

Using Surveys as a Research Tool

Resident Research Course 2025

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Objectives



Purpose of surveys



Survey design process



Distribution of surveys



Tips 'n Tricks



Sample survey

*Some content modified from prior version of this lecture given by Dr. Nadia Luca, 2021

Pre-Test Question 1

1. Which of the following statements is true about surveys:

- A. Surveys with a black background have a better response rate
- B. Use of the word “survey” in the subject line will increase response rate
- C. It is best to start a survey with the more difficult questions
- D. It is best to ask one question at a time

Pre-Test Question 2

2. All of the following are types of survey error, except:

- A. Measurement error
- B. Coverage error
- C. Interpretation error
- D. Nonresponse error

Pre-Test Question 3

3. Which of the following is false regarding survey development:

- A. Reliability refers to getting consistent results from repeated samples and different researchers
- B. Validity refers to an instrument being able to detect change over time, when it has occurred
- C. Close-ended questions typically result in clear and complete responses
- D. It is important that all response choices are mutually exclusive

Audience survey (!)

- How many people in this Zoom:
 - Have completed a survey as part of a research study?
 - Have designed a research survey?
 - Are thinking of designing a research survey for their resident project?
- What factors make a survey easier to complete?
- What factors make it challenging to complete a survey?

Types of surveys

1. Epidemiological surveys
2. Attitudes to a health service or intervention
3. Assessing knowledge on particular issue or topic

Advantages

- Allows selection of large sample
- May be exploratory, descriptive or explanatory
- Cost-efficient
- Rapid data collection

Disadvantages

- Low response rate → bias
- Literacy issues
- Questions/answers can't be clarified (if online/mail)

Should I use a Survey?

- When to use a survey (or “indications”)
 - Best for assessing non-observable phenomenon
 - Attitudes, opinions, beliefs, values
 - Some behaviors, assuming
 - ✓ Observation is impractical
 - ✓ People might reasonably/accurately report their behavior
- When not to use a survey (or “contraindications”)
 - When observable or recorded data already exists
 - When examining a very novel or exploratory topic
 - Qualitative methods preferred (e.g. interview/focus groups)

Steps to a great survey

1. Identify objective(s)
2. Identify population
3. Statistician consult
4. Survey development
5. Survey formatting
6. Testing
7. Distribution
8. Analysis and reporting

Steps to a great survey

1. Clear research objective(s)

- “Need to know” rather than “would be nice to know”

2. Identify population

- Define overall population
- Define sample from that population

3. Statistician consult

- Early on
- Sample size/power

Types of samples

Type	Description
Simple Random	Whole population has equal chance of selection (i.e. random generator)
Systematic Random	Random start point then every Kth individual (k=5 or 20 etc)
Stratified Random	Subgroups within a sample determined then do simple random within
Purposive	Specific population criteria
Quota	Specific number with specific qualities
Chunk	Those available in a certain setting
Snowball	Individuals meeting a criteria then identify other individuals meeting same criteria

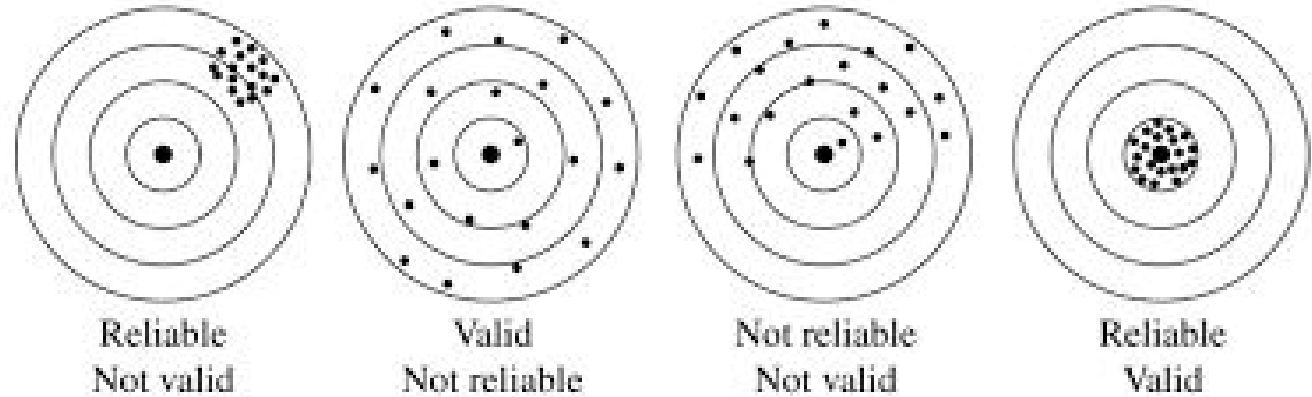
Steps to a great survey

4. Survey development

- ***First question to be asked: can you use an existing validated instrument?***
 - Depends on whether the type and range of closed responses reflects the full range of perceptions and feelings that people in all the different potential sampling frames might hold.
 - Importantly, health status and quality of life instruments lose their validity when used beyond the context in which they were developed.

Survey development

- Reliability
- Validity



- Responsiveness



Survey development

- **Item Generation**

- Purpose: Generate ALL possible question ideas
- Identify themes related to objectives
- Use literature reviews, focus-group sessions, expert panels
- Add questions to “fatigue” or “redundancy”
- Consider “Delphi method”

Survey development

- **Item Deletion**

- “Prune” down question ideas
- Get rid of redundant items
- Expert panels
- Rank importance
- Rank relevance to objectives
- Aim for max 25 questions
- Aim for at least 5 questions per theme

Writing Questions

- Every potential respondent should:
 - Interpret questions in the **same** way (ie reliable)
 - Respond to questions **accurately** (ie valid)
 - Be **willing** to answer the questions (ie feasible)

Writing Questions

- Make every question count
- Short and simple
- Ask direct questions
- Ask one question at a time
- Avoid leading and biased questions
 - Clear, concise, without bias
 - Normalizing statements
 - Language level targeted at lowest educational level

Writing Questions

Comprehension

- Comprehend question!

Common problems:

Lexical – What do the individual words mean

Semantic – What does overall question mean, literally, when those words are assembled?

Pragmatic – what did the author of the question intend for me to understand/do?

Sample question

- How often are you particularly averse to risky situations?

- Never
- Rarely
- Sometimes
- Often
- All of the time

- How often do you take risks?

- Never
- Rarely
- Sometimes
- Often
- All of the time

Sample question

- Consider your geographic area within a range of 20 miles. Which of these fast-food restaurants is closest in proximity to your residence?
- Which of these fast-food restaurants is closest to where you live?

Types of questions

- Open-ended vs close-ended
- Ordered vs unordered

Types of questions

- **Open-ended**

- Be specific in what you want in your response
- Try to create your question in a way that will limit babble
- Specify the number of responses you would like, and provide separate line for each response
- Use response spaces that are appropriate for the response
- Make sure you have a plan on how you will analyze the response

Types of questions

- Close ended – ordered
- Close ended – unordered
 - Typically more difficult

Type	Description
Binary	Yes/No
Nominal	List of selections
Ordinal	Likert-type
Interval or ratio	Continuous responses

Sample question

- Which of the following do you think should be the resident research course's highest priority?
 - Training in research design
 - Training in statistical analysis
 - Small group discussion of projects
 - Feedback on written proposals
- To what extent do you favor including small group discussion of projects in the resident research course?
 - Strongly favor
 - Somewhat favor
 - Neither favor or oppose
 - Somewhat oppose
 - Strongly oppose

Types of questions

- **Close-ended**

- Dichotomous responses are the easiest (yes/no)
- Multiple response — Try to use questions that allow only one answer — Use “forced choice” as it is much easier to respond and to analyze
- Likert— 4-5 choices best; balance neg/pos
- Avoid complex matrix questions if possible
- Make sure the response choices are mutually exclusive
- Make sure all possibilities are included or include a null response

Sample question

- Are you satisfied with the resident research course?
 - Yes
 - No
- How satisfied or dissatisfied are you with the resident research course?
 - Very dissatisfied
 - Slightly dissatisfied
 - Neither satisfied nor dissatisfied
 - Slightly satisfied
 - Very satisfied

Types of questions

Pros

Cons

Closed-ended

- Appear easy and quick to complete
- Socially less desirable responses can be included as an option.
- Responses usually clear and complete.
- **Easy to standardize, code and analyze.**

- Depend on participants understanding concept of preference or rating scale.
- Participants may just guess, or tick any response at random.
- Participants or researchers may make errors (e.g. tick the wrong box by mistake).
- Don't allow participants to expand on their responses or offer alternative views.

Open-ended

- Allows for participant creativity and free expression.
- **Captures responses, feelings and ideas that researchers may not have thought of.**
- Participants may write as much or as little as they wish.

- Take longer to complete
- Much more work to analyze. Coding and interpretation needed.
- If handwriting is not clear data are lost.
- Rely on participants wanting to be expressive and having writing skills.

Steps to a great survey

5. Survey formatting

- Question order:
 - Easier, important questions at beginning
 - Never put sensitive questions at the start
 - Complex or contentious questions in middle
 - Respondent will be fatigued or distracted towards the end

More formatting tips

- Format so that all responses fit into one dimension (either horizontal or vertical)
- Number all questions
- Separate “unknown” and “other” selections from the rest of the group.
- Try to group themes into a single page
- Try to keep all pages similar
- Give background info to start a page
- Use a consistent way to prompt the respondent that a new questions is starting
- Give notification of completion status

STEPS TO a great survey

6. Testing

Pre-test

- Initial review/revising of questions based on comprehension
- Knowledgeable colleagues

Pilot test

- Small sample of target population in controlled setting
- Relevance, flow, and arrangement of survey
- Acceptability
- Time for completion
- Floor and ceiling effects

Testing

- Reliability

Type	Definition
Test-Retest	Is same answer given by same individual at different times
Inter-rater	Do different respondents given similar results to the same item
Internal Consistency	Do different questions related to same theme give related/consistent responses

STEPS TO a great survey

7. Survey Distribution

- Notification Letter – “heads up”; optional
- Cover Letter
 - Sponsorship to encourage trust
 - Salutation
 - Appeal for help
 - Why you were selected
 - Why you should respond/what the results of the study will do
 - How long it will take to complete survey
 - Clickable link if electronic
 - Confidentiality & voluntary responses & ethics approval
 - Contact information
 - Appreciation and thank you
 - Signatures (real ones are good)

Survey distribution

- Method
 - In person
 - Telephone
 - Mail
 - Electronic
- Reminders
 - Usually 2 reminders plus a final notice
 - Spaced minimum 1 week apart
 - Use positive language

E-Survey platforms



Optimizing Response rate (e-questionnaires)

- Non-monetary incentives
- SHORTER
- Statement that others had responded
- Lottery with immediate notification of results; offer of survey results
- White background
- Deadline
- PICTURE included in email
- Not mentioning “survey” in email subject line

Survey distribution

- Closing Letter
 - Notify that survey is closed
 - Thank participants
 - Tell people if you have a set place results will be available

STEPS TO a great survey

- 8. Analysis and reporting
- Common pitfalls
 - Errors in data entry
 - Missing data fields
 - Power (*address at start)
 - Bias

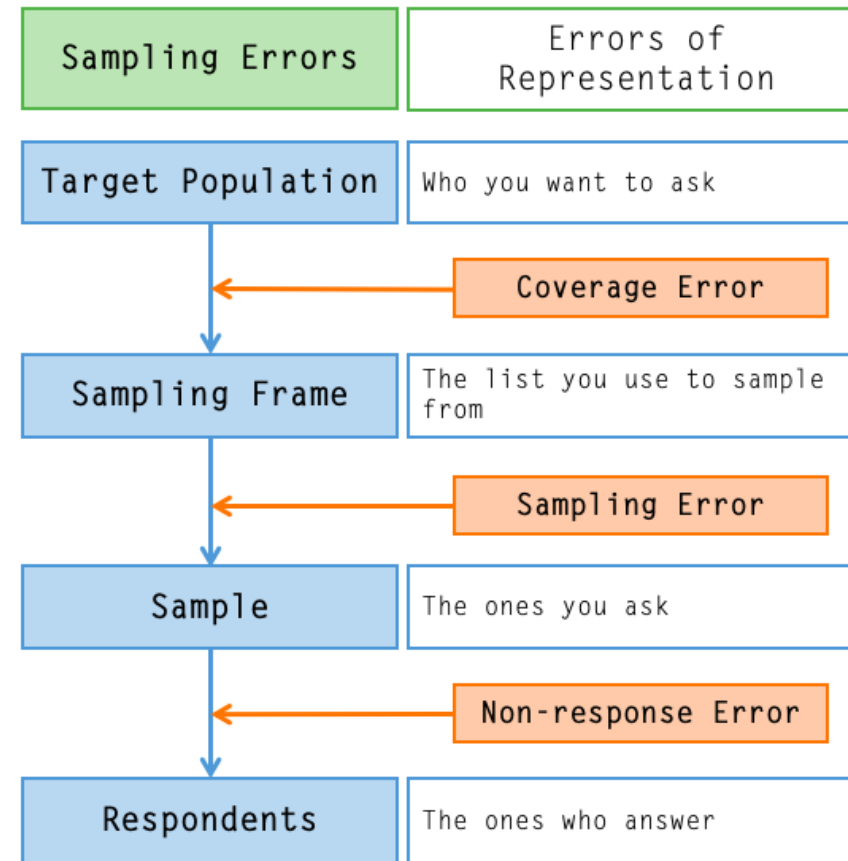


Analysis and reporting

- Response rate
- Demographics
- Proportions
- May collapse Likert-type response options (i.e. at least somewhat satisfied)
- Open-ended – qualitative analysis (e.g. Nvivo)

Sources of survey error

- Coverage error
- Sampling error
- Nonresponse error
- Measurement error



Let's practice our skills

Sample survey

Community Paediatric Practice Preparedness



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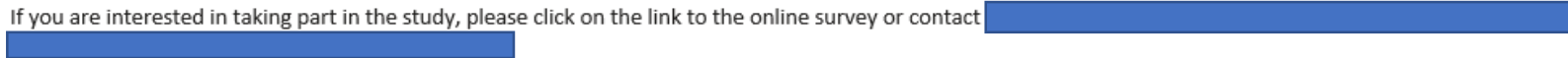
Dear



The department of Paediatrics at SickKids hospital is interested in better understanding the impact of its postgraduate program and, in particular, training for community practice. I am a member of a research team at SickKids that is exploring how postgraduate training at SickKids has impacted physicians in relation to community hospitals practices. I am writing to inform you of a study we are conducting which includes an online survey to better understand physicians' practices, teaching experiences, and self-efficacy related to training and skills in specific areas of paediatrics.

Completing the survey would take up to 10 minutes. All information collected about you will be "de-identified" by replacing your identifiable information (i.e., name) with a "study number". Only the "study code key" can connect the information collected about you to your identity. The study code key will be safeguarded by the SickKids research team. Even though the risk of identifying you from the study data is very small, it can never be completely eliminated. At the end of the survey, you would be asked to participate in a follow-up semi structured interview to expand on the findings obtained through the survey. Both the survey and interview are optional, and you do not have to participate if you do not want to. By completing this survey, you are consenting to its use in research.

If you are interested in taking part in the study, please click on the link to the online survey or contact



Follow this link to the Survey:

[Take the Survey](#)

Or copy and paste the URL below into your internet browser:

https://rc1user2hjwt45f8pp2f2.ca1.qualtrics.com/jfe/form/SV_aVJSvM6ZfPTQLad?Q_DL=zi7HFASghP58fku_aVJSvM6ZfPTQLad_MLRP_3vHdGpum5XkN25v&Q_CHL=email

We look forward to hearing from you.

Sample survey

Q3. Please choose the situation that best describes you:

- ☐ Completed 3 core years of paediatric residency followed by a RCPSC subspecialty training fellowship
- ☐ Completed 4 core years of paediatric residency followed by a subspecialty training fellowship program
- ☐ Completed your training with 4 years of core paediatric residency (General Paediatrics)



0%  100%



Sample survey

Q10. Which of the following practice profile would best describe your current practice profile?

- ☐ Almost exclusively or exclusively primary care
- ☐ Almost exclusively or exclusively consulting outpatients
- ☐ Almost exclusively or exclusively acute care in the community hospital setting including attendance at high risk deliveries
- ☐ A mix of primary care and consulting outpatients but no hospital ward or shift work
- ☐ Primary care PLUS community hospital ward or shift work including attendance at high risk deliveries
- ☐ Consulting outpatients PLUS community hospital ward or shift work including attendance at high risk deliveries
- ☐ A mix of primary care and consulting outpatients PLUS community hospital ward or shift work including attendance at high risk deliveries
- ☐ I exclusively, or almost exclusively, work in an Academic Health Sciences Children's Hospital
- ☐ Other (please describe)

SAMPLE SURVEY

22%

ASSOCIATION
MÉDICALE
CANADIENNE



CANADIAN
MEDICAL
ASSOCIATION

Which of the following best describe(s) your primary work/ residency setting?

☐ Academic health centre

☐ Administrative office or corporate office

☐ Community hospital

☐ Private office or clinic

☐ Other (please specify):

☐ Prefer not to answer

Previous

Next

Sample survey

Q14. How would you describe your volume of practice? (# of hours per week)



0%  100%



Sample survey

Q25. How many hours per week do you teach paediatric residents?

Q26. In which setting do you teach paediatric residents?

☐ Clinical

☐ Classroom

☒ Both



0%  100%



SAMPLE SURVEY

27%

ASSOCIATION
MÉDICALE
CANADIENNE



CANADIAN
MEDICAL
ASSOCIATION

Please indicate how many hours in a typical week you usually spend on the following tasks:

*Note: For any task(s) that you do not perform in a typical week, please ENTER "0". Please provide your **best estimate**.*

PATIENT CARE: Including direct patient care, indirect patient care, and on-call work hours		hours per week
ADMINISTRATIVE TASKS: Including electronic documentation time, email, prescriptions, ordering tests, etc.		hours per week
OTHER DUTIES/RESPONSIBILITIES: Including teaching, committee work, research, leadership role, etc		hours per week
TOTAL HOURS PER WEEK:	0	

Previous

Next

Sample survey

Q38. If you had to do it all over again, would you have chosen a different area in Paediatrics or Medicine?

☐ Yes

☒ No



0%  100%



Sample survey

Q34. The following questions are designed to capture your self-rated efficacy in some specific areas of Paediatrics. On a scale from 1-10, 1 being the least comfortable, and 10 being the most, how would you rate your level of comfort in the following areas:

[illegible]

SAMPLE SURVEY

29%

ASSOCIATION
MÉDICALE
CANADIENNE



CANADIAN
MEDICAL
ASSOCIATION

Please indicate how strongly you agree or disagree with the following statements:

Note: When you respond to each statement, the question will automatically move forward to the next statement. When it no longer moves forward, please click the "Next" button.

◀ Previous

Next ▶

No one on this team would deliberately act in a way that undermines my efforts (including colleagues, nurses, admin).

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Not applicable
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Previous

summary

- Surveys are useful and practical tools for a variety of research objectives
- Developing a good survey will take time and effort, but is necessary
- **A poorly designed survey results in poor data!**
- Test, Test and then Test some more
- Anticipate sources of error and prepare analysis plan at start
- Follow standard distribution techniques and tips for increasing response rates

Pre-Test Question 1

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*Thank
You*

Feel free to email me: marinka.twilt@ahs.ca