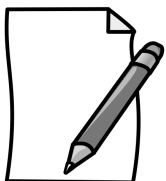


Survey Design



Lecture 2

Survey Research & Design in Psychology
James Neill, 2012

Summary of Lecture 1 – Survey research

1. Research types (3) and purposes (4)
2. A survey is a standardised stimulus used as a social science measurement tool
3. Survey research
 1. Pros – ecological validity, cost-efficient collection of large amounts of data
 2. Cons – low compliance, reliance on self-report

2

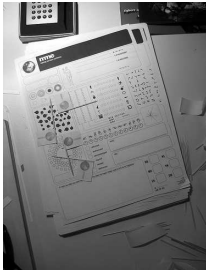
Overview



1. Objectives
2. Research process
3. Survey types – Interview vs. self-administered
4. Survey construction
5. Levels of measurement
6. Biases
7. Sampling

3

Objectives



4

Objective 1

Understand the importance of a **rigorous, step-by-step process** in planning, developing & implementing research questionnaires

5

Objective 2

Consider the pros and cons of **common methods for survey administration**

1. Interview-based survey
2. Self-report survey

6

Objective 3

Examine the nuts & bolts of **questionnaire design** e.g.,

1. Question style,
2. Response formats,
3. Layout, and
4. Pre- and pilot-testing

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Objective 4

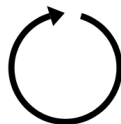
Consider **implementation issues**:

1. Sampling methods
2. Biases
3. Sample size and return rates
4. Representativeness

8

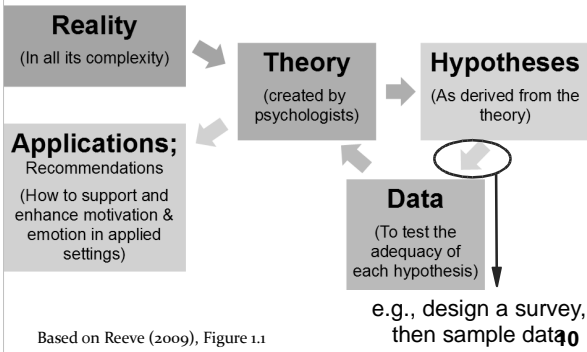
Research process

Examples of iterative research process models and where survey design and sampling fits in.

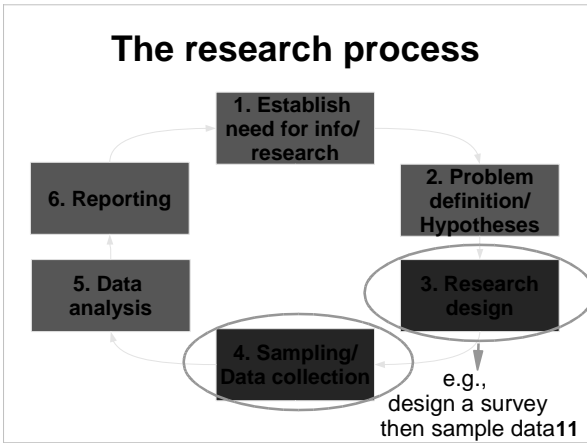


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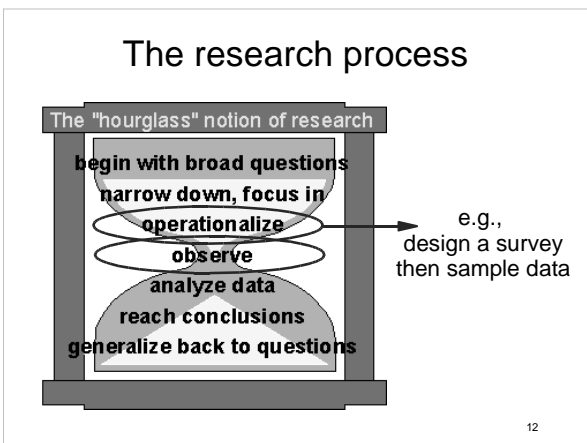
The research process



The research process



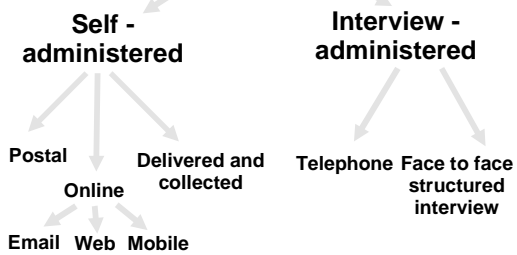
The research process



Survey types

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Types of surveys



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Advantages and disadvantages of self- and interview-administered surveys



(Activity - Handout)

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Advantages and disadvantages of self- and interview-administered surveys

Instructions. Rate self- and interview-administered surveys against these eight aspects of survey administration as follows:

1. Rate each cell as "low" or "high".
2. Circle the (generally) most desirable response for each aspect.

#	Aspects of survey administration	Type of survey	
		Self-administered survey	Interview (EI or telephone)
1	Cost and time involved in data collection and data entry		
2	Demand characteristics		
3	Risk of non-response and low response rate		
4	Access to a representative (and possibly widely dispersed) sample		
5	Data quality and richness per participant		
6	Anonymity		
7	Adjustability to accommodate cultural differences		

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#	Aspects of survey administration	Type of survey	
		Self-administered survey	Interview (EI or telephone)
1	Data collection and data entry cost and time	Low	High
2	Demand characteristics	Low	High
3	Risk of non-response and low response rate	High	Low
4	Access to a representative (and possibly widely dispersed) sample	High	Low
5	Data quality and richness per participant	Low	High
6	Anonymity	High	Low
7	Adjustability to accommodate cultural differences	Low	High
8	Suitability for young children or others with low literacy levels	Low	High

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Survey construction



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Survey construction



1. Surveys are science and art
2. Questionnaire development
 1. Parts of a survey
 2. Order, flow and structure
 3. Demographics and personal information
 4. Ending the survey
 5. Layout
 6. Pre- and pilot-testing
3. Writing questions
 1. Types of questions
 2. Response formats



Surveys are science and art

“Surveys are a mixture of science and art, and a good researcher will save their cost many times over by knowing how to ask the correct questions.”

- Creative Research Systems (2008)

Questionnaire development

1. Formulate generic questionnaire

Turn into separate sections based on study objectives.

2. Expand the questionnaire

Question order & funnel qs

Draft qs & response formats

4. Finalise questionnaire & implement

3. Pre-test, pilot test, & redraft

Parts of a survey



- Initial pages
 - Cover letter
 - Human research ethics statement
 - Informed consent
 - Survey instructions
- Sections containing measurement items for each objective
- End pages
 - Indication of survey end
 - Instructions for returning survey

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Cover letter / ethics statement / informed consent

Outline details of research project e.g.,:

- Who are you? Are you bona fide?
- Purpose of survey?
- What's involved?
- Explain any risks/costs/rewards
- How will results be used?
- Human ethics approval #
- How is consent given / not given?
- Voluntary - can choose not to continue anytime
- More info: Complaints, how to obtain results, contact details etc.

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Ethical considerations: How to treat respondents

- Minimise risk / harm to respondents
- Informed consent
- Confidentiality / anonymity
- No coercion
- Minimal deceit
- Fully debrief
- Honour promises to provide respondents with research reports
- Be aware of potential sources of bias / conflicts of interest

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Instructions

- Provides consistency - helps to ensure standard conditions across different administrations
- Few will read it without good prompting and easy-to-read instructions
- Explain how to do the survey in a user-friendly manner

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LEQ-H

PLEASE DO NOT TURN OVER YET
READ THESE INSTRUCTIONS

This is a chance for you to consider how you think and feel about yourself in some ways. **This is not a test** - there are no right or wrong answers, and everyone will have different responses. It is important that you give your own views and that you be honest in your answers and do not talk to others while you think about your answers. They will be used only for research purposes and will in no way be used to refer to you as an individual at any time.

Over the page are a number of statements that are more or less true (that is like you) or more or less false (that is unlike you). Please use the eight point scale to indicate how true (like you) or how false (unlike you), each statement is as a description of you. **Answer the statements as you feel now**, even if you have felt differently at some other time in your life. Please do not leave any statements blank.

FALSE NOT LIKE ME						TRUE LIKE ME	
1	2	3	4	5	6	7	8
This statement doesn't describe me at all; it isn't like me at all		More false than true		More true than false		This statement describes me very well; it is very much like me.	

Order, flow and structure

- Start gently; ease respondent in
- Group like questions together
- Consider order effects:
 - Habituation e.g. → polarisation of responses, yea-saying, nay-saying
 - Fatigue
 - Minimise switching between response formats
- Consider counter-balanced orders

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Demographics and personal information

- Single section, usually at beginning or end of questionnaire
- Only include personal questions that are justified by the research question(s)

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Ending the survey

- Space for comments?
- Indicate the end
- Say thanks!
- Details about how to contact researchers, obtain results, make complaint etc.
- Instructions about how to return the survey or submit responses
- Debriefing or referral information?

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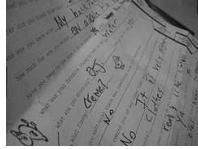
Layout

- Page size and desktop layout
- Font (type, size)
- No. of pages
- Margins
- Double vs. single-siding
- Colour, etc.

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Pre- & pilot-testing

- Pre-test items on convenient others - ask for feedback
- Revise items e.g.,
 - Which don't apply to everybody
 - Are redundant
 - Are misunderstood
 - Are non-completed
- Reconsider ordering & layout
- Pilot test on a small sample from the target population, analyse, & revise



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How to write good survey questions

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How to write good survey questions



1. Drafting survey questions
2. Objective vs. subjective questions
3. Open- vs. closed-ended questions
4. Closed-ended response formats
5. How could these survey questions be improved (Exercise)

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Drafting survey questions

- **Be direct:** Focus directly on topic/issue
- **Be clear:** Be clear, brief, and readable
 - Avoid big words
 - Use simple and correct grammar
- **Define target constructs:** be as concrete and unambiguous as possible; the meaning must be clear to *all* respondents

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Drafting survey questions

- **Related tools:** Check related research & surveys
- **Relate to objectives:** Only ask questions that relate to objectives
- **Ask questions:** Phrase as questions
- **Brevity:** Keep questions as short as possible

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Drafting survey questions

- **Applicability and Exhaustivity:** Questions must apply to all respondents. Response options must be exhaustive (so as to apply to all respondents, e.g., include 'other') and mutually exclusive (not overlapping)
- **Demand:** Recall of detail or time involves must not be unnecessary or excessive
- **Font size:** Use large (e.g. 14)
- **Number** the questions

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Watch out for questions which are...

Double negative: Negatively worded questions are often confusing because responding "no" creates a double negative. e.g., "Do you disapprove of tax reforms?" vs "Do you approve of tax reforms?"

Double-barrelled: e.g., "Do you think speed limits should be lowered for cars & trucks?"

Watch out for questions which are...

Loaded: A question which contains a controversial assumption e.g.,

"Have you stopped beating your wife?" vs "Have you ever physically struck your current partner?"

"Do you advocate a lower speed limit in order to save human lives?" vs "What speed limit is required for traffic safety?"

Watch out for questions which are...

Leading: A question that suggests the answer the researcher is looking for e.g.,

"You were at KC's bar on the night of July 15, weren't you?" vs.

"Where were you on the night of July 15?"

"What dangers do you see with the new policy?" vs.

"What do you think about the new policy?"

Objective questions

- A verifiably true answer exists (i.e., factual info).
- An observer (in theory) could provide an accurate answer.

e.g.,

How times during 2011 did you visit a general medical practitioner? _____

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Subjective questions

- Asks about fuzzy personal perceptions
- There is no “true”, factual answer
- Many possible answers
- Can't be accurately answered by an observer. e.g.,

Think about the visits you made to a GP during 2011. How well did you understand the medical advice you received?

perfectly very well reasonably poorly not at all

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Open-ended questions

- Rich information can be gathered
- Useful for descriptive, exploratory work
- Difficult and subjective to analyse
- Time consuming



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Open-ended questions: Examples

What are the main issues you are currently facing in your life?

How many hours did you spend studying last week? _____

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Closed-ended questions

- Important information may be lost forever
- Useful for hypothesis testing
- Easy and objective to analyse
- Time efficient



Closed-ended response formats

1. Dichotomous
2. Multichotomous
3. Verbal frequency scale
4. The list (multiple response)
5. Ranking
6. Likert scale
7. Graphical rating scale
8. Semantic differential
9. Non-verbal (idiographic)



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Dichotomous

Two response options e.g.,

Excluding this trip, have you visited Canberra in the previous five years? (tick one)

Yes No

Provides the simplest type of quantification (categorical LOM).

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Multichotomous

Choose one of more than two possible answers e.g.,

What type of attractions in your current trip to Canberra most appeal to you? (tick the most appealing one)

- historic buildings
- museum/art galleries
- parks and gardens

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Verbal frequency scale

Over the past month, how often have you argued with your intimate partner? (circle one)

1. All the time
2. Fairly often
3. Occasionally
4. Never
5. Doesn't apply to me at the moment

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The list (multiple response)

Provides a list of answers for respondents to choose from e.g.,
Tick any words or phrases that describe your perception of Canberra as a travel destination:

- Exciting Important
- Boring Enjoyable
- Interesting Historical

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Ranking

Helps to measure the relative importance of several items
Rank the importance of these reasons for your current visit to Canberra (from 1 (most) to 4 (least)):

- to visit friends and relatives
- for business
- for educational purposes
- for holiday/ sightseeing

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Likert scale

Measures strength of feeling or perception.

Indicate your degree of agreement with this statement:

“I am an adventurous person.”
(circle the best response for you)

- | | | | | |
|-------------------|----------|---------|-------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| strongly disagree | disagree | neutral | agree | strongly agree |

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Watch out for too many or too few response options

“Capital punishment should be reintroduced for serious crimes”

1 = Agree 2 = Disagree

- | | |
|-------------------------------|-----------------------------|
| 1 = Very, Very Strongly Agree | 7 = Slightly Disagree |
| 2 = Very Strongly Agree | 8 = Disagree |
| 3 = Strongly Agree | 9 = Strongly Disagree |
| 4 = Agree | 10 = V. Strongly Disagree |
| 5 = Slightly Agree | 11 = V, V Strongly Disagree |
| 6 = Neutral | |

How could these survey questions be improved?

Example: How could this question be improved?

How old are you?

- 18-20
- 20-22
- 22-30
- 30 and over

Example: How could this question be improved?

Are you satisfied with your marriage and your job?

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Example: How could this question be improved?

You didn't think the food was very good, did you? (tick your answer)

_____ Yes _____ No

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Example: How could this question be improved?

Environmental issues have become increasingly important in choosing hotels. Are environmental considerations an important factor when deciding on your choice of hotel accommodation? (tick an answer)

_____ Yes _____ No

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Example: How could this question be improved?

What information sources did you use to locate your restaurant for today's meal?
(please tick appropriate spaces)
 yellow pages
 Internet
 word of mouth

Levels of Measurement

=

Type of Data

Stevens (1946)



Levels of measurement

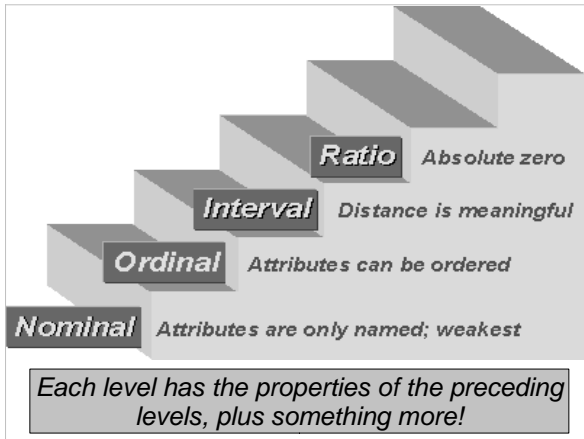
- **N**ominal / Categorical
- **O**rdinal
- **I**nterval
- **R**atio

Discrete vs. continuous

Discrete

Continuous

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Categorical / nominal

- Conveys a category label
- (Arbitrary) assignment of #s to categories

e.g. Gender

Male	Female
0	1
♂	♀

- No useful information, except as labels

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Ordinal / ranked scale

- Conveys *order*, but not *distance*
e.g. in a race, 1st, 2nd, 3rd, etc. or ranking of favourites or preferences



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Ordinal / ranked example: Ranked importance

Rank the following aspects of the university according to what is most important to you (1 = most important through to 5 = least important)

- ___ Teaching and education
- ___ Social life
- ___ Campus
- ___ Administration
- ___ University's reputation

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Interval scale

- Conveys *order & distance*
- 0 is arbitrary
e.g., temperature (degrees C)
- Usually treat as continuous for > 5 intervals

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Interval example: 8 point Likert scale

FALSE NOT LIKE ME				TRUE LIKE ME			
1	2	3	4	5	6	7	8
This statement doesn't describe me at all; it isn't like me at all		More false than true		More true than false		This statement describes me very well; it is very much like me.	

SOME EXAMPLES

- A. I am a fast thinker. 1 2 3 4 5 6 **7** 8
(The 6 has been circled because the person answering believes the statement "I am a fast thinker" is sometimes true. That is, the statement is sometimes like him/her.)
- B. I am a good storyteller. 1 **2** 3 4 5 6 7 8
(The 2 has been circled because the person answering believes that the statement is mostly false as far as he/she is concerned. That is, he/she feels he/she does not tell good stories.)
- C. I enjoy working on puzzles. 1 2 3 4 5 6 7 **8**
(The 8 has been circled because the person really enjoys working on puzzles a great deal, therefore the statement is definitely true about him/her.)

Ratio scale



- Conveys *order & distance*
- Continuous, with a meaningful 0 point
 e.g. height, age, weight, time, number of times an event has occurred
- Ratio statements can be made
 e.g. X is twice as old (or high or heavy) as Y

Ratio scale: Time

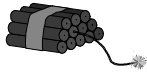
Estimate the average hours per week (approx.) you spend during semester:

- 10 in paid employment _____
- 11 in classes (lectures, tutorials etc.) _____
- 12 studying outside of classes _____

Why do levels of measurement matter?

Different analytical procedures are used for different levels of data.

More powerful statistics can be applied to higher levels



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Biases

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Biases

Many biases influence survey research data collection:

- Non-sampling biases
 - Instrumentation
 - Reliability
 - Validity
 - Response biases
- Sampling biases
 - Where sample does not represent target population

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Response biases

- Acquiescence
 - yea- and nay-saying
- Order and fatigue effects
- Demand characteristics
- Hawthorne effect
- Self-serving bias
- Social desirability
- Experimenter bias

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Demand characteristics

Participants form an interpretation of the researcher's purpose and unconsciously change their behaviour to fit that interpretation.

Interview

- Higher demand characteristics

Questionnaire

- Lower demand characteristics

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Maximising response rate

- Layout and design is key
- Respondent's level of interest
- Rewards
- Accompanying letter / introduction
- Colour of paper
- Mail surveys - self-addressed stamped return envelope
- Reminders or follow up calls

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Sampling



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Sampling: Overview

1. Sampling terminology
2. What is sampling?
3. Why sample?
4. Sampling methods
5. Example: Shere Hite's survey

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Sampling terminology

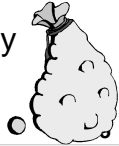
- **Target population**
 - To whom you wish to generalise
- **Sampling frame**
 - Those who have a chance to be selected
- **Sample**
 - Those who were selected and responded
- **Representativeness**
 - The extent to which the sample is a good indicator of the target population

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What is sampling?

“Sampling is the process of selecting units (e.g., people, organizations) from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen.”

- Trochim (2006)



Why sample?

- Reduces cost, time, sample size etc.
- If the sample is representative, the sample data allows inferences to be drawn about the target population.

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Representativeness of a sample depends on:

- Adequacy of sampling frame
- Sampling method
- Adequacy of sample size
- Response rate – both the % & representativeness of people in sample who actually complete survey

It is better to have a small, representative sample than a large, unrepresentative sample.

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Sampling methods

Probability sampling

- Simple
- Systematic
- Stratified

Non-probability sampling

- Convenience
- Purposive
- Snowball

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Random/probability sampling

- Each unit has an equal chance of selection
- Selection occurs entirely by random chance
- Also called representative sampling

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Simple random sampling

- Everyone in the target population has an equal chance of selection
- Useful if clear study area or population is identified
- Similar to a lottery:
 - List of names are assigned #s and randomly select #s of respondents
 - Randomly select # through table of random #s or by computer

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Systematic random sampling

- Selecting without first numbering
- Respondents (units) selected from a list/file.
- Useful when survey population is similar e.g. List of students
- Select sample at regular intervals from the population e.g., every 5th person on a list, starting at a random number between 1 and 5

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Stratified random sampling

- Sub-divide population into strata (e.g., by gender, age, or location)
- Then random selection from within each stratum
- Improves representativeness
- e.g., Telephone interviews using post-code strata

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Non-random / non-probability

- Also called purposive or judgemental sampling
- Useful for exploratory research and case study research
- Able to get large sample size quickly
- Limitations include potential bias and non-representativeness

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Convenience sampling

- Sampling is by convenience rather than randomly
- Due to time/financial constraints
- e.g. surveying all those at a tourist attraction over one weekend

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Purposive sampling

Respondents selected for a particular purpose e.g., because they may be “typical” respondents

- e.g., select sample of tourists aged 40-60 as this is the typical age group of visitors to Canberra
- e.g., Frequent flyers to contact regarding service quality in an airline setting

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Snowball sampling

- Useful for difficult to access populations e.g., illegal immigrants, drug users
- Respondents recommend other respondents
- e.g., in studying ecstasy users, gain trust of a few potential respondents and ask them to recommend the researcher to other potential respondents

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Sampling process

- Identify **target population** and **sampling frame**
- Select **sampling method**
- Calculate **sample size** for desired power.
- Maximise **return rate**

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Sampling Example: Shere Hite 'American Sexology'



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Hite's survey of American male-female relations (early 1980's)

- Shere Hite 'doyenne of sex polls'
- Media furors & worldwide attention
- 127-item questionnaire about marriage & relations between sexes
- Sample: 4500 USA women, 14 to 85 years
- Conclusion: Society and men need to change to improve lives of women

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Some of Hite's findings about American women....

- Only 13% married for 2+years were still in love
- 70% married for 5+ years were having affairs...
 - usually more for 'emotional closeness' than sex
 - 76% of these women did not feel guilty
- 87% had a closer female friend than husband
- 98% wanted "basic changes" to love relationships
- 84% were emotionally unsatisfied
- 95% reported emotional & psychological harassment from their men

Some of the critical comments....

She goes in with prejudice & comes out with a statistic.

The survey often seems merely to provide an occasion for the author's own male-bashing diatribes.

Hite uses statistics to bolster her opinion that American women are justifiably fed up with American men.

Hite's response rate & selection bias

- 100,000 questionnaires were sent to a variety of women's groups (feminist organisations, church groups, garden clubs etc.)
- 4,500 replied (4.5% return rate)

Hite's response rate & selection bias

"We get pretty nervous if respondents in our survey go under 70%. Respondents to surveys differ from nonrespondents in one important way: they go to the trouble of filling out what in this case was a very long, complicated, and personal questionnaire."

- Regina Herzog, University of Michigan Institute for Social Research **103**

Lessons from Hite's male-female relations survey

- **Sample size** – it's not how big, it's how representative
- **Objectivity** – watch out for manipulating the survey questions and results interpretation to suit your personal conjectures

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Summary

1. Pros and cons of interview- vs. self-administered surveys
2. Iterative questionnaire development – draft then test
3. Types of survey questions (subj./obj., open/closed) and response formats
4. Levels of measurement
5. Sampling - probability & non-prob.

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References

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- Free and open source software.
- <http://www.openoffice.org/product/impress.html>



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