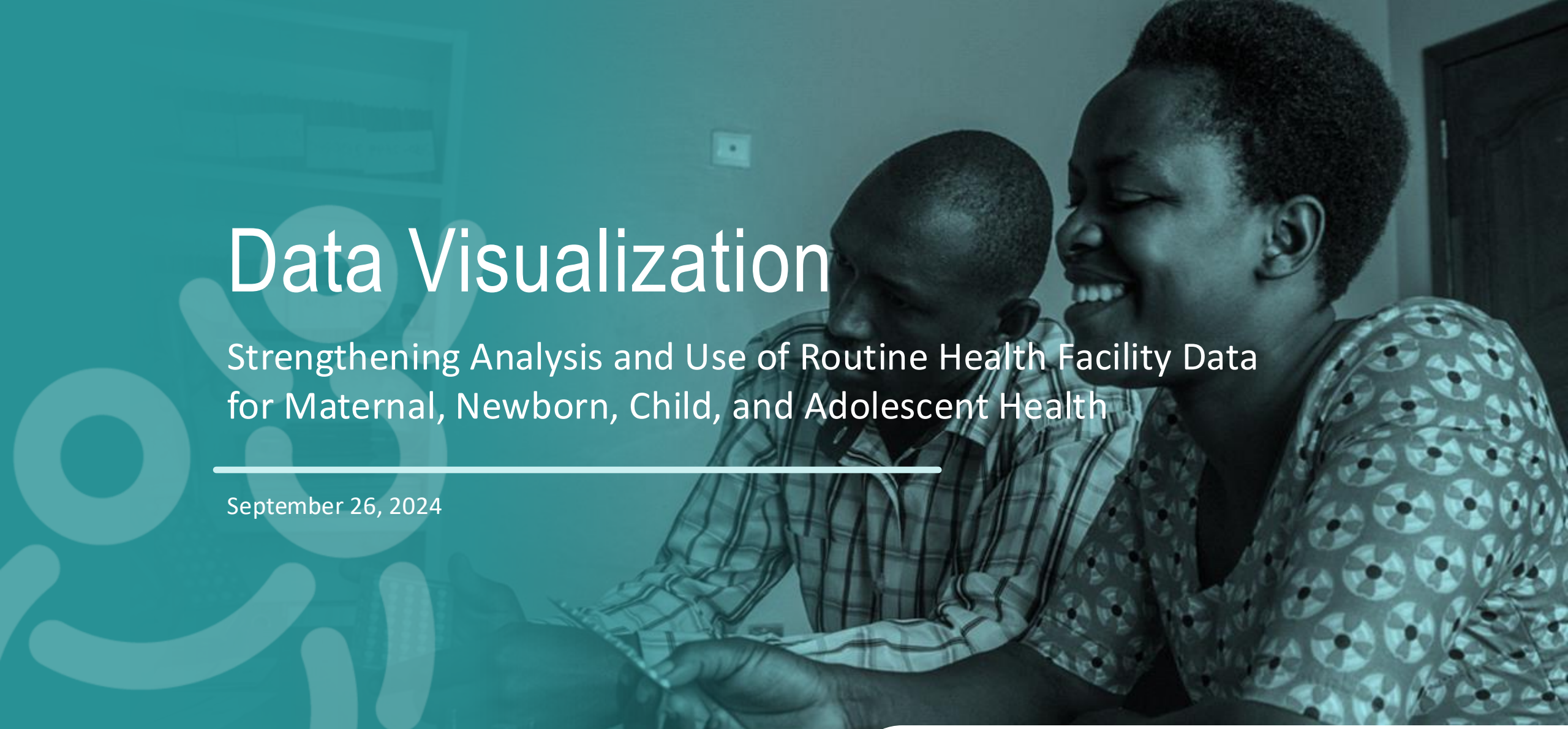
Data Visualization

Strengthening Analysis and Use of Routine Health Facility Data for Maternal, Newborn, Child, and Adolescent Health

September 26, 2024



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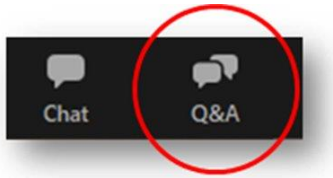
Housekeeping

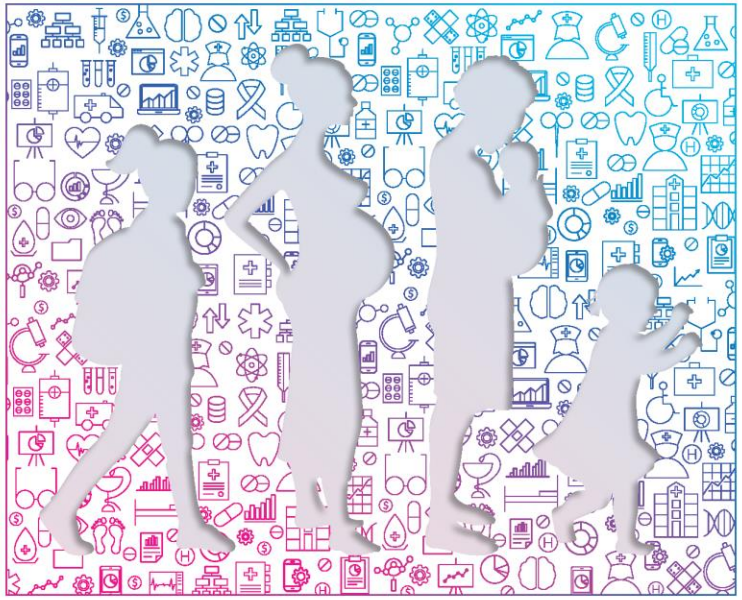
- This webinar series will be recorded, and **the recording and webinar materials will be posted on the MOMENTUM website**.
- Please access the interpretation channel and choose English or French audio.

- Please submit your questions for the presenters in the Q&A box. Presenters will either reply to you in the Q&A box or will answer your question during the Q&A portion of the webinar.



Series Overview

- Training of trainers on strengthening data use and analysis.
- Based on World Health Organization (WHO) guidance *Analysis and Use of Health Facility Data: Guidance for Maternal, Newborn, Child and Adolescent Health Programme Managers*.



unicef for every child

World Health Organization

Toolkit Supporting Materials

Presentation Materials

1. Health Information System: Types and Sources of Health Data With a Spotlight on Routine Health Facility Data
2. Routine Health Facility Data Indicators for MNCAH
3. Data Quality Considerations for MNCAH Managers
4. Data Triangulation: Using Multiple Sources of MNCAH Data Together
5. Principles and Approaches for Analysis, **Visualization**, and Interpretation of Routine Health Facility Data for MNCAH
6. Data Communication Products for MNCAH
7. Using MNCAH Data for Decision-Making

Slide adapted from World Health Organization. (2023). *Analysis and use of health facility data: Guidance for maternal, newborn, child and adolescent health programme managers*.

Series Overview

Each session in the webinar series will:

- Introduce key concepts related to analysis and use of routine data.
- Feature examples from MOMENTUM awards.
- Highlight tools and resources to support technical assistance activities.

Date	Session
August 1	Introduction to Health Facility Data
August 13	Data Quality
September 5	Data Triangulation and Analysis
September 12	Data Interpretation and Use for Decision-Making
September 26	**Bonus Session: Data Visualization**

Today's Presenters

Emily Stammer

Senior Research, Monitoring, and Evaluation Advisor, MOMENTUM Knowledge Accelerator

Wycliffe Waweru

Head of Monitoring, MOMENTUM Private Healthcare Delivery–PSI

Session Objectives

- Provide an overview of the importance of data visualization when supporting partners working with routine maternal, newborn, child, and adolescent health (MNCAH) health facility data.
- Present and discuss real-world examples of how MOMENTUM Private Healthcare Delivery has used data visualization to drive data engagement across the project within the context of their Data to Action framework.
- Highlight key tools and resources for supporting partners to visualize routine health facility data for MNCAH.

Trivia

Question 1

What proportion of the world's data was generated in the last two years?

1. 30%
2. 50%
3. 70%
4. 90%
5. I don't know the number, but it's probably a lot considering how much my aunt posts on Facebook.

Answer

Note: This 90% number is commonly repeated, and I was not able to independently verify its accuracy or even find the methodology for calculating something like this. Suffice it to say, though, there's probably a lot of data being generated.

Source: SINTEF. (2013, May 22). *Big data, for better or worse: 90% of world's data generated over last two years*. ScienceDaily.

Question 2

Why is visualizing data useful?

1. Visualizations help guide the reader to the most important takeaways.
2. Visualizations appeal to visual learners.
3. Visualizations help break up the monotony of text.
4. Visualizations *may* be useful for low-literacy audiences.
5. Visualizations help convey messages and comparisons that may be difficult using text.
6. All of the above.
7. I don't know—I didn’t think I was going to have to read so much in a viz webinar.

Answer

All of the above!

Caution: Data visualization CAN be useful if done correctly and if it is clear. Otherwise, visualizations could be misinterpreted.

Data Visualization

Things to Consider Before You Begin

Who is your audience?

- What is their level of data literacy?
- What is already understood and what level of detail is needed?
- What do you want them to know and what action(s) do you want them to take?

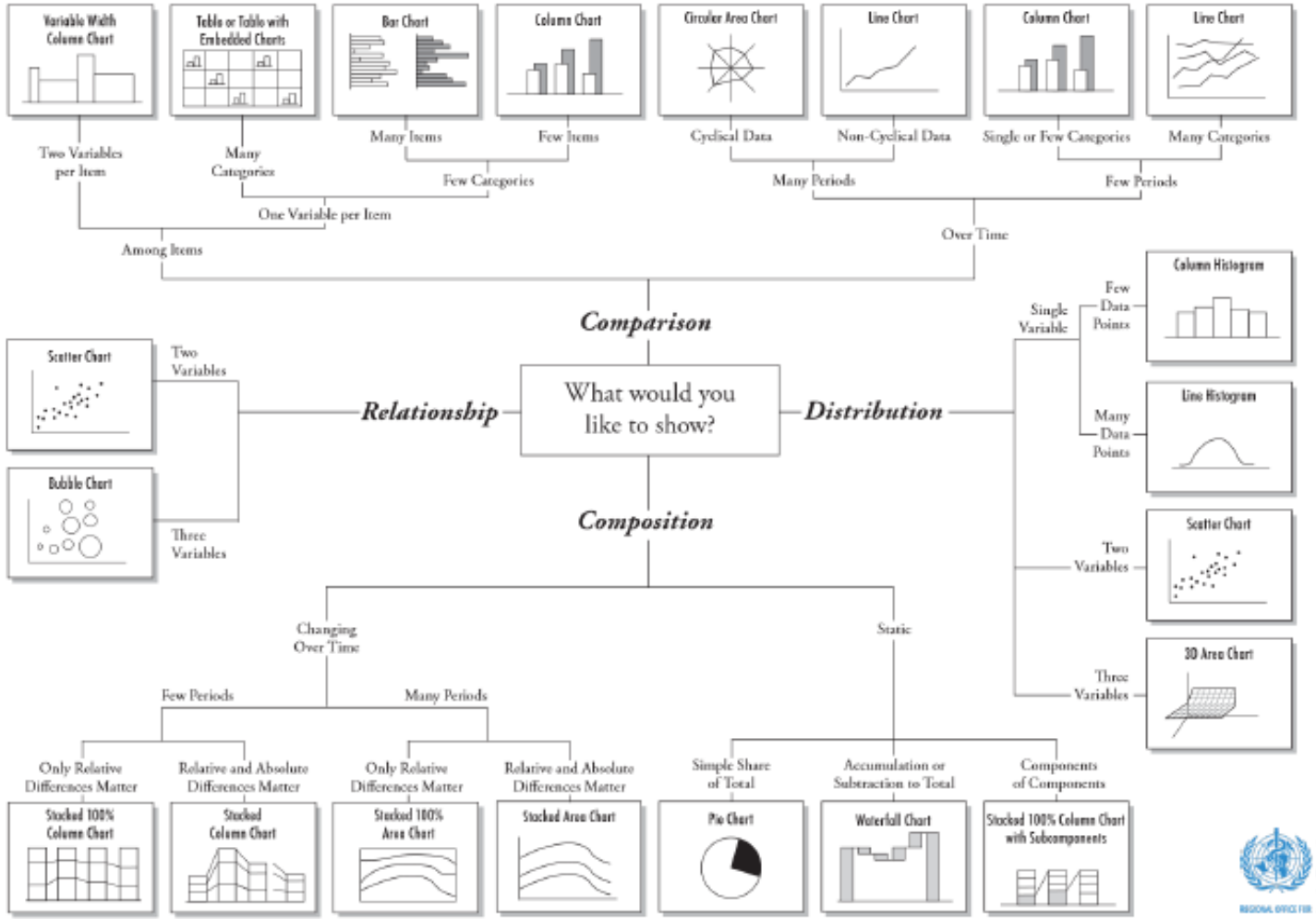
What is the purpose of the visualization?

- Is it explanatory or exploratory?

Slide adapted from Staedicke, S. (2021). *MOMENTUM data visualization guide*. USAID MOMENTUM.

Selecting Your Visualization Type

Consider your audience!

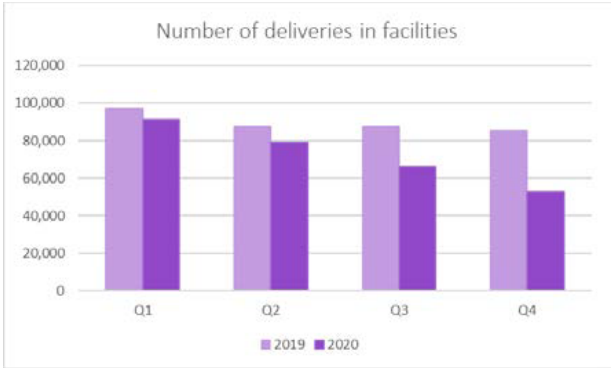


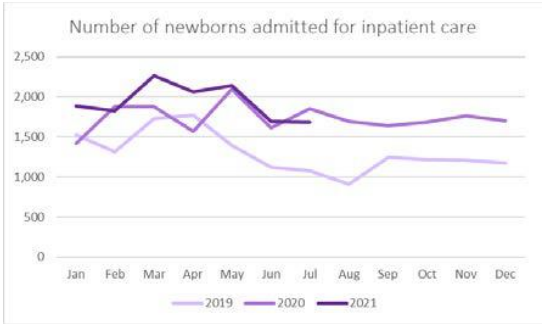
Slide from: World Health Organization Africa

Slide adapted from World Health Organization. (2023). *Analysis and use of health facility data: Guidance for maternal, newborn, child and adolescent health programme managers*.

Common Visualization Types and When to Use Them

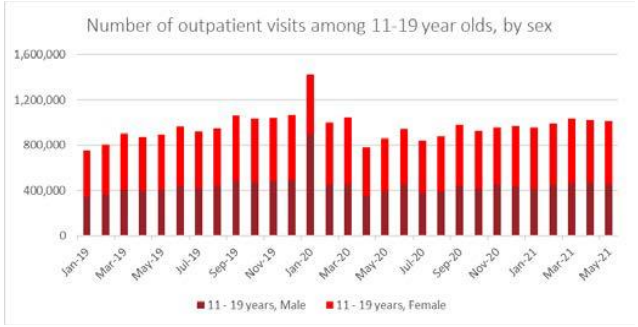
Bar charts compare categories of data.

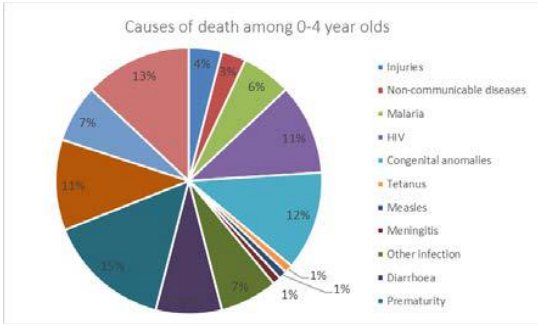




Line graphs display trends over time.

Stacked bar charts represent components of a whole and compare wholes (or multiple values).





Pie charts show percentages or proportional share of a total (100%).

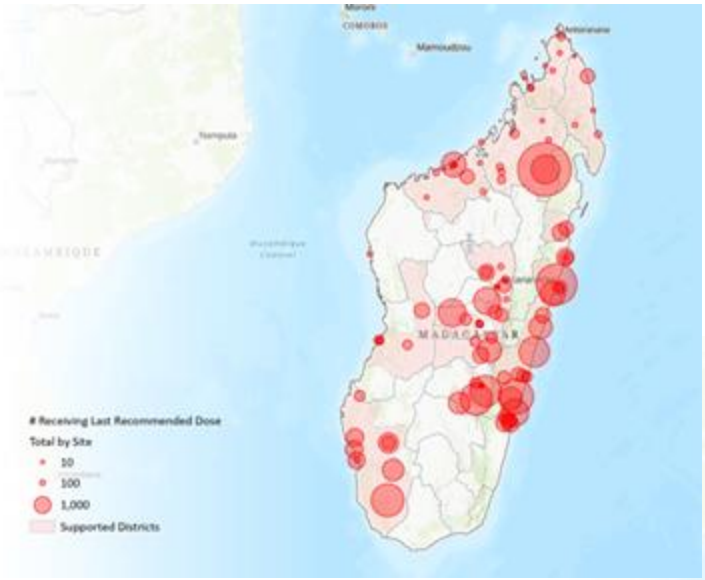
Data can also be summarized in a **table**.

Percentage of deliveries by caesarean section												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	11%	12%	13%	12%	12%	12%	12%	11%	11%	11%	14%	12%
2020	11%	11%	11%	13%	12%	12%	14%	11%	11%	12%	11%	11%
2021	11%	11%	12%	11%	10%	11%	11%					

Slide adapted from World Health Organization. (2023). *Analysis and use of health facility data: Guidance for maternal, newborn, child and adolescent health programme managers*

Other Common Visualizations

- Thematic maps:
  - Show performance of key indicators across various subnational areas or facilities, allowing for easy identification of differences in performance between areas.
  - Can only show a single time point (e.g., for a year, quarter, month, etc.).



Slide adapted from World Health Organization. (2023). *Analysis and use of health facility data: Guidance for maternal, newborn, child and adolescent health programme managers*.
Maps from MOMENTUM Strengthening Analysis and Use of Routine Facility Data for Maternal, Newborn, Child and Adolescent Health Webinar Series. Session 4. Data Interpretation and Use. https://usaidmomentum.org/resource/strengthening-analysis-and-use-of-routine-facility-data-webinar-series/.

Other Common Visualizations

- Dashboards:
  - Are useful when displaying several indicators together.
  - No need to keep the same denominators across indicators **BUT** should be related with consistent time periods and clearly labeled for easy interpretation.

Slide adapted from World Health Organization. (2023). *Analysis and use of health facility data: Guidance for maternal, newborn, child and adolescent health programme managers*.

Orientation to WHO Guidance and Other Relevant Resources

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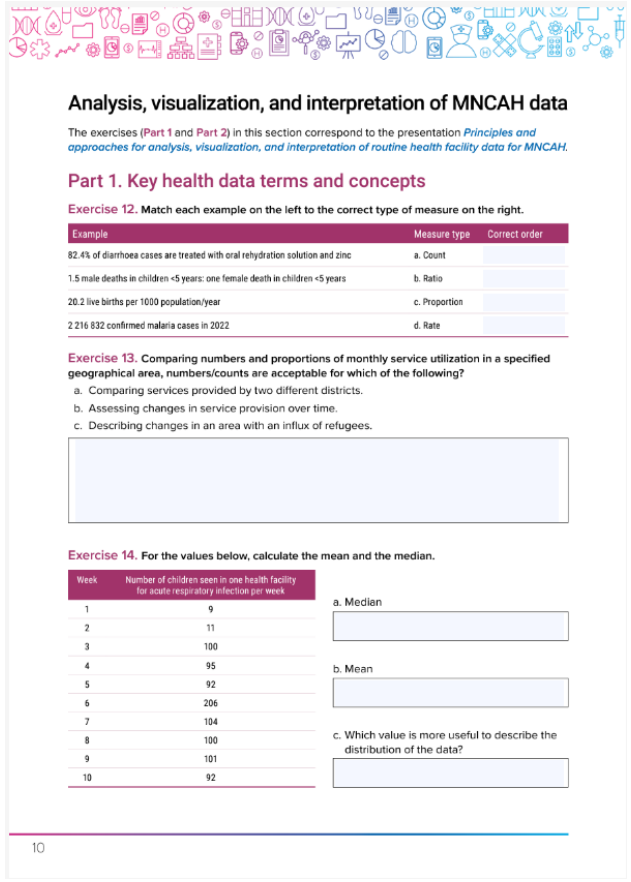
Exercises for Visualization



Analysis, visualization, and interpretation of MNCAH data

The exercises (Part 1 and Part 2) in this section correspond to the presentation *Principles and approaches for analysis, visualization, and interpretation of routine health facility data for MNCAH.*

Part 1. Key health data terms and concepts

Exercise 12. Match each example on the left to the correct type of measure on the right.

Example	Measure type	Correct order
82.4% of diarrhoea cases are treated with oral rehydration solution and zinc	a. Count	
1.5 male deaths in children <5 years: one female death in children <5 years	b. Ratio	
20.2 live births per 1000 population/year	c. Proportion	
2 216 832 confirmed malaria cases in 2022	d. Rate	

Exercise 13. Comparing numbers and proportions of monthly service utilization in a specified geographical area, numbers/counts are acceptable for which of the following?

a. Comparing services provided by two different districts.
b. Assessing changes in service provision over time.
c. Describing changes in an area with an influx of refugees.

Exercise 14. For the values below, calculate the mean and the median.

Week	Number of children seen in one health facility for acute respiratory infection per week
1	9
2	11
3	100
4	95
5	92
6	206
7	104
8	100
9	101
10	92

a. Median

b. Mean

c. Which value is more useful to describe the distribution of the data?

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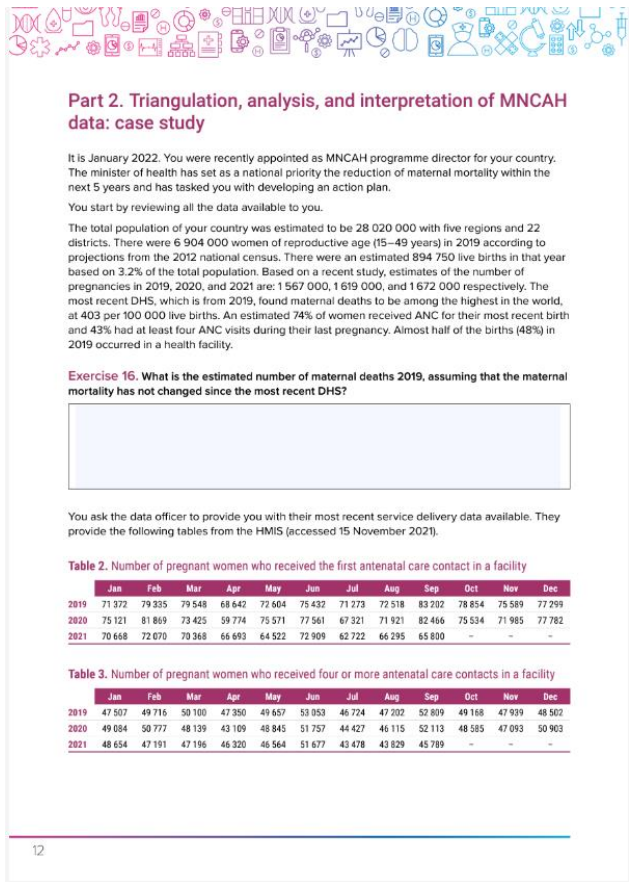


Part 2. Triangulation, analysis, and interpretation of MNCAH data: case study

It is January 2022. You were recently appointed as MNCAH programme director for your country. The minister of health has set as a national priority the reduction of maternal mortality within the next 5 years and has tasked you with developing an action plan.

You start by reviewing all the data available to you.

The total population of your country was estimated to be 28 020 000 with five regions and 22 districts. There were 6 904 000 women of reproductive age (15–49 years) in 2019 according to projections from the 2012 national census. There were an estimated 894 750 live births in that year based on 3.2% of the total population. Based on a recent study, estimates of the number of pregnancies in 2019, 2020, and 2021 are: 1 567 000, 1 619 000, and 1 672 000 respectively. The most recent DHS, which is from 2019, found maternal deaths to be among the highest in the world, at 403 per 100 000 live births. An estimated 74% of women received ANC for their most recent birth and 43% had at least four ANC visits during their last pregnancy. Almost half of the births (48%) in 2019 occurred in a health facility.

Exercise 16. What is the estimated number of maternal deaths 2019, assuming that the maternal mortality has not changed since the most recent DHS?

You ask the data officer to provide you with their most recent service delivery data available. They provide the following tables from the HMIS (accessed 15 November 2021).

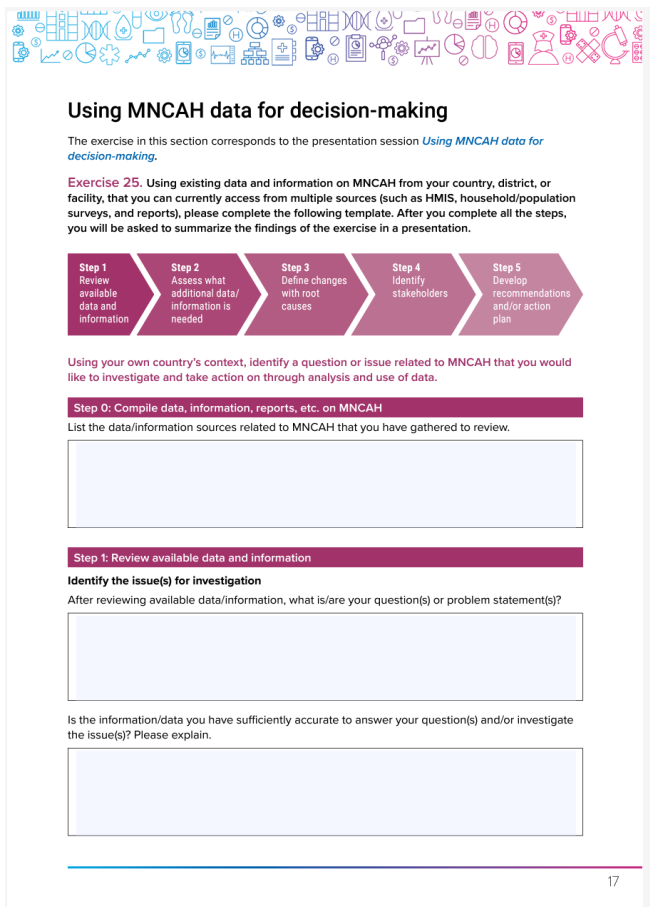
Table 2. Number of pregnant women who received the first antenatal care contact in a facility

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	71 372	79 335	79 548	68 642	72 604	75 432	71 273	72 518	83 202	78 854	75 589	77 299
2020	75 121	81 869	73 425	59 774	75 571	77 561	67 321	71 921	82 466	75 534	71 985	77 782
2021	70 668	72 070	70 368	66 693	64 522	72 909	62 722	66 295	65 800	–	–	–

Table 3. Number of pregnant women who received four or more antenatal care contacts in a facility

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	47 507	49 716	50 100	47 350	49 657	53 053	46 724	47 202	52 809	49 168	47 939	48 502
2020	49 084	50 777	48 139	43 109	48 845	51 757	44 427	46 115	52 113	48 585	47 093	50 903
2021	48 654	47 191	47 196	46 320	46 564	51 677	43 478	43 829	45 789	–	–	–

12



Using MNCAH data for decision-making

The exercise in this section corresponds to the presentation session *Using MNCAH data for decision-making.*

Exercise 25. Using existing data and information on MNCAH from your country, district, or facility, that you can currently access from multiple sources (such as HMIS, household/population surveys, and reports), please complete the following template. After you complete all the steps, you will be asked to summarize the findings of the exercise in a presentation.

Step 1 Review available data and information → **Step 2** Assess what additional data/ information is needed → **Step 3** Define changes with root causes → **Step 4** Identify stakeholders → **Step 5** Develop recommendations and/or action plan

Using your own country's context, identify a question or issue related to MNCAH that you would like to investigate and take action on through analysis and use of data.

Step 0: Compile data, information, reports, etc. on MNCAH

List the data/information sources related to MNCAH that you have gathered to review.

Step 1: Review available data and information

Identify the issue(s) for investigation

After reviewing available data/information, what is/are your question(s) or problem statement(s)?

Is the information/data you have sufficiently accurate to answer your question(s) and/or investigate the issue(s)? Please explain.

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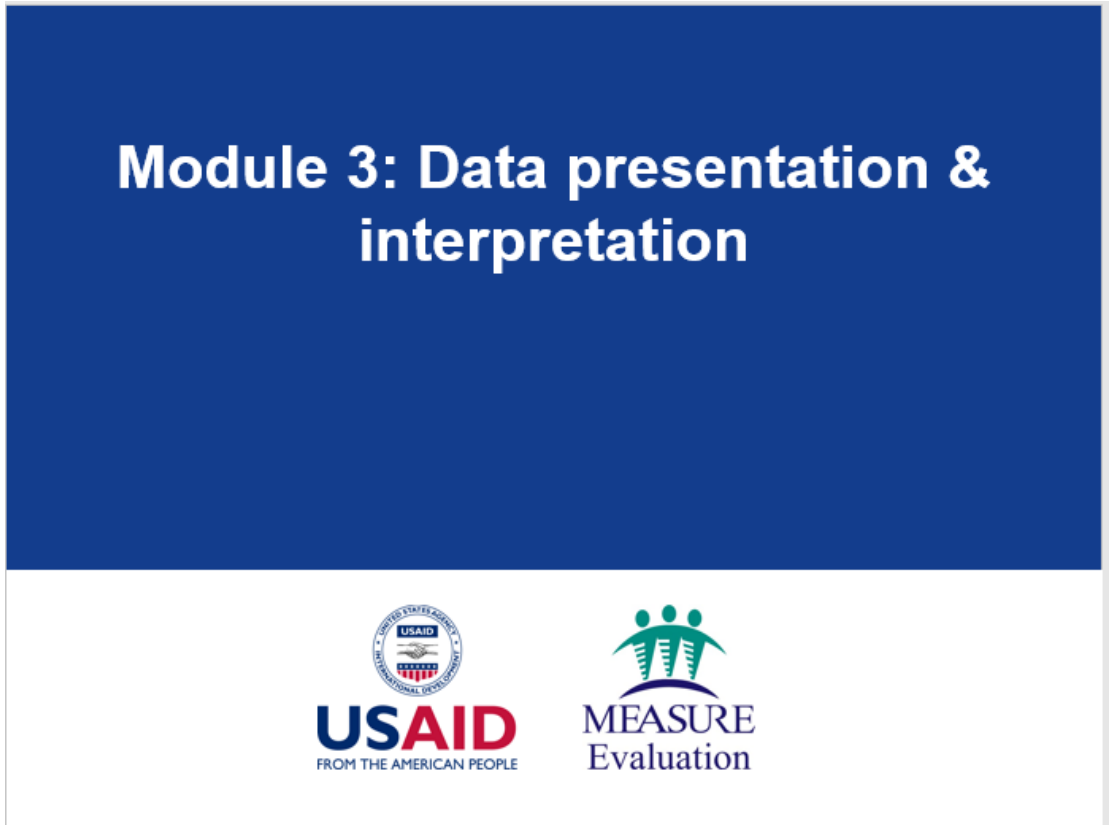
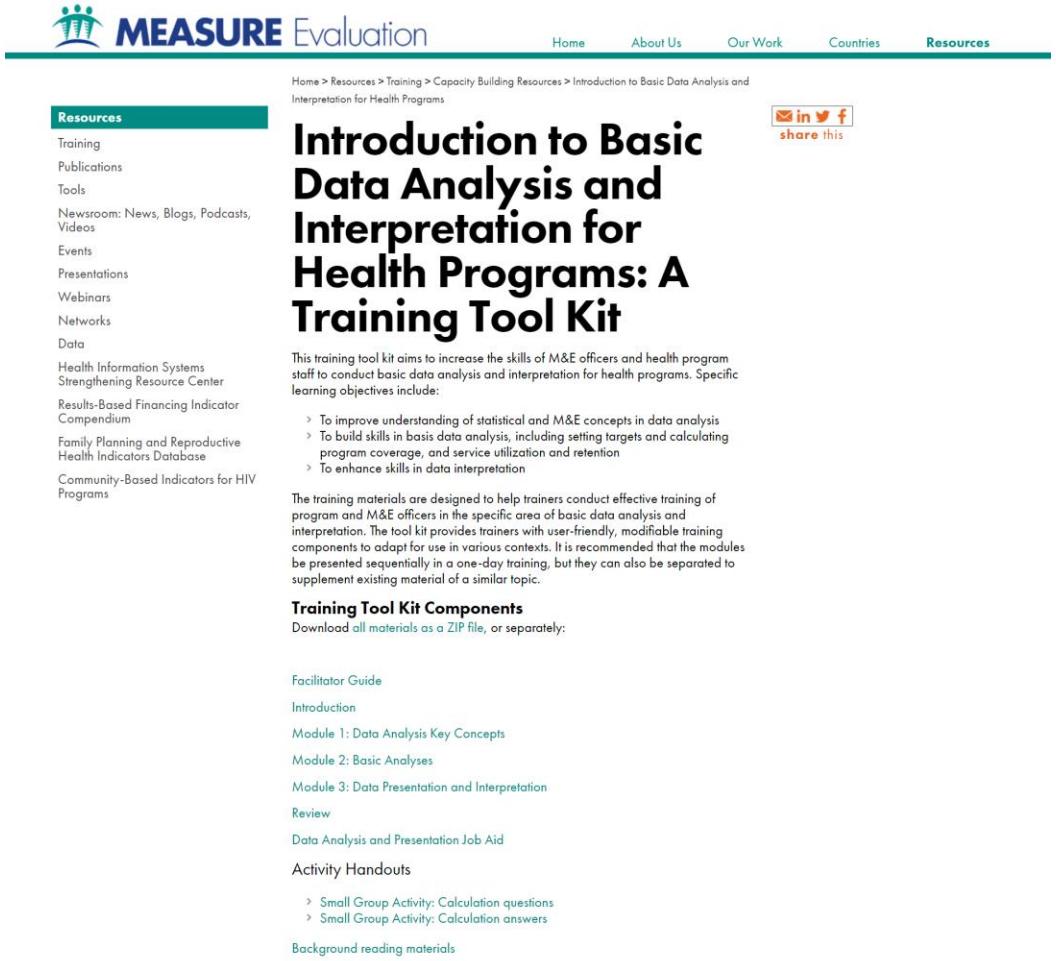
Slide adapted from World Health Organization. (2023). *Analysis and use of health facility data: Guidance for maternal, newborn, child and adolescent health programme managers*.

Resource Spotlight

Measure Evaluation: Introduction to Basic Data Analysis and Interpretation for Health Programs: A Training Tool Kit





Data Visualization and Use: MOMENTUM Private Healthcare Delivery

Wycliffe Waweru, Population Services International

September 2024

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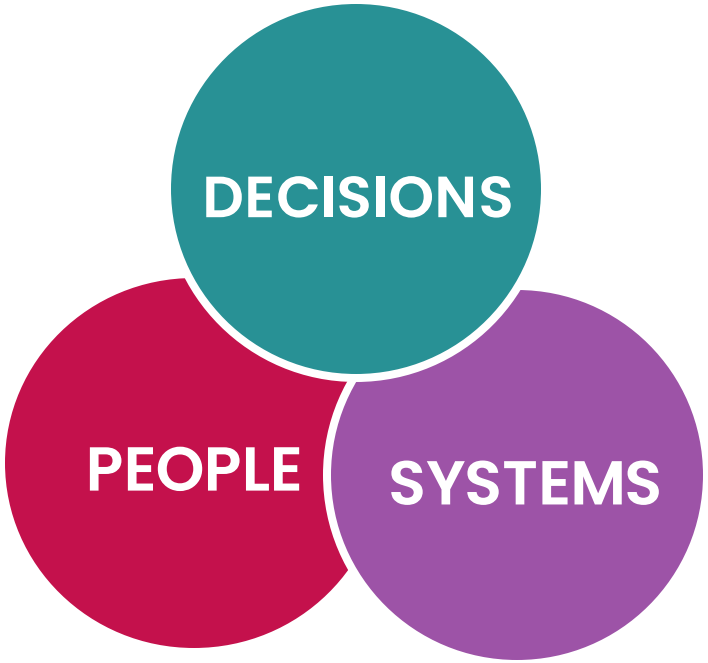
Monitoring and Evaluation Strategy

MOMENTUM Private Healthcare Delivery believes that the ultimate purpose of data is to make **actionable decisions** that **improve the performance** of programs.

People: appropriate staffing structure with the relevant skills and competencies.

Systems and processes: for collecting, storage, quality assurance, analysis, and reporting of data.

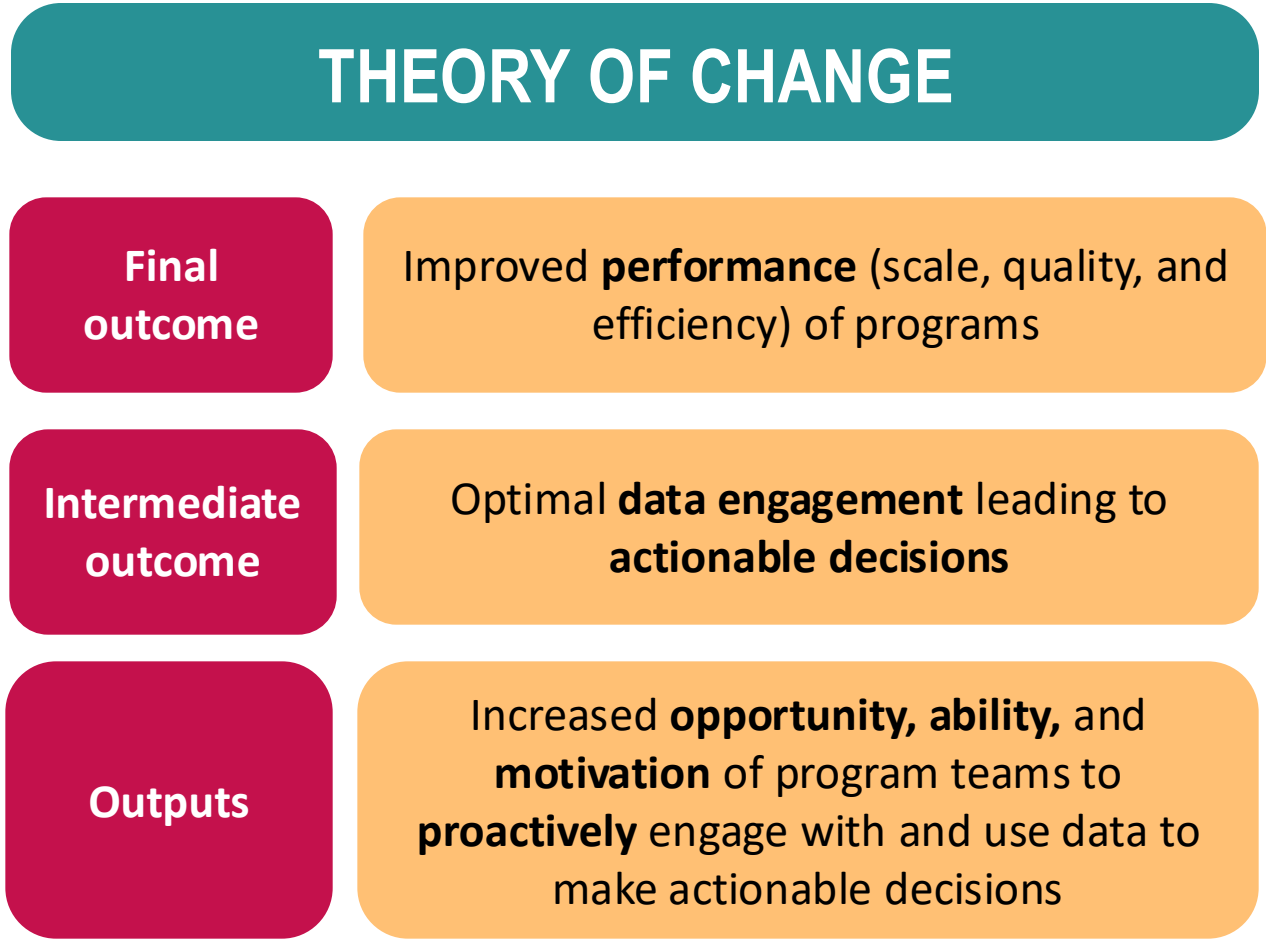
Decisions: the right information is collected; relevant teams engage with and use data.



Data Use Strategy

Facilitating engagement with and use of data to make **actionable decisions** that **improve the performance** of programs:

- Develop Data to Action frameworks.
- Build dashboards based on the framework.
- Engage routinely with data.



Data to Action Framework

Inform the system design and development of program dashboards:

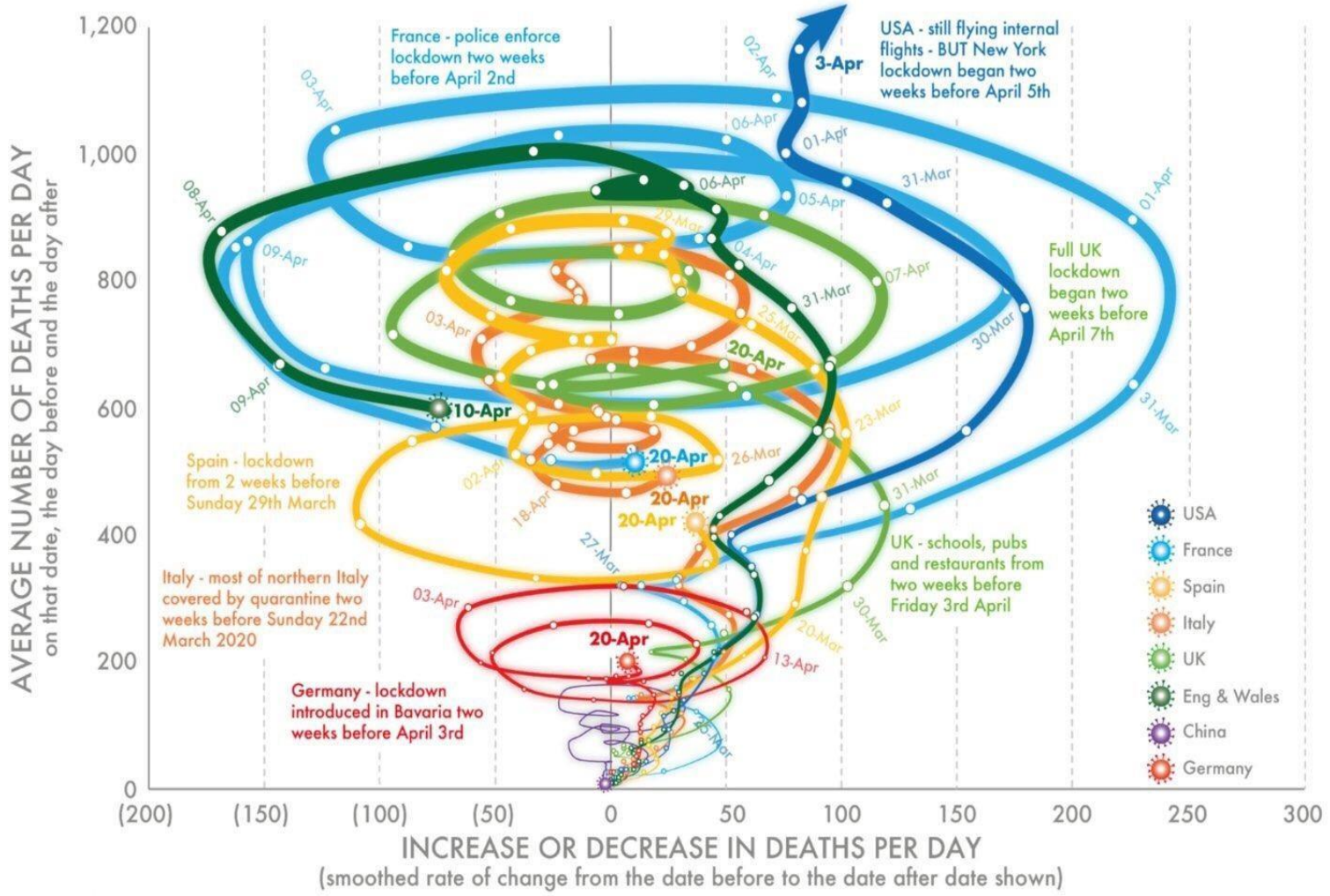
- Identify **key performance metrics**.
- Identify **benchmarks/targets** for metrics.
- Identify **actions** to take and questions to ask when benchmarks/targets aren't met.

- ✓ Developed in consultation with program/technical team.
- ✓ Helps monitoring and evaluation teams develop useful and usable dashboards.
- ✓ Is a living document.

Data to Action Framework: MOMENTUM's Global Framework

Indicator	Objective: Why is it important?	Action Plan: What questions will you ask based performance against target/benchmark?	How would you like the data visualized?	Countries Included
Family Planning				
Number of FP client visits by age (<20, 20 – 24, >25) *N1: FP.RH.2_Number of family planning client visits (both new acceptors and continuing clients, for both services and counseling)*	Understanding who we are reaching is a fundamental pillar to determine if our FP project is being successful.	**<u>If benchmark is met: [PY4: Tracking toward 2.6 million by year end]</u>** 1. What strategies did we use to reach various age categories (demand creation). Were home to home visits conducted? or community dialogues? engagement of community leaders? 2. Was training of community health workers (or equivalent) in demand creation done across the geographies? 3. What are trends over time in terms of footfall/ client visits? What factors could be influencing the number of client visits? **<u>If benchmark is not met: [PY4: Tracking toward 2.6 million by year end]</u>** 4. What strategies did we use to reach various age categories (demand creation). Were home to home visits conducted? or community dialogues? engagement of community leaders? 5. Was training of community health workers (or equivalent) in demand creation done across the geographies? 6. What are trends over time in terms of footfall/ client visits? What factors could be influencing the number of client visits?	Each country: Stacked bar graph of age groups by month Overall: Stacked bar graph of age groups by country. Includes last six months	Burundi, Benin, Ghana, Madagascar, Mali, Mozambique, Nepal, Niger,

Data Visualization



"There is no such thing as information overload. There is only bad design."

—Edward Tufte

Data Visualization: Design Principles

"The goal is to turn **data** into **information**, and information into **insight**."

—Carly Fiorina, former CEO of Hewlett-Packard

USER-CENTRIC DESIGN

Understand the preferences of users and design the dashboard to cater to their needs.

FOCUS ON KEY METRICS

Avoid overloading the dashboard with too much information.

CLEAR MESSAGING

Keep the design simple, using one message per visual.

USE APPROPRIATE VISUALIZATION

Choose the right type of chart, graph, or color that best represents the data.

Driving Data Engagement

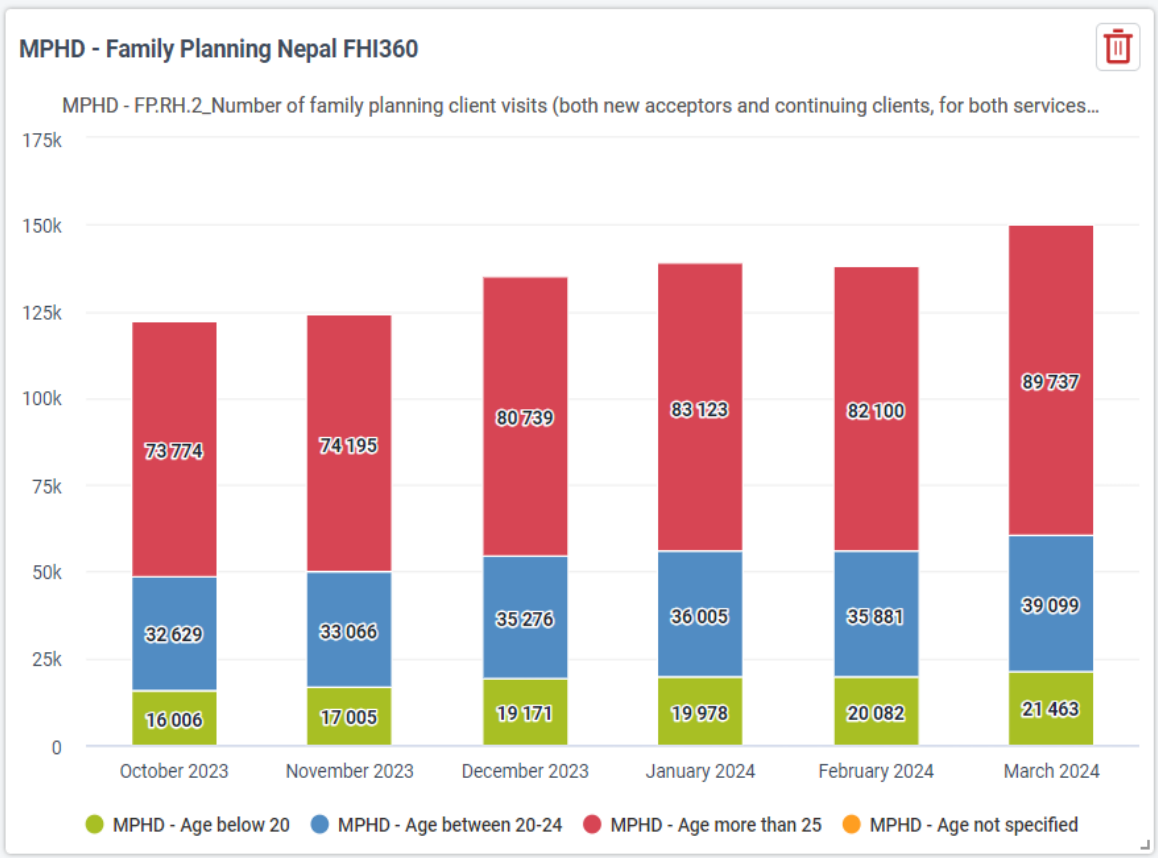
Core:

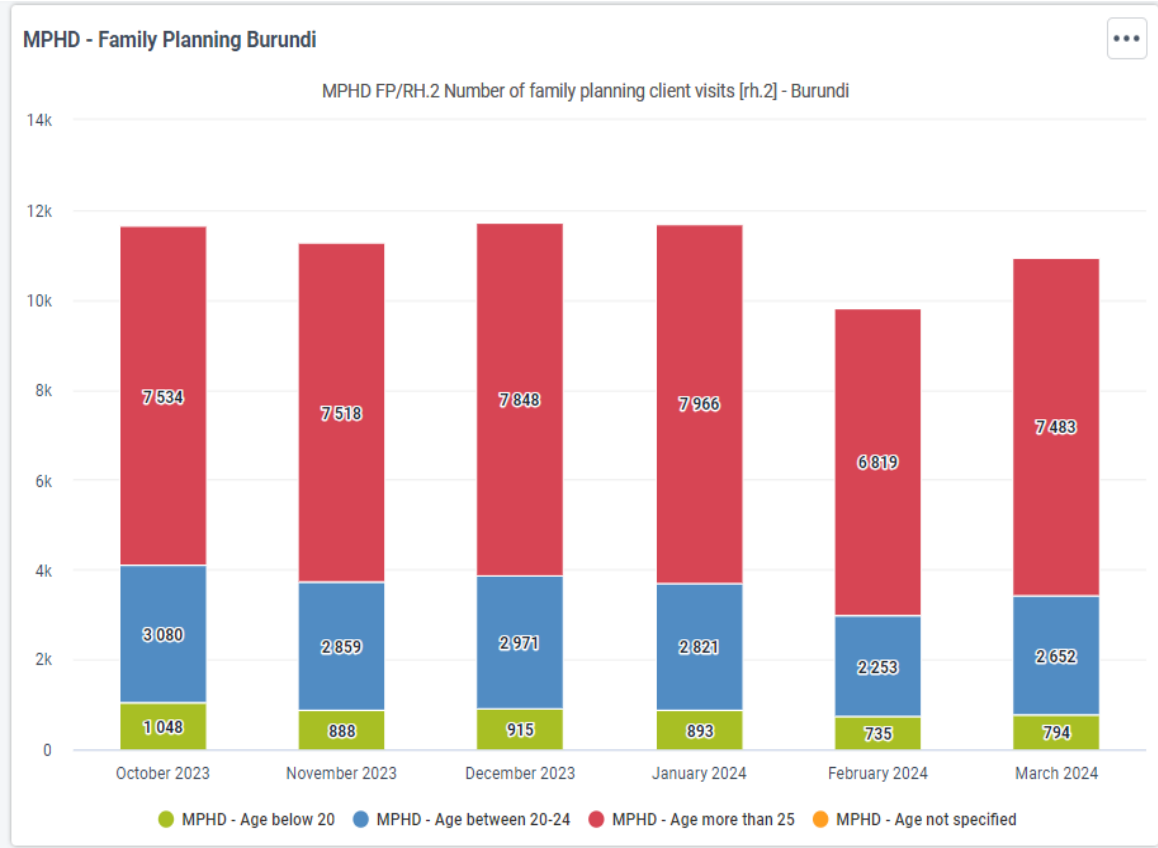
- Developed global Data to Action framework.
- Set up DHIS2 data sets and dashboards.
- Scheduled data review across countries.

Country-level:

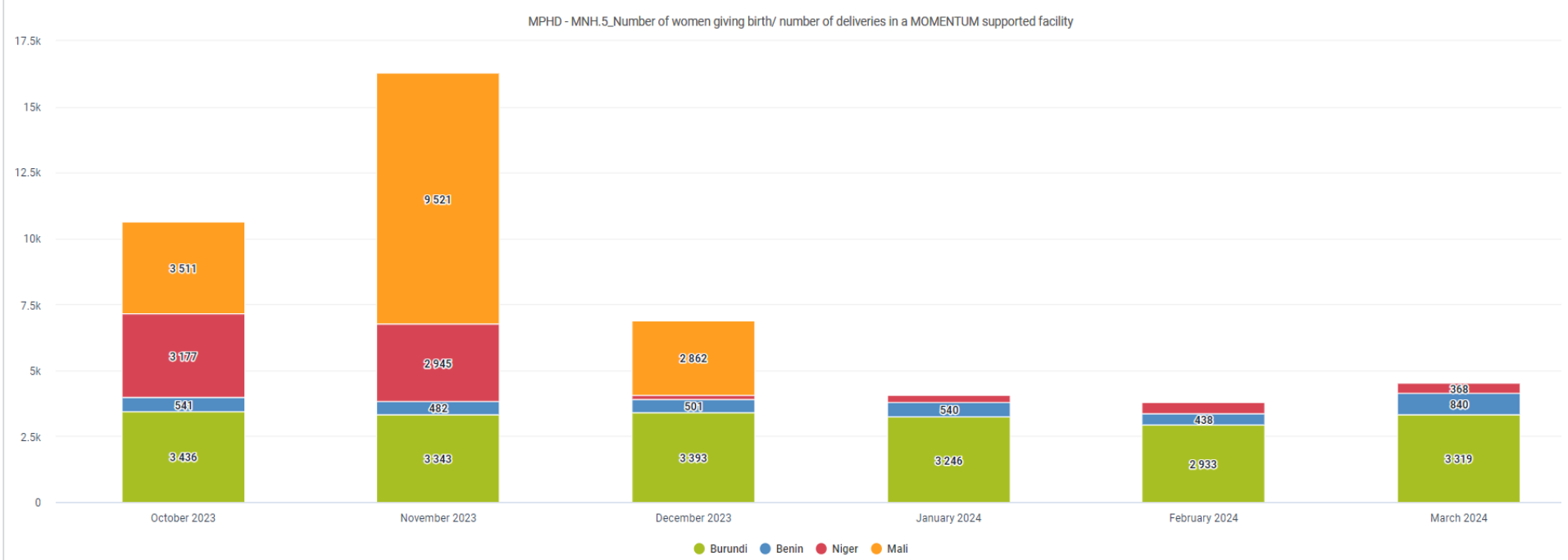
- Adapted global Data to Action framework and set up dashboards.
- Monthly data review by field- and national-level teams.
- Focus on addressing underperformance, challenges, and needs.

Dashboards

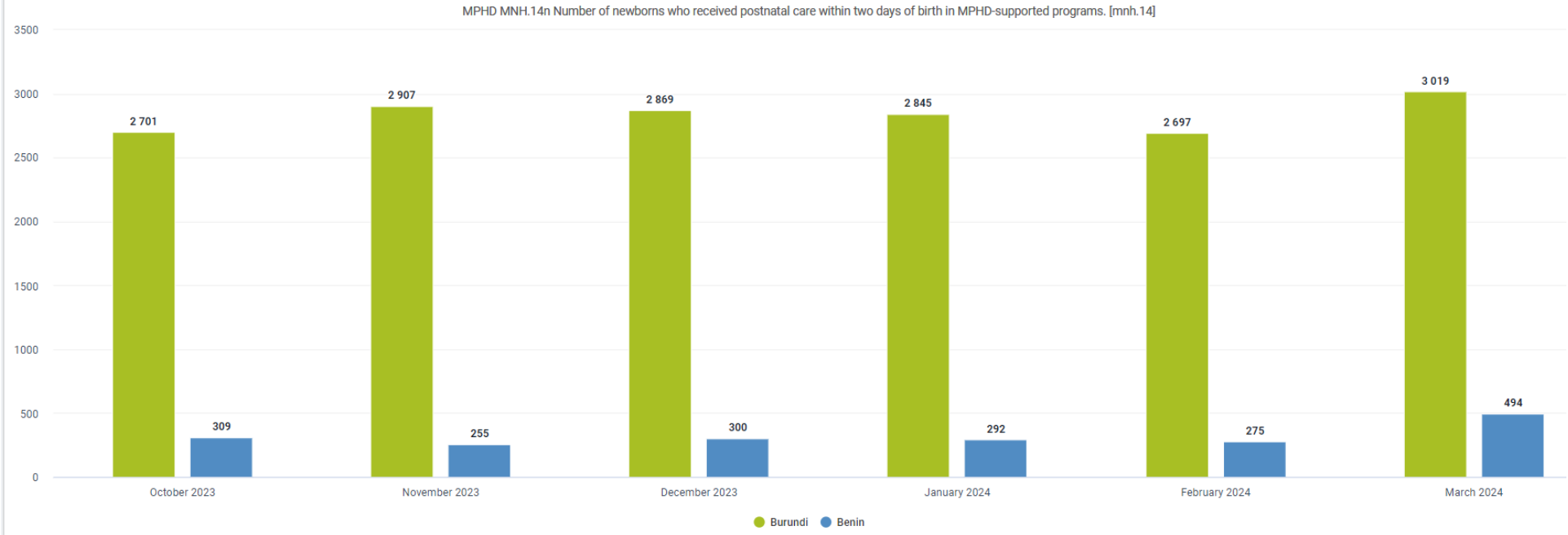

MPHD - Family Planning Nepal FHI360
MPHD - FP.RH.2_Number of family planning client visits (both new acceptors and continuing clients, for both services...
175k
150k
125k
100k
75k
50k
25k
0
73 774
74 195
80 739
83 123
82 100
89 737
32 629
33 066
35 276
36 005
35 881
39 099
16 006
17 005
19 171
19 978
20 082
21 463
October 2023
November 2023
December 2023
January 2024
February 2024
March 2024
MPHD - Age below 20
MPHD - Age between 20-24
MPHD - Age more than 25
MPHD - Age not specified


MPHD - Family Planning Burundi
MPHD FP/RH.2 Number of family planning client visits [rh.2] - Burundi
14k
12k
10k
8k
6k
4k
2k
0
7 534
7 518
7 848
7 966
6 819
7 483
3 080
2 859
2 971
2 821
2 253
2 652
1 048
888
915
893
735
794
October 2023
November 2023
December 2023
January 2024
February 2024
March 2024
MPHD - Age below 20
MPHD - Age between 20-24
MPHD - Age more than 25
MPHD - Age not specified

MPHD - MNH.5 # of women with institutional delivery in MPHD supported facilities



MPHD - MNH.14 Number of newborns who received postnatal care within two days of birth in MPHD-supported programs



DHIS2 Data Visualization Demo

DHIS2 Demo Site: demos.dhis2.org/hmis

DHIS2 Online Academy: https://academy.dhis2.org/

Questions?

Series Complete

Access all materials on the MOMENTUM website

THANK YOU

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