

# DATA ANALYSIS



The aim of data analysis is to help turn raw data into knowledge, which can then be used for decision-making and other purposes. Data analysis can take place at any stage of a project or programme cycle. There are many different types of data analysis. These include quantitative, qualitative and participatory analysis. Many projects and programmes use a combination of different types of analysis.

Raw monitoring and evaluation (M&E) data is not normally useful on its own. If it is to be useful it first needs to be analysed. The aim of data analysis is to help turn raw data – facts and opinions developed through formal or informal planning, monitoring, evaluation or research processes – into knowledge. In turn that knowledge can then be used for decision-making, or to ensure accountability to different stakeholders (Britton 1998).

Data analysis can take place at any stage of a project or programme. It can happen before a project or programme begins as part of the design phase, it can also happen during a project or programme, at the end, or a while after it has finished. Data analysis can be carried out at many different levels – within or across projects, programmes, sectors of work and organisations. In social development, data analysis is often encouraged within communities as part of a participatory development process.

## *Different types of analysis*

There are many ways of categorising data analysis – far more than can be described in this paper. One way is to categorise it according to the type of data collected. (Note that many organisations, projects and programmes use a combination of different types of data analysis).

- **Quantitative** data analysis is used to analyse numbers rather than words. It can range from simple exercises to process and tabulate data through to very complicated processes designed to accurately measure quantitative changes with calculated degrees of precision.
- **Qualitative** data analysis, on the other hand, is used to analyse words – quotes, cases, transcripts, reports – and, sometimes, images. Qualitative methods rely on rules and processes which are very different from those of quantitative methods.
- Some M&E methodologies are designed to translate qualitative data into quantitative information through **rating or scaling** exercises. This involves developing ratings or scales based on qualitative analysis, and then processing them through quantitative methods.
- **Participatory** data analysis can involve quantitative or qualitative data analysis, and is often treated as a separate case. This is because participatory data analysis follows different rules, and is usually based on stakeholders' sensemaking and consensus rather than

rigorously applied methods. The purpose of participatory analysis may also be quite different – encouraging stakeholders to analyse their own situations rather than coming to a conclusion based on an external viewpoint.

Another way of categorising data analysis is as follows.

- **Descriptive** data analysis is only concerned with processing and summarising data. This is often true of financial or administrative data analysis.
- **Theory driven** data analysis is used to test theories of change, assumptions or hypotheses. The aim is to analyse data to see if it confirms (or not) the theory or hypothesis.
- **Data or narrative driven** analysis involves letting patterns emerge from data, and then developing theories afterwards.

Qualitative data analysis can normally be applied to any of the three types described above. However, quantitative data analysis is rarely used with data or narrative driven analysis. This is because most quantitative data analysis techniques involve collecting predicted information for specified purposes.

Within M&E, there are also many data collection methodologies which have their own data analysis methods built into the process. For example, the Most Significant Change (MSC) technique includes defined processes for selecting, analysing and using stories of change. Contribution analysis has distinct methods for testing alternative theories of change. And quasi-experimental methods involve rigorous processes for assessing changes within target and control groups, and drawing conclusions afterwards.

## *Analysis questions*

Separate papers in the M&E Universe series deal with processes used for quantitative and qualitative data analysis, as many of the processes are quite different. However, many of the questions designed to be addressed through data analysis are similar. Some of these are listed in the table on the following page (based partly on Gosling and Edwards 2003).

## **Common Analysis Questions**

### **Process questions**

- What work (activities undertaken or outputs delivered) has been carried out?
- What work was planned but not done? Why was this work not done?
- What problems have been encountered? How were these problems addressed (if at all)? If they were not addressed, why not?
- Which activities appear to have been particularly successful or unsuccessful? Why?
- Are there constraints to progress which could be addressed? If so, how?
- Are there constraints which cannot be helped? If so, what can be done to minimise their effects?

### **Change questions**

- What changes have been realised? Were these expected or not?
- How do they compare with what was hoped for or anticipated?
- How important or significant are they? Are they likely to be sustainable?
- How have changes affected different groups?
- What made the changes happen? Which other factors (other than your own project, programme or organisation) influenced the changes?
- Are there expected changes that have not happened? If so, why have they not happened?

### **Action questions**

- Is the project, programme or organisation still on track to deliver its objectives? If not, what needs to change?
- Are they still the right objectives? If not, how do they need to change?
- Are the activities and outputs still appropriate? Should some be stopped, or others added?
- How has the external political or socio-economic situation changed? How should the project, programme or organisation adapt as a result?
- What are others doing (or not doing) that might influence the project, programme or organisation? How should it adapt as a result?

### **Learning questions**

- What lessons have been learned from implementing the work? How can these lessons be applied to future work?
- What needs to be done differently in the future, based on what has happened in the past?
- What lessons are there for other projects, programmes or organisations?
- What lessons might there be for policy-makers or other decision-makers?

### **M&E questions**

- Are there questions about progress, change, actions or lessons that cannot be answered through current M&E processes?
- What further evidence or information needs to be produced in order to make future decisions?
- Are current indicators, methodologies and approaches appropriate? If not, how do they need to change?
- Is there a need for new or further research, review or evaluation?

## **Enhancing capacity for data analysis**

Data analysis is often the hardest part of M&E to do well. Where it relies on following clearly defined rules and processes, it may be relatively straightforward. But in other instances it can be very challenging. Data analysis often relies on attributes such as experience, intuition, and an ability to handle complexity. This is especially true when interpreting findings in order to inform future plans.

To some extent, it is always possible to support people to undertake better data analysis. But there are limits. Some people are naturally better than others at data analysis. Some have more intuition; some are more experienced than others; and some are better able to handle complex information. Capacity support for data analysis can help build on existing skills or abilities. But the ability to analyse complex data – whether used to help design projects or programmes, or assess changes and lessons with a view to

improving – may be partly down to natural ability or talent, rather than acquired skills.

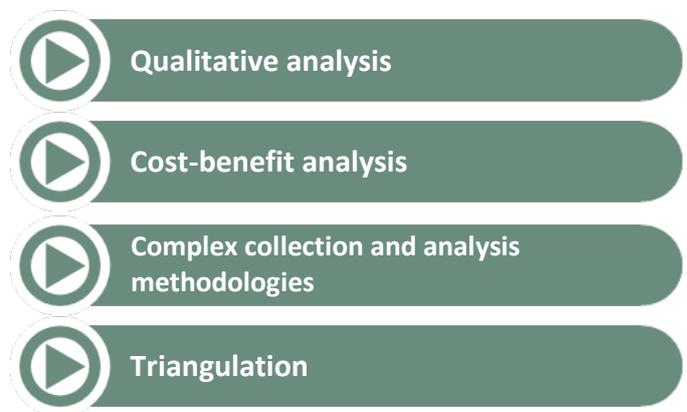
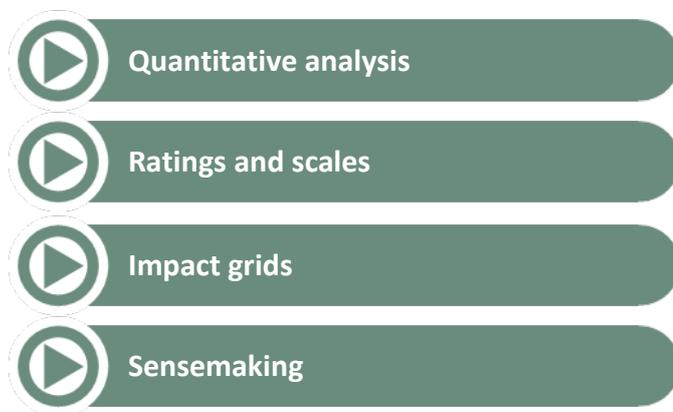
Of course, the challenges of data analysis are very different in different circumstances. For example, data analysis in a straightforward health project covering a single community may be a relatively simple matter, largely relying on mechanical processes. On the other hand, data analysis at the level of an international NGO working across many different sectors and countries is likely to be a much more complicated affair, requiring considerably more competency.

This section of the M&E Universe contains advice and information on a range of different approaches, tools and methods that can be used for data analysis. Ultimately, however, data analysis always relies to some extent on human interpretation, and is often subjective to at least some degree. It is not unusual for different stakeholders – even skilled and experienced researchers or evaluators – to examine the same data but come up with completely different analyses.

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## Further reading and resources

Further papers in this section of the M&E Universe deal with other topics related to analysis. These include quantitative analysis, qualitative analysis, and the use of rating and scalar tools. There are also papers dealing with cost-benefit analysis, triangulation, sensemaking and impact grids. These papers can be accessed by clicking on the links below. There is a further section of the M&E Universe dealing with complex methodologies for data collection and analysis.



## References

- Britton, B (1998). *The Learning NGO*. Occasional Papers Series no. 17. INTRAC, July 1998.
- Gosling, L and Edwards, M (2003). *Toolkits: A practical guide to assessment, monitoring, review and evaluation*. Second edition. Save the Children, UK.

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INTRAC is a not-for-profit organisation that builds the skills and knowledge of civil society organisations to be more effective in addressing poverty and inequality. Since 1992 INTRAC has provided specialist support in monitoring and evaluation, working with people to develop their own M&E approaches and tools, based on their needs. We encourage appropriate and practical M&E, based on understanding what works in different contexts.

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