instance</td>
<td>Iteration and Testing</td>
<td>Scale the Implementation</td>
<td>Ongoing Support</td>
</tr>
</tbody>
</table>

**NOTE**
Integration between DHIS2 and other systems may range from automated to manual and regular import of data from other systems to DHIS2. More information on interoperability can be found from DHIS2 Implementer's guide, see [https://www.dhis2.org/documentation](https://www.dhis2.org/documentation). Also support on can also be acquired from DHIS2 Expert community. For DHIS2 Experts near your region See expert list [https://www.dhis2.org/expert-community](https://www.dhis2.org/expert-community).

2.12.4.2 Training and roll out of scorecard and Bottleneck analysis in DHIS2

Quite often training and rolling out of the scorecard and BNA dashboard in DHIS2 requires prior knowledge and skill in using DHIS2 tools. The DHIS2 community has instituted an online training program (http://academy.dhis2.org/) that builds the capacity and skills of all users interested in the DHIS2. The online training program focuses on basic functionality of DHIS2, which is a prerequisite to maximise the benefits of using scorecards and BNA dashboards in DHIS2.

The training needs may vary depending on the scope of the program (Reproductive Health, Maternal Health, Neonatal and Child health) and or implementation at various levels. For national programs, it is important to first conduct a Training of Trainers (ToT) that will support the implementation at lower levels. Individual organisations can focus on training departments or
program representatives who would in turn train and support lower level units. Below are some considerations for training and rollout;

1. Selecting the team for training: team selection is critical to the proper use of scorecards and BNA dashboards. Program managers, M&E experts, HIS analysts as well as data managers should ensure to take part in training.

2. Determining an appropriate training Schedule (See Annex II): Given the busy schedule of most implementers, it is important to select a date and venue that is suitable for all participants. The training program should cover the topic of discussion comprehensively addressing general overview of the DHIS2, visualization tools as well as the scorecard and bottleneck analysis.

3. Choosing to conduct short trainings (one day) has also proven advantageous given the busy schedule of most implementers.

4. Ensure that the training program is designed in such a way that sessions are practical and interactive to foster learning

5. Participants must each have functional laptop / desktop computer to enable access to practical sessions

6. Provide adequate infrastructure for the training sessions including good accessibility to Internet, Clear projector, ample spacing and any printed material for the training should be clear and visible.

7. Allow short breaks within training sessions, to encourage participants to refresh and concentrate on the topic of discussion

8. At the end of each session, ensure to allow for discussion address any outstanding questions

9. Provide feedback to participants at the end of training. This creates assurance that the participants expectations have been addressed and provide a way forward for any pending issues

10. Plan to follow up participants and provide support on areas that may not have been clarified during the training session.

2.12.5 Factors for scale up

Beginning with a pilot is often good as it provides guidance on areas that need most attention. Piloting provides cost estimates that can be used for scaleup projections. Below some factors to consider for scaling up implementation of the scorecards and bottleneck analysis;

1. Availability of technical support: The scorecard and BNA are currently supported by UiO/HISP nodes in east africa. This support is critical to build local capacity for Scorecard and BNA customization, maintenance, and quality assurance

2. Development of user friendly tools e.g. RMNCAH scorecard/s triggered national interest, leading to greater use of DHIS2 at district and national levels

3. Bottleneck and causal analysis are useful for evidence based planning and can be used as a tool for resource mobilization

4. Community engagements should be aligned to already existing community structures to ensure sustainability

5. Political and technical district leadership is necessary to influence real change in the communities

6. Aligning programs initiatives to the already existing national planning cycles and systems the planning process. This will

1. Foster Government buy in
2. Build local ownership
2.13 Help, tour guide & translation

The scorecard offers a quick guidance to get the user started off with using making use of the basic features of the app, user documentation can be accessed from within the app as will be explained in this chapter.

Options available on clicking of the help button

2.13.1 Tour guide

To get a brief tour of navigation across the scorecard app simply click the Help icon and choose “Take a tour” and a floating pop-up will appear hinting on some basic navigation that user can use to analyze with scorecard.
2.13.2 Help and documentation

The documentation of the scorecard app is accessible through clicking the “User Manual” from the Help dropdown menu. This will open the documentation of the scorecard app.

2.13.3 Translations

The scorecard app offers basic translation for up to three languages, French, Portuguese and English.

By default, the app opens up with English Language.

To change Language to French, click Fr.

To change Language to Portuguese, click Pt.

2.14 Scorecard community and use cases

Scorecard development and implementation is community driven by HISP Nodes and UNICEF Globally. As it is an open source software, its source codes are available on github (https://github.com/hisptz/scorecard) for contribution.

Contributions on scorecard community can be on the following areas:

1. Development and Testing of scorecard application
2. Documentation and translation of scorecard application
3. Implementation of scorecard and experience sharing with community

2.14.1 How to be part of the community

Scorecard development and implementation is a DHIS2 Community driven development and implementation initiative comprising of collaborative support of developers, implementers and
translators from HISP Nodes, Governments and Organizations using DHIS2. The best way to join
the DHIS2 Community is to sign up on the community of Practice.

1. If you are interested in the usage, setup or implementation of Scorecard you can sign up for
   **Dhis2 Jira**.
2. If you have questions about or want to follow the development process you can sign up for
   the **Dhis2 Community of Practice**.

Don't hesitate to get in touch if you are interested in using Interactive scorecard for your
organisation or government. We can be reached through the contact details below. For technical
questions or questions related to scorecard implementation please sign up and use the mailing
lists as described above.

Email

- HISP Tanzania  info@hisptanzania.org
- HISP Uganda  info@hispuganda.org
- DHIS2 - post@dhis2.org
- DHIS2 Academies - post@dhis2.org
- The DHIS2 Online Academy - onlineacademy@dhis2.org

Websites

https://hisptanzania.org/
http://www.hispuganda.org/
https://dhis2.org/

2.14.2 Development and implementation

Interactive scorecard uses **JIRA** for issue tracking. You can use it to report bugs and request new
features. You can search for features to get an overview of which features make it into each
release.

2.14.3 Documentation and Translations

The Scorecard app documentation is available in google docs from here https://goo.gl/miojZ4.
You can recommend your changes by commenting on the topic of interest in the document and
share back your copy with tracked changes.

The Scorecard user interface is translated to a range of languages including English, French and
Portuguese. Efforts for improving the existing translations or adding new languages are much
appreciated.

The easiest approach to translation is to download the google doc, revise the existing
translations and share the translated copy with tracked changes to info@hisptanzania.org. You
can use the same email to request scorecard build with your translations reflected.

2.14.4 Data use academy scorecard setup and use cases

2.14.4.1 Rationale for adding scorecard app in data use academy

Scorecard has been added as one of the suite of analytics application in DHIS2 array of analytics
use cases, to enrich data use experience of DHIS2 implementers.

The African Leaders Malaria Alliance is a groundbreaking coalition of 49 AFRICAN HEADS OF
STATE AND GOVERNMENT working across country and regional borders to eliminate malaria by
2030. They are leveraging collective knowledge and influence to bring about action and accountability as they fight one of their continent’s most devastating diseases by:

- Providing a forum to review progress and address challenges in meeting the malaria targets;
- Implementing a monitoring and accountability system through the ALMA Scorecard for Accountability and Action to track results, identify bottlenecks, and facilitate appropriate action; and
- Identifying and sharing lessons learned for effective implementation of national programs

Never before have African leaders come together in this way to solve a crisis assailing our entire continent. The collaborative strategy has proven itself to be an effective model for sustainable change as we continue to engage new stakeholders, deepen relationships with key decision makers, and work with ministers, NGOs, the private sector, and other partners to maximize the value and impact of our work.

The overall objective of this the scorecard Info use academy is to demonstrate how to analyze data using a scorecard using the scorecard. Further the sessions:-

- Demonstrates best practices of scorecard use
- Explains the different features of the scorecard
- Step by step use of scorecard

2.14.4.2 Topics covered in dhis2 academy

Scorecard utilises training land setup with select few set of indicators based on global RMNCH use cases to allow implementers to get first hand experience of scorecard use cases and how it can be used as a powerful real time tool for data use discussion, bottleneck analysis as well as formulation of action and tracking of progress.

- Launching and navigating the Scorecard app.
- Different features of the scorecard.
- Analyzing data using a scorecard
- Explaining the different functions in the scorecard app
- Downloading scorecard (excel and pdf)
- Creating a new scorecard
- Adding BNA indicators to scorecard

2.14.4.3 Training materials and servers being used

The training materials used follow the standard DHIS2 Academy trainers guides and in this case “Demo - Using a Scorecard.” The session follows the standard Academy training approach with 1) a live demo session where the trainer demonstrate and explain the features, and 2) a hands-on session with exercises where participants get to practice what they have learned.

2.14.5 Existing DHIS2 Scorecard app use cases

Countries and institution are slowly adopting use of interactive scorecard application to leverage simplicity of scorecard creation process as well as interactive user experience during analysis, among the major functionalities cited as handy features that triggers adoption of scorecard application uses includes:

1. Ability to drill down and up the organization unit hierarchy, will supporting all possible organisation unit selections
2. Ability to navigate scorecard across time as well as presentation of data with more than one period selection
3. Ability to perform further analysis with charts, tables and maps, as well as indicator dictionary overview on numerator and denominator definitions, calculations, data sources and related aspects of data quality such as deadlines of data sources.

Below are select few interactive scorecard application use cases across various country implementation use cases.

2.14.5.1 Tanzania’s RMNCAH Scorecard

The Tanzania RMNCH scorecard was first produced using the African Leaders Malaria Alliance (ALMA) RMNCH scorecard tool from January 2014 to June 2016; and from July 2016 to December 2016 the RMNCH scorecard is being produced using the HMIS/DHIS2 RMNCH scorecard tool.

The Ministry of Health, Community Development, Gender, Elderly and Children with technical support from the University of Dar es Salaam is now utilizing generic scorecard tool to support customization of the Ministry’s scorecards with focus on revised RMNCH scorecard.

Among goals of moving to utilizing generic scorecard includes:

- To fast track the scorecard generation, dissemination and use cycles and thereby introduce room for more data use, transparency and accountability at all levels (Council, Region, National) during all cycles of the scorecard generation.
- Addition of supports of generic functionalities such as drill down on organization units, navigation across period, and further analysis supported by generic scorecard.
- Facilitate the ministry’s initiative of generating scorecards for different types of health sector interventions within HMIS/DHIS2.

The above scorecard have been implemented utilizing all possible functionalities such as presentation of twin and related indicators under single column. More initiative expected to support incorporation of impact indicators presented separately on scorecard header originating from census and surveys opposed to the majority of routine data source indicators enlisted in scorecard rows.

RMNCAH Scorecard adopted from ALMA’s RMNCAH scorecard
2.14.5.2 Tanzania’s PMTCT Scorecard

The Ministry of Health and Social Welfare (MOHSW) through Prevention of Mother to Child Transmission of HIV program (PMTCT) in its efforts to improve PMTCT services at all levels, initiated development of PMTCT scorecard with technical support from University of Dar es Salaam. This initiative aimed at improving quality of PMTCT services to active data use with scorecard.

PMTCT scorecard contained 10 cascade indicators measuring PMTCT interventions with the following rationales:

1. To assess HIV Testing coverage among Pregnant women receiving ANC services at RCH
2. To assess proportion of registered HIV positive women on ART. (Applicable for baseline values)
3. Measure PMTCT retention and infant testing coverage
4. Measures early MTCT, indicates effectiveness of PMTCT in the pregnancy period
5. Coverage of testing at the end of breastfeeding
6. To assess Impact of interventions up to the end of breastfeeding
7. Measures overall MTCT rate up to the period of cessation of exposure to HIV virus through Breastfeeding

### PMTCT Score Card

**Jan to Mar 2016 - MOH - Tanzania**

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>% of women tested for HIV</th>
<th>% of HIV+ women newly initiated ART</th>
<th>% of HIV+ exposed infants enrolled into HIV care</th>
<th>% of HIV infants received ARV prophylaxis to reduce vertical HIV transmission</th>
<th>% of HIV+ exposed infants initiated on ART &lt; 2 months</th>
<th>% of HIV+ exposed infants tested for HIV</th>
<th>% of HIV+ exposed infants 1st HIV test &gt; 2 months</th>
<th>% of HIV+ exposed infants initiated on ART &gt; 2 months</th>
<th>% of HIV+ infected children initiated on ART</th>
<th>% of Male Couples tested for HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arusha Region</td>
<td>96.0</td>
<td>57.9</td>
<td>96.4</td>
<td>94.2</td>
<td>97.3</td>
<td>79.6</td>
<td>85.9</td>
<td>6.6</td>
<td>69.0</td>
<td>95.7</td>
</tr>
<tr>
<td>Dar Es Salaam Region</td>
<td>94.0</td>
<td>64.8</td>
<td>90.4</td>
<td>95.1</td>
<td>90.6</td>
<td>71.3</td>
<td>59.9</td>
<td>5.6</td>
<td>71.0</td>
<td>88.5</td>
</tr>
<tr>
<td>Dodoma Region</td>
<td>89.5</td>
<td>69.5</td>
<td>92.2</td>
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**PMTCT Scorecard measuring cascade indicators**

2.14.5.3 Tanzania’s QIP Scorecard

The Ministry of Health and Social Welfare (MOHSW) through Quality assurance division aims at improving quality of service provision at health facilities through assessment of four domain areas of service provisions.

Among the key objectives of Quality Improvement plan (QIP) scorecard includes:

- Creation of transparent mechanism for tracking implementation of formulated quality improvement plans across four quarters for each annual assessment.
- Systematically identify facilities areas of implementation challenges and gaps for re-strategizing and reprioritization of plans.
- Provide appropriate suggesting improvement steps to effectively implement formulated quality improvement plans.
QIP Scorecard presents facility performance based on most recent facility assessment or routine follow up information about.

**Tanzania**

**Ministry of Health - Quality Assurance**

Quality Improvement Scorecard for Health Centers.

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QIP Scorecard for measuring quality improvement on gaps

**2.14.5.4 Uganda’s RMNCH Scorecard**

In November 2013, Uganda launched a Renewed, Sharpened and first Integrated Reproductive, Maternal, Newborn and Child Health (RMNCH) plan with clear goal, objectives, priorities and 5 strategic shifts in order to employ new ways of combating RMNCH challenges. The plan aims to accelerate reduction in maternal, newborn and child mortality and improve on Uganda’s RMNCH indicators. In order, to track progress against the ambitious goals and targets, a deliberate effort to track performance must be invested.

Therefore, the endeavor of developing and implementing the Uganda RMNCH Scorecard is in line with global initiatives including A Promise Renewed (APR), UN Commission on Information and Accountability among others. Under the APR initiative, the Ministry of Health progressively institutionalizes a national and sub national RMNCH scorecard based on routine Health Management Information System (HMIS) data and the District Health Information System (DHIS2) platform.. The scorecard is also aimed to facilitate health facilities to review their performance within the quality improvement framework.
## Ugandan RMNCAH Scorecard

### 2.15 Annex

#### 2.15.1 Annex I: Uganda RMNCH Scorecard Indicators and Definitions

Revised after Discussion with the Planning Unit at the Ministry of Health

<table>
<thead>
<tr>
<th>Lifecycle stage</th>
<th>Indicators</th>
<th>Definition/ description</th>
<th>Data source</th>
<th>Assumption(s)</th>
<th>Numerator/ Denominator</th>
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<tr>
<td>Pregnancy</td>
<td>% of 1st ANC visit within the 1st trimester</td>
<td>This is the percentage of all expected pregnancies in a given catchment population in a given period of time who have attended their 1st ANC visit within the first trimester</td>
<td>HMIS</td>
<td></td>
<td>Numerator: # of pregnant Women attending 1st ANC visit within 1st trimester Denominator: All expected pregnancies</td>
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2.15.2 Annex II: Scorecard and BNA indicators

2.15.3 Annex III: Scorecard and BNA Training Program

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>8:45 - 9:00 am</td>
<td>Registration</td>
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<tr>
<td>9:00 - 9:30 am</td>
<td>Introduction to DHIS2</td>
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<tr>
<td>9:30 - 10:00 am</td>
<td>HMIS 105: Data Elements versus Indicators</td>
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<td>10:00 - 10:15 am</td>
<td>SHORT BREAK</td>
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<tr>
<td>10:15 - 11:00 am</td>
<td>How to use the Dashboards for your Programme - Interactive Session</td>
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<tr>
<td>11:00 - 11:30 am</td>
<td>Introduction to Pivot Tables</td>
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<td>11:30 - 1:00 pm</td>
<td>Pivot Table Interactive Session - Designing Dashboards</td>
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<td>1:00 - 2:00 pm</td>
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<td>2:00 - 2:30 pm</td>
<td>Introduction to Data Visualization Tools</td>
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<td>2:30 - 3:15 pm</td>
<td>Data Visualization Interactive Session - Designing Dashboards</td>
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<td>3:15 - 3:30 pm</td>
<td>SHORT BREAK</td>
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<td>3:30 - 4:00 pm</td>
<td>Introduction to Scorecards and BNA</td>
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<td>4:00 - 4:45 pm</td>
<td>Scorecard Interactive Session - Designing Dashboards</td>
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<td>4:45 - 5:00 pm</td>
<td>Wrap up and Conclusion</td>
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2.16 Bibliography

2.16.1 References