Principles of Questionnaire Design

LECTURE 4

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Today's agenda

- Overview of the survey process: where does questionnaire design fit?

- General principles of questionnaire design, with focus on the measurement of consumption

- Note: today is about general principles, whereas specific guidelines for each type of consumption expenditure will be provided in lectures 5-10.

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Useful readings – I
Grosh and Glewwe eds. (2000)

- Three-volume work

- Chapter 2
  Making decisions on the overall design of the survey
  by M. Grosh and P. Glewwe

- Chapter 3
  Designing modules and assembling them into survey questionnaires
  by M. Grosh and P. Glewwe and J. Munoz

- Chapter 5
  Consumption
  by A. Deaton and M. Grosh

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3

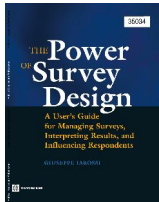## Useful readings — II
Iarossi (2006)

Chapter 3	Chapter 2
How Easy It Is to Ask the Wrong Question	The Survey Process and Data Quality

THE Power OF Survey Design
A User's Guide for Managing Surveys, Interpreting Results, and Influencing Respondents
GIUSEPPE IAROSSI

Introduction to Survey Quality

PAUL P. BIEMER
RTI Distinguished Fellow and Professor in the Survey Methodology Program at the University of North Carolina and Chapel Hill
LARS E. LYBERG
Statistics Sweden

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4

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1. The survey process

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Overview of the survey process

- 1) Research objectives
- 2) Questionnaire design
- 3) Sampling design
- 4) Data collection and processing
- 5) Data analysis
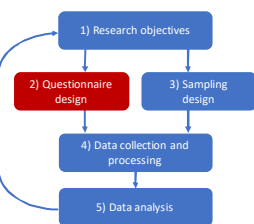
1) Identify a key set of research questions to be answered by the survey

2) & 3) Develop the questionnaire; define target population and sampling frame (in parallel)

4) Recruit and train interviewers, field the survey, collect the data, convert it to computer readable format, edit the data

5) Weight the data to compensate for unequal sampling probability and/or missing values, perform analysis.

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Slide 1

The importance of questionnaire design
Joliffe (2001)

Measuring absolute and relative poverty: The sensitivity of estimated household consumption to survey design[1]

Dean Jolliffe
Economic Research Service, US Department of Agriculture, 1800 M Street NW, Washington, DC 20036-5831, USA
and William Davidson Institute, University of Michigan, Ann Arbor, MI 48109-1234, USA
E-mail: jolliffe@ers.usda.gov

This paper illustrates that questionnaire design significantly affects estimates of household consumption and absolute poverty. In a between-groups designed experiment in El Salvador, longer, more detailed questions on consumption result in an estimate of mean, household consumption that is 31 percent greater than the estimate derived from a condensed version of the questionnaire. The distribution of household consumption from the long questionnaire first-order stochastically dominates the distribution from the short questionnaire over 96 percent of the range of the distribution. This difference in estimated consumption results in a measure of absolute, severe poverty from the short questionnaire that is 46 percent greater than the estimate derived from the long questionnaire. In contrast, the level of relative poverty is unaffected by the changes in questionnaire design. An implication of this paper is that modifications over time to questionnaires will result in spurious estimates of change in consumption and absolute poverty levels.

Keywords: Household consumption; poverty; El Salvador; questionnaire design; stochastic dominance

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Slide 2
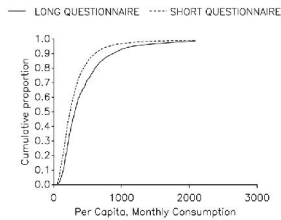
Beyond any reasonable doubt

- The main finding of the paper is captured in the graph reporting the cumulative distribution functions (CDF)
- How to interpret a CDF?
- One curve (short questionnaire) lies below the other (long questionnaire), irrespective of the level of consumption
- This is called first-order stochastic dominance (FOD)
- Interpretation: the long questionnaire will generate a significantly lower estimate of the incidence of absolute poverty, irrespective of the level chosen for the poverty line.

LONG QUESTIONNAIRE ····· SHORT QUESTIONNAIRE

(Cumulative proportion vs Per Capita, Monthly Consumption)

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8

Slide 3

The importance of questionnaire design – Niger
Backiny-Yetna et al. (2017) experiment

Contents lists available at ScienceDirect

Food Policy

journal homepage: www.elsevier.com/locate/foodpol

The impact of household food consumption data collection methods on poverty and inequality measures in Niger

Prospère Backiny-Yetna, Diane Steele, Ismael Yacoubou Djima
Living Standards Measurement Study, Development Research Group, The World Bank, 1818 H Street NW, Washington, D.C. 20433, USA

ARTICLE INFO

ABSTRACT

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Impact on poverty indicators

Table 8
Poverty Indicators by Type of Questionnaire Using the National Poverty Line (Niger).

	7-day recall		Usual month		7-day diary		Test	
	Mean	SE	Mean	SE	Mean	SE	χ^2	Level
Poverty headcount	0.425	0.052	0.465	0.050	0.510	0.051	1.91	0.392
Poverty Gap	0.150	0.024	0.136	0.018	0.199	0.028	8.57	0.020
Squared poverty gap	0.070	0.014	0.053	0.010	0.100	0.019	11.64	0.006

- Differences in questionnaire design are responsible for different poverty estimates
- A similar result applies to inequality estimates
- Questionnaire design matters

10

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2. Principles of questionnaire design

Topics covered

Research objectives

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Questionnaire design

- A. Choice of topics (modules)
- B. Choice of respondents
- C. Formulation of questions
- D. Order of questions within module (flow)
- E. Field-testing
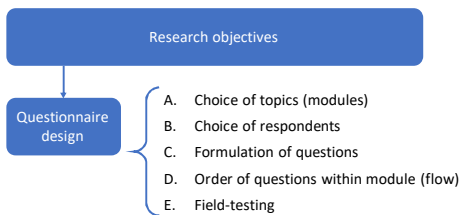
Definition of research objectives
principles

- What research questions should the data answer?

- The answer influences the whole survey process

- Two priorities:
    1. Organizing a survey design team
    2. Formulating objectives as questions

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Organizing a survey design team
Grosh and Glewwe (2000: 21-29)

- Designing a survey questionnaire is a joint effort of different experts, stakeholders, institutions.
- The higher the diversity within the survey design team, the better:
    - researchers
    - policy analysts
    - policy makers
    - data producers
- Local knowledge is crucial, as is familiarity with international best practice. They are complements not substitutes.

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Formulating objectives
Grosh (2005: 36-40)

- Useful to formulate objectives as questions, for instance:
    - "What proportion of the population is poor?"
    - "Has poverty increased or decreased over time?"
- Objectives are likely to multiply with consultations.
- Balance with constraints:
    - budget
    - capacity of the organization (experience, know-how)
    - respondents' willingness and ability to cooperate

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Choice of topics
principles

- What pieces of information are needed to attain research objectives?

- Unfortunately, few general guidelines exist

- In practice, a popular solution is the module approach (typical of LSMS-type surveys): choosing modules (that is, topics), then moving to drafting each module.

- The order of modules matters: group together modules answered by same household member, and put sensitive modules last.

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Choice of topics – an example
(Grosh and Glewwe, 2000: 30)

LSMS "core" modules

1) Household roster
2) Housing
3) Education
4) Consumption — Daily expenditures
   Food and fuel
   Non-food consumption
   Expenditures on private interhousehold transfers
   Durable goods
5) Health
6) Employment
7) Transfers and other nonlabor income
8) Metadata
9) Prices
10) Credit
11) Agriculture

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Choice of respondents – I
principles

- Who should answer the questions?
- Answer: "the most knowledgeable person"
- Individual questions (*e.g.* employment)
  - Individuals themselves should answer
  - When forced to use "proxy respondent" (one person responds for another) consider recording who is answering on behalf of who
- Household questions
  - Household is asked to determine the "most informed individual", who will respond to questions (may change for different sub-modules)

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Choice of respondents – II
in practice (Deaton and Grosh, 2000: 118)

- For expenditures, "most informed person" is a good approach, because it does not pre-judge division of labor in household (who does the shopping? who manages budget?)
- Has worked well when food is large share of budget, and when most of the household resources are pooled
- Problem: "There are expenditures on which no single person may have an accurate picture. (…) There may be items, such as clothing, that individuals purchase without any other household member knowing how much was spent."
- No easy fix: interviewing each household member individually on own expenditures is very expensive

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Formulation of questions
principles

- What to ask, exactly – and how?
- When developing a question, the designer should first of all put himself in the position of the typical, or rather the least educated, respondent.
- A good rule to remember in designing questions is that the respondent has probably not thought about these questions at the level of detail required by the survey.
- Details will be the subject of the next lectures. For now, a few general principles on two specific issues:
    1. Question wording
    2. Question type

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Question wording
Iarossi (2006: p. 30-43)

- A number of studies have shown that changing even a single word in a question can significantly alter response distribution and accuracy.
- Useful checklist: the "BOSS" principle
- Four criteria should be followed when wording any question: brief, objective, simple, and specific

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Brief

- As a rule of thumb, a question should not exceed 20 words, and should not have more than three commas
- Brevity also means asking one question at a time, that is, avoiding "hidden questions"
- Example: "What interest rate are you paying on your loan?"
- Problem: implies the hidden question of whether the person has a loan or not.
- Possible fix: Ask questions separately: "Do you have a loan?" and "What interest rate are you paying?"

Objective

- Non-objective questions share a common characteristic: they tend to suggest an answer
- Avoid leading questions, that is, questions that push the respondent in the direction of a specific answer
- Example: "Shouldn't something be done about X?"
- Problem: question leads to a positive answer.
- Possible fix: "Do you think something should be done about X?"

Simple

- Use words and expressions that are simple, direct, and familiar to respondents
- Avoid technical terms, jargon, and slang
- Adopt the same definitions throughout the questionnaire

How simple is my question?
Burgess (2001: 9)

(Please circle relevant number)

	Yes	No
Are you against a ban on smoking	1	2

- Would you consider this question as a good example?
- Problem: double negative expression
- Possible fix: "Do you think smoking should be banned?"
- Recommendation: avoid negatives or double-negative expressions.

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25

Specific

- Being specific means asking precise questions.
- Example: "on average per month"
- Problem: it is unclear whether the question means "on average over the past 12 months" or "on average over the months in which there were positive expenditures" (yes to Q5)
- Possible fix: indicate explicitly which is the case

MONTHLY CHARACTERISTICS		
5.- In the past 12 months, how many months have you had expenditures on this ..[ARTICLE].. ^ YES 0 ▶ 8	6.- How much have you spent on average per month on this ..[ARTICLE]..?	7.- Quantity purchased of this ..[ARTICLE].. on average per month, in the unit utilized for the product?
MONTH	ARY (average per mo	QUANTITY	UNIT

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26

Question wording – I/II
example

- "During the past seven days, were you employed for wages or other remuneration, or were you self-employed in a household enterprise, were you engaged in both types of activities simultaneously, or were you engaged in neither activity?"

- How would you improve this question?

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Question wording – II/II
explanation

- "During the past seven days, were you employed for wages or other remuneration, or were you self-employed in a household enterprise, were you engaged in both types of activities simultaneously, or were you engaged in neither activity?"
- Long, unclear, and contains technical jargon
- Possible fix: revising it as two separate questions that are brief, simple, specific
1. During the past seven days, did you work for pay for someone who is not a member of this household?
2. During the past seven days, did you work on your own account, for example, as a farmer or a seller of goods or services?

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Question type
Grosh (2005: 45-46)

- A key decision is whether to make use of open questions (permitting respondents to answer in their own words) or closed questions (requiring respondents to select an answer from a set of choices).
- The use of "closed questions", that is questions with pre-coded answers, is recommended
- Codes should be mutually exclusive and collectively exhaustive
- Coding schemes should be consistent across questions, *e.g.* if one question uses 1 for yes, 2 for no, then this should be maintained throughout the questionnaire, and should be clearly available for interviewer to consult

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What's wrong with my question?
Burgess (2001: 9)

What is your **most usual** means of travelling to college?

(Tick one box only)

Bus ☐
Car ☐
Bike ☐

- This is an example of a closed question.
- Assume that the computer codes Bus by 1, Car by 2 and Bike by 3. If the respondent omitted to answer then this could be coded as 0 or some other missing value.

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30

10

Question type

- Allow respondents to answer on their own terms as much as possible

- Example: "How much do you pay per month to rent your dwelling?"

- Problem: reference period is forced as 1 month. If giving amount per week or per year comes more natural to respondent, he/she is forced to convert, making room for mistakes

- Possible fix: "How much do you pay in rent for your dwelling?", with option to associate pre-coded reference period, such as week, month, year, to declared amount.

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What happens when people are asked a question about which they have no relevant knowledge?

- In theory, respondents will say that they do not know the answer

- In practice, they may wish not to appear uninformed and may therefore give an answer to satisfy the interviewer.

- In order to reduce the likelihood of such behavior, some researchers have recommended that don't know (DK) options (or filters) routinely be included in questions.

- Do DK filters work? Evidence is mixed. Krosnick and Presser (2010: 282) argue that DK filters do *not* improve measurement.
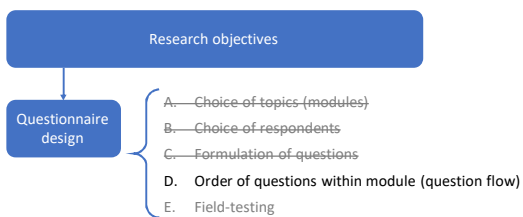
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32

Remember where we are…

Research objectives

Questionnaire design	
	A. Choice of topics (modules)
	B. Choice of respondents
	C. Formulation of questions
	D. Order of questions within module (question flow)
	E. Field-testing

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Question flow

- In what order should questions be asked?
- Early questions should be easy and pleasant to answer, and should build rapport between the respondent and the interviewer
- Flow should be tuned to logical reasoning of the respondent
- Related questions grouped together, minimize abrupt changes of topic
- "Filter" questions (skips) are important to minimize irrelevant questions
- Sensitive questions last

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Sensitive questions

- Certain questions are perceived as sensitive
- A typical example is for income (another is wealth)
- "How much do you have in your current account?"
- People are less likely to participate in surveys with sensitive topic (Tourangeau et al., 2010)
- People are likely to provide an unreliable answer (underreporting)
- This is why questions that might make respondents uncomfortable should be placed at the end of the questionnaire
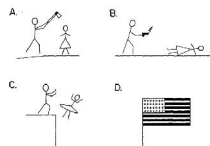
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Did you kill your wife?
Barton (1958)

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Asking sensitive questions after 1958

- Use methods to reassure households of the confidentiality of their responses
- Explain the reasons of the questions
- Use unfolding brackets questions

Unfolding bracket questions
Income

- The first question asks the respondent to provide the exact amount of the family's savings in the last year
- If the respondent does not provide an answer to the exact amount question, the respondent is asked to provide the family's savings in relation to $20,000 (greater than or equal to, or less than).

The Bank of Italy
SHIW

Q1. This is a list of different forms of saving and investment. Did the household have … (*form of saving or investment*) on 31-12-2016?
    (*1=Yes or 2=No*)

Q2. (**SHOW CARD C25**)
(*For each form of saving or investment held on 31-12-2016*)
What was the value on 31-12-2016? Answer using one of the ranges on this card.

Field-testing the questionnaire

- Pre-testing is the word
- Some evaluation methods require administration of the questionnaire to respondents, whereas others do not.
- The least structured evaluation method is expert review, in which one or more experts critiques the questionnaire
- The most common form of pretest data collection — conventional pretesting — involves administering a questionnaire to a small sample of the relevant population under conditions close to, or identical to, those of the main survey.

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Accuracy vs. Comparability

- Trade-off between following best practices and improving the questionnaire, vs. ensuring comparability with previous data

- No easy solution. Incremental progress, when benefits from accuracy outweigh disadvantages of non-comparability

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Lessons learned

- No need to repeat guidelines for stages of questionnaire design: choice of modules, choice of respondents, formulation of questions, order of questions (flow), field-testing

- In practice, choices not made in a vacuum: always consider previous questionnaire

- Important to strike a balance between comparability with the past and accuracy of data

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References

Required readings

Glewwe, P. (2005). Chapter III: Overview of questionnaire design for household surveys in developing countries. In United Nations Statistical Division, United Nations Department of Economic and Social Affairs (Eds.), Household surveys in developing and transition countries. New York, NY: United Nations.

Grosh, M. & Glewwe, P. (2000). Designing Household Questionnaires for Developing Countries, Lessons from 15 years of Living Standards Measurement Study, Volume One: World Bank. Chapters 2, 3, 5

Suggested readings

Backiny-Yetna, P., Steele, D., & Dijma, I. (2017). The impact of household food consumption data collection methods on poverty and inequality measures in Niger. Food Policy, 72, 7-19.

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Krosnick, J. A., Et Presser, S. (2010). Question and questionnaire design. In J. D. Wright Et P. V. Marsden (Eds.), Handbook of survey research (second edition) (pp. 263-313). Bingley, UK: Emerald Group.

Tourangeau, R., Groves, R. M., & Redline, C. D. (2010). Sensitive topics and reluctant respondents: Demonstrating a link between nonresponse bias and measurement error. Public Opinion Quarterly, 74,413–432.

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43

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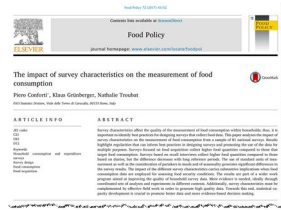
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44

Homework

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45

Exercise 1 – Engaging with the literature

- P. Conforti, K. Grünberger, N. Troubat (2017) have investigated the impact of certain survey characteristics on the measurement of food consumption.

- Summarize the main findings of the paper.

46

Exercise 2 – Question wording

- We want to measure the current net present value of owner-occupied dwellings.

- Which of the following wordings is most appropriate, and why?

1. How much is your house worth?
2. What is the current net present value of this dwelling?
3. How much would you sell your house for today?
4. If you were to sell your house today, what price do you believe you could receive?
5. How much did you pay for this house?