RESEARCH METHODOLOGY

WEEK 5 & 6: METHODS AND TOOLS FOR DATA COLLECTION

The important features of a research design are:

- It's a plan that specifies the sources and types of information relevant to the research problem.
- It's a strategy giving which approach will be used for gathering and analyzing data.
- It specifies the resources (financial and time) required undertaking the study.

We thus see that research design is important because it seeks to ensure efficient research operations for maximal information with minimal efforts and money expended.

INTRODUCTION

- Data collection means gathering information to address those critical evaluation/ research questions that you have identified earlier in the evaluation/ research process.
- To plan data collection, you must think about the questions to be answered and the information sources available.
- You must begin to think ahead about how the information could be organized, analyzed, interpreted and then reported to various audiences
- There are many methods available to gather information, and a wide variety of information sources.

PRE-DATA COLLECTION STEPS

1. Clearly define the goals and objectives of the data collection
2. Reach understanding and agreement on operational definitions and methodology for the data collection plan
3. Ensure data collection (and measurement) repeatability, reproducibility, accuracy, and stability

WHAT KIND OF DATA SHOULD BE COLLECTED?

- The information you collect is the evidence you will have available to answer the evaluation/research questions.
- Poor evidence is information which cannot be trusted, is limited, or simply is not relevant to the questions asked.
- Good evidence is information that comes from reliable sources and through trustworthy methods that address important questions

WHERE DOES THE DATA COME FROM?

- Take a step back – if we're starting from scratch, how do we collect / find data?
  - Secondary data
  - Primary data

SOURCES OF DATA

1. SECONDARY SOURCES

Secondary data refer to information gathered from sources already existing

- Secondary data – data someone else has collected

Secondary Data – Examples of Sources

- County health departments
- Mortality Statistics – birth, death certificates
- Hospital, clinic, school nurse records
- Private and foundation databases
- City and county governments
- Surveillance data from state government programs
- Federal agency statistics - Census, etc.

Secondary Data – Limitations

- What did you find on the frustrating side as you looked for data on the state's websites?
- When was it collected? For how long? May be out of date for what you want to analyze. May not have been collected long enough for detecting trends.
- Is the data set complete? There may be missing information on some observations, Unless such missing information is caught and corrected for, analysis will be biased.
- Are there confounding problems? Sample selection bias? Source choice bias?In time series, did some observations drop out over time?
- Are the data consistent/reliable? D id variables drop out over time? Did variables change in definition over time? E.g. number of years of education versus highest degree obtained.
- Is the information exactly what you need? In some cases, may have to use "proxy variables" – variables that may approximate something you really wanted to measure. Are they reliable? Is there correlation to what you actually want to measure? E.g. gauging student interest in U.W. by their ranking on FAFSA – subject to gamesmanship.

Secondary Data – Advantages

- No need to reinvent the wheel. If someone has already found the data, take advantage of it.
- It will save you money. Even if you have to pay for access, often it is cheaper in terms of money than collecting your own data. (more on this later.)

- It will save you time. Primary data collection is very time consuming. (More on this later, too!)
- It may be very accurate. When especially a government agency has collected the data, incredible amounts of time and money went into it. It's probably highly accurate.
- It has great exploratory value, Exploring research questions and formulating hypothesis to test.
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2. Primary Data

Primary data refer to information obtained firsthand by the researcher on the variables of interest for the specific purposes of the study

Primary data – data you collect

Primary Sources of Data

- Individuals
- Focus groups
  - Aimed at obtaining respondents' impressions, interpretations, and opinions.
  - Provides only qualitative and not quantitative information
  - Can not be considered to be truly representative
  - Focus groups are used for (1) exploratory studies, (2) making generalizations based on the information gathered by them, and (3) conducting sample surveys
  - Videoconferencing

Primary sources

- Panels
  - Whereas focus groups meet for a one-time group session, panels meet more than once.
  - Static or dynamic
  - Typically used when several aspects of a product are to be studied from time to time
- Unobtrusive Measures
  - Originate from a primary source that does not involve people

Primary Data - Limitations

- Do you have the time and money for:
  - Designing your collection instrument?
  - Selecting your population or sample?
  - Pretesting/piloting the instrument to work out sources of bias?

- Administration of the instrument?
- Entry/collation of data?

- Uniqueness
  - May not be able to compare to other populations
- Researcher error
  - Sample bias
  - Other confounding factors

DATA COLLECTION CHOICE

- What you must ask yourself:
  - Will the data answer my research question?
- To answer that
  - You much first decide what your research question is
  - Then you need to decide what data/variables are needed to scientifically answer the question
- If that data exist in secondary form, then use them to the extent you can, keeping in mind limitations.
- But if it does not, and you are able to fund primary collection, then it is the method of choice.

DATA COLLECTION TECHNIQUES QUESTIONNAIRE DESIGN

In research investigations, information can be collected through the application of a variety of techniques:

- Observation,
- Questionnaires,
- Interviews,
- Direct physical measurement and
- The use of standardized tests.

The approach selected depends on the following:-

- The study objectives
- The study design
- The availability of time, money, personnel
- Whether the study is intended to produce relatively precise quantitative findings or to produce qualitative descriptive data.

DATA COLLECTION

Quantitative data

- Structured interview
- Services statistics
- Self-administered questionnaire
- Secondary data sources
- Observation checklists
- Physical measurements

Qualitative data

- Unstructured interview
- Focus group discussion
- Directed observation of operations
- Content analysis of written materials

QUESTIONNAIRE CONSTRUCTION

- A *questionnaire* is a document designed with the purpose of seeking specific information from the respondents.

- *Questionnaires* are best used with *literate* people.

- The process of design and implementation is usually termed *questionnaire construction*.

Some important functions of questionnaire:

Generally, all types of questionnaires perform at least two functions

(1) Description,

(2) Measurement,

(3) or both.

STEPS OF QUESTIONNAIRE CONSTRUCTION

1. ***The variables which are designed to measure should be listed***

The researcher defines the information that is being sought.

- Thinking and discussion.
- research objectives,
- discussions with others,
- Reading and other sources.

At this stage, the document is typically a list of information yet to be translated into specific question form.

2. ***Drafting of the questionnaire.***

- Takes the list of information
- Attempts to devise draft questions.
- ask more than one question to measure a single variable
- pay attention for the phrasing and design of the questions

- pay attention for the overall design of the questionnaire

If the questionnaire is badly designed, then the responses may not accurately reflect the real situation for the respondents, so, this will affect the validity of the obtained information.

3. *Questionnaire piloting.*

It is wise to pilot or trial a new questionnaire with a small group of the intended respondents and with clinical or research colleagues, in order to improve its clarity and remove any problems, before the main survey.

4. *Redrafting of the questionnaire.*

- If the pilot phase uncovers *problems* with the questionnaire, it will need to be *redrafted* in order to address these problems by making modifications.
- If they are of a major nature, it is usual to repeat the pilot phase.
- If they are minor, the researcher may make the changes, and then proceed to administration of the questionnaire to the full sample of respondents.

5. *Judge for validity of the questionnaire:*

- The easiest type of validity is to test face validity of the questionnaire by reviewing it by judges (experts in the field of the study)
- The test is said to have face validity if it "looks like" it is going to measure what it is supposed to measure. It refers to what it appears superficially to measure.
- *Face validity* is often contrasted with *Content validity*.

6. *Administration of the questionnaire*

After the questionnaire has been developed, and judged, it is administered to the full sample of respondents.

Note: the ethics of conducting surveys and designing questionnaires must be considered.

-*Clear aim* - *anonymity* - *confidentiality* - *no harm*

THE STRUCTURE OF QUESTIONNAIRES

1. *Covering letter & Introductory statement*

- Identification of the sponsoring institution and the researcher.

- The name of the highly person or agency is a guarantee to the respondents that the project is worthwhile, that the data will not be misused , and the that confidentiality will be maintained.
  - ➔ The covering letter is of value in gaining cooperation, introducing the questionnaire & the researcher to respondents.

- ➔ *Introductory statement* describes the purpose of the questionnaire, the information sought and how it is to be used, how the respondents were selected for the study and why their answers are important .

2. ***Demographic questions:-*** Position these questions first as they are easily answered and serve as a 'Warm-up'.
3. ***Factual questions:-*** It is generally easier for respondents to answer direct factual questions, e.g. 'Do you have any chronic disease? than to answer opinion questions, also to serve as a 'warm up'.
4. ***Opinion questions:-*** They require reflection on the part of the respondent and are usually positioned after the demographic and factual questions.
5. ***Closing statements and return instructions:-*** -Thank the respondent for their participation, Invite the respondents to take up any issues they feel have not been satisfactorily addressed in the questionnaire; Provide information on how to return the questionnaire.

QUESTION AND QUESTIONNAIRE FORMATS

The questionnaire may be formatted as:-

- Interview schedule: (unstructured, semi-structured, structured)
- Self administered questionnaire

Questionnaires versus interviews:

Interview schedule

- Lower rejection rate
- More detailed responses can be elicited
- Greater control over filling out of response form
- Expensive
- Time consuming
- Require expert help
- Responses much more susceptible to interviewer bias
- Respondents modify their response to fit what they perceive to be the opinion of the interviewer

Self-administered questionnaire

- Cheap to administer

- Less susceptible to interviewer bias
- Can be administered by mail
- Higher rejection rate, incomplete responses
- Difficult to elicit detailed responses
- Less control over how responses form is filled out
- Respondents are forced to answer, with little opportunity to influence the researcher's agenda

THERE ARE TWO MAJOR QUESTION FORMATS:

The open ended question

- No predetermined response schedule into which the respondent must fit their response.
- Questions that require short or lengthy replies by respondents.

The closed-response question:

- Respondent is supplied with a predetermined list of response options.
- The question consists of fixed number of choices

Format of questions	Costs	Benefits
Open-ended	- Less structured. - Responses difficult to encode and analyze using powerful statistical methods. - Greater time taken by respondent to answer. - Respondent may find writing an essay more difficult than circling a number.	- More detailed answers elicited.
Closed- ended	- Less depth in answers (it does not allow for any answers other than the ones listed). - The potential responses listed by the researcher may not include an answer that is most appropriate for a particular respondent. - May frustrate respondents.	- Tightly structured - Responses easily encoded and analyzed Less time taken to collect responses. - Quicker and easier to answer. - well suited for use in multi-item scales designed to produce a single score

- To ensure accurate and standardized responses, all questionnaires must have instructions specifying how they should be *filled* out.
- Provide *an example* of how to complete a question, using a simple question that is easily answered.

- To improve the flow, questions concerning major areas should be *grouped together* and introduced by headings or short descriptive statements.
- For each question or set of questions, particularly if the *format differs* from that of other questions , instructions must indicate clearly how to respond.
- It is best to avoid *complicated structures* involving conditional questions which usually confuse respondents and ought be avoided where possible. For example, many conditional questions such as 'If you answered yes to Question 6 and no to Question 9, please answer Question 10'.
- A *neat format* with plenty of space is more attractive and easier to use than one that is crowded or cluttered.
- Although investigators often assume that a questionnaire will appear shorter by having fewer pages, the task is more difficult when more questions are *crowded* onto a page
- Sometimes the investigator may wish to follow up certain answers with more detailed questions. This is best accomplished by a *branching question*, For example

  ➢ Have you ever been told that you have high blood pressure?

  □Yes □ No

  ➢ If yes, how old were you when you were first told that you had high blood pressure?

  _____ years old

  If no, go to question 11.

DON'TS IN QUESTIONNAIRES

1. ***Double-barreled questions.*** This is where two questions are included in the one, 'Do you like maths or science?', for example. These questions should be separated so that it is perfectly clear to the respondent (and the researcher) which component is being answered.
2. ***Ambiguous questions***. Avoid vacuous words and terms that may mean different things to different people.
3. ***Level of wording***. It is important to tailor the level of wording of questions to accord with the intended respondents.

➢ ***Avoid Jargon***, and it should be established in the pilot study that the respondents will understand the concepts.

➢ Using double negatives should be avoided. In general, questions should be simple and concise.

4. ***Bias and leading questions.*** The wording of the question should not lead the respondent to feel committed to respond in a certain way.

5. ***Sensitive questions:*** is the question asked in such a way that the respondents may become embarrassed, angry, emotionally upset?
6. ***Complex question*** : does the question use long phrases and complex sentences?

QUALITIES OF A GOOD QUESTIONNAIRE

- *Clarity*: can the question be interpreted in more than one way ?
- *Brevity*: can the question be shorted and still retain its meaning?
- *Simplicity*: is the vocabulary at a simple level (such as that of a newspaper) which is appropriate to the study sample?
- *Applicability*: can the respondents in the study sample be reasonable expected to answer accurately?

FOCUS GROUPS

CONDUCTING FOCUS GROUPS DISCUSSIONS: PRINCIPLES

What is a focus group?

- A *focus group* is a small group discussion guided by a trained leader, used to learn more about opinions on a designated topic, and then guide future action.
- Focus groups are *group interviews*

How are focus groups different from regular "groups"?

- They are focused on a specific topic
- They have a trained facilitator/moderator
- Members of the group are encouraged to talk openly about their opinions and respond to other members

When should you use a focus group?

- When considering introducing a new program or service
- When the main concern is depth or shading of opinion
- When you want to ask questions that can't easily be asked or answered in a written survey
- When there is a gap between people
- When investigating complex behaviour and motivations
- When you want to understand diversity

– when you need a friendly respectful research method

Application Areas of Focus Groups

	Academic Research	**Product Marketing**	**Evaluation Research**	**Quality Improvement**
Problem Identification	Generating Research Questions	Generating New Product Ideas	Needs Assessment	Identifying Opportunities
Planning	Research Design	Developing New Products	Program Development	Planning Interventions
Implementation	Data Collection	Monitoring Customer Response	Process Evaluation	Implementing Interventions
Assessment	Data Analysis	Refining Product or Marketing	Outcome Evaluation	Assessment Redesign

Areas to avoid Focus Groups

- When they imply commitments you cannot keep
- If the participants are not comfortable with each other
- When the topic is not appropriate for the participants
- When a project requires statistical data

How to Conduct a Focus Group:

Before the meeting:

- Recheck your goals
- Consider other methods
- Find a good leader
- Find a recorder
- Decide who should be invited
- Decide about incentives

1. *Preparation*

- Select participants / interviewees / sample
- Contact prospective participants and explain the purpose and conduct of the interview / research verbally and in writing.
- Explain the participants ethical rights verbally and in writing.
- Allow time and opportunity for prospective participants to ask for clarification.
- Obtain verbal and written consent from participants.
- Prepare interview schedule (if appropriate).
- Get to know your technical equipment.

2. *Resources Required*

- Skilled Moderators
- Sufficient time
- An appropriate room and a "do not disturb sign"
- A good quality recording device and microphone
- Sufficient media if appropriate, e.g. tapes, disks
- A reliable power supply, e.g., spare batteries
- "Food and drink"
- Spare information sheets / consent forms
- Interview schedule

3. *The Interview Setting (What is an appropriate room / setting?)*

- One that is the appropriate size.
- One that has appropriate seating.
- One that has appropriate work surfaces.
- One that is heated / ventilated appropriately.
- One that has refreshments available.
- One that is exclusively yours for the required time.

4. *Conducting them (How many participants should take part?)*

- Conventionally the literature suggests 8 – 10 participants
- It is possible to have larger groups but there are implications for the level of structured required, i.e.,
- The greater the No. the more structure is required e.g moderators / facilitators.
- One solution is to run multiple concurrent groups.

Being Creative

- Vary the focus, e.g., images, propositions, scenarios
- Vary the procedure e.g., use activities to punctuate discussion

Recording and Note taking

- Electronic recording
- Field notes
- Analytical notes
- Who does what?

5. How long should a Focus Group be?

- It depends on the motivation of the participants.
- It depends on available time.
- It depends on the complexity of the issue being explored.
- It depends on how well the interview is going.

The Guiding Principles of Moderating

- Be interested in the participants
- Show positive regard
- Be a moderator not a participant
- Be ready to hear unpleasant views
- You can't moderate all groups
- Use your unique talents

6. During the Focus Group

Register the Participants	Be comfortable with the pause
Make small talk	Probe as needed
Introduce the Focus Group	Listen
Ask questions	Summarize the Discussion
Anticipate the flow	Get people to leave
Control your reactions	Debrief with assistant moderator