

Owning a bicycle

A Case Study and Evaluation of pretest interviews executed by regular interviewers

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Statistics
Netherlands

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Boeije, H. R., & Willis, G. (2013). The Cognitive Interviewing Reporting Framework (CIRF): Towards the harmonization of cognitive testing reports. Methodology, 9, 87–95.

Introduction

- Mobility Survey:
 - General questions about household;
 - Questions about owning different kinds of vehicles;
 - Questions about all movements on one specific day of one specific respondent.
- Since 2010 mixed mode Web-CAPI-CATI
- Stable time series and stable division of responses between modes
- In 2013 additional question about electronic bicycles.

Introduction

		2011	2012	2013	2014
Number of bicycles in the household?					
	Value				
Total all modes	1 or more	94,3%	94,6%	93,8%	93,7%
Web	1 or more	96,7%	96,8%	96,5%	96,0%
CATI	1 or more	93,5%	93,3%	92,9%	93,1%
CAPI	1 or more	91,3%	92,6%	91,4%	91,4%
Does respondent own a bicycle?		2011	2012	2013	2014
	Value				
Total all modes	Yes	95,1%	95,3%	85,3%	86,2%
Web	Yes	96,6%	96,8%	71,1%	71,6%
CATI	Yes	95,4%	95,5%	94,7%	95,3%
CAPI	Yes	91,0%	91,4%	89,8%	90,7%

“Original” Survey questions

Survey questions up until 2012:

Intro: Now we will ask several questions about vehicles.

AantFiets: How many bicycles are in your household?

[0..97]

BezitFiets: Do you yourself own a bicycle?

Yes/No

Survey questions 2013 – 2014:

Intro: Now we will ask several questions about vehicles.

AantEFiets: How many **electronic** bicycles are in your household?

[0..97]

BezitEFiets: Do you yourself own an **electronic** bicycle?

Yes/No

In Dutch also meaning
different.

AantFiets: How many **other** bicycles are in your household? **Do not include electronic bicycles.**

[0..97]

BezitFiets: Do you yourself own an **other** bicycle?

Yes/No

Research objectives

The research questions that were formulated were:

1. Could the addition of the questions on electronic bicycles cause this mode effect?
2. If so, why did this mode effect occur?
3. How can we change the questions, i.e. phrase alternative questions, to reduce the mode effect?

Research design

- **Review** on questionnaire design and survey methodology issues using checklists and best practices. Emphasis on formulation of the questions, question order and the exact changes between the “old” questions (up until 2012) and the “new” question (of 2013 and 2014).
- **Interviewer debriefing** in which the Mobility Survey was evaluated. What do the interviewers think of the mode effect? Do they recognise it? How can the questions be improved?
- **Pretest interviews by telephone interviewers** with standardised survey questions and open interview
 - Test questionnaire with alternative survey questions, and instructions for open interview
 - Compare answers to original Mobility Survey questions (from December) to answers to alternative questions and to answers in open interview.



Participant selection

Actual respondents of the Mobility Survey.

For the **selection** we used the following criteria:

- Persons have responded in December 2014
- Response from CATI- and Web questionnaire
- Persons are 18 years or older
- Persons have a household of more than 1 persons
- Persons have indicated that they agree to being re-approached
- Persons have indicated there is at least one bicycle in the household.

The aim was to complete a test telephone interview with **at least 30 respondents**, i.e. 20 web respondents and 10 CATI-respondents.

Participant selection - Ethics

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All personal identifiers in the data are eliminated, i.e. test respondents are identified only by a code.



Test questionnaire (1/4)

The test questionnaire acted also as protocol and reporting format. It is built up in four parts:

Part 1: Opening. Introducing the reason for the telephone call:

You recently participated in the Mobility Survey. We would like to thank you for this.

Statistics Netherlands is continuously concerned with the quality of our surveys and interviews. We monitor and evaluate the processes.

This is the reason for this call.

We want to pay extra attention to the survey you participated in. We want to investigate how accurate our questions are and want to check our measurements with reality.

Do you want to participate? It will only take 5 minutes.



Test questionnaire (2/4)

Part 2: Background questions and context.

The interviews begin with some background questions. To get some background information to later check with the survey data we have, and to have some easy questions to get the interview started.

Next several questions about possession of vehicles from the Mobility Survey are repeated. This is to create the same context for the alternative questions as for the original questions.



Test questionnaire (3/4)

Part 3: Alternative questions on possessing a bicycle.

Alternative A:

- First “original” bicycle question, followed by electronic bicycle questions.
- Executed on 20 and 21 January.
- 35 responses.

Alternative B:

- First “original” bicycle question, but with instruction “**Do not include electronic bicycles.**” Then electronic bicycle questions.
- Executed on 22 January.
- 16 responses.

Alternative C:

- First question about all bicycles in the household, with the instruction “**Include all kinds of bicycles.**” Then establish how many of these bicycles are electronic. And finally establish whether the respondent owns any of the bicycles.
- Executed on 23 and 26 January, and 5 and 6 February.
- 39 Responses.



Test questionnaire (3/4)

Alternative questions A:

Intro: Now we will ask several questions about vehicles.

NrBike: How many bicycles are in your household?

[0..97]

OwnBike: Do you yourself own a bicycle?

Yes/No

NrEBike: How many electronic bicycles are in your household? Electronic bicycles are all bicycles with electronic aid.

[0..97]

OwnEBike : Do you yourself own an electronic bicycle?

Yes/No

Alternative questions B:

Intro: Now we will ask several questions about vehicles.

NrBike: How many bicycles are in your household? Do not include electronic bicycles

[0..97]

OwnBike: Do you yourself own a bicycle?

Yes/No

NrEBike: How many electronic bicycles are in your household? Electronic bicycles are all bicycle with electronic aid.

[0..97]

OwnEBike : Do you yourself own an electronic bicycle?

Yes/No

Alternative questions C:

Intro: Now we will ask several questions about vehicles.

NrBike: How many bicycles are in your household? Include all kinds of bicycles.

[0..97]

OwnEBike: How many of those are electronic bicycles? Electronic bicycles are all bicycles with electronic aid.

[0..97]

OwnBike: Do you yourself own a bicycle?

- Yes, a non-electronic bicycle
- Yes, an electronic bicycle
- Yes, both
- No.



Test questionnaire (4/4)

Part 4: Open interview.

Interviewers are instructed to let the respondents to tell in their own words about all sorts of bicycles in their households and to whom they belong.

The interviewers can use any probe they think appropriate.

Data collection and Analysis

- The telephone interviews were executed between 20 - 26 January and 5 - 6 February 2015, by **5 telephone interviewers and 1 methodologist**.
- The interviews were executed according to a fixed **protocol**.
- All test interviewers received an **instruction** in which the aim of the test, the protocol, test questionnaire and some practical organization of the test interviews and the reporting format were discussed.
- The interviews were conducted **during the shifts** of the interviewers. They were allowed to spend 1 hour per shift of 4 hours on the test.
- **No recordings** were made.



Data collection and Analysis

- A paper questionnaire was the **reporting format** for the interviews. Each interviewer filled out a paper questionnaire for each interview.
- For the analyses everything was also entered in a **spread sheet**.
- In the spread sheet also the **responses to the original Mobility Survey** were entered.
- Then the **responses were compared** and coded whether there was a difference between the responses.

Data collection and Analysis

In total **161 telephone** numbers were contacted:

	Total	Web	Cati
nonresponse	71	48	23
response	90	54	36
	161	102	59

It took a mean number of **1,3 contact attempts** to reach a response, with a maximum of 3 attempts.

Data collection and Analysis

Nonresponse:

One person could not participate because of hearing problems, one person explicitly refused, the other non-responses were non-contacts.

Response:

Age	Total	Male	Female
19-30	7	3	4
31-40	8	3	5
41-50	10	6	4
51-60	19	8	11
61-70	29	14	15
71-84	17	10	7
	90	44	46

Findings and Conclusions

Returning to the research questions.

1. Could the addition of the questions on electronic bicycles cause this mode effect?

→ Yes

2. If so, why did this mode effect occur?

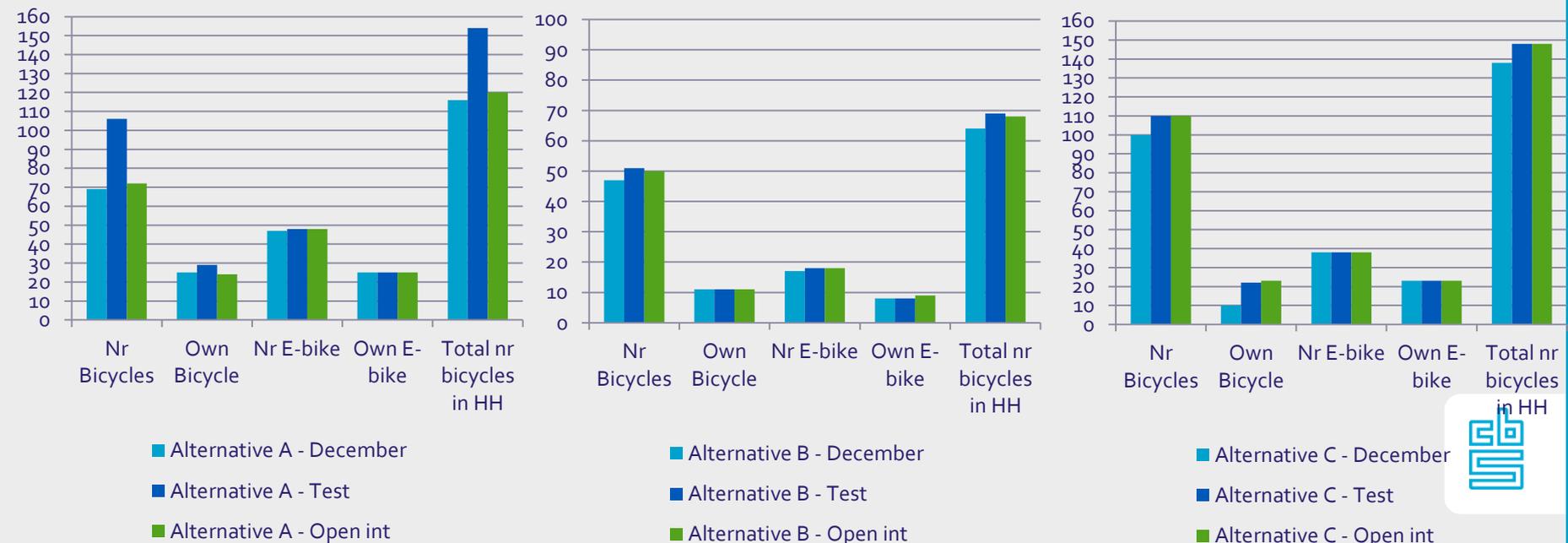
→ Combination of reasons

- **Context effect.** The context of the original question has been disturbed.
- **Order effect.** Respondents think they have already answered the question.
- **Misinterpretation** of the word “other”. From interviewer debriefing: “*They don’t mean a different or special bicycle, but a normal one.*”
- **Mode effect.** In web there is no interviewer to correct the misinterpretations.

Findings and Conclusions

3. How can we change the questions, i.e. phrase alternative questions, to reduce the mode effect?

- In most cases, for all question alternatives, valid measurements.
- Still, mistakes are made now to find the alternative questions in which the least mistakes are made.



Findings and Conclusions

- **Alternative Questions A.** Here we see that systematically and spontaneously all kinds of bicycles are erroneously included in the answers. This causes **false positives** answers.
- **Alternative Questions B.** The addition of “Do not include electronic bicycles”, seems **prevent false positives**. Yet it caused more **discussion** between the respondents and interviewers. More requests for confirmation.
- **Alternative Questions C.** Here we see that the first question meets the natural urge of the respondents to include all bicycles. There a **no false positives**, and virtually **no discussions** between respondents and interviewers.

Findings and Conclusions

- Though Alternative B and C both generate the correct amount of bicycles, there is a methodological difference between the two. According to the theory **Alternative B has a higher cognitive burden** than Alternative C. Negative instructions (“do not include...”) are more difficult to process than positive instructions (“include all kinds...”).
- An **additional benefit of Alternative C** seems to be that it measures, with the least discussion and doubt, what you think it measures. And it needs less guidance from the interviewer to answer correctly.

Findings and Conclusions

Other findings

- We were able to **reproduce the mode effect** that is shown in the data: Of the 25 test respondents who in the original Mobility Survey had said not to own a bicycle themselves, 13 persons still appear to have a bicycle, according to their own description in the open interview.
- These test respondents have not spontaneously mentioned a change in the situation since December, and in the test this was not asked. Still, since it systematically happened in all these cases, we **assume that the measurement in December was incorrect** and the measurement in the test interview was correct.
- In 22 test interviews we measured **more bicycles in the household** than the original Mobility Survey had measured in December. This could be caused by actual changes in the situation since December, yet this is not plausible for all cases. The pre-test offered no other explanation.



Recommendation

It was recommended to adopt **Alternative questions C** in the new Mobility Survey questionnaire.

Even though we **cannot guarantee** that the time series will return to the situation before 2013, we are convinced that now we better know what we measure.

The client agreed.

Strengths and limitations

Limitations:

- Most test interviews were conducted **during the day-shifts** and less in the evening-shift.
- **More older than younger respondents** responded. This is not surprising, yet it was also aggravated by the interviewers who wanted a quick response and **deliberately** first selected the older respondents.
- Most test reports were **concise and brief**. The interviewers were not elaborate in describing the interviews or respondents' quotes.
- Most interviewers were **not able to “feel” the need to probe** more, or elaborate on a respondent's response.

Strengths:

- We have been **able to reproduce the mode effects**.
- **More interviews** than expected were conducted.
- The interviews were **efficient and short**.
- The interviewers were **very willing to help** and hoped to improve the questionnaire.
- The test was **successful** in answering the research questions



Strengths and limitations

Regular survey interviewer \neq Cognitive interviewer.

For future pre-tests Statistic Netherlands can ask the help of regular telephone interviewers **if**:

- You have a limited research objective, e.g. one or only a few simple research questions;
- You do not need a thorough examination of respondents' cognitive processes;
- You want to execute many short telephone interviews in a short time;
- You want to incorporate the views of the interviewers.

Thank you

