

Research and Evaluation Methods

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Introduction

Evaluation and research are processes with multiple stages. The process begins with developing your evaluation or research question(s) and ends with presenting your findings. The stages in between can include:

- Designing data collection tools
- Determining the data analysis strategy
- Gathering and analyzing the data
- Writing the results

Methods are the tools needed to help you complete different tasks or stages in this process.

This document introduces three research and evaluation methods, and what to consider when choosing the right methodology for your project. The three methods are:

1. Quantitative
2. Qualitative
3. Mixed (includes both quantitative and qualitative elements)

Key terms

- **Methodology:** The guiding principle or strategy that is the basis for the methods used.
- **Methods:** Procedures and techniques for gathering, analyzing, and interpreting data.
- **Study design:** A plan or strategy for how to carry out an evaluation or research project. It includes both the methodology and specific methods chosen.

Choosing a method

What you are trying to find out should guide your choice of methods.

Consider the following questions when choosing a method (Patton, 2002):

- What are you trying to learn?
- What is the purpose of the evaluation or research project?
- Who will use the findings?
- What kind of information is needed?

- How will the information be used?
- When is the information needed?
- What resources are available to collect and analyze the information?

Quantitative methodology

What is it?

Quantitative studies use numbers and statistics to examine the facts or causes of events. These types of studies are designed to test hypotheses, which may later be applied in other settings.

How is data collected?

Common quantitative data sources include:

- Surveys with rating scales and pre-determined response categories (over the phone, online, or in-person)
- Standardized clinical tools or tests
- Official statistics databases (such as census data)
- Administrative databases
- Structured observations or interviews with content analysis

When collecting quantitative data, you need to be sure to collect enough to allow for statistical analysis. Calculating statistical power can help you determine if your sample size is large enough to detect a statistically significant difference (if one exists).

How is data analyzed?

Quantitative data analysis is usually done using statistical software packages. Common programs include Microsoft Excel, SPSS, and SAS. The analysis generally follows these steps:



- 1) **Clean and prepare your data.** You will need to explore the quality of your data to see how much information is missing, and determine if you need to construct new variables or recode existing ones. Data cleaning is important to ensure your results are reliable.
- 2) **Explore your data.** You can get more familiar with your data by looking at descriptive statistics (such as mean, median, and standard deviation). This will help you decide what statistical procedures will be best for your analysis.
- 3) **Analyze and interpret your data.** Once you are confident and familiar with your data, you can run the statistical procedures needed for your analysis and interpret your results.
- 4) **Verify your findings.** At this stage, it may be helpful to have someone else review your analysis.
- 5) **Present your results.** Once this is done, you can prepare the final presentation of your results.

When are quantitative methods appropriate?

Quantitative methods may be a good fit if you want to:

- Test a specific hypothesis or theory.
- Generalize results beyond your study.
- Try to predict the outcome of a program or intervention.
- Find out how common or widespread an issue is.
- Explore service use patterns.
- Measure satisfaction with programs or services.
- Examine trends over time.

Qualitative methodology

What is it?

Qualitative studies are more in-depth and flexible than quantitative studies. Qualitative evaluation or research “aims to provide an in-depth understanding of people’s experiences, perspectives and histories in the context of their personal circumstances or settings” (Spencer et al., 2003, p. 3). In contrast to quantitative studies, qualitative studies create hypotheses rather than test hypotheses. This methodology also recognizes the role of the evaluator or researcher in the evaluation or research process (Silverman, 2013).

How is data collected?

Qualitative data is typically collected in a natural setting (not laboratories or controlled environments) and involves *watching*, *asking*, or *examining*. It can be text-based, oral, or pictorial.

Common qualitative data sources include:

- Observations
- Interviews
- Document reviews
- Focus groups
- Case studies
- Narrative or discourse analysis

Qualitative data collection methods are unstructured or semi-structured. This means:

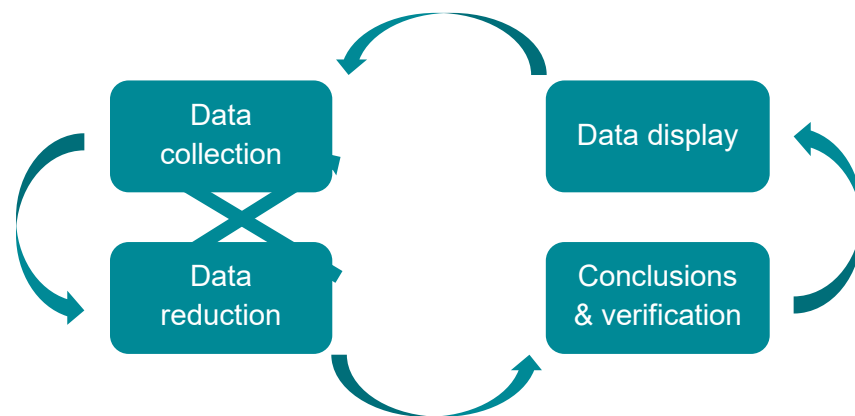
- Interviews use open-ended questions, and let the interview progress naturally rather than following a script.
- Observations and document reviews are typically exploratory and do not impose pre-defined categories. Instead, themes and categories are generated from the observations or documents themselves.

The most common principle for determining adequate sample size in qualitative research is saturation (Vasileiou, 2018). Saturation is reached when adding new participants does not lead to any new perspectives or information. To determine when data saturation occurs, data analysis should occur concurrently with data collection in an iterative process.

How is data analyzed?

In qualitative evaluations or research, data collection and data analysis are not distinct activities. Analysis begins with data collection. During data collection, the evaluator or researcher decides what data to include or exclude, and how the data should be organized and interpreted.

Qualitative data analysis generally involves *data reduction*, *data display*, and *conclusions and verification* (Miles et al., 2013). These activities occur in an iterative process as shown here:



- **Data reduction:** Qualitative data collection methods often generate large amounts of information, making data reduction an important process. This involves sorting, coding, and classifying information; identifying themes; and writing summaries. You will need to read and re-read your information multiple times. You may also develop coding sheets or templates for organizing your data. Qualitative data analysis software, such as NVivo or ATLAS-ti, can also sort, code, and organize your data.
- **Data display:** Once your data is organized in a manageable format, you can display it to highlight patterns and relationships between themes. These displays can include matrices, concept maps, or charts.
- **Conclusions and verification:** Based on your organization and display, you can draw conclusions and verify them. Analysis software can help with these processes. Similar to quantitative studies, you may also want to have someone else verify your analysis and conclusions.

When are qualitative methods appropriate?

Qualitative methods may be a good fit if:

- You want to understand people's perspectives and experiences.
- You want a more detailed, in-depth understanding of a particular problem or issue.
- You want to document the history of a program.
- There are only a small number of potential participants in your research.
- You want to explore a concept or generate a theory.

Mixed methods

What is it?

Mixed methods studies combine qualitative and quantitative methods, approaches, and concepts into a single study (Creswell, 2014; Johnson & Onweugbuze, 2004).

This method is often done in evaluations, and can be either *sequential* or *concurrent*. For example:

- A **sequential mixed methods** program evaluation would document clients' service use patterns to determine if they are using more or fewer services. Clients would then be interviewed to learn about their experience with the services.
- A **concurrent mixed methods** evaluation would include interviews with stakeholders that include both open-ended questions (qualitative) and rating scales (quantitative). The data would be analyzed and presented together.

Qualitative and quantitative methods can have an equal status in the study, or one can be the primary collection method.

There are several key features of mixed method studies:

- **Pragmatic** – Your choice of methods are guided by practical considerations. For example, you may use data that is already available, and choose data collection and analysis techniques that will provide the most reliable and comprehensive answer to your questions (Patton, 2002).

- **Comprehensive** – The combination of methods provides more comprehensive answers to your evaluation or research questions than one method alone.
- **Complementary** – The results from one method are enhanced or clarified by the results from another method (Cameron, 2009).
- **Includes both induction** (discovering patterns) **and deduction** (testing hypotheses or theories).
- **Triangulation** – Your study is strengthened by using a variety of data sources, involving multiple researchers or evaluators, or using multiple perspectives to interpret your data (Patton, 2002).

When mixing methods, you will need to carefully consider whether they can be combined and still generate trustworthy results in the context of your study.

When are mixed methods appropriate?

Mixed methods may be a good fit if you:

- Want to first explore a problem or issue before undertaking a large-scale survey.
- Are interested in the prevalence of an issue, but also want to understand how it affects individuals.
- Want to test specific hypotheses, but are also interested in identifying other hypotheses.
- Want to include both numerical and narrative results in your research.
- Want to generalize qualitative findings beyond the individuals or program studied.
- Want to study complex interventions or problems.
- Want to answer “why” and “how many” in the same study.

Table 1. Summary of Research and Evaluation Methods*

| | Quantitative Methods | Qualitative Methods | Mixed Methods |
|-------------------------------|---|---|--|
| Purpose | <ul style="list-style-type: none"> To test hypotheses and examine the relationship between variables To confirm hypotheses Asks “How much?” and/or “How many?” | <ul style="list-style-type: none"> To examine an event or situation in rich detail and in its natural setting To explore possible explanations Asks “Why?” “How?” and/or “Under what circumstances?” | <ul style="list-style-type: none"> To combine elements of both quantitative and qualitative methods that will provide the most comprehensive answers to questions |
| Approach | Deductive (testing hypotheses/theories) | Inductive (generating hypotheses/theories) | Both deductive and inductive |
| Researcher role | Researcher is distant (results are objective) | Researcher is involved (results are subjective) | Flexible, could be both distant and involved |
| Design | Predetermined at onset of the study | Emergent (evolves during the study) | Varied, could be both predetermined and emergent |
| Type of data collected | Numeric (closed-ended responses) | Text, oral, and/or images (open-ended responses) | Both closed- and open-ended responses |
| Sample | Large and can be generalized to the population being studied | Small and non-representative of the population being studied | Varied, could be both large and small |
| Data analysis | Statistical analysis | Text and image analysis | Both statistical and text/image analyses |

*adapted from Creswell, 2014

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