HCI and Design

Today: Survey Design

Types of surveys

Response rates

Cases, populations, samples

Sampling methods and sample sizes

Question design

Three types of surveys:

1. Self-administered questionnaires

   Including:

   1. Mail(ed) surveys (or e-mail surveys)
   2. Web-based surveys
   3. Group surveys (e.g. in a classroom)

2. Interview surveys (‘face-to-face’)
3. Telephone surveys

Method	Advantages	Disadvantages	Tips to Remember
Self-completion	•Cheap •Cover wide area •Anonymity protected •Interviewer bias doesn't interfere •People can take their time	•Low response rate (and possible bias from this) •Questions need to be simple •No control over interpretation •No control over who fills it in •Slow	•*Simplify questions* •*Include covering letter* •*Include stamped addressed response envelope* •*Send a reminder*
Telephone survey	•Can do it all from one place •Can clarify answers •People may be relatively happy to talk on the phone •Relatively cheap •Quick	•People may not have home phones/be ex-directory •You may get wrong person or call at wrong time •May be a bias from whose name is listed/who's at home •Easy for people to break off •No context to interview	•*Because you rely totally on verbal communication – questions must be short and words easy to pronounce* •*Minimize number of response categories (so people can remember them)*
Face-to-face interview	•High response rate •High control of the interview situation •Ability to clarify responses	•Slow •Expensive •Interviewer presence may influence way questions are answered •If there is more than one interviewer, they may have different effects	•*Interviewer should be non-threatening* •*Interviewer can clarify questions, but should be wary of affecting the content* •*Aim to ask questions in a clear, standardized way* •*If the list of possible responses is long, show them to the respondent for them to read while the question is read out*

Time as a dimension in survey research

Longitudinal studies: permit observations of the same population or phenomena over an extended period of time.

Enable analysis of change. May also facilitate more credible assertions relating to causality.

1. **Trend studies** – examine change in a population over time (e.g. Census).
2. **Cohort studies** – examine specific subpopulations or cohorts (often, although not necessarily, the same individuals) e.g. a study might interview people aged 30 in 1970, 40 in 1980, 50 in 1990, etc.
3. **Panel study** – examine the same set of people each time (e.g. the same sample of voters every month during an election campaign.

Thinking about what you're researching: Case, Population, Sample

Case: each empirical instance of what you're researching

So if you're researching **celebrities who have been in trouble with the law** Justin Bieber would be a case, as would Kate Moss, Boy George, George Michael, Winona Ryder, OJ Simpson and Rachel Christie, etc.

If you were interested in **Fast Food companies** McDonalds would be a case, Burger King would be a case, as would Subway, KFC, etc.

Thinking about what you're researching: Case, Population, Sample

Population – all the theoretically-relevant cases (e.g. 'Patriots supporters'). This is also often referred to as the **target population**.

This may differ from the **study population**, which is all of the theoretically-relevant cases which are actually available to be studied (e.g. 'all Patriots season ticket holders').

The Study Population

Are they relevant to the problem?

Are they the group affected by the problem?

Or are they the group that will have to carry out the recommendations?

Or are they people who have dealt successfully with this problem elsewhere?

Can you get a fair sampling? How?

Will you get a high response rate?

Sometimes you can study all possible cases

i.e., The total population that you are interested in.

For example:

- *Post WW2 US Presidents*
- *Homeless people using a particular shelter on Christmas Day 2011*
- *National soccer teams in the 2010 World Cup*

Often you can't study the whole population

…Because it is too big and to do so would be too costly, too time consuming, or impossible.

For example, if your 'population' is:

- *Voters in the US since WW2*
- *All the homeless people in the US on Christmas Day 2011*
- *High schools in the US.*

On these occasions you need to select some cases to study.

Selecting cases from the population is called sampling.

Sampling methods

Rely on available participants

- Literally choosing people because they are available (e.g. approaching the first five people you see after class)
- Only justified if less problematic sampling methods are not possible.
- Researchers must use considerable caution in generalizing from their data when using this method.

Sampling methods

Snowball sampling

- Researcher collects data on members of the target population s/he can access, and uses them to help locate other members of the population.
- May be appropriate when members of a population are difficult to locate (and/or access).
- By definition, respondents will be connected to other respondents, thus are more likely to share similarities with each other than with other members of the population.

Sampling methods

Random Sampling (Representative)

Feasible only with the simplest sort of sampling frame (a comprehensive one).

The researcher enumerates the sampling frame (i.e. all possible participants), and randomly selects people.

Sampling methods

Stratified sampling

Rather than selecting a sample from the overall population, the researcher selects cases from homogeneous subsets of the population (e.g. random sampling from a set of CM students, and from a set of MBA students).

This ensures that key sub-populations are represented adequately within the sample.

A greater degree of representativeness in the results thus tends to be achieved, since the (typical) quantity of sampling error is reduced.

Sample Size

The sample size that is needed depends upon:

The heterogeneity of the population: the more heterogeneous, the bigger the sample needed

The number of relevant sub-groups: the more sub-groups, the bigger the sample needed

The frequency of a phenomenon that you are trying to detect: the lower the frequency that it occurs, the bigger the sample needed

How accurately you want your sample statistics to reflect the population: the greater accuracy that is required, the bigger the sample needed.

How confident you want to be about your results!

Other considerations when you are thinking about sample size

The response rate – if you think that a lot of people will not respond, you need to sample a larger number of people.

Form of analysis – some forms of statistical analysis require a larger number of cases than others. If you plan on using one of these you will need to ensure that you've got enough cases.

Generally (given a choice): Bigger is better!

(hence the sample size often reflects costs/resources.)

Questionnaire Design

Title & Purpose

Give your questionnaire a topic-related title

Include a brief explanation of the survey's purpose (short paragraph)

Include instructions for completing the survey

Include instructions for returning the survey

Assure respondents the survey is anonymous

Question Design

Survey questions should be easy to understand and hard to misinterpret.

- Use common language & clearly defined terms
- Use mostly closed questions
- Include demographic questions to help identify the sample
- Use precise, unambiguous language
- Make sure questions are valid & reliable

What to Avoid

Avoid double-barreled questions

- *Do you like running and going to the gym?*

Avoid leading, biased questions

- *Will this product help you to be efficient and better at your job?*

Avoid loaded questions

- *Have you stopped stealing food from the TAs?*

Avoid repetitive questions

- *Why? Why? Why? Why?*

Avoid personal questions

- *What type of relationship did you have with your parents?*

Gathering Demographic Information

Do you expect age or gender to play a role in people's opinions?

Do you expect education level or income level to play a role?

Do you expect size of household or length of employment to play a role?

Do you want to compare responses from different groups?

Sequencing your Questions

Group questions that are similar

Put them in a logical order

Place demographic questions at the beginning

Put any sensitive or difficult questions at the end

Put any open-ended questions at the end

Types of Questions: Yes/No

Are you currently employed?

___ yes ___ no

Types of Questions: True-false

Your store is located downtown.

___ True ___ false

Types of Questions: Multiple Choice

What is your favorite browser?

___ Chrome

___ Mozilla Firefox

___ Internet Explorer

___ Safari

___ Other _____

Types of Questions: Agree/Disagree Scale

Drug use is a problem among our employees.

___ Strongly agree

___ Agree

___ No opinion

___ Disagree

___ Strongly disagree

Types of Questions: Ranking

How much of your shopping and recreation do you do in Brooklyn?

___ Little or none

___ Less than half

___ About half

___ More than half

___ Most or all

Types of Questions: Rating

Rate the following factors according to their importance on your choice of where to live. (5 = very important and 1 = unimportant)

___ Commuting time

___ The apartment size

___ Rent price

___ Proximity to friends and family

___ Restaurants and night life

Types of Questions: Checklist

From what sources did you finance your business? Check all that apply.

___ Bank

___ Savings and loan institution

___ Personal savings

___ VC funding

___ Other _____

Formulating Response Categories

Limit types of questions and response sets to no more than three

Give clear-cut answer choices

Make response sets easy to navigate

Make sure response categories don’t overlap

Make sure responses cover all possibilities

Overlapping Response Categories

Example:

How many credit hours have you completed?

___ 1 – 25

___ 25 – 55

___ 55 – 85

___ 85 or more

___ 1 – 24

___ 25 – 54

___ 55 – 84

___ 85 or more

Checklist for your survey

Have you asked everything you want answers to ?

Will the answers help you make recommendations?

Are your questions unbiased, clear, and to the point?

Are they logically arranged?

Is the questionnaire neat & uncluttered?

Is it carefully edited?

Can respondents complete it quickly & without difficulty?

Test run your survey!

Once questionnaires with a mistake go out, it’s too late to correct them! This will negatively affect your data AND has a negative effect on your credibility.

Summary

Strengths of survey research:

- Useful for describing the characteristics of a large population.
- Makes large samples feasible.
- Flexible - many questions can be asked on a given topic.
- Has a high degree of reliability and replicability.
- Is a relatively transparent process.
- Useful for measuring change over time.

Weaknesses of survey research

Seldom deals with the *context* of social life.

Inflexible – cannot be altered once it has begun.

Subject to artificiality – the findings can be a product of the respondents' consciousness that they are being studied.

Can be poor at answering questions where the units of analysis are not individual people.

Can be weak at gathering at certain kinds of information, e.g.,

- highly complex or 'expert' knowledge
- people's past attitudes or behavior
- subconscious (especially macro-social) influences
- shameful or stigmatized behavior or attitudes

Let's practice!

1. Take a survey *(5 min)*
   - http://bit.ly/2behsurvey
2. On paper, critique the survey you just took *(5 min)*
   - Question types, wording, grouping, etc.
   - Just pick a few questions to critique
3. Design your own survey *(10 min)*
   - On paper
   - Question types, wording, grouping, answer choices, etc.
4. Critique someone else's survey *(10 min)*
   - Swap with someone and critique each other's surveys