

Saving Brains Platform Webinar

Data Systems for Action

**Brought to you by:
The Data for Action Team of
Innovators and Mentors
from The Dubai Workshop**

November 6, 2019



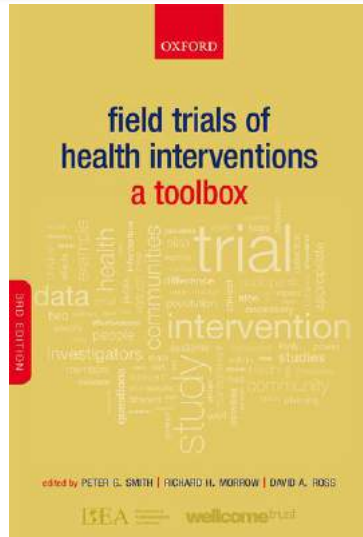
Grand Challenges Canada™
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Acknowledgements

This presentation draws on work done by several persons, including:

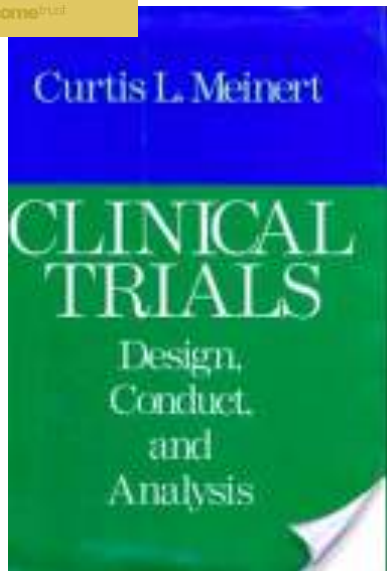
- Caroline Dusabe, Save the Children
- Muneera Rasheed, Aga Khan University
- Peter Lubell-Doughtie, Ona Systems
- Felipe Argolo, Federal University of Sao Paulo
- Daniel Fatori, University of Sao Paulo
- Anselme Sanou, Centre Muraz
- Elizabeth Prado, University of California, Davis
- Summit Study Group, Mataram, Indonesia
- Lauren Pisani, Save the Children
- Jonathan Seiden, Save the Children
- Babar Hasan, Aga Khan University

Some useful resources



Field Trials of Health Interventions: A Toolbox, 3rd ed., Edited by Peter G. Smith, Richard H. Morrow, and David A. Ross (2015),) Oxford University Press

global.oup.com/academic



Clinical Trials: Design, Conduct and Analysis. Meinert CL (1986), Oxford University Press

...some more useful sources

www.idela-network.org

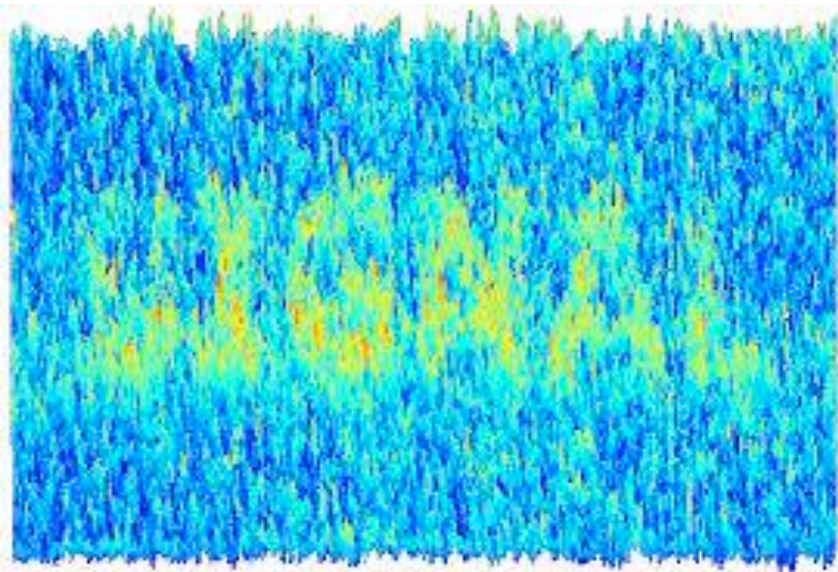
<https://www.england.nhs.uk/improvement-hub/publication/the-good-indicators-guide-understanding-how-to-use-and-choose-indicators/>

...still more useful resources

- ***Journal of the American College of Cardiology: State of the Art Review Series (2015) Pocock SJ, Clayton TC, Stone GW. Volume 66***
 - Making Sense of Statistics in Clinical Trial Reports: 1 of 4
 - Statistical Controversies in Reporting of Clinical Trials: 2 of 4
 - Design of Major Randomized Trials: 3 of 4
 - Challenging Issues in Trial Design: 4 of 4



Good study design, implementation, and analysis enhances data signal to noise ratio



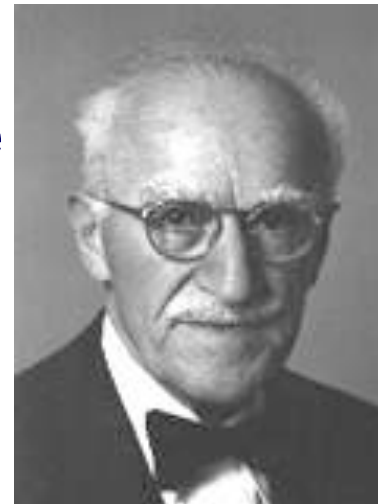
The Pareto Principle

- 80% of the effects come from 20% of the causes
 - The 80–20 rule
 - Law of the vital few
- 80% of your data and process errors are coming from 20% of the sources



Vilfredo Pareto:
(1848-1923)
Italian economist.

“~80% of the land in Italy was owned by 20% of the population”

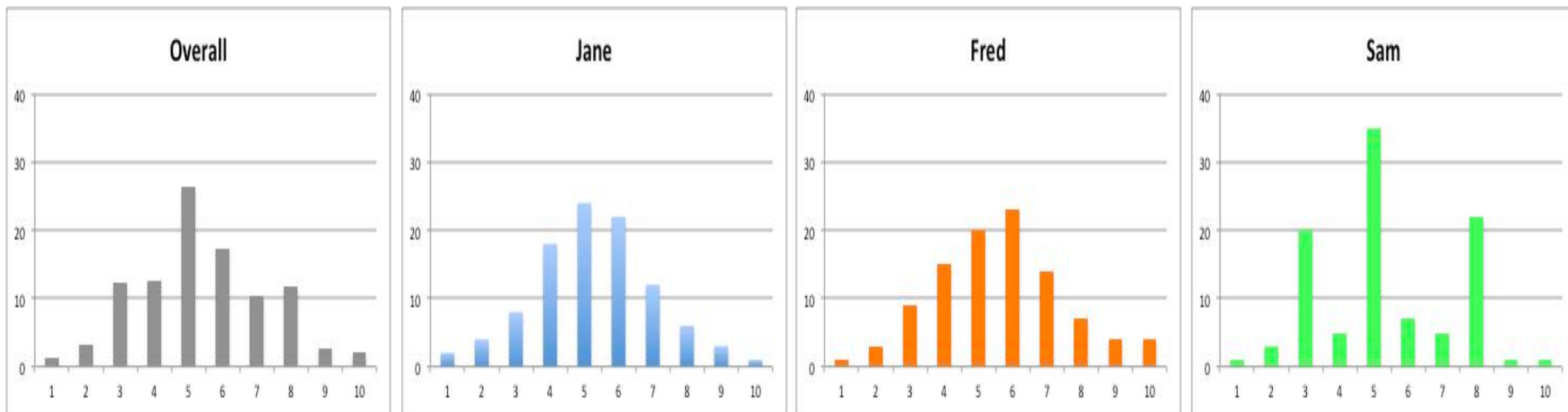


Joseph Moses Juran:
(1904-2008)
Romanian-born
American engineer.

“Evangelist for quality and quality management”

Who did what, where and when?

- Ongoing assessment is critical



Strength of response from 1-10

Seven (or more) Deadly Sins of Studies

1. The idea is not useful
2. The study was not ethically conducted
3. **Statistically underpowered**
4. Inappropriate control group
 - a. No control group
 - b. Control group not comparable to the intervention group
5. Not properly randomized



Seven (or more) Deadly Sins of Studies

6. The intervention was not delivered as intended
 - a. The control and intervention groups are no longer comparable
 - b. The intervention is modified in way that makes it less effective
7. Staffing shortfalls
 - a. Not enough staff are hired
 - b. Staff are not trained to the level needed
8. The compliance or adherence is low (<80%)
9. The loss to follow-up is high (>20%)

Seven (or more) Deadly Sins of Studies

10. The outcome is not properly assessed
- The data collected does not represent the expected impact
 - There is systematic bias or confounding in data collection
 - The data collected is not reliable

11. The data management system is not proper

- Data is not entered on time
- Data quality is not checked or corrected

12. The data are not properly analyzed

- Clustering not taken into account
- Missing and dirty data are not taken into account



Seven (or more) Deadly Sins of Studies

13. Not enough money\$\$\$ for your design to be done well
 - a. Trying to do too much
 - b. Spending on unnecessary items and activities
 - c. Under-budgeting



Avoid common pitfalls in data collection and use

- Not action driven
- Collection and analysis is separate
- Poor reporting:
 - Not understandable or too complex
 - Report given to the wrong persons
- Delay in feedback of results
- Lack of culture of use of data
 - Monitoring equated with just filling in data, registers etc.
 - Manuals are prepared but not used



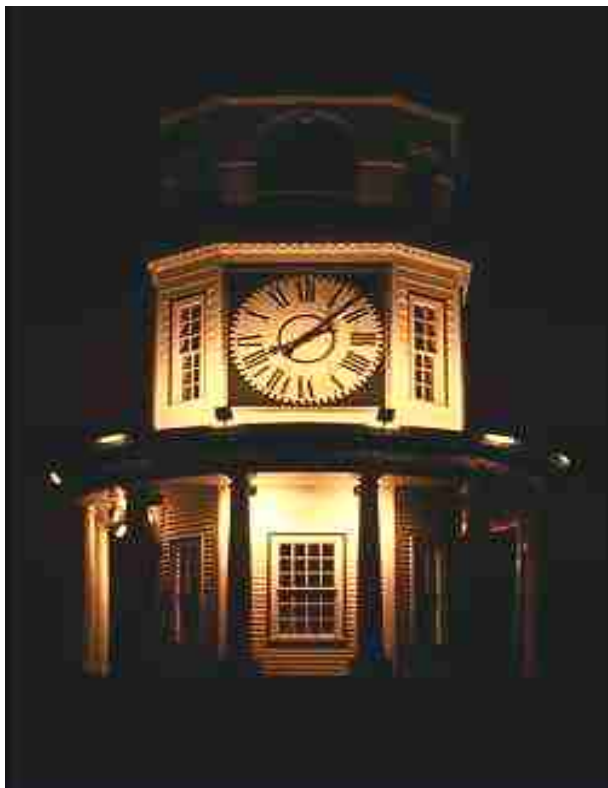
Stairway to Heaven

- Use data driven monitoring and management
- Focus on data that is actionable
- Get **EVERYONE** involved



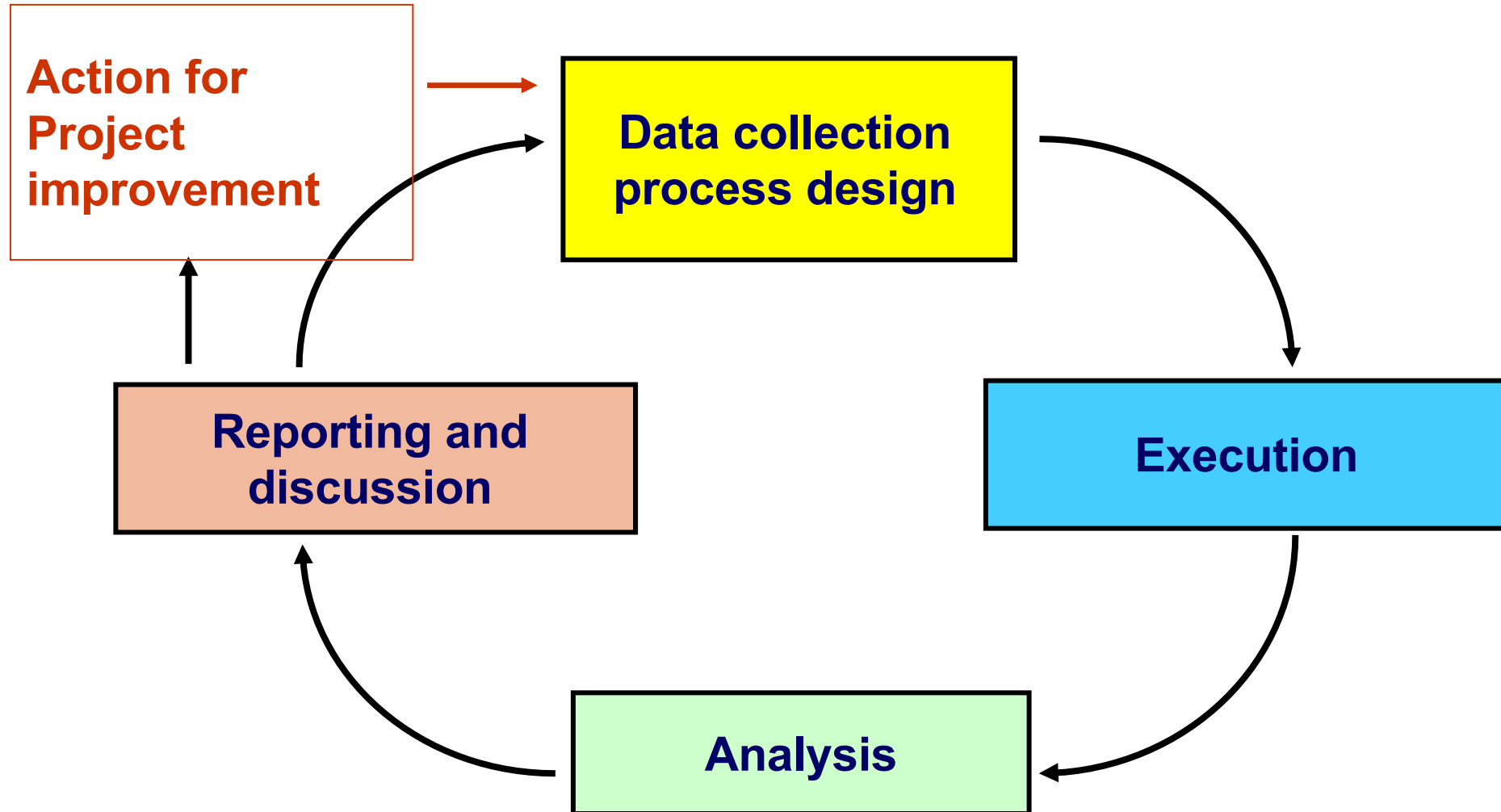
Timely vigilance with data is the key...

Data driven decision-making and processes enable evidence based success in a dynamic environment



- **Formula for success is dynamic**
 - Solution in one place may not work in another
 - Solution this quarter may not work next quarter
- **Scaling with success requires dynamic data systems**
 - Analytics discerns spatial and time trends
 - Frequent and small corrections succeed

Advantage of active data systems



Use data driven processes to enhance project implementation and scaling:

Utilize the DMAIC Process



Define



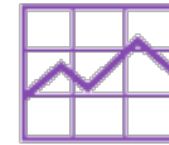
Measure



Analyze



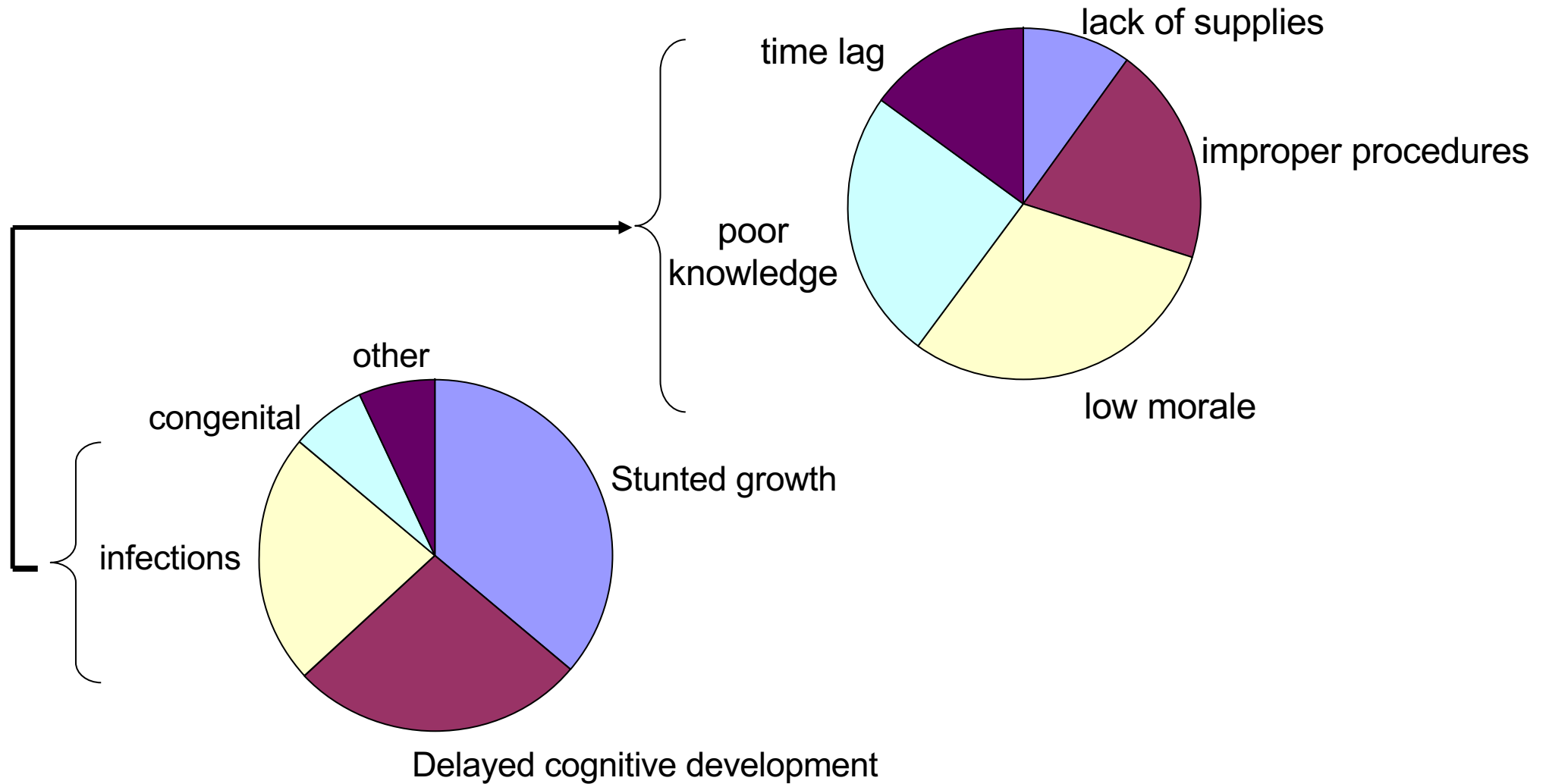
Improve



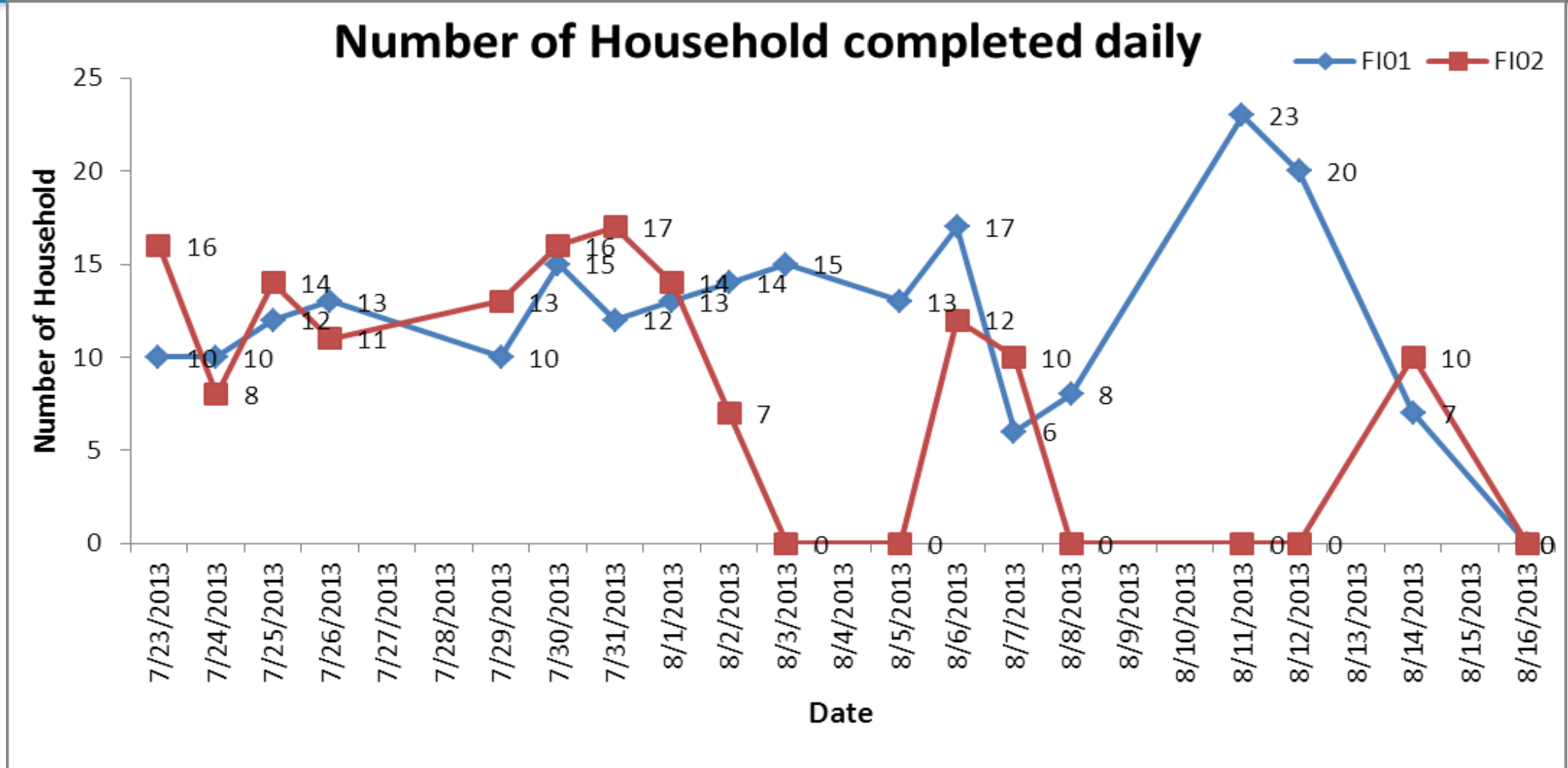
Control

- **Define:** State or set the goals of the project or process.
- **Measure:** Collect the relevant data based on simple and rapidly available indicators.
- **Analyze:** Use simple or advanced analytics to verify current status of goals, determine cause-and-effect relationships, seek out root cause of the problem.
- **Improve:** Take action based on the data analysis and decide how that action will be assessed.
- **Control:** Set up iterative ongoing monitoring based on data to see if new processes are working or not

If an adverse event is preventablethen the cause is poor implementation



Close tracking of work patterns provides gateway for guided action and coaching (ANCHUL Project, PHFI/IIPH Delhi)



Community Health Workers (CHW): promotion, information, participation



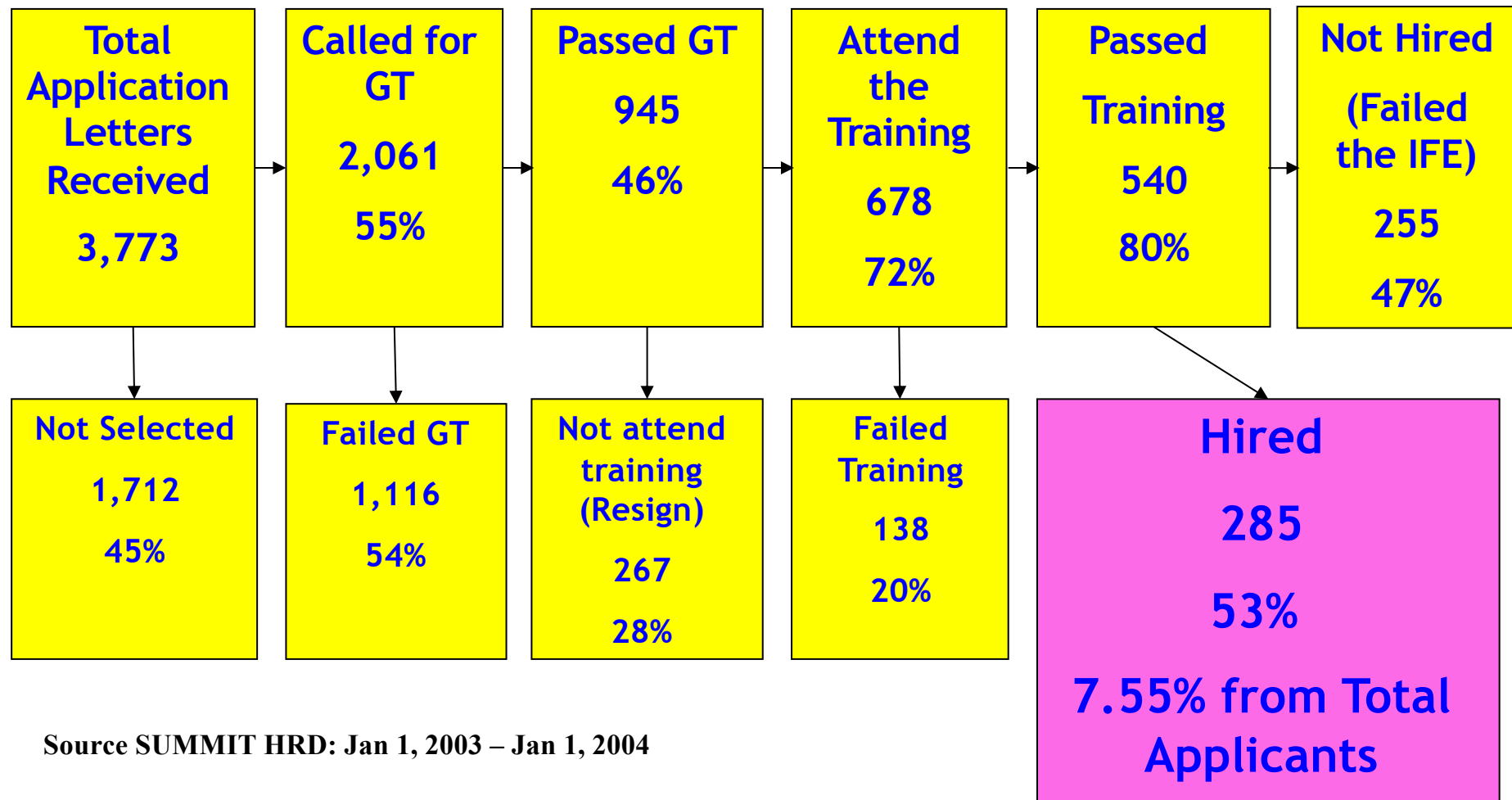
Staff selection process

- Began by using traditional review of CVs and recommendations, and interview. Selected trainees based on:
 - Health backgrounds
 - Recommendations
 - Good impression in interview
- **BUT: trainees selected experienced high failure rate in training (i.e. >50%)**

Staff selection process (cont'd)

- Based on review of recruitment data, traditional screening process was found to lack prediction of success for trainees. New more open process was developed.
- Criteria for selection
 - Motivation
 - Honesty
 - Intelligence
 - Compassion

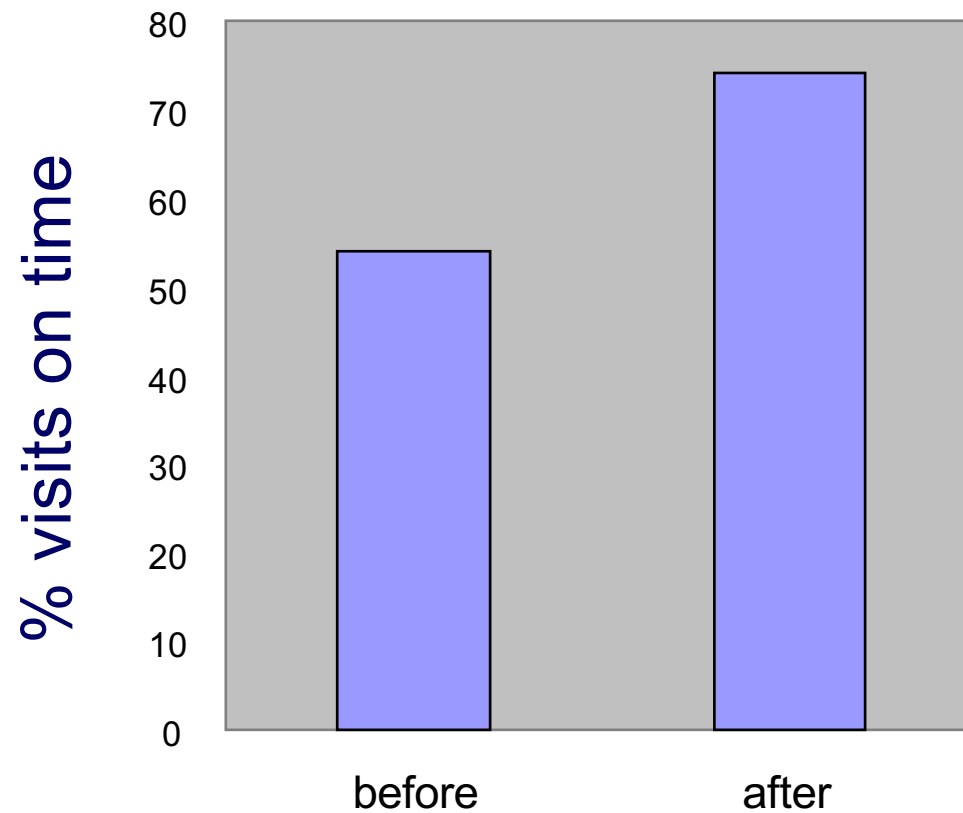
Data driven process selects successful trainees



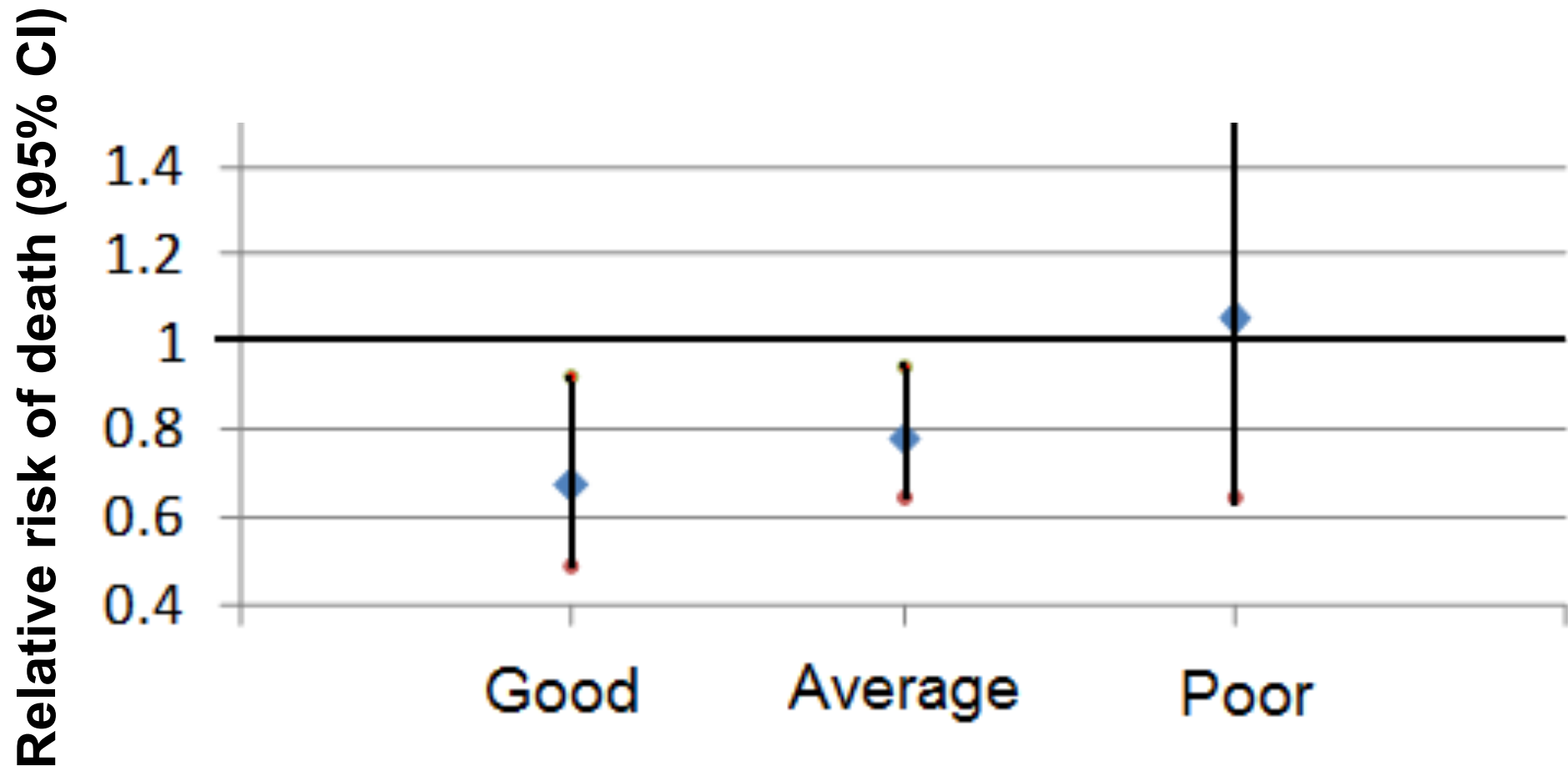
Home Visit Scheduling

- **Conventional:** field worker juggles their visitation schedule. Difficult to optimize due to unpredictable presence of clients in the home or planned clinics
- **New method using data:** joint scheduling with data management section based on fieldworker feedback on distance and problematic visits.
 - More visits done on-time
 - Facilitated scheduled supervision

Enhancement of on time interviews

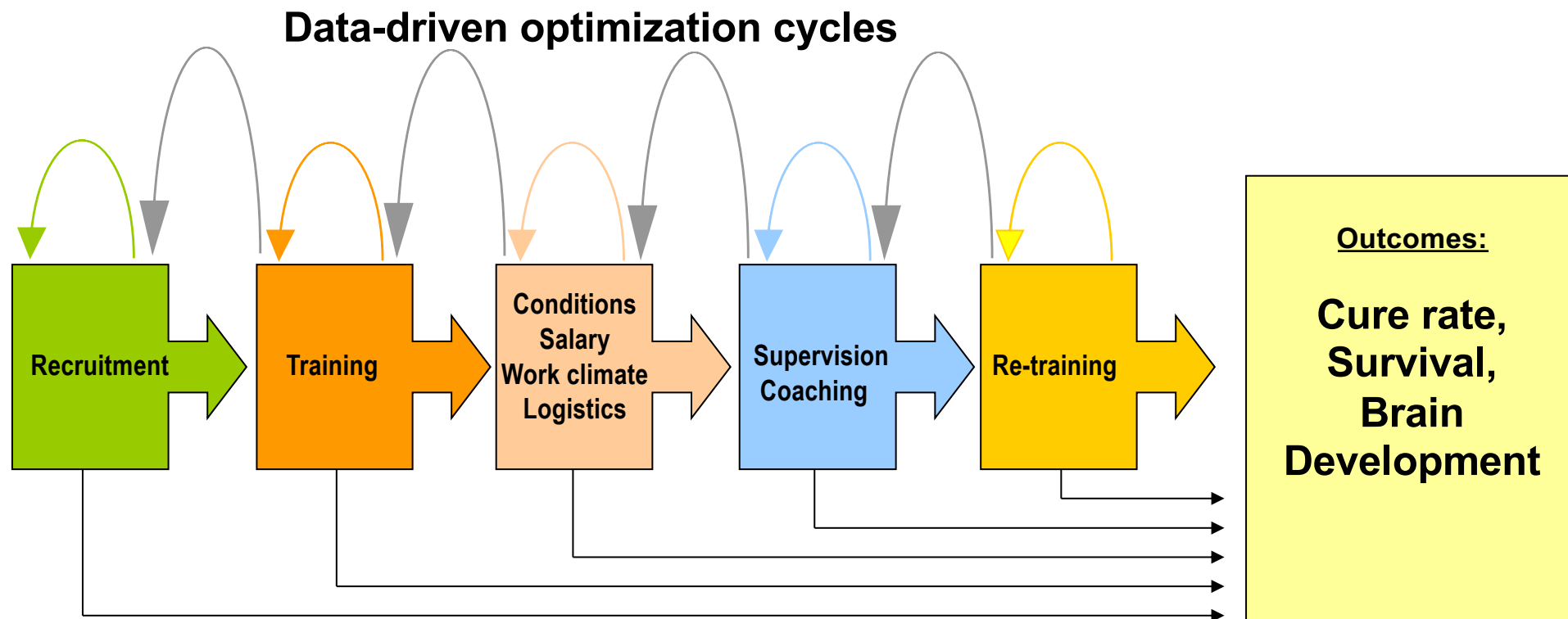


Performance of community facilitator and impact of intervention on infant death



Shankar AV et al., Food Nutr Bull 2009 30:S207

Date driven feedback cycles enhance effectiveness



A way forward...

- **Link inputs with process outcomes AND health outcomes**
- Use available data and tools as a starting point, and enhance as needed
- Promote use of data for **decisions that can be implemented**



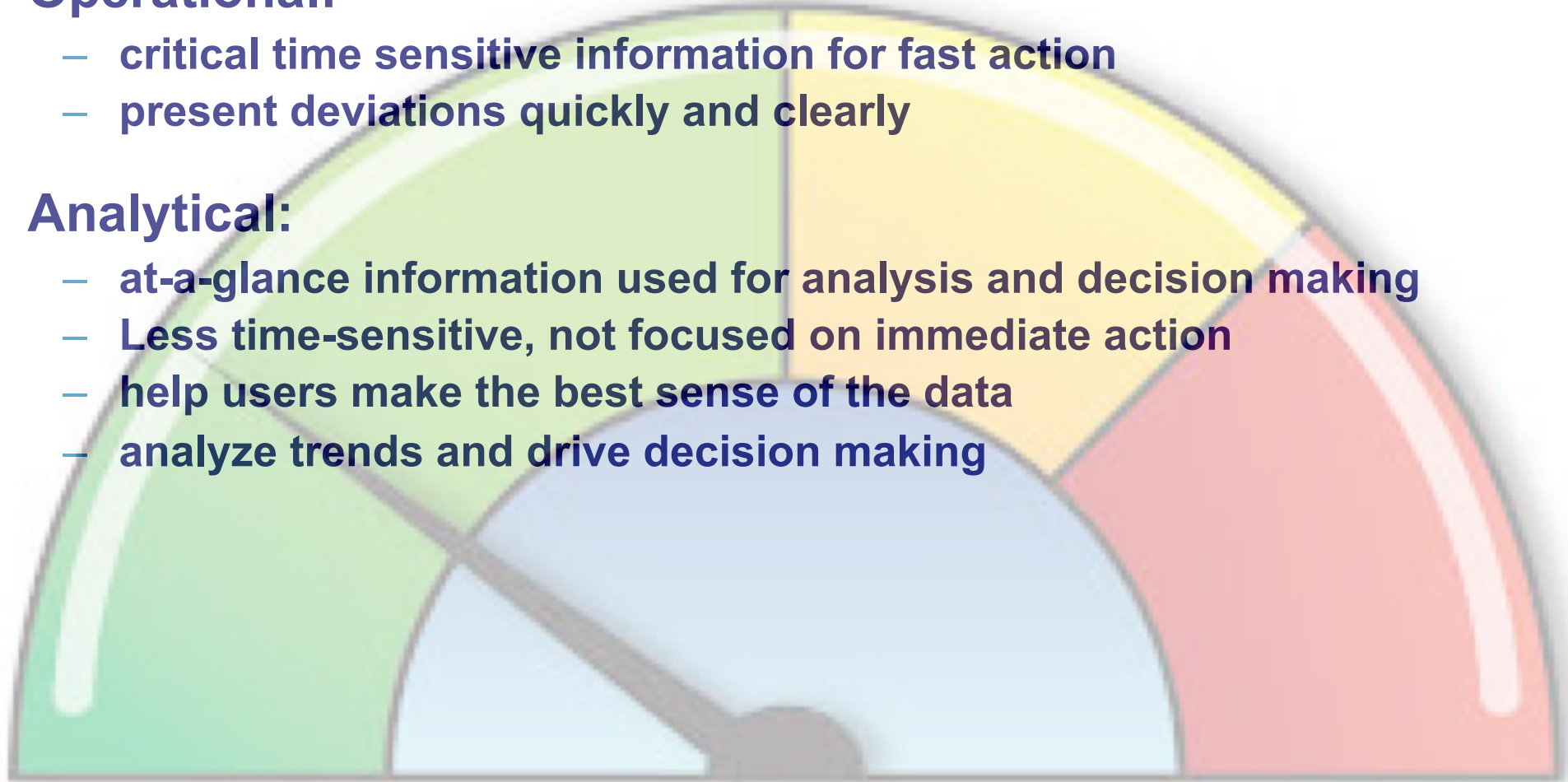
Different types of Dashboards

- **Operational:**

- critical time sensitive information for fast action
- present deviations quickly and clearly

- **Analytical:**

- at-a-glance information used for analysis and decision making
- Less time-sensitive, not focused on immediate action
- help users make the best sense of the data
- analyze trends and drive decision making



ZEIR Summary Dashboard ☆

Edit Dashboard Actions

Total Children Registered

86,648
Children registered

Total Children Seen

80,219
Children Seen

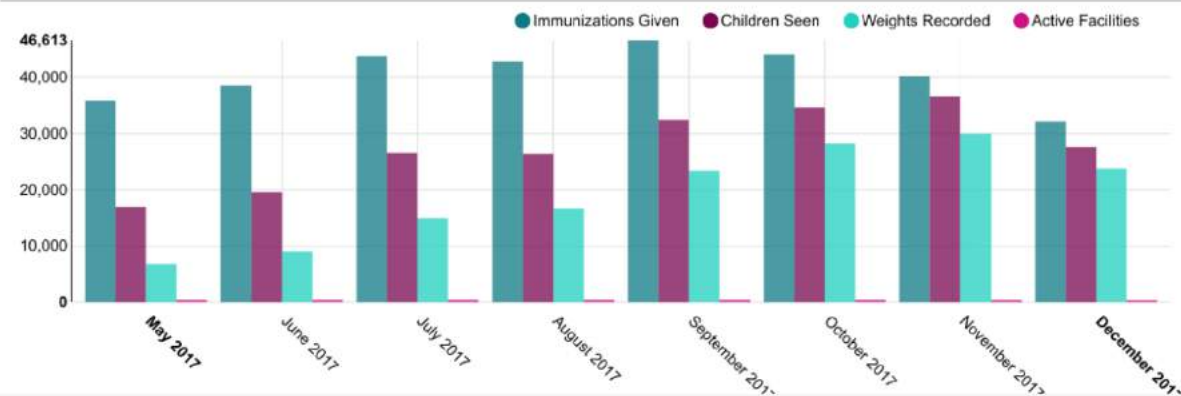
Total Weights Recorded

219,395
Weights recorded

Total Immunizations Given

981,100
Immunizations given

Key Activities - Last 12 Months



Encounters Filter

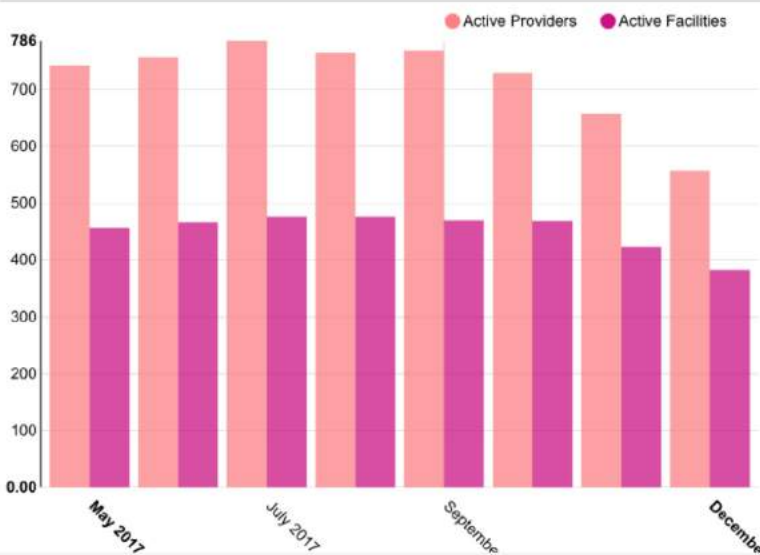
Since Until

District

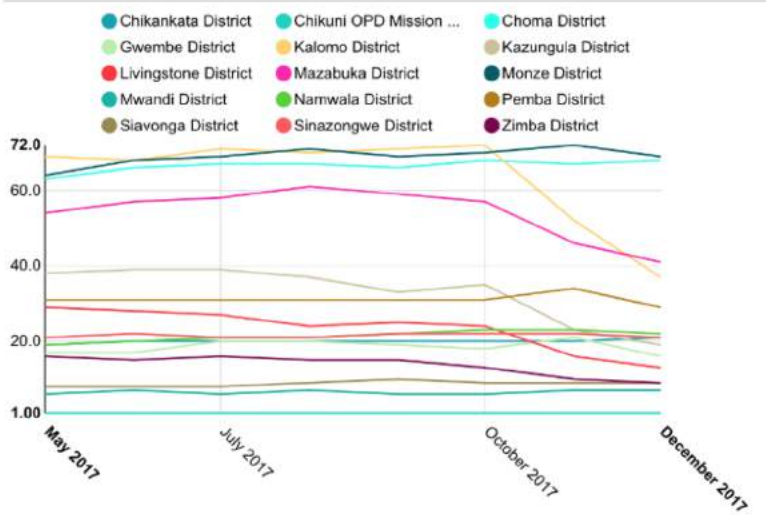
Facility

Provider

Active Users



Active Facilities by District



Rohingya Summary

Overview

Nutrition

Health

WASH

Child Protection

Education

C4D/Accountability Mechanism

Performance

Nutrition



55%

Total: 178,746
Target: 324,756

Health



12%

Total: 141,606
Target: 1,143,856

WASH



96%

Total: 1,722,429
Target: 1,800,000

Child Protection



59%

Total: 190,354
Target: 320,000

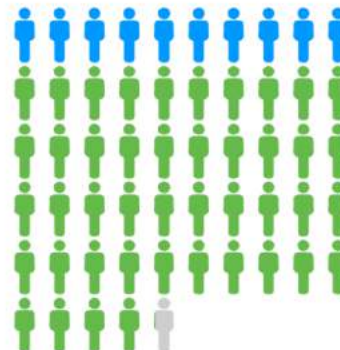
Education



52%

Total: 146,982
Target: 283,628

C4D/Accountability Mechanism



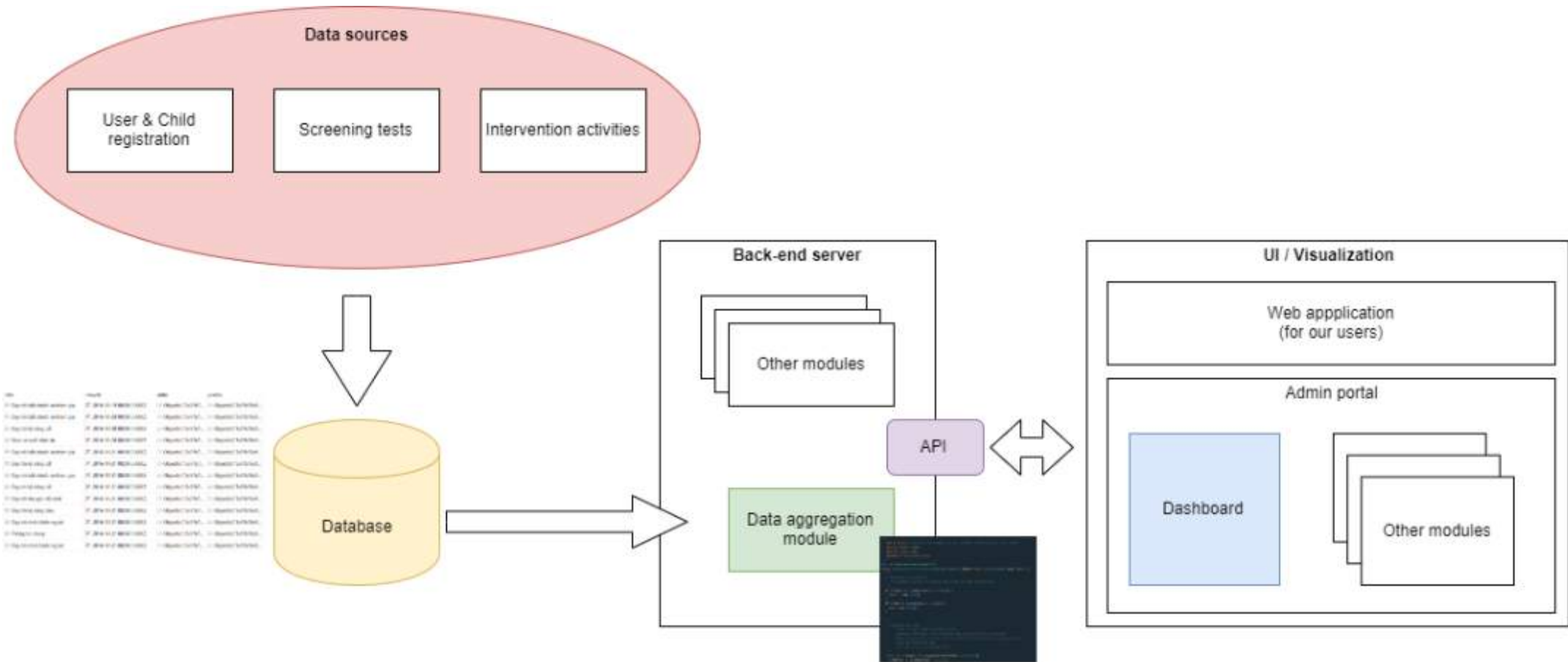
542%

Total: 1,708,859
Target: 315,000

Anatomy of a Dashboard

- Database
- Indicators
- Code
- Charts and tables
 - Static
 - Live
- Interpretation guidelines
- Action guidelines

Diagram of data to dashboard to action



Underlying technologies



Infrastructure



Saving Brains Workshop

Track 2: Data For Action

Final presentation

**Smart Care to support children with
autism reach their full potential**

prepared by:

Phuong Nguyen and Dang Trieu



Key considerations of a Dashboard

- **WHO** will use it and who will create it?
- **WHY** do those users need a dashboard?
- **WHAT** actions need to happen from use of the dashboard?
- **WHEN** and how often will the dashboard be used? Is this a short-term or long-term strategic solution?
- **WHERE** does the dashboard need to be viewed, e.g. desktop, mobile device, etc?
- **HOW** do its contents support your goals?



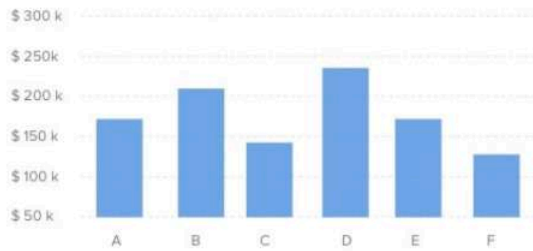
Purpose of a Dashboard

- Display of key information for decision-making
 - Relationships
 - Comparisons
 - Compositions
 - Distributions

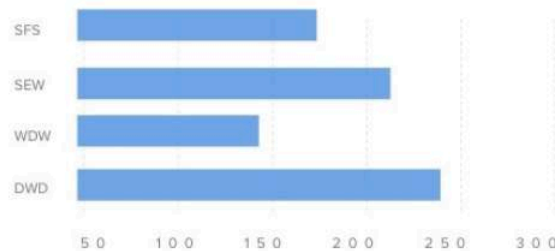
Relationships

Static

Column Chart



Bar Chart

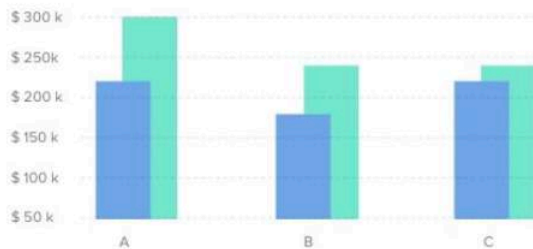


Over Time

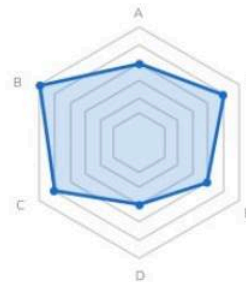
Line Chart (area beneath)



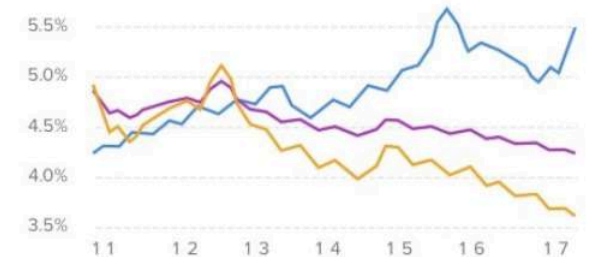
Multiple column Chart



Spider Plot



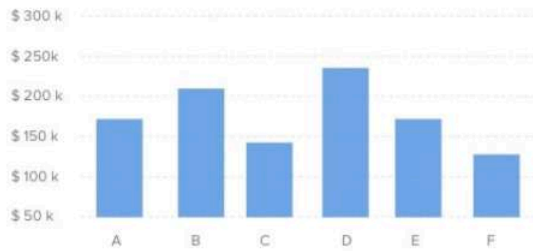
Line Chart (multiple)



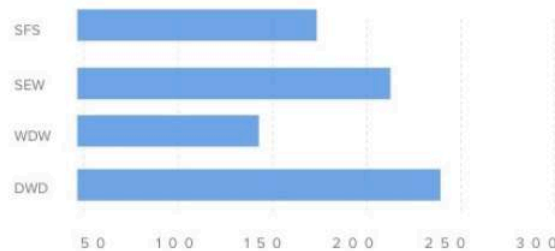
Comparisons

Static

Column Chart



Bar Chart

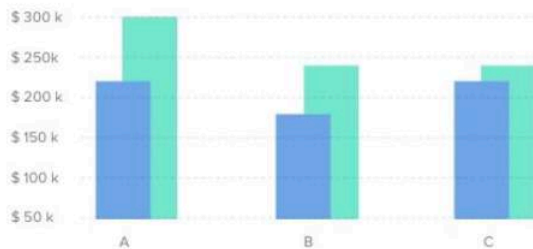


Over Time

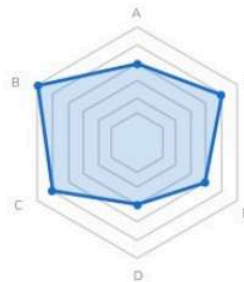
Line Chart (area beneath)



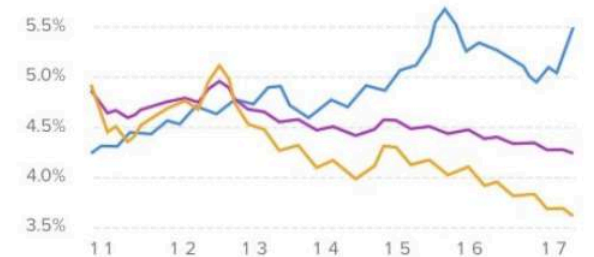
Multiple column Chart



Spider Plot



Line Chart (multiple)

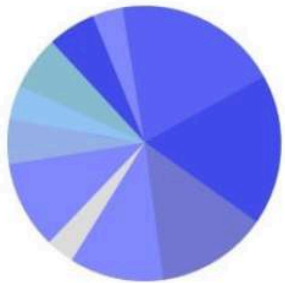


Compositions (Parts of a Whole)

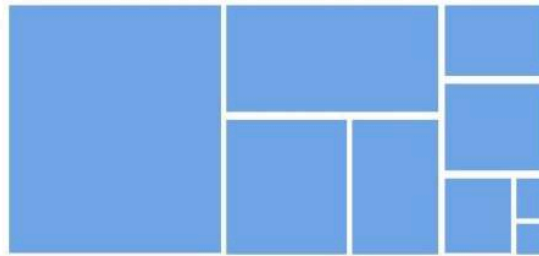
Static

Over Time

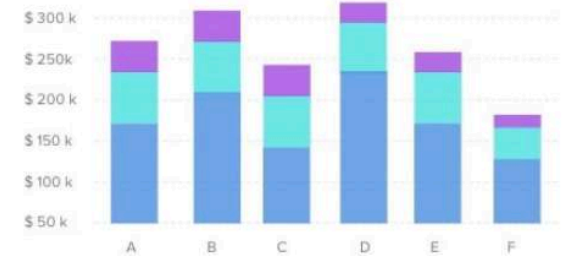
Pie Chart



Tree Map



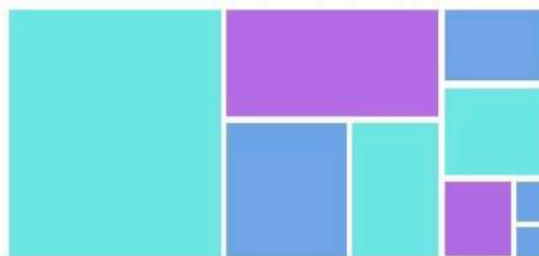
Stacked Column Chart



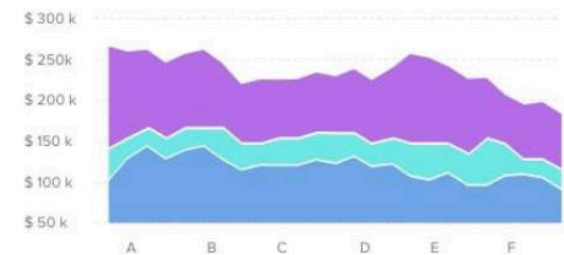
Donut Chart



Heat Map



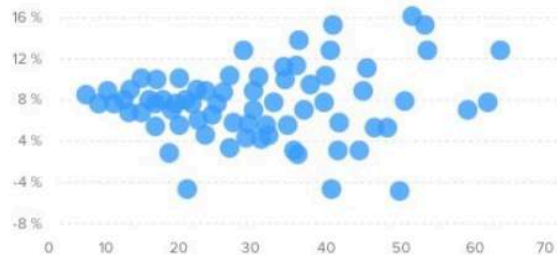
Stacked Area Chart



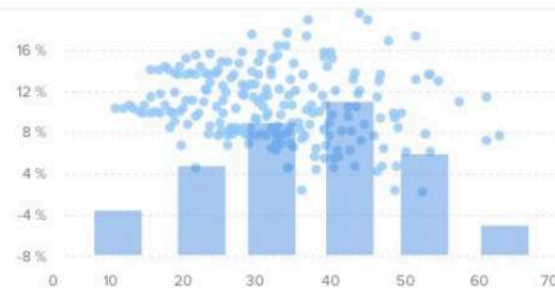
Distributions

Static

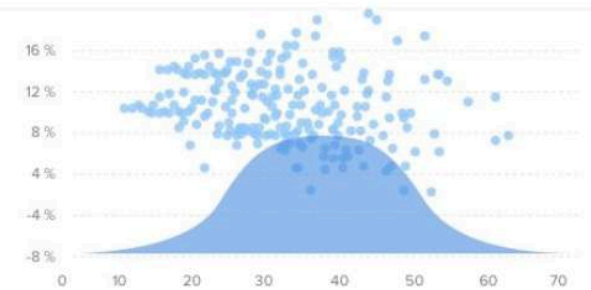
Scatter chart



Histogram chart



Bell curve



Database

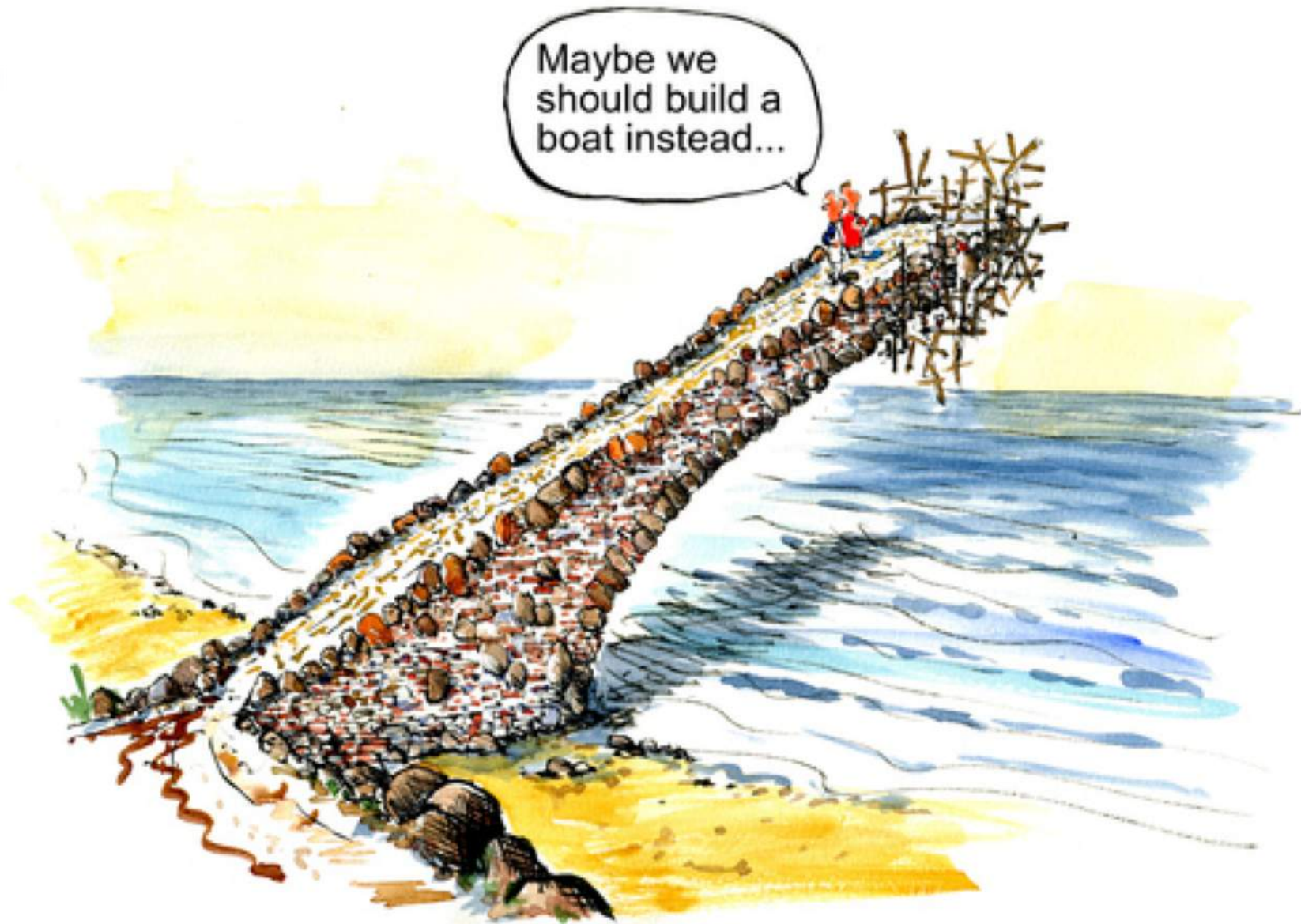
- What is the purpose:
 - House your data in a secure and structured way
 - Provide interoperability with analysis software
 - Enable links with other relevant data
- Common Pitfalls
 - No database management system is used
 - The system is not well designed
 - The personnel available cannot maintain it



I

REMEMBER M&E INFORMATION IS USEFUL
ONLY IF IT IS USED!

Indicators help you make the right choices

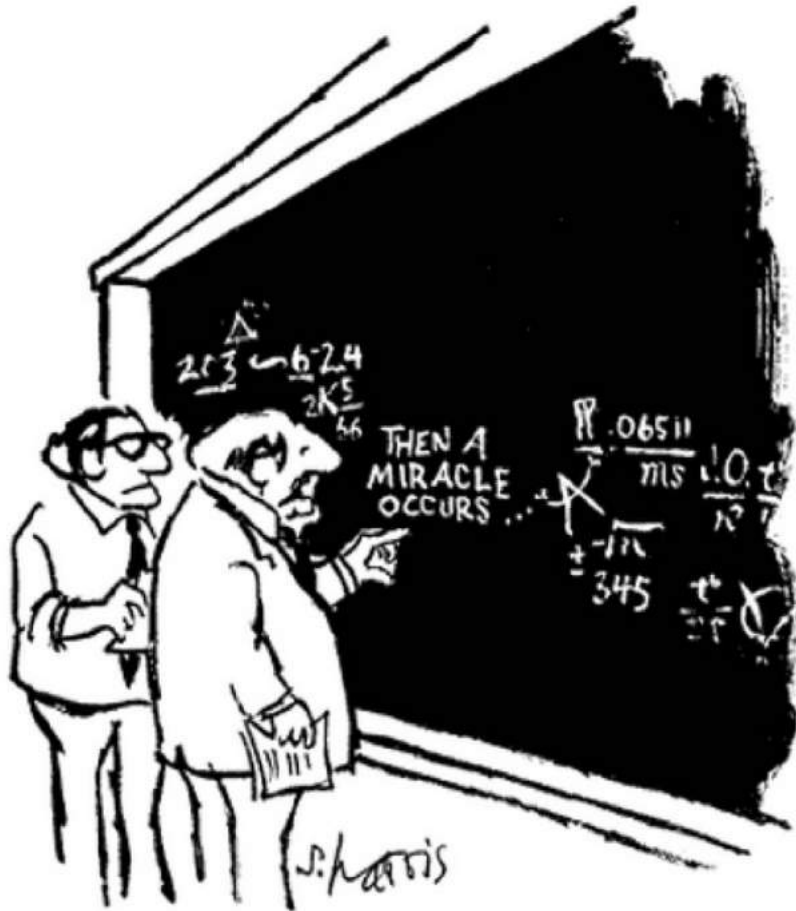


What are indicators

- Indicators are succinct measures that aim to describe as much about a system as possible in as few points as possible
- Indicators help us understand, compare, and improve an intervention program

The Good Indicators Guide: Understanding how to use and choose indicators, NHS

How to begin



"I think you should be more explicit here in step two."

- Good **measurement** depends on good understanding of the pathways of change.
- **Indicators** must be chosen and used in a way that relates very specifically to the objectives of the system in question.
- **Begin with conversation with the team.**
- Ask
 - How can we measure to understand how things work?
 - How can we understand how we might do things better?

10 Key Questions to Make Indicators

10 key questions

1. What is being measured?

2. Why is it being measured?

3. How is this indicator actually defined?

4. Who does it measure?

5. When does it measure it?

6. Will it measure absolute numbers or proportions?

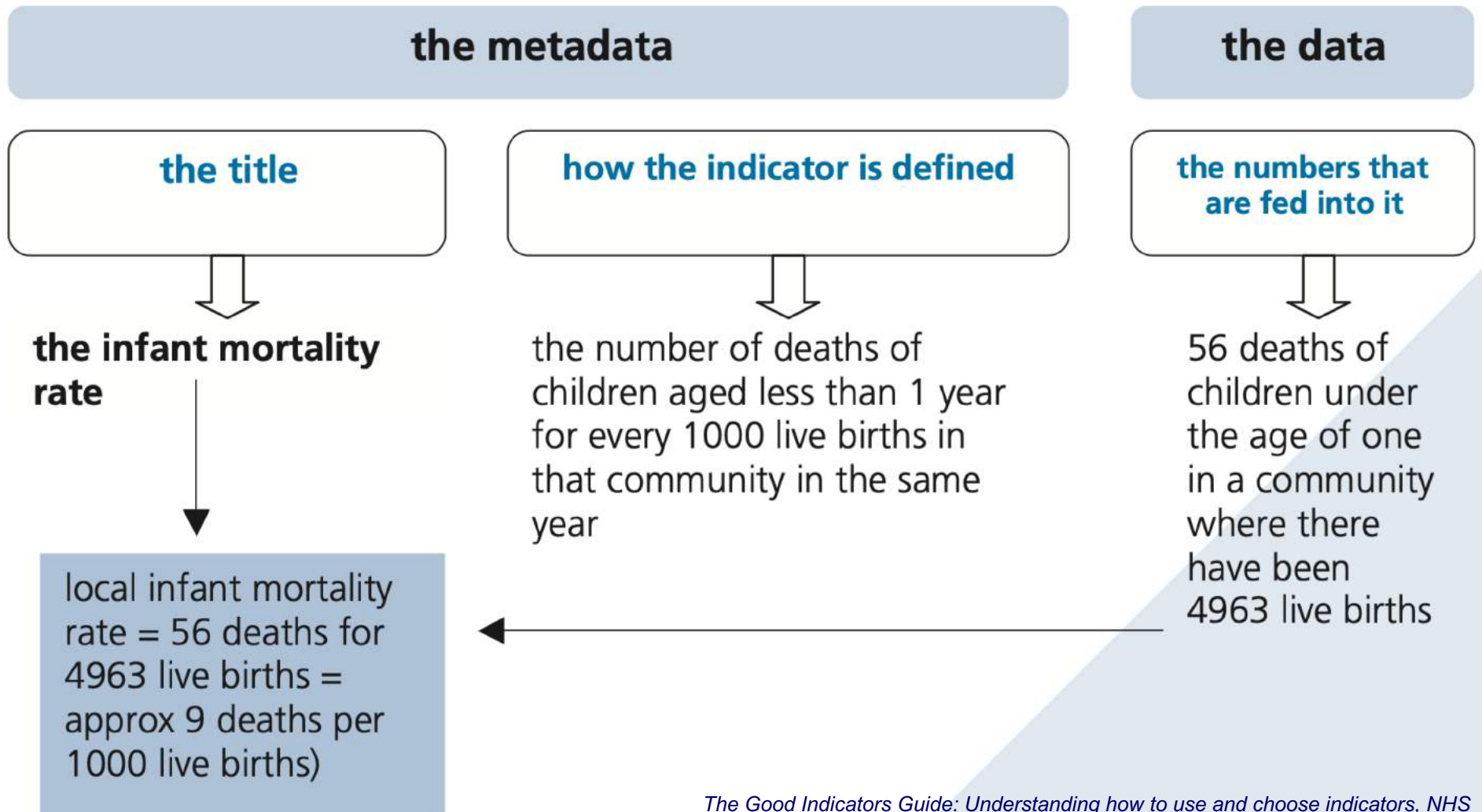
7. Where does the data actually come from?

8. How accurate and complete will the data be?

9. Are there any caveats/warnings/problems?

10. Are particular tests needed such as standardisation, significance tests, or statistical process control to test the meaning of the data and the variation they show?

Creating useful indicators



What is a meaningful indicator?

- What is the goal?
 - Will depend on the stakeholder
- What can you derive from the indicator?
 - What assumptions are embedded in the indicator?
- What actions do you know to take or avoid based on the indicator?
 - How and why

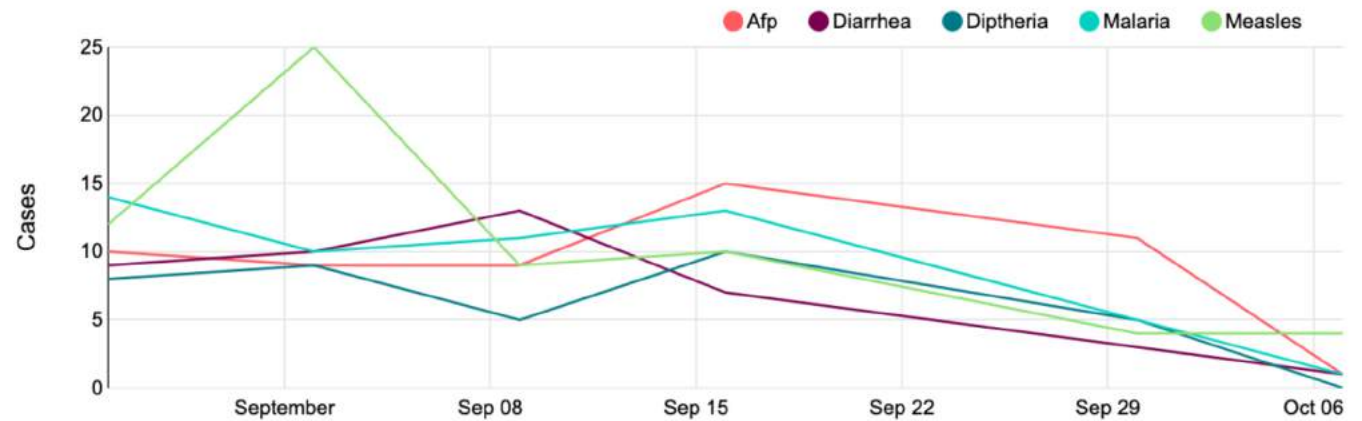
What is a meaningful indicator?

Total number of suspected cases

253
Cases



Suspected cases reported over time

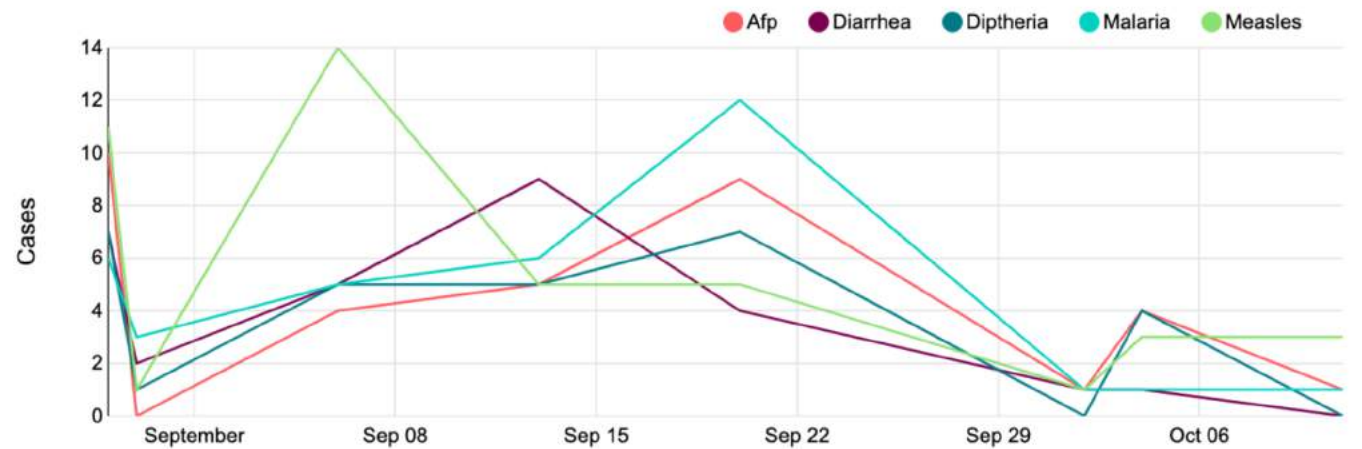


Total number of confirmed cases

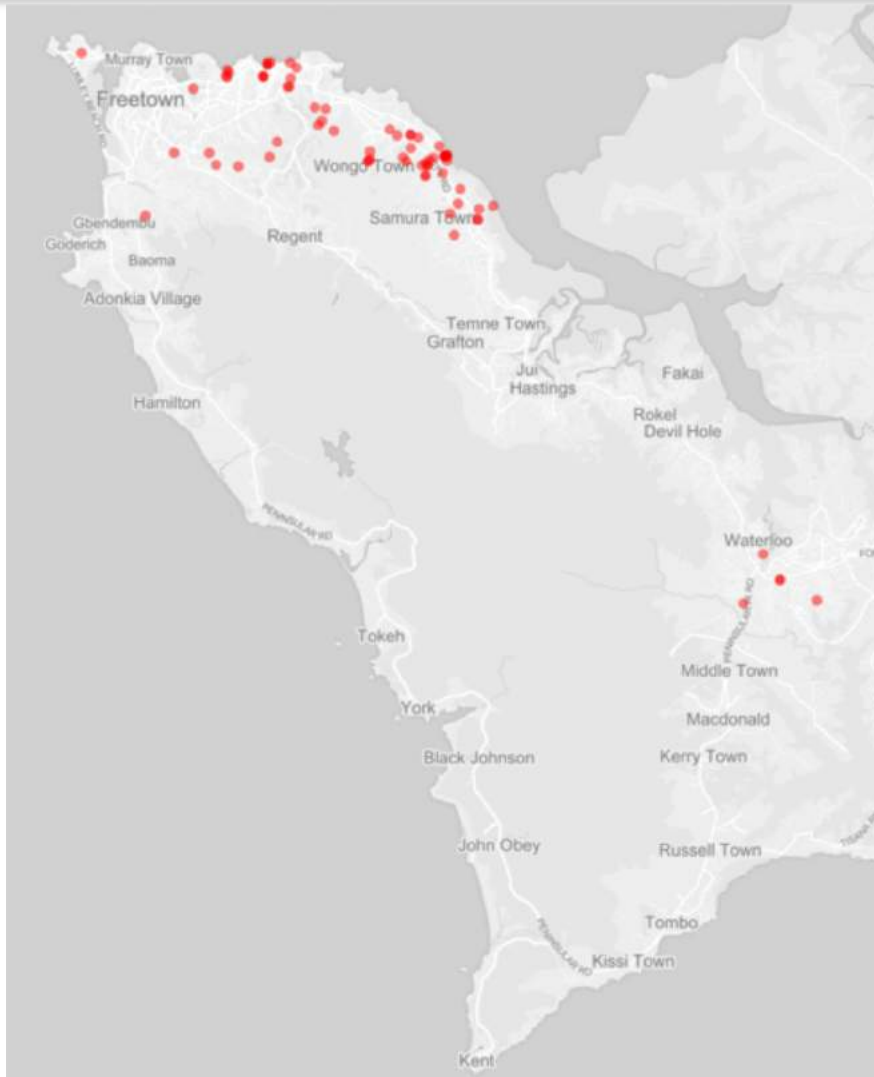
170
Cases



Confirmed cases reported over time



Creating useful indicators



Freetown, Sierra Leone



Indication for re-thinking your indicators

When variation is low:

- Ceiling or floor effects e.g. workers achieve a certain level of quality
- More data is required to understand the complete picture
- Start with the basic indicators first, e.g. number of visits

Within quality, start with indicators where your intervention process to pathway to change will have the greatest impact e.g. supervision of workers

- Think of adding qualitative indicators e.g. having photographs

Key Realities of Indicators

- Indicators, although essential in every improvement process, will not by themselves motivate people to change.
- Good communication bridges the gaps between measurement, understanding, and improvement.
- In order to influence people, indicators need to be presented in ways that are easy to understand and in ways that make changes to the system compelling and possible.
- Indicators can be adapted on an ongoing basis during an intervention implementation.

The Good Indicators Guide: Understanding how to use and choose indicators, NHS

Using Data for Change

Tradition

(*n.*) Peer pressure from dead people.

Changing hearts and minds

“A genuine leader is not a searcher for consensus, but a molder of consensus.”

Martin Luther King, Jr.

Civil Rights Leader

digital.com

10+ Hacks to overcome low dashboard use


- **Hack #1:** Appeal to people's emotions:
- **Hack #2:** Know and present for your audience
- **Hack #3:** Relate dashboard information to immediate action
- **Hack #4:** Incorporate users/ staff feedback in the dashboard
- **Hack #5:** Use dashboard to discuss progress during regular team meetings and reporting
- **Hack #6:** Encourage all cadres of team to make suggestions.

...hacking away...

- **Hack #7:** Appreciate the team for timely use of dashboard information
- **Hack #8:** Use the dashboard for mentoring and program improvement and not just for policing.
- **Hack #9:** Train the users/ share interpretation guide.
- **Hack #10:** Use dashboard information to communicate and advocate with stakeholders outside your organization eg Government.

...and hacking to the end

- **Hack #11:** Update indicators and make it fresh and exciting
- **Hack #12:** Be personally accountable for the use of the dashboard.



People change what they do less because they are given an analysis that shifts their thinking than because they are shown a truth that influences their feelings.

John P. Kotter

“ quote fancy