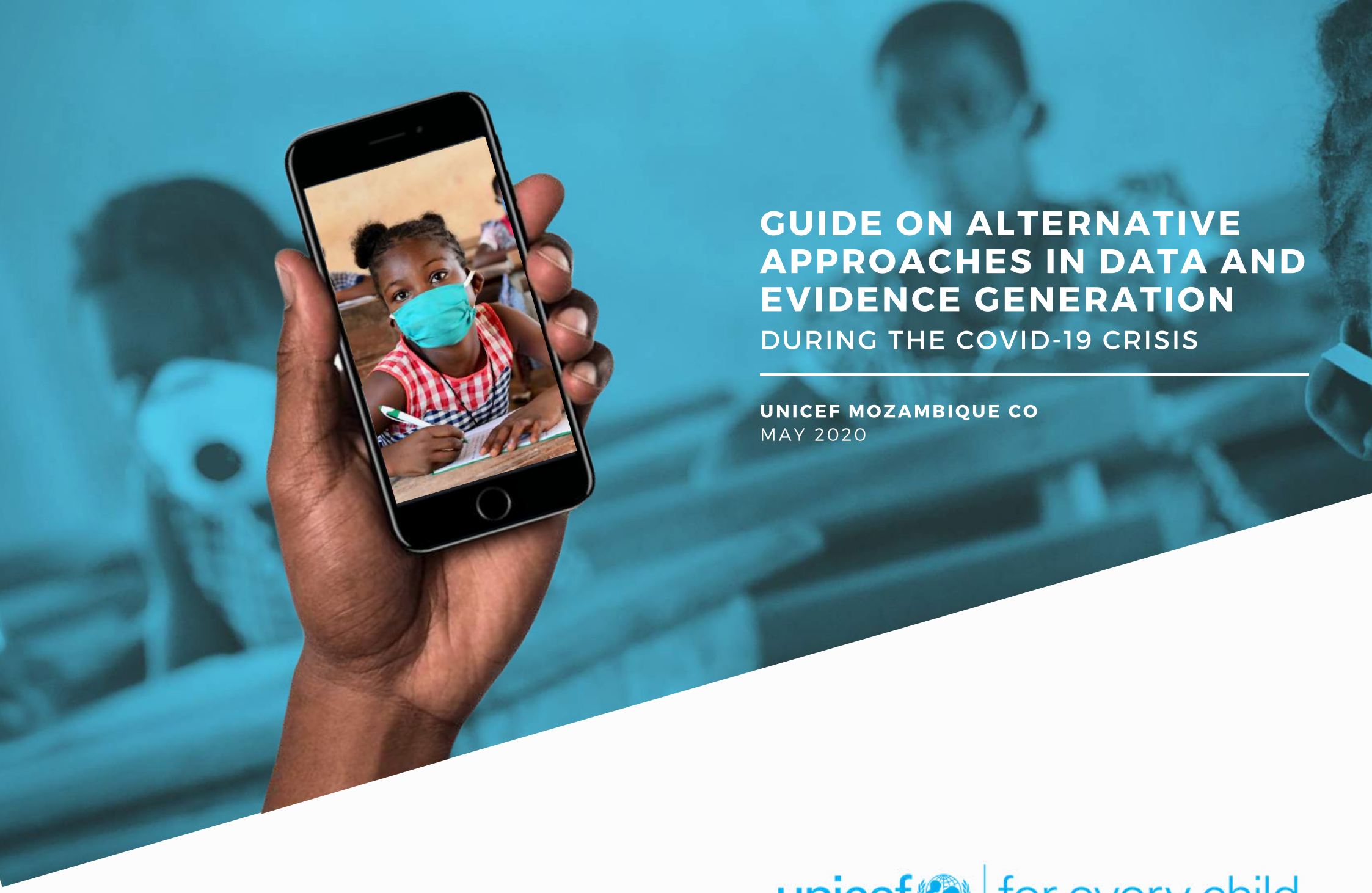

GUIDE ON ALTERNATIVE APPROACHES IN DATA AND EVIDENCE GENERATION

DURING THE COVID-19 CRISIS

UNICEF MOZAMBIQUE CO

MAY 2020

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GUIDE ON ALTERNATIVE APPROACHES IN DATA AND EVIDENCE GENERATION

DURING THE COVID-19 CRISIS

Over the last month all UNICEF programmes faced the challenge of continuing evidence generation activities under new COVID-19 restrictions for travel and face-to face interaction. Many already started using information technologies and remote data collection for planned activities or emerging COVID-19 response needs. This is a non-exhaustive guide on using innovative tools to collect data 'contactless' that aims to facilitate these efforts. Tools and approaches in this guide are presented by the type of data they collect: spatial, text-based and voice-based data. The guide highlights benefits, limitations and general conditions for implementing each method. It also shares a selection of examples on the use of these approaches from Mozambique and other countries. The guide will be updated as new information comes in

Given the fluid circumstances, this guidance is a 'living document' and will be updated, as needed, as the crisis unfolds.

Pillar documents for preparation of this guide are:

Technical Note: Response of the UNICEF Evaluation Function to the COVID-19 crisis – UNICEF – 2020
Approaches to remote monitoring in fragile states - GSDRC - 2018
Evaluation in hard to reach areas - European Commission - 2019
Technologies for monitoring in insecure environments - GPPI - 2016
Policy Responses to Coronavirus (Covid-19) - Ensuring data privacy - OECD - 2020

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OVERVIEW

GUIDE SECTIONS

OVERVIEW
benefits, limitations and ethical considerations

SPATIAL DATA
aerial imagery and geospatial data

TEXT-BASED DATA
sms, ussd, online platforms, u-report, intelligent infrastructure, fly on the wall, digital data entry

VOICE-BASED DATA
ivr, call centres, phone interview,

Over the last month all UNICEF programmes faced a challenging of continuing evidence generation activities under new COVID-19 restrictions for travel and face-to face interaction. Many already started using information technologies and remote data collection for planned activities or emerging COVID-19 response needs.

The objective of this guide is to provide an overview of **innovative tools and approaches for data collection and evidence generation adapted to the restrictions of movement and social interaction during the COVID-19 emergency**. It is vital that data collection activities fully comply with the precautionary measures put in place by UNICEF and host governments, in order to protect teams, our partners, and the people we serve. It is of utmost importance that the **'do no harm'** principle consistently guides our efforts across the board.

Given the fluid circumstances, this guidance is a 'living document' and will be updated, as needed, as the crisis unfolds.

OVERVIEW

Benefits
of using technologies in data collection and evidence generation

The integration of alternative data approaches can help overcome some of the structural challenges of remote data collection in the current COVID-19 crisis, though we should be cautious and technology must be approached as an enabler, means to achieve underlying objectives rather than a goal in itself. Some of the opportunities brought about by ICT in remote data collection are[1]:

- **Rapid and near real-time monitoring**: New technology can be used to collect, analyse, and publish information more rapidly than with traditional methods. Incorporating new technologies, such as mobile and internet networks and digitisation of the collection process, can reduce time-delays, inefficiencies, and improve data quality by reducing data entry and human errors.

- **Different types of data to assess programming**: New technologies provide the opportunity to collect a wide range of data, including sounds, pictures, and videos. The different data types can help programme staff analyse the complexity of an intervention and its context through different lenses and ultimately uncover new patterns of influence.

- **A chance to track indicators more systematically**: Tracking culturally appropriate and context-specific indicators over time, systematically, may be done more effectively with new technologies. To be able to aggregate indicators, organisations and partnersneed to openly share data and standardise methodologies and indicators.

- **Cost savings**: New technologies are seen as cost saving M&E strategies, with the potential to decrease costs associated with transportation, printing, data entry and cleaning, coding, and staff hours. Some new technologies, such as the use of tablets and mobile phones, have an initial operational and infrastructure cost, but thereafter costs can be kept relatively stable. New LTAs recently set up wit providers of some technologies (links are provided in this guide below) provide an opportunity for a more rapid process of recruitment.

- **Opportunity to increase capacities and collaboration**: New technologies are also enabling the increase in capacity of all staff related to M&E systems. The Internet has provided a platform to enable the easy sharing of a wide range of documents, interactive trainings, and manuals on M&E, and encourage discussions on key questions related to overcoming M&E challenges during the Covid crisis.

[1] GSDRC - Approaches to remote monitoring in fragile states.

OVERVIEW

Limitations
that come with using new technologies in the COVID-19 crisis

- **Selection bias:** While new technologies can lead to having more information more rapidly, there is a risk that only utilising alternative data approaches can make it more difficult to be inclusive of all participant groups due to different levels of access to technology or limitations in the forms of interaction. Overlooking the differences in technological access can result in leaving the most vulnerable outside (women and childrens specially). Research, evaluation and data collection teams are encouraged to use a mixed-methods approach with a balanced data collection between qualitative and quantitative tools, and a sensible combination of traditional data collection tools and other technologies.

- **Training:** The use of specific technology for remote data collection requires a certain level of skills, knowledge and competencies, which narrows the group of firms and experts who could engage in it within a short period of time. Further, not all alternative data approaches are available in local languages, making it more difficult for field-based staff to engage with the platforms and also seek assistance.

Ethical
considerations

Standard ethical guidance for paper-based data and evidence generation remains applicable. In digital settings, data protection imposes obligations on researchers and evaluators to provide research subjects with detailed information about what will happen to the personal data that they collect, how it will be stored, used and shared.

Digital data protection legislation is still on its early stages in Mozambique. However, principles and standards can be drawn from the National Law for Electronic Transactions and the UNStats Guidelines on the Use of Electronic Data Collection Technologies. Measures to be observed include:

- **anonymisation of personal data;**
- **only gathering adequate, relevant and limited data to what is necessary in relation to the purposes for which they are processed (data minimisation);**
- **applied cryptography (e.g. encryption and hashing);**
- **using data-protection focused service providers and storage platforms; and**
- **arrangements that enable data subjects to exercise their fundamental rights (e.g. as regards direct access to their personal data and consent to its use or transfer).**

Where your research or evaluation involve complex, sensitive or large-scale data processing, the proposal should include a description of the measures taken to apply the principles of data protection by design and default, and/or to enhance security so as to prevent unauthorised access to personal data or equipment.

ALTERNATIVE DATA APPROACHES

TEXT-BASED DATA

sms & ussd

technical complexity ★★☆☆☆
running costs ★★★☆☆
inclusiveness ★★★☆☆

social media

technical complexity ★★☆☆☆
running costs ★☆☆☆☆
inclusiveness ★★☆☆☆

u-report

technical complexity ★★☆☆☆
running costs ★★★☆☆
inclusiveness ★★☆☆☆

intelligent infrastructure

technical complexity ★★★★☆
running costs ★★★☆☆
inclusiveness ★★★★☆

fly on the wall

technical complexity ★☆☆☆☆
running costs ★★☆☆☆
inclusiveness ★★★★☆

digital data entry

technical complexity ★☆☆☆☆
running costs ★★☆☆☆
inclusiveness ★★★★☆

VOICE-BASED DATA

ivr

technical complexity ★★★★★
running costs ★★★★☆
inclusiveness ★★★★☆

phone interviews

technical complexity ★★★☆☆
running costs ★★★★★
inclusiveness ★★★★☆

SPATIAL DATA

aerial imagery and geospatial data

technical complexity ★★★★☆
running costs ★★★☆☆
inclusiveness ★★★★☆

Rankings range from very low, to moderate, to very high.
Rankings are a subjective analysis from the author and do not represent the result of a customer survey.

SPATIAL DATA

aerial imagery and geospatial data

technical complexity

★★★★☆

running costs

★★★☆☆

inclusiveness

★★★★☆

Geospatial technology and aerial imagery are methods to capture a visual representation of land, objects or social and environmental phenomena through observation with satellites and (un)manned Aerial Vehicles. These methods gather, show, and analyse evolution in time of infrastructures, environmental changes, population and product movement from global to neighbourhood scales.

Applications

Identifying location of target groups: remote sensing analysis of land coverage characteristics as proxies for social and economic conditions (e.g. economic vulnerable groups can be identified through analysis of construction types and night light emissions).

Mapping population movements and verifying delivery of products and services: imagery and GPS-tracking data can be used to observe population movement and progress of large deliveries.

Observing contextual conditions and changes over time: gather before-and-after images of vegetation, buildings and natural resources to assess intervention changes, reported conditions, deduce population data (e.g. economical activities, infrastructure changes) and identify environmental changes.

Conditions for Use and Limitations

While there is much free public data, processing requires **highly specialised expertise and time**.

Still dependent on **field-based personnel to test the assumptions**, provide precise coordinates of the intervention zones, validate findings, and support analysis.

High-resolution imagery requires **heavy storage and computing capability.**

Opportunities

Allows for **contactless data collection** during times of movement restriction or in hard-to-reach areas.

Outcome analysis, which requires development of sound assumptions, and **visible impact can be compared over time/scale**.

Complementing/triangulating existing data garnered through crowdsourcing: for instance, geospatial mapping of economically vulnerable population combined with an SMS survey and key informant data.

Building up missing baseline data: satellite data is available in time series, allowing you to see changes over time, and comparing them with the situation prior to the project.

High quality satellite images are available free of charge and drone imagery is becoming more accessible

Resources

Satellite Image Databases: UNOSAT/UNITAR; UN-SPIDER; International Charter 'Space and Major Disaster'; Copernicus; GRID3 Mozambique

Drone collaboration in Mozambique: Digital Diplomacy.

UNICEF Resources: Geospatial LTAs; Geospatial Roadmap

SPATIAL DATA

Good practices

Using night light emissions for prediction of deprivation level of local communities (worldwide): Night-time illumination can serve as a proxy for economic variables in particular in developing countries, where data are often not available or of poor quality. Existing research has demonstrated its usefulness on different analytical scales, such as countries level, administrative units or large grid cells. Weidmann and Schutte research show that light emissions are highly accurate predictors of economic wealth estimates even with simple statistical models, both when predicting the deprivation levels new locations in a known area and when generating predictions for previously unobserved areas.

Drone collaboration during Cyclone Idai in Beira (Mozambique): As part of response efforts to Cyclone Idai, INGC and WFP carried out aerial damage assessment by mapping affected areas and providing logistical information. Major parts of Beira City and other parts of Sofala region were mapped with high precision (ten times clearer than satellite map image), allowing the government, UN agencies and NGOs to have access to critical information for decision making, such as counting the number of houses that needed to be repaired. Additional information can be seen here.

Mapping of Urban environment and Factors influencing Children's wellbeing in a low-income neighbourhood of Maputo, by means of Drone Image Analysis - MUFIC-WB-UNICEF (Mozambique): The innovation in this project is in the application of multidisciplinary approach that combines state of the art drone aerial surveys with ground control point collection, carried out by the University Eduado Mondlane-IHE Delft Institute for Water Education consortium, combined with ground data on children mobility, carried out by UNICEF staff. This approach based on image analyses and tracking of movements of children in school age allowed for the identification of the most vulnerable schools and open public spaces, frequented by children, in terms of potential pollution by surface water flows, carrying not only rain waters but also pollution that is left on the ground.

GRID3 - Geo-Referenced Infrastructure and Demographic Data for Development (Worldwide): With the support of UNFPA as the United Nations' lead implementing agency, the GRID3 partnership provides high-quality assistance to the implementation of high-resolution geo-referenced population and housing censuses and hybrid methods. Conducting these efforts means mapping an entire country, deciding what technologies should be employed, mobilizing and training legions of enumerators, conducting a major public awareness campaign, canvassing all households, collecting individual information, compiling hundreds of thousands – or millions – of completed questionnaires, monitoring procedures and results, and analysing, utilizing and disseminating the results. Applications can be found here.

TEXT-BASED DATA

sms & ussd

technical complexity

★★☆☆☆

running costs

★★★☆☆

inclusiveness

★★★☆☆

A targeted gathering of structured information using Short Message Service (SMS) or Unstructured Supplementary Service Data (USSD). This method can rely on proactive behavior (beneficiaries reaching out to reporting system) or reactive behavior (beneficiaries answering to requests). Software is used to manage, send and receive text messages. Respondents interact through self-guiding questions which can be close ended or open ended.

Applications

Feedback or complaints mechanisms: Affected people send SMS messages or access USSD menu to ask questions, comment or complain about service delivery. It can be used for intervention targeting through self-identification process (which is recommended to be triangulated afterwards).

Household surveys: through a simple phone, a household member can answer questions about socioeconomic conditions, infrastructure and individual behavior/practices.

Verification messages: beneficiaries can be contacted through SMS to report on product or service delivery, on health and nutritional status, school attendance, etc.

Opportunities

SMS and USSD: Simple to implement with **low level of technological requirements**. Participation may happen when it is most **convenient/safe** for the respondent. Organizations can cover for participation costs, improving inclusiveness. Devices and software are inexpensive.

USSD only: Does not store data in the respondents' phone, ensuring safety. It is also a good platform to **create and manage respondents' profile**.

Conditions for Use and Limitations

SMS and USSD: **Requires a previously obtained list of phone numbers**. Verification and follow-up are challenging. **Bias towards those owning phones** and living in areas with network connection. **Potential literacy bias**.

SMS: The **responsibility to delete sensitive communications from the phone lays with the respondent**.

USSD: **Response time is limited** to 1 to 2 minutes per menu/screen

Resources

Communication flow and data management: RapidPro; U-Report

TEXT-BASED DATA

social media

technical complexity

★★☆☆☆

running costs

★☆☆☆☆

inclusiveness

★★☆☆☆

People in local communities can post comments, send questions or feedback via online/cloud channels directly to the development organisation. Two types of platforms can be distinguished:

- social media and publicly accessible networks: allows for data collection from open information on platforms and return results on simple keywords.
- Instant Messaging channels for one-on-one or group conversations. These normally requires contact to be initiated by user and have limitaitons on use of automated maessages ("bot" accounts).

Applications

Improve context understanding: Scan public social media conversations and photographs to understand what local communities are discussing and concerned about. Use analytical tools combined with tagging campaigns can improve targeting and C4D.

Outreach and accountability efforts: Where local communities already use online platforms, they offer practical channels for development actors to report back to. This can happen via public social media platforms or bulk communications on instant messaging apps. Being visibly responsive can in turn make beneficiaries more likely to submit feedback

Response analysis: Analysis of large amounts of social media data can improve needs assessment and understanding of local perceptions on development programmes and services. Using social media analytical tools, organisations can judge support of programmes through positive or negative feedback, analysing large amounts of data in a short period of time.

Conditions for Use and Limitations

Requires incentives for citizens to continuously participate in a tailored crowdsourcing platform.

Technological access bias that makes **digital data skewed in favour of citizens with higher income**.

The most vulnerable, specially **women, can suffer from a double exclusion.**

Opportunities

It can gather **massive, location specific data in real-time** with lower running costs than more traditional methods, boosting **civic engagement** by establishing direct channels of communication from the ground up.

If systems are set up right, crowdsourced data tends to be more difficult to manipulate and **less vulnerable to biased interpretation**, therefore potentially increasing independence and credibility

Resources

Data management: U-Report;
Communication platform: Facebook, Whatsapp, Twitter, Instagram

TEXT-BASED DATA

u-report

technical complexity

★★☆☆☆

running costs

★★★☆☆

inclusiveness

★★☆☆☆

U-Report is a mix of an SMS and Social Media communication tool that collects data on interactions system-user, It is a communication management tool built on the RapidPro open source software that enables and empowers people to speak out and provide their perspective on a wide range of important issues in their communities. U-Report is a free and non-exclusive tool for community participation. It allows to run communication in a variety of channels, including the main social media and messaging applications. In Mozambique, it provides immediately an anonymized database of 300,000 profiled contacts.

Applications

Participatory statistics: it empowers young people to share opinions on issues that matter to them clarifying who required help and where. Especially useful for conducting needs assessment and situation analysis. Generating and aggregating local data can make statistics more accurate, especially on sensitive issues, thus increasing accuracy, reliability and ultimately credibility and potential use of data

Accountability to beneficiaries: polling on beneficiaries' perceptions of programme delivery and effects allows for using citizen data to improve accountability and strengthen programmes. Communication of results ensure U-Reporters are given feedback on how data is used.

Communication for Development: utilization of 'bots' or artificial intelligence in the interaction with -reporters make possible to provide health, education and protection services while conducting polls

Conditions for Use and Limitations

Bias towards those owning phones and living in areas with network connection. Potential literacy bias.

As in other approaches which deal with large volumes of data, especially in multiple languages, it can be very **time consuming** and require a great deal of **skilled labour**

Opportunities

Low cost or free of charge access (in Mozambique, several networks provide free access to Facebook browser and Messaging).

Platforms provide an **easy-to-use and popular channel** for feedback. Allows for **open-ended questions** and collection of **multimedia data.**

Mass messages directly to people who opt in to receive information or updates from the programme can help improve **transparency**.

Resources

Communication flow and data management: RapidPro; U-Report

TEXT-BASED DATA

intelligent infrastructure

technical complexity

★★★★☆

running costs

★★★☆☆

inclusiveness

★★★★☆

This method requires equipping a sample of infrastructure or items, such as roads, bridges, buildings, water treatment systems, handwashing stations, latrines, cookstoves, etc., with low-cost, remotely accessible electronic sensors to relay usage or operational data in near real-time to the internet via cellular phone technology, feeding into an automated, remote monitoring system.

Applications

Measure and track over time the value of infrastructure or public services to the people (e.g., to determine whether the infrastructure is actually used enough to justify the cost).

Measure wear down of infrastructures through usage monitoring.

Complement mapping techniques and behaviour analysis by tracing movement patterns of the population

Opportunities

The massive amounts of data generated can be used to better **understand programmatic, social, economic, and seasonal changes and behavioural patterns** that influence the quality of a policy or a service.

Real-time data on infrastructure or public service use makes **faster, more informed decisions** possible.

Potentially **lower running costs** once system is set up compared to repeated sample surveys using experts and enumerators.

More **objective and real-time operational data** on the usage and performance of infrastructure or services may result in greater credibility and use of monitoring information and evaluations.

Conditions for Use and Limitations

Initially expensive, high-tech monitoring option which requires special technical expertise.

Lack of maintenance or **malfunctioning equipment can 'contaminate' data**.

Requires **energy supply delivered to the sensors and for cell phone communication**.

Potential **privacy concerns** if users, or user groups, can be identified

Resources

WASH intelligent technology: Nilebot; UNICEF Innovation Fund

TEXT-BASED DATA

fly on the wall

technical complexity

running costs

inclusiveness

Fly on the Wall is a non-digital structured behaviour observation method which allows to stealthily collect information by looking and listening to people in their own settings - with low observer influence. Low cost and effort, this method is an easy way to begin behaviour research. Usually uses the AEIOU framework (coding structure mnemonic used to organize data under the following sections: Activities, Environments, Interactions, Objects and Users). By excluding direct interaction with the participants, it minimizes the risks of physical contact during Covid-19 crisis.

Applications

Surveys of use of facilities (including water points, communal latrines, etc) **and services under emergency protocols** (physical distancing, disinfection, etc).

Identification of differentiated treatment, if existent, to men and women, boys and girls at service points such as distribution centres or clinics.

Identitifcation of ways in which people express **behaviour change** after cognitive elaboration process.

Perception about the **level of attention and interaction** during meetings, delivery, collective activities

Opportunities

With proper training, **field-work agents (required to take field trips during the pandemic) can act as informed observers** during their activities.

Blending in helps **minimizing any self-monitoring or "acting" of participants**, creating more grounded and valid data. Note-taking frameworks/structures and tools are also essential to this method.

Low cost/effort to get qualitative data, with minimal bias and influence.

Conditions for Use and Limitations

Can be limiting as it **does not allow a researcher to probe or follow up with participants**.

If the participants are aware of the observer's presence, this can lead to **reactivity**.

Requires **physical presence of the observer.**

Resources

Fly on the Wall method: FOTW;
Observation framework: AEIOU Framework

TEXT-BASED DATA

digital data entry

technical complexity

running costs

inclusiveness

Smartphones and tablets, or 'handhelds,' can replace paper-based questionnaires to speed up field data collection and reduce data entry errors. However, digital data entry requires an enumerator/observer in the field to digitise beneficiaries' registration, track deliveries or record environment observations. As it is easy to download or custom-build software for many purposes, handhelds can be used for various programming tasks, such as needs assessments, coordination, mapping and reporting. This is now widely used approach in many countries

Applications

Surveys, questionnaires, registration and distribution reporting: Handhelds are used instead of paper-based questionnaires and survey forms to collect and transmit field data. The elimination of a physical delivery of collection materials reduces the risk of virus contamination through paper circulation. Considering core service delivery is an ongoing activity even during the COVID-19 emergency state, digital data entry may be a useful way collect data with beneficiaries during a short time of exposure provided it is a continuation of already started activity (the equipment (tablets) is available in the location, enumerators are trained and set to go, real time data management system is set up). Stations with tablets and hand sanitizers for auto filling surveys/questionnaires can be a solution to enforce physical distancing during data collection

Opportunities

Electronic **data transmission from device to database is automatic**, which prevents unauthorized views, saves time and money.

GPS tracking and timestamping can be used for validation of data collection.

Enumerations using small handheld devices are less visible, hence **interfere less with the context.**

Smartphones and tablets can collect a wide range of **multimedia data** to enrich analysis.

Conditions for Use and Limitations

Digital data entry **requires physical access.** Physical distancing and auto filling processes can be used to minimize contact between enumerator and respondents.

Devices can cause distress where communities may be suspicious about digital equipment and their capacity to record sensitive data.

Encourages **closed-question formats**

Resources

Open sources for Digital Questionnaire and Database: ONA; OpenDataKit; KoBo Toolbox; Martus; Last Mile Mobile Solutions

TEXT-BASED DATA

Good practices

Capturing school attendance with a SMS-based reporting system (South Sudan): At the beginning of the year each school gets a registration book and a unique ID code. Every student and teacher is registered with a unique code as well. On a daily basis, teachers take record of their pupils' attendance and report absences via text message. To do so, the teachers send both their own unique code to register with the system and then can send messages with the students' codes for free. Teachers also record attendance on paper as a back-up log. In areas where there is no network connectivity, data can be recorded manually, and teachers can regularly move to an area with network access to submit it. See the report here.

The use of social media in the Nepal earthquake response (NEPAL): Through an analysis of mainly Twitter, Facebook, YouTube, Flickr and blog content, the project sought to identify concerns and trends emerging amongst the affected population and understand conversations related to the quality and accessibility of aid. This allowed development agencies to see which issues communities cared about and also which topics flared up and which ones communities discussed continuously. The report can be seen here.

Adolescent participation (East Timor): UNICEF East Timor found Facebook to be a useful data collection tool. The team had originally wanted to use Survey Monkey to collect data from current youth parliament members but found it was expensive for youth to have internet access. A local telephone company had a plan that enabled access to Facebook for a much cheaper sum of $1. As many youth parliamentarians had Facebook pages this helped support more representative data collection.

U-Report in Emergencies (Panama): On the brink of hurricane Irma in 2015, U-Report was used across the Caribbean to communicate with over 8,500 U-Reporters important information on how to stay safe. Quickly, U-Report was able to provide citizens information about the hurricane on the spot, in English, French or Spanish. As the hurricane passed, UNICEF used U-Report to gather important information about the children affected to understand who required help and where. After the support, the CO sent a monitoring poll to understand the usefulness of U-Report's support. An account of the initiative can be seen here.

U-Report (Mozambique): U-Report Mozambique is a SMS-based system which gathers more than 200,000 registered users. It regularly runs polls and surveys that allow young people to make their voices heard. An additional important element of the platform is the counselling service: registered users can ask their questions to trained youth counsellors and receive answers by SMS, anonymously and completely free of charge. An account of the initiative can be seen here.

TEXT-BASED DATA

Good practices

Real-time water-quality and monitoring alarm system (Egypt): A portfolio member of UNICEF Innovation fund, Conative Labs, developed an Internet of Things (IoT) solution named Nilebot in Egypt, a system that measures crucial parameters in water: Dissolved Oxygen, pH, Total dissolved solids, temperature, salinity, electrical conductivity and oxygen saturation. This solution was initially used in fish farms, having now expanded the use case to agribusiness and they are working with WASH teams in the MENA region to understand how to deploy an efficient and cost-effective quality water monitoring in refugee camps. Details on this initiative can be seen here.

Digital entry of information for Ebola preparedness - Point of entry (POE) data collection (Uganda): With funding from the International Organization for Migration (IOM) in Uganda, Humanitarian OpenStreetMap Team (HOT) developed a more robust digital information system to be used by POE focal persons to track the use and availability of Ebola-related stock at these locations. The system's tools and technology were made compatible with existing data systems in the National Response to ensure its use and sustainability once the programme was complete. Such information was uploaded to a central server managed by IOM on a weekly and monthly basis enabled MOH and its partners to respond to needs and gaps relating to Ebola-stock more quickly and systematically. An account of the experience can be found here.

VOICE-BASED DATA

ivr

technical complexity

★★★★★

running costs

★★★★☆

inclusiveness

★★★★☆

Interactive Voice Response (IVR) is a voice call in which a pre-recorded voice talks respondents through the data collection process and interaction is done by keypad dial or verbal answers. The interaction is recorded for further quantitative or content analysis. Due to the high volume of data gathered in this process, analysis is normally conducted by automated speech-to-text software combined with coding exercises. Messages can be personalised and entered directly into databases

Applications

Feedback or complaints mechanisms: beneficiaries call the hotline to ask questions, comment or complain about service delivery. It can be used for intervention targeting through self-identification process (which is recommended to be triangulated afterwards).

Household surveys: through a simple phone, a household member can answer questions about socioeconomic conditions, infrastructure and individual behaviour/practices.

Verification messages: beneficiaries can be contacted through an automated call to report on product or service delivery, on health and nutritional status, school attendance, etc

Opportunities

Possibility to have **open-ended answers** recorded.

More **complex questions can be answered** through verbal accounts and descriptive recordings.

Allows for the **inclusion of illiterate people**.

No stored data on respondents' phone

Conditions for Use and Limitations

Expensive and complex technology, if compared to SMS and text-messaging applications.

Requires speech analysis software adapted to local language and accent to guide interaction.

If interaction is based on tones input via keypad, interaction is limited by **literacy bias and close-ended answers.**

Resources

Companies which develop IVR systems: Viamo (Voice-Dial tone); Neuron (Voice-Voice).

VOICE-BASED DATA

call centres / phone interviews

technical complexity

★★★☆☆

running costs

★★★★★

inclusiveness

★★★★☆

Operators reach out to or pick up when beneficiaries call in. Staffed call centres tend to return high quality data quickly. They are suitable for collecting qualitative information and to monitor beneficiary feedback for programme delivery

Applications

Feedback or complaints mechanisms: beneficiaries call the hotline to ask questions, comment or complain about service delivery. It can be used for intervention targeting through self-identification process (which is recommended to be triangulated afterwards).

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Opportunities

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Allows for the **inclusion of illiterate people**.

No stored data on respondents' phone

Conditions for Use and Limitations

Requires hiring **operators/interviewers which may generate high costs**.

Call centres' need to be adapted to respect physical distancing and avoid agglomeration of operators.

Data collection **speed limited to the number of interviewers available.**

Resources

Mozambican company operating a call-centre with previous work done to UN-agencies: Howard Johnson International Call Centre

VOICE-BASED DATA

Good practices

'**Press 1 if you have not eaten today' - food security monitoring with calls and SMS (Somalia):** The World Food Programme (WFP) was seeking to improve its data on the impact of food deliveries in South Central Somalia. Insecurity severely limited staff access and significant capacity was required for outreach, interviews and processing the responses from thousands of individuals. IVR was used to ask about food consumption, stock prices and other details that were easy to provide but hard to access from afar. Responses were collected automatically in a central database. The information gathered in this way by far surpassed the level of data collection possible before. A report of the initiative can be accessed here.

Interactive Voice Response, SMS and radio as part of the Rural Voices of Youth Program (Nepal): UNICEF and the Nepali radio program Saathi Sanga Man Ka Kura (SSMK), joined forces to help children and adolescents to engage in UNICEF's Voices of Youth (VOY). Listeners would call a number and navigate a menu of options, leave comments, questions and responses or get information. Input collected from the audience results in modifications to the programming so that radio hosts can be responsive to what the audience wants and address questions or confusion about the information that was presented. Report.

One hotline to cover all information needs (Iraq): Internally Displaced People in Iraq had limited access to reliable news from local media and information about available aid services. Individual aid agencies sometimes provided numbers to people, but this created confusion as the affected populations often did not know the agency responsible for each type of aid. An inter-agency group of UN agencies and NGOs launched a nationwide toll-free hotline. The Erbil-based call centre is run by two coordinators and four Iraqi operators, three of whom are female. The operators collect information from cluster leads and agency heads every week in order to answer straightforward questions from callers. With more complex queries, the call centre's coordinators contact the relevant agency or cluster for an answer and get back to the caller within three days. When agencies themselves have a well-functioning hotline in place, the operators refer the caller directly to this number. Report here.

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GUIDANCE ON DATA COLLECTION DURING COVID-19 EMERGENCY AND IN HARD-TO-REACH AREAS

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