Data Collection and Analysis for Impact Evaluation

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3ie International Initiative for Impact Evaluation
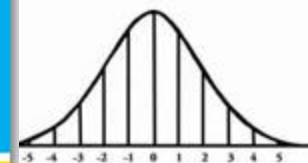
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UNICEF Impact Evaluation Briefs

POLL: In your experience, how are data collection & analysis methods for an evaluation usually decided?

1. UNICEF evaluation manager/steering committee defines them in **Terms of Reference** (ToR)

2. Evaluation team suggests revision to ToR in **inception report**

3. Evaluation team suggests revision to ToR in their **proposal**

4. Evaluation team recommends methods in their **proposal**

5. **Separate evaluation design project** before the evaluation

6. **Other**

1. Understand the different types of questions in the
Key Evaluation Questions (KEQs)

Types of Questions in Impact Evaluation

TYPE OF QUESTION	EXAMPLES
Normative	What were the priority needs? What would be considered high quality processes?
Descriptive	What were conditions before and after the program/policy? What changes have occurred – intended and unintended? What happened during implementation? What activities were undertaken? What was the context in which the program/project was undertaken?
Causal	What produced the changes? To what extent were they due to the program/project? What other factors contributed to the observed changes? What were the impacts of the program/project?
Evaluative	Was implementation good quality? Was the program/project effective? Was it good, taking into account intended and unintended impacts? Is it the best option compared to other options? Considering the resources used, was it worthwhile?

Unpacking different question types in a Key Evaluation Question

How effective was the program/project?

NORMATIVE	• What were desirable results?
DESCRIPTIVE	• To what extent were these achieved?
CAUSAL	• Were these results (at least partly) produced by the program/project?
EVALUATIVE	• What level of success does this represent?

2. Map possible data sources across the KEQs (and sub-questions), using a complementary mix of methods

EXAMPLES OF KEY EVALUATION QUESTIONS	PROGRAMME PARTICIPANT SURVEY	KEY INFORMANT INTERVIEWS	PROJECT RECORDS	OBSERVATION OF PROGRAMME IMPLEMENTATION
WHAT WAS THE QUALITY OF PROGRAMME IMPLEMENTATION?		✓	✓	✓
TO WHAT EXTENT WERE THE PROGRAMME OBJECTIVES MET?	✓	✓	✓	
WHAT OTHER IMPACTS DID THE PROGRAMME HAVE?	✓	✓		
HOW COULD THE PROGRAMME BE IMPROVED?		✓		✓

Example of complementary data

	WFP/UNICEF/IFPRI Impact Evaluation of Cash and Food Transfers at Early Childhood Development Centers in Karamoja, Uganda
Child assessment	Including direct measurement of cognitive and noncognitive development, anthropometry, and anemia): completed for one child aged 3-5 years in each designated household at baseline, and for three children in each designated household at endline
Early Childhood Development caregiver questionnaire	Completed for each sampled ECD center
Community questionnaire	Completed for each community in which there is a sampled ECD center

Example of complementary data

	Impact Evaluation Report External Evaluation of the Mchinji Social Cash Transfer Pilot 2010
Qualitative	**Interviews** in-depth interviews focus groups with children and other stakeholders key informant interviews **Observation/Photos** Intervention and comparison households to document the situation of these households over time.
Quantitative	**Survey based on:** the Malawi Integrated Household Survey II, Demographic and Health Surveys from Measure DHS, Income and Expenditure Surveys from the World Bank, Instruments from the Kalomo Cast Transfer Study in Zambia, and surveys from the Amajuba Orphan Study in Kwa Zulu Natal South Africa.

Mobile data collection

- Lower cost
- Better geographic coverage
- Better error checking
- Scope to add categories for open ended questions
- Faster analysis and reporting

- SMS, Java or Android

Mariel Lazcano using FLOW to interview a community member. Photo: Water for People http://newswatch.nationalgeographic.com/2012/01/24/the-cellphone-that-keeps-the-water-and-data-flowing/ http://humanitarian-nomad.org/wp-content/themes/nomad/presentations/NOMAD-MDC-Research.pdf

Big data

ESTIMATING POVERTY LEVELS IN CÔTE D'IVOIRE

In another study (Smith et al., 2012), researchers used CDRs to map poverty levels in Côte d'Ivoire. No full survey of the country's population has been published since a civil war in the 1990s. Researchers used anonymized CDRs of five million Orange telecommunications customers between December 2011 and April 2012 to assess both the level of activity among subscribers and locations where calls were made. Higher levels of mobile communication and wider range of calls are a proxy indicator for prosperity. Using this data, poverty levels of eleven regions of Côte d'Ivoire were quantified. The estimate was validated when compared with a multi-dimensional poverty index created by University of Oxford, which uses indicators such as poor health, lack of education, inadequate living standard and threat from violence among other factors. This research validated the possibility of making poverty maps using CDRs.

The previous three studies show that in countries where information regarding census, socioeconomic levels or poverty indicators is lacking, CDRs may be used to estimate these variables on an ongoing basis, thus augmenting and complementing survey data.

CDRs can provide a proxy indicator for assessing regional poverty levels, and can valuably augment national surveys in estimating changes associated with a growing economy.
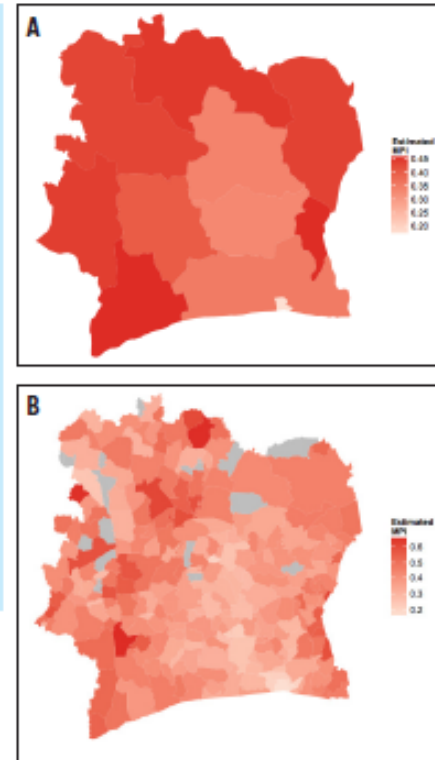
Figure 5. Figure 5A shows poverty map estimated based on the antennas in the eleven major regions of Cote d'Ivoire, where the darker areas indicate higher estimated poverty level. Figure 5B shows the Department poverty levels as approximated by the model used on regional level indicating the finer granularity possible when using CDRs. Source: Smith et al., 2012.

United Nations Global Pulse (October 2013) Mobile Phone Network Data for Development.

Decentralized data gathering

Press Release - Diagnosis of Polio in Deir-Ez-Zor Governorate

🕐 19:55 Oct 18 2013 ⊕ Deir ez-Z...

■ Aggregate Report (تقرير إجمالي)   ■ Summary Report (تقرير ملخص)

■ Disease Spread/Epidemic (أوبئة)

Description

SYRIA - Confirmation of Polio Outbreak in Deir-Ez-Zor Governorate

Several reports were received from District Level Officers (DLOs) of the ACU-run Early Warning and Response Network (E-WARN), which covers the Syrian opposition-controlled areas, identifying several of cases of suspected Acute Flaccid Paralysis (AFP) in the Deir-Ez-Zor governorate. AFP is a common indicator of acute polio, though it may also be associated with a number of other pathogenic agents.

Based on the field outbreak investigation mission, the ACU Rapid Response Teams (RRTs) have verified that of the 22 reported cases, all were children below 5 years of age with symptoms consistent with the standard case definition of AFP. The cases were distributed in several areas in Deir-Ez-Zor, and in the town of Sbeikhan in particular. In order to confirm the causal agent, stools specimens were collected and shipped to a WHO-compliant laboratory in Turkey, with facilitation from the Turkish government authorities. One of the specimens tested positive for the wild poliovirus. The Health Department of the ACU is currently engaged in developing an urgent response plan concentrating on organizing an immediate mass vaccination campaign and other appropriate prevention and control measures, in collaboration with corresponding Turkish authorities, UN agencies, donors, and local institutions.

Polio is a highly infectious disease caused by a virus which invades the nervous
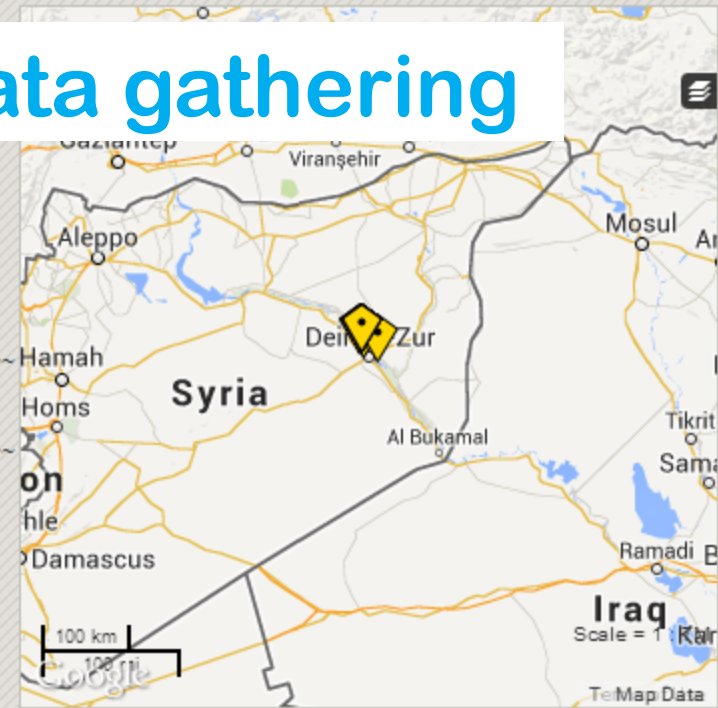
Additional Reports

2 missing	🕐 15:54 May 02, 2011
⊕ dayr azzawr, 0 Kms	
عادل خليف الشحاذة	🕐 19:32 May 07, 2011
⊕ Dayr az-zawr, 0 Kms	
	🕐 03:03 May 13, 2011

- Data via text messages, email, twitter and web-forms.

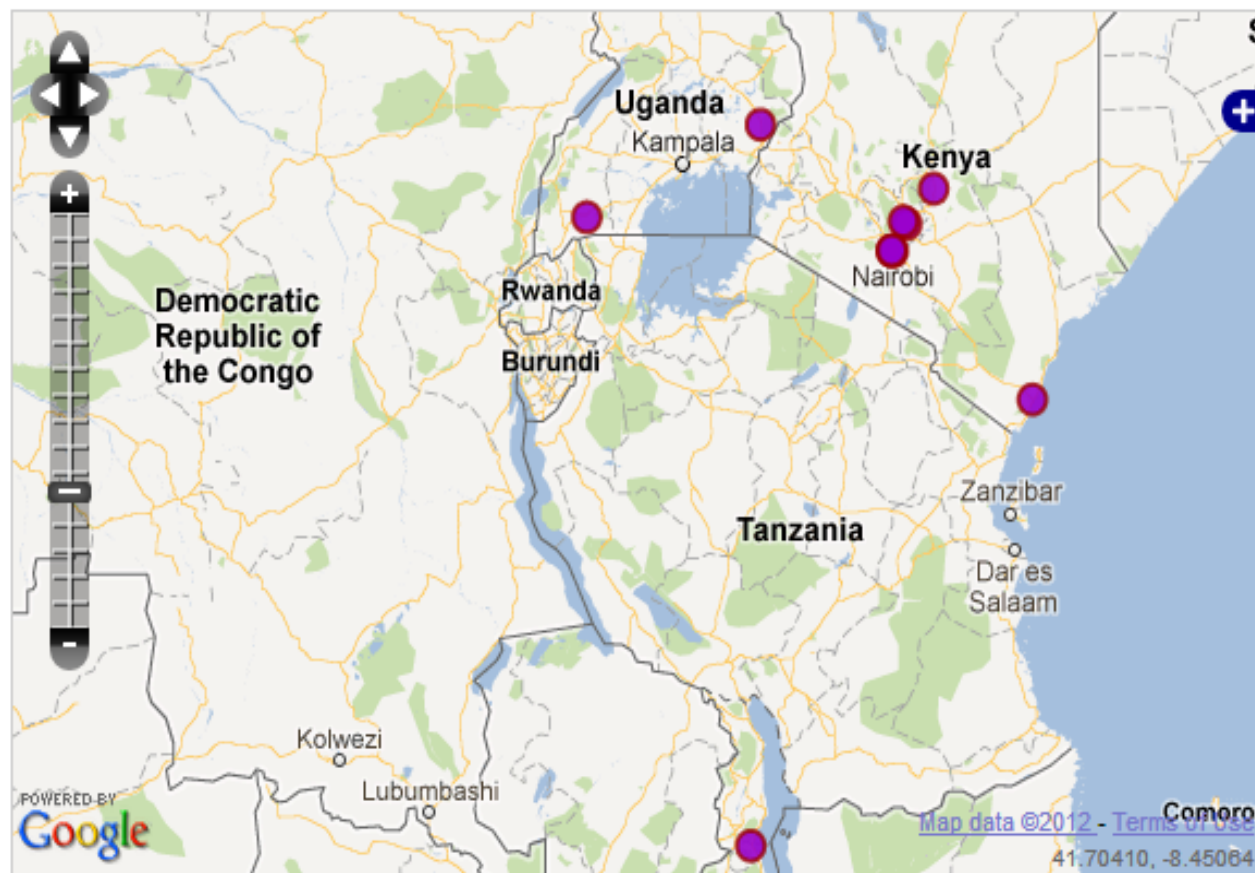- Decentralized data collection

- Immediate reporting and analysis

https://syriatracker.crowdmap.com/reports/view/3937
http://ushahidi.com/

Decentralized data gathering

STOP STOCK-OUTS!
Ensure Access to Essential Medicines for All

↓ CATEGORY FILTER

- **All Categories**
- **First-line antimalarials (AMs)**
- **Zinc 20mg tablet**
- **Benzathine penicillin**
- **First line ARVs**
- **Metronidazole 200mg tablet**
- **Ciprofloxacin 250 or 500mg tablet**
- **Amoxicillin suspension**
- **Ceftriaxone 250mg or 1g vial**
- **Cotrimoxazole suspension**
- **ORS - Diarrhea**

Map data ©2012 - Terms of Use
41.70410, -8.45064

Medicine stock-outs still plague Kenya, Malawi, Uganda and Zambia

The map above shows stock-outs of essential medicines collected via SMS during the pill check week.

Community mapping
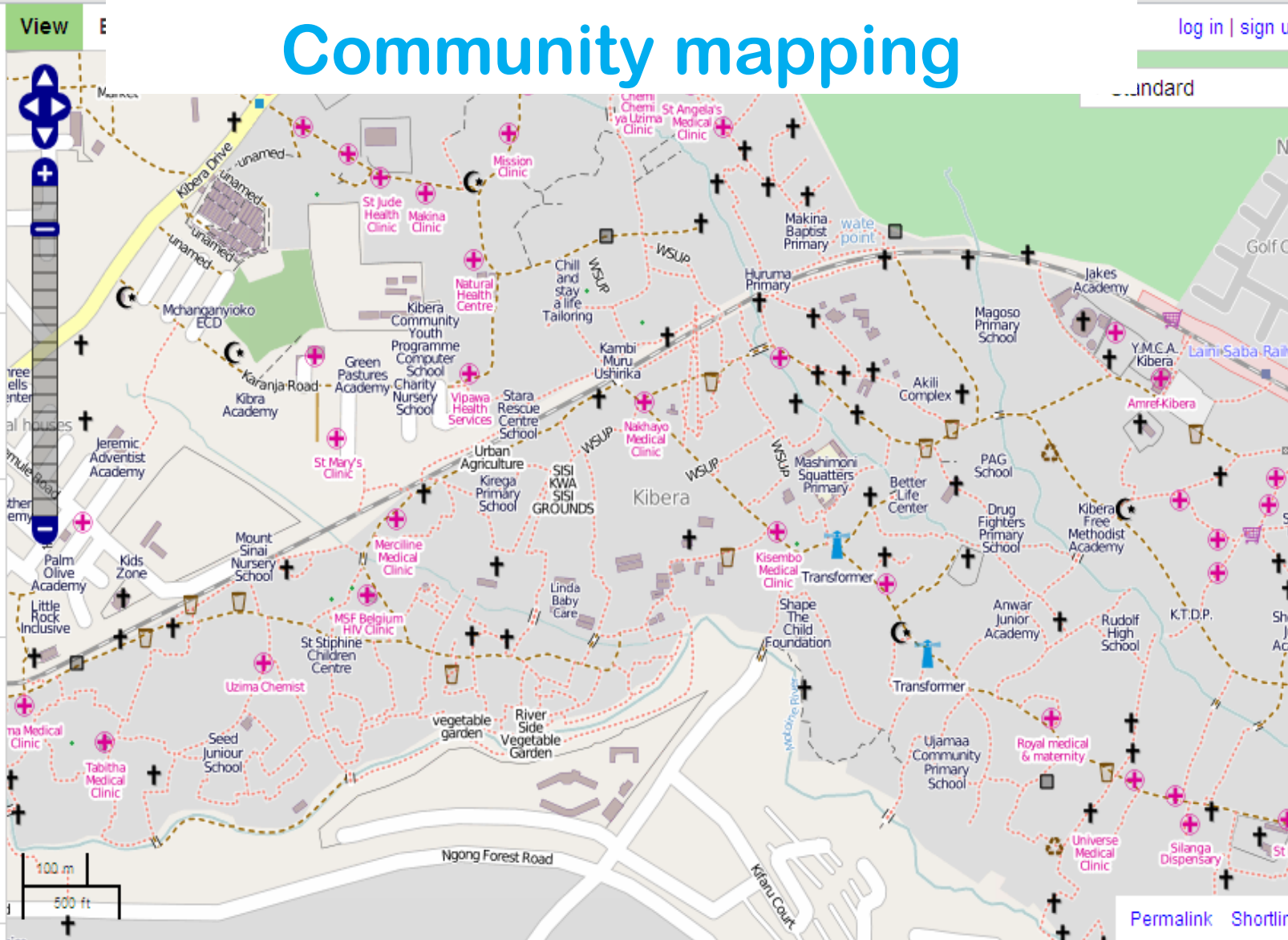
Some more methods of data collection

Individuals:

Convergent Interviewing: asking probing questions to interviewees and then using reflective prompts and active listening to ensure the conversation continues.

Deliberative Opinion Polls: providing information about the issue to respondents to ensure their opinions are better informed.

Email Questionnaires: distributing questionnaires online via email.

Face to Face Questionnaires: administering questionnaires in real time by a researcher reading the questions (either face to face or by telephone).

Global Assessment Scales: providing an overall rating of performance across multiple dimensions (also called a rubric).

Goal Attainment Scales: recording actual performance compared to expected performance using a 5 point scale from -2 (much less than expected) to +2 (much more than expected).

Internet Questionnaires: collecting data via a form (with closed or open questions) on the web.

Interviews: in-depth, structured, semi-structured, or unstructured.

Key Informant Interviews: interviewing people who have particularly informed perspectives.

Logs and Diaries: monitoring tools for recording data over a long period of time.

Mobile Phone Logging: Targeted gathering of structured information using devices such as smartphones, PDAs, or tablets.

Peer/Expert Reviews: Drawing upon peers or experts with relevant experience and expertise to assist in the evaluation of some aspect or all of a project.

Photo Voice: promoting participatory photography as an empowering option of digital storytelling for vulnerable populations.

Photolanguage: eliciting rich verbal data where participants choose an existing photograph as a metaphor and then discuss it.

Polling Booth: collect sensitive information from participants anonymously .

Postcards: collecting information quickly in order to provide short reports on evaluation findings (or an update on progress).

Projective Techniques (photo-elicitation): participants selecting one or two pictures from a set and using them to illustrate their comments about something.

Seasonal Calendars: analysing time-related cyclical changes in data.

Sketch Mapping: creating visual representations ('map') of a geographically based or defined issue.

Stories (Anecdote): providing a glimpse into how people experience their lives and the impact of specific projects/programs.

Survey: collecting data in response to structured questions.

Telephone Questionnaires: administering questionnaires by telephone.

Groups:

After Action Review: bringing together a team to discuss a task, event, activity or project, in an open and honest fashion.

Brainstorming: focusing on a problem and then allowing participants to come up with as many solution as possible.

Card Visualization: brainstorming in a group using individual paper cards to express participants thoughts about particular ideas or issues.

Concept Mapping: showing how different ideas relate to each other - sometimes this is called a mind map or a cluster map.

Delphi Study: soliciting opinions from groups in an iterative process of answering questions in order to gain a consensus.

Dotmocracy: collecting and recognizing levels of agreement on written statements among a large number of people.

Fishbowl Technique: managing group discussion by using a small group of participants to discuss an issue while the rest of the participants observe without interrupting.

Focus Groups: discovering the issues that are of most concern for a community or group when little or no information is available.

Future Search Conference: identifying a shared vision of the future by conducting a conference with this as its focus.

Hierarchical Card Sorting: a participatory card sorting option designed to provide insight into how people categorize and rank different phenomena.

Keypad technology: gauging audience response to presentations and ideas in order to gain provide valuable feedback from large group settings.

Mural: collecting data from a group of people about a current situation, their experiences using a service, or their perspectives on the outcomes of a project.

ORID: enabling a focused conversation by allowing participants to consider all that is known (Objective) and their feelings (Reflective) before considering issues (Interpretive) and decisions (Decisional).

Q-methodology: investigating the different perspectives of participants on an issue by ranking and sorting a series of statements (also known as Q-sort).

SWOT Analysis: reflecting on and assessing the Strengths, Weaknesses, Opportunities and Threats of a particular strategy.

World Cafe: hosting group dialogue in which the power of simple conversation is emphasised in the consideration of relevant questions and themes.

Writeshop: a writing workshop involving a concentrated process of drafting, presenting, reviewing and revising documentations of practice

Observation:

Field Trips: organizing trips where participants visit physical sites.

Non-participant Observation: observing participants without actively participating.

Participant Observation: identifying the attitudes and operation of a community by living within its environs.

Photography/video: discerning changes that have taken place in the environment or activities of a community through the use of images taken over a period of time.

Transect: gathering spacial data on an area by observing people, surroundings and resources while walking around the area or community.

Physical measurements:

Biophysical: measuring physical changes over a period of time related to a specific indicator by using an accepted measurement procedure.

Geographical: capturing geographic information about persons or objects of interest such as the locations of high prevalence of a disease or the location of service delivery points.

Existing documents and data:

Big data: data sets that are so voluminous and from such different sources that traditional analysis methods are not feasible or appropriate.

Official Statistics: obtaining statistics published by government agencies or other public bodies such as international organizations. These include quantitative or qualitative information on all major areas of citizens' lives such as economic and social development, living conditions, health, education, the environment.

Previous Evaluations and Research: using the findings from evaluation and research studies that were previously conducted on the same or closely related areas.

Project Records: retrieving relevant information from a range of documents related to the management of a project such as the project description, strategic and work plans, budget and procurement documents, official correspondence, minutes of meetings, description and follow-up of project participants, progress reports.

Reputational Monitoring Dashboard: monitoring and quickly appraising reputational trends at a glance and from a variety of different sources.

More information on these other methods

Strategies for combining qual and quant data

STRATEGY	Example
ENRICH	Use qual data to get more information on issues identified in quant data
EXAMINE	Generate hypotheses from qual data and test with quant data
EXPLAIN	Use qual data to explain patterns in quant data
TRIANGULATE	Verify or challenge results from quant data using qual data (or vice versa)

Key Evaluation Questions

Qualitative Data   Quantitative Data
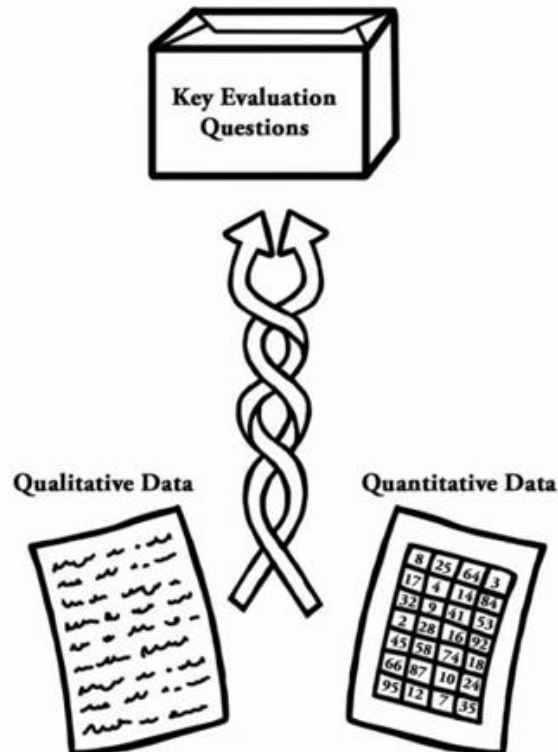
Collecting data from children

Climate Change and Environmental Education. A companion to the Child Friendly Schools Manual. unicef
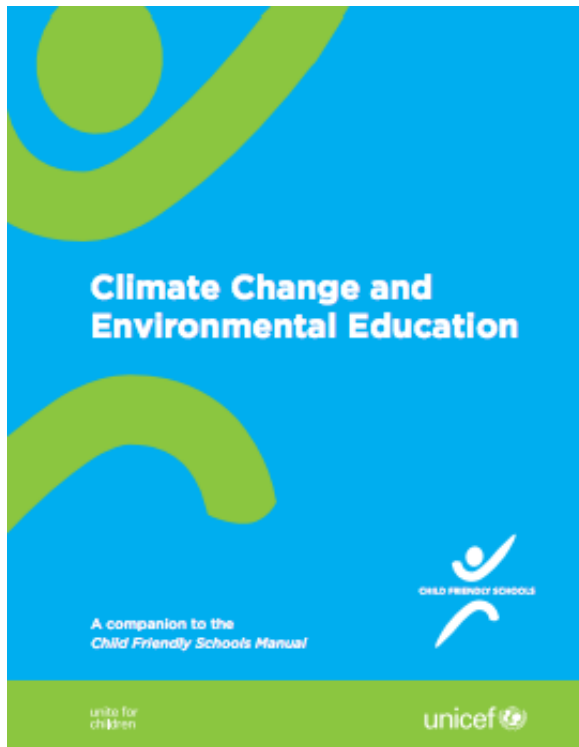
"Methods for investigating climate change and sustainability with children should include a range of visual techniques at which children can excel. These include mapping, modeling, community touring with a purpose, and observational techniques that require careful record-keeping at home, in the community and at school." (p.17)

These include:

- Mapping

- Community tours

- Designing with templates

- Item rating and card sorting

- Annotated drawings

- Focus groups with children

Source: Itus, S. (2012) *Climate Change and Environmental Education*. UNICEF. Retrieved from: http://www.unicef.org/publications/files/CFS_Climate_E_web.pdf

Dotmocracy

Dotmocracies are suggested as a method for involving students in decision making processes and gathering feedback.

Source: UNICEF Canada (2013) *Rights Respecting Schools: Good Practices for Meaningful Student Participation - Supplement to Workshop 3*. UNICEF Canada. Retrieved from: https://rrscanada.files.wordpress.com/2013/10/good-practices-for-meaningful-student-participation.pdf

Children and Evaluation: A webinar from BetterEvaluation and Community of Evaluators

http://betterevaluation.org/blog/evaluating_with_children

3. Make maximum possible use of existing data, measures and indicators

PROGRAMME PERFORMANCE AND MONITORING DATA

RECORDS AND COMMUNICATIONS

EXTERNAL STATISTICS OR SURVEYS FROM
GOVERNMENT AND OTHER AGENCIES

Example of using existing measures

|	Pakistan Early Child Development Scale Up Trial UNICEF Pakistan 2012
Early childhood development	Scores on cognitive, language, motor and socio-emotional development assessed using Bayley Scales of Infant and Toddler Development
Nutrition	Growth as indexed by z-scores for: Length/Height-for-age Weight-for-age Weight-for-height

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Methodological Briefs
Impact Evaluation No. 11

Developing and Selecting Measures of Child Well-Being

Howard White and Shagun Sabarwal

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4. Choose sampling strategies carefully
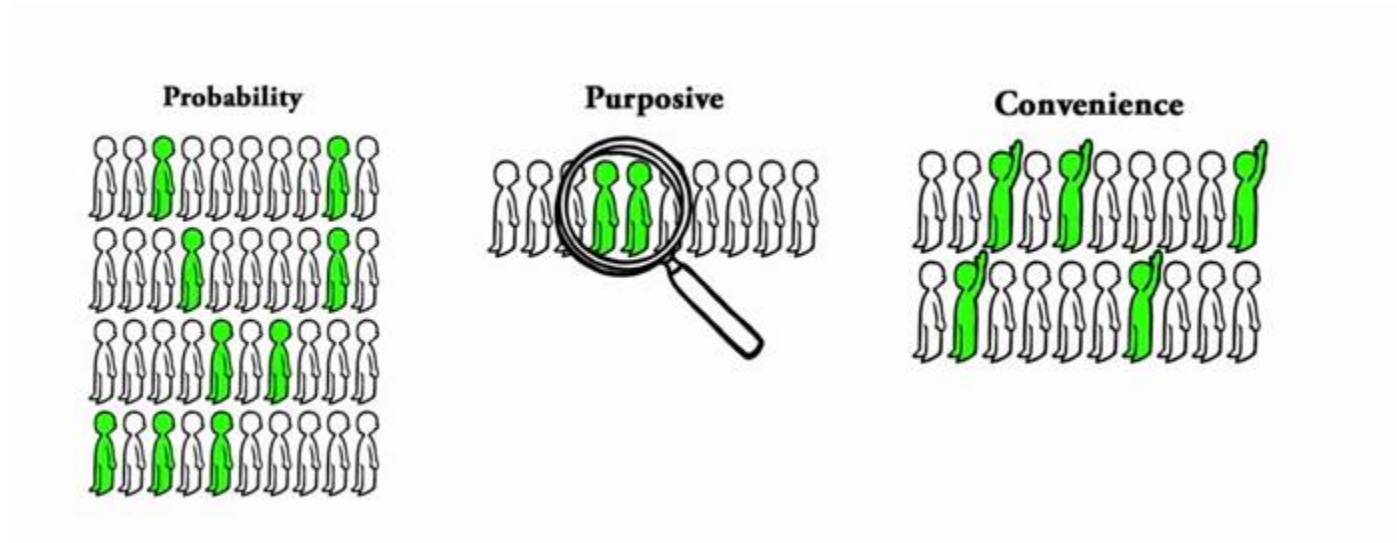
Sampling:
- Regions, communities
- Sites
- Projects
- Events
- Time Periods
- Clients
- Staff

Sampling strategies

TYPE	SOME OPTIONS	FEATURES
Probability	Simple random Stratified random Multi-stage Sequential	Rules about selection of sampling frame, size of sample, statistical generalisation
Purposive	Confirming and disconfirming Critical case Maximum variation Outlier Snowball Typical case	Transparency in case selection, triangulation, analytic generalisation
Convenience	Readily available Volunteers	Least effort but lowest credibility

5. Ensure ethical issues are anticipated and addressed
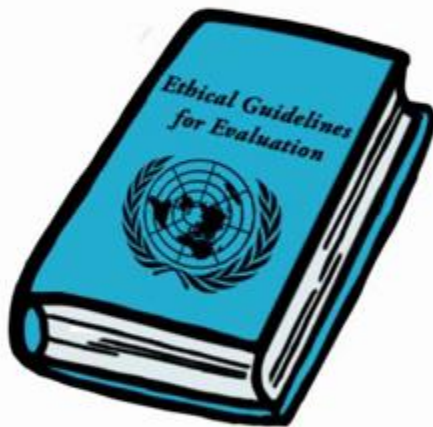
Example of addressing ethical issues

Strategies to address:
•Response burden on informants
•Informed consent
•Anonymity of informants

6. Pay attention to data quality
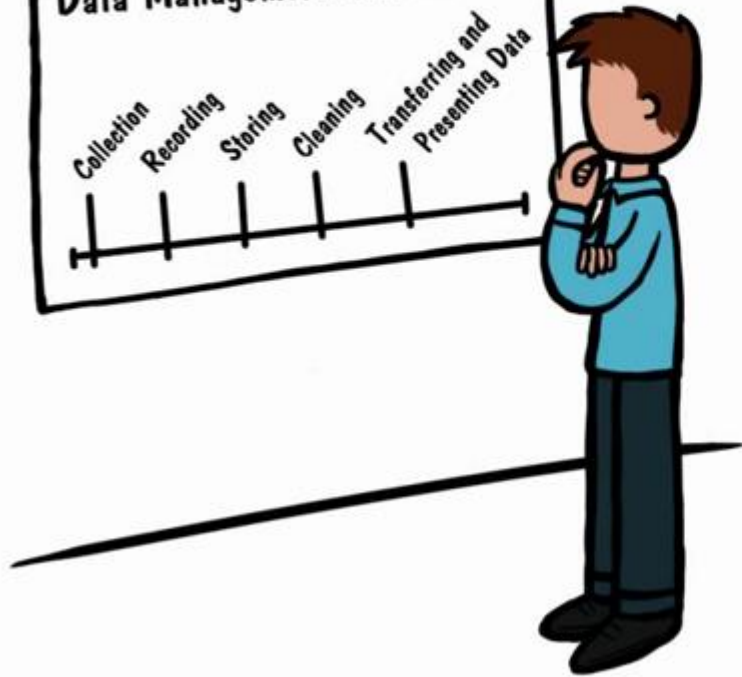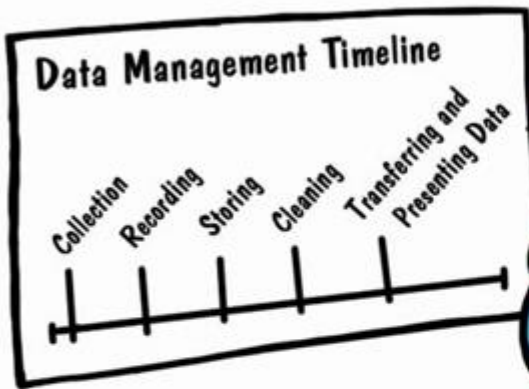
7. Plan how analysis will answer KEQs

- Report in terms of the KEQs, not the data sources
- Do 'data rehearsal' before data collection to ensure necessary data are being collected
- Go beyond the average effect and explore patterns
- Iterate between summarising and further analysis

Options for deciding data collection and analysis methods

Methodology by commissioning agency, up front	Initial methodology by commissioning agency, then revised	Initial methodology by evaluators, then revised	Methodology by evaluators, up front as separate project
• Set out in ToR	• Initial methodology revised in inception report	• Initial methodology revised in inception report	• Set out in ToR • The actual evaluation is commissioned as a separate project

More resources on data collection and analysis from the Office for Research

Effective data collection & analysis in impact evaluation

1. Clarify the different types of questions in the Key Evaluation Questions (KEQs)
2. Map possible data sources across the KEQs, using a complementary mix of methods
3. Make maximum possible use of existing data, measures and indicators
4. Choose sampling options carefully
5. Ensure ethical issues are anticipated and addressed
6. Pay attention to data quality
7. Plan how analysis will answer KEQs