

Survey Methodology

Part B

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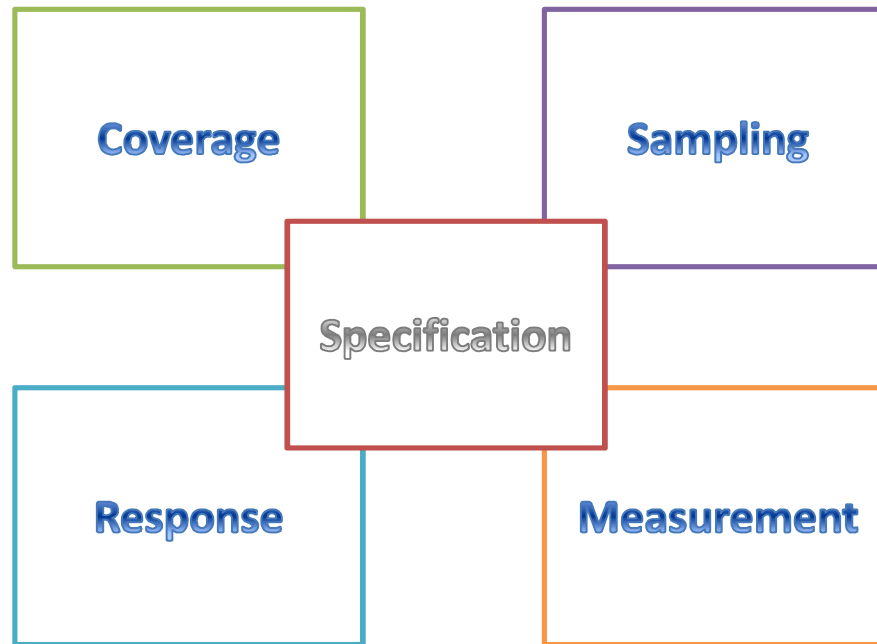
Basics on Questionnaire Designing and Survey Modes



Cornerstones of survey research (modified from Salant&Dillman 1994)

There are big variations in coverage of surveys (under- and over-coverage), also due to classification errors

Avoid/minimize non-response error, and hope that it is as ignorable as possible



Some sampling error occur, hopefully as random and low as possible given the budget available.

Avoid/minimize measurement error, which occurs when a respondent's answer to a question is inaccurate

Questionnaire designing

I thus concentrate on measurement in surveys that can be avoided well if the questionnaire and its validity is optimal and well connected to the survey mode used. This is the big part of Data Collection but the three other cornerstones are considered in more details on following parts although:

- Non-response may be due to a bad measurement (no motivation to participate, inappropriate survey mode, bad/invalid questions in a questionnaire).
- Coverage cannot be equally achieved with all types of survey data collection modes. E.g. phone numbers are not available for all people, web is not used by all without an available device and the ability to use it correctly.
- Using interviewers or not i.e. using self-administered answering: there can be an influence both for non-response and measurement, and even for coverage.

Questionnaire designing

What it is in this presentation?

Next I first discuss the whole process of the data collection after the potential respondents have been selected by sampling and a more or less complete list of them is available (This is not the case always like in ad hoc surveys).

The second area is close to the first one but focus more on survey modes.

Thirdly, I will try to give a summary on designing the questions themselves for the survey.

The fourth section is focused on examples of various types, but mainly on the European Social Survey (ESS).

Go on to <http://www.europeansocialsurvey.org/> . You can find here the core questionnaires and the supplementary questionnaires of each round, some pilot survey questionnaires are also there.

Questionnaire and questioning

Basically four questions is required to be answered:

(i) How to contact/approach to a potential respondent?

- Mail
- Direct contact at home or another location
- Phone, SMS, e-mail
- General invitation in media, web, social media, poster
- Automatic invitation in the website to those who just are present there
- Respondent has been contacted at street, shop, sport event, cultural event, training course, outside the voting location (Exit polls)
- After using a service, it is often asked to answer a few questions about the service quality.
- Respondent has been contacted from outside (driving, walking etc at certain area/point); she/he does not necessarily know that she/he has been picked up at survey data. This may lead to confidentiality problems if entering sensitive information in the data but counts or other aggregates are not so sensitive (e.g. How many students entered today the building?).

Questionnaire and questioning

(ii) How the information is saved/uploaded into the file?

- Interviewer asks, and saves the answers into the paper or another manual file
- Interviewer asks, and saves the answers into the electronic file.
- Respondent reads, looks and/or listens the questions and saves the answers into an electronic file (self-administered survey answering)
- Respondent reads, looks and/or listens the questions and the interviewer saves the answers into a file
- IT system submits the questions to a respondent and she/he answers by email or by web questionnaire
- IT system collects the data automatically from the data base of the respondent (should be accepted by the respondent or his/her representative); this is typical for business surveys and employer-employee surveys.

Questionnaire and questioning

(iii) **What kind of formats do the questionnaires use?** Note that the format can be converted into a new format after initial data collection.

- Paper that can be filled in manually or printed from an electronic file.
- Electronic local format such as a memory stick
- SMS, email, annex of the email,
- Specific driver on the web, open or closed (Closed is the best solution, of course with a unique password for each potential respondent. Open driver may lead to an enormous bias in estimates). This is a self-selection method that thus is often problematic, cf. next page.

(iv) **How to submit the data?**

- If the data are already uploaded into a electronic file, it is ready.
- The paper responses can be submitted by mail or after scanning by email etc.
- Electronic files can also be submitted forward by mail or email or uploading on an appropriate location.

Example slide by the Jelke Bethlehem in the Baltic-Nordic Conference on Survey Statistics, August 2015 Haltia, Espoo

Sample selection problems

What is self-selection?

- No probability sampling is applied.
- Participants are people that have internet, happen to see the invitation, and decide to participate.
- It is a cheap and fast way to collect a lot of data.
- However, the sample is not representative.

Problems

- Also people outside the target population of the survey can respond.
- Often people can respond more than once (on the same or on a different computer).
- Groups of people may attempt to manipulate the outcomes of the web survey.

Questionnaire and modes

Key terms with acronyms

Postal or Mail Survey, independently or together with another tool; main tool in the case that a potential respondent can read, understand the questions and fill in them. This may work with sensitive questions as well, in most countries.

Face to Face Interview (f2f)

PAPI = Paper and Pencil Interview, typically with *f2f*

CAPI = Computer Assisted Personal Interview (phone or *f2f* or Skype)

CASI = Computer Assisted Self Interview (often together with *f2f* for sensitive questions as in the Finnish Security Survey)

CATI = Computer Assisted Telephone Interview (this can be conducted in a specific so-called CATI centre or managed by an individual interviewer)

TSI = Telephone Self Interview

Web/Internet Survey (CAWI = computer-assisted web survey that is the only rational choice for web)

CAI = Computer Assisted Interview (general term for almost all except postal survey + PAPI)

Questionnaire and modes

Summary of survey modes

Single-mode, Uni-mode, One-mode: just one mode only used (mail, f2f, phone, web, downloading, ...). Traditional strategy in human surveys.

Multi-mode: two or more modes for different sub-target populations (strata) or domains. If the frames are different for different target populations, it is practical even that these target populations are possibly overlapping. In business surveys common: e.g. web questionnaire for large and paper/phone questionnaire for small businesses.

Mixed mode survey: two or more modes for one target population (or for one gross sample, e.g. first web, next phone, or first *f2f*, next mail for supplementary questions like ESS, or first web, next *f2f*, or first web, next mail or mail vs web by the choice of the respondent. I never heard about three modes used as mixed-mode survey in practice. It seems that mail survey is coming but connecting to web. This is fairly cheap so that it is recommended to reply in web if available. The questionnaire has been seen any way that helps in orientating in the survey even answering by web.

Designing questions for the questionnaire

This is of course a very big area in the whole survey process. The questions are implementations of the measurement desired to study. That is, they should be valid. At the same time, the measurement instruments should be reliable.

How to succeed well in measurement? My practical strategies:
(i) **Try to find appropriate questions from the earlier studies.** This is often possible unless your field is something very new, never tested or validated. Still, it is good to make a search for good questions and question models. Go on to look at the surveys of your interest areas. There are of course a lot of websites too, like europeansocialsurvey.org and the question bank of the UK <http://surveynet.ac.uk/sqb/>.

Designing questions for the questionnaire

(ii) If you have a new type of target, it is still good to exploit those general models, but next **try to develop your own strategy**, not alone but in the team, and then to test it in your neighbourhood first and after that to pilot the whole questionnaire with similar people (= pre-test), taking a small sample. This sample does not need to be representative unless you do not have in mind to get real preliminary estimates. Usually, it is enough to try to find more such potential respondents that are not very ordinary, thus such who maybe have problems in answering.

Developing questions for the survey

Answer the following seven questions at least:

1. How well the question is concerned your research target and well formulated in this direction (validity)?
2. Is the question definitely beneficial; the question should give some value added for your analysis?
3. Are you sure that the respondents understand the question as your target for the question is?
4. Has the respondent reasonably information to answer correctly (e.g. terminology is known well, help tools might help)?
5. Are the respondents willing to answer the question?
6. Should the question be presented to all or for a certain group of the sample?
7. Can you find other information in order to analyse the answers given and how reliable they are?

Other general features for questionnaire designing

Size of the questionnaire is a big issue. Of course, it should not be too long but not either too short in this case you will lose useful information. How to get an optimal size?

1. First, it does not matter much if you will have all possible questions in the list but after that you have to go to choose the best combination avoiding overlapping, among others.
2. Finally, your team will make the first selection but this should be piloted with 'real respondents.'
3. Always check that the question is valid and the estimates intended to compute using it are applicable.

Other general features for questionnaire designing

Size of the questionnaire (continued)

4. It is possible that some subjects cannot be measured with one question but needs a pattern of questions using the same formulation. Do not avoid this since a good pattern may help in getting a good reliability for your measurement? Later, you maybe create some factors from this pattern and interpret these correctly.
5. Estimate the time needed filling in the questionnaire and take also into account the response burden of the average interviewer.

Good to remember that there are good validated patterns for several fields like Shalom Schwarz human values in the ESS. His pattern consists of 21 questions that was discussed in Part A.

When analysing this pattern with exploratory factor analysis, we thus found four factors, Equality, Enjoy, Tradition and Success.

It is best to use validated patterns, not trying to create a new pattern that needs much work and good validation. Shalom Schwartz's pattern seems to work even well, why not use it?. However, it is good to think which pattern in each case corresponds best to your study targets. If you do not trust any, create your own pattern. It may take several years to be validated and used by others.

Other general features for questionnaire designing
Order of questions is also essential but there is no only one optimal order. Take into account at least these points.

1. The first real question is important. It is good that it already is concerned one big issue of the survey but should not be too difficult to answer. Naturally, this question should be for all respondents, not for some.

2. Where to put so called background questions (gender, age, education, occupation, workplace)? Some prefer to put all these in the end but some others to divide in a quite early stage as far as non-confidential questions are concerned but confidential questions (salary, income, ...) are good to put in a very end. Note that if you know the above variables from registers for example, do not ask them again except for testing purposes.

3. Each survey should have certain specific key areas/subjects and main concentration should be paid to these. Hence it is good to carefully design the questionnaire so that such key questions are in an optimal place.

Other general features for questionnaire designing

Fortunately, possible questions are only of two types. They are concerned either

1. *Facts (age, gender, living area, industry class, occupation, income and its components as salary, partnership, ...)*

Or

2. *Subjective features (attitudes, opinions, assessments, purposes, ...).*

Naturally, questionnaire layout is often essentially different between these two questions. Basically, the first ones are easier to formulate and their scaling is often initially clear. Of course, there can be used different categories for categorical variables like for partnership or occupation and education. Continuous variables can be asked as continuous or they can be categorised, even age or salary since it may help in getting more reliable answers.

Naturally, using them as continuous it gives more options to categorise these later but how well it is possible to get correct answers, this is another point.

Other general features for questionnaire designing

As far as attitudes, opinions, assessments, purposes, ... are concerned there are in literature different standards for example concerning scales. I think that in history the scales have been shorter than currently for example in the ESS. I soon give some examples from show cards used in it by *f2f*. Show cards help a respondent to understand better the scaling of the question. These cannot be used in CATI at all, and the interviewer should be able to explain scales in the best way. I am not convinced how well this works. Naturally in self-administered surveys the respondent have in fact such show cards at hand, she/he see the scaling well. Layout is still a big issue, e.g. How far from real answers are the 'don't know' answers?

Screening

Certain questions, often on facts, are better to ask so that

- The first question is concerned whether you have been involved or experienced or met a phenomenon. There are now two possible categories: 1. Yes, 2. No.
- The second question is only to those who answered 'Yes' for the first question.

Unfortunately, this strategy is not always applied but asked for example an opinion about a public service even though never used or not used recently. This problem is often in survey results that gets much publicity even though is a so-called 'zero-research.'

Next page, you see a good example from the Finnish Security Survey.

Screening example of the Finnish Security Survey

A12 Over the last year, has anyone in your household had a car, van or truck for private use?

[YES; NO]

A13 IF A12=YES, How many cars has your household had use of for the most of the time?

NUMBER OF CARS: [1-10]

C1 IF A12=YES: During the last 12 months have you or anyone else in your household had a car or a van stolen or driven away without permission? [YES; NO] (COMPANY CARS INDCLUDED)

C2 IF C1=YES: How many times did this happen? [1-90]

C3 IF A12=YES: (Apart from this) During the last 12 months have you or anyone else in your household had anything stolen of (your/their) vehicle or out of it (parts of the vehicle, personal possession or other things?) [YES; NO]

C4 IF C3=YES: How many times did this happen? [1-90]

How to put the answers in the questionnaire?

I do not try to give any sufficient answer to my question above but some notes.

- Continuous variable used as continuous: there should be a maximum number of digits, not more; if the decimal is needed, this should be there already. In the computer-assisted questionnaire, it is possible to include some edit rules so that the accepted answer may vary by respondents but this is often hard to do well. If this variable in the paper questionnaire, in the respective web, may a value box also be used, helping to answer correctly.
- Categorical in electronic questionnaires are now done always so that the answer is possible only in the correct category; if several categories are accepted, it may be good but usually it is better to ask to answer each category either 'Yes' or 'No'.

How to put the answers in the questionnaire?

The face-to-face interviewers are always using show cards for several questions that facilitate to find a correct category. The ESS is using these. You can find these show cards here:

http://www.europeansocialsurvey.org/docs/round7/questionnaire/ESS7_source_showcards_main_questionnaire_final_alert_04.pdf

I give below two examples:

No time at all													
Less than ½ hour													
½ hour to 1 hour													
More than 1 hour, up to 1 ½ hours													
More than 1 ½ hours, up to 2 hours													
More than 2 hours, up to 2 ½ hours													
More than 2 ½ hours, up to 3 hours													
More than 3 hours													
	You												Most
	can't be												people
	too												can be
	careful												trusted
	0	1	2	3	4	5	6	7	8	9	10		

Other general features for questionnaire designing

As far as attitudes, opinions, assessments, purposes, ... are concerned there are in literature different standards for example concerning scales. I think that in history the scales have been shorter than currently for example in the ESS. I give some examples from show cards used in it by *f2f*. Show cards help a respondent to understand better the scaling of the question. These cannot be used in CATI at all, and the interviewer should be able to explain scales in the best way. I am not convinced how well this works. Naturally in self-administered surveys the respondent have in fact such show cards at hand, she/he see the scaling well. Layout is still a big issue, e.g. How far from real answers are the 'don't know' answers?

Other general features for questionnaire designing

The response burden is thus a big problem even in short questionnaires to some extent. The expected time is always told in advance for a respondent, and in the web survey there should be a measurement indicator that tells how far you are in replying.

An interesting side effect relating to response burden is so-called satisficing:

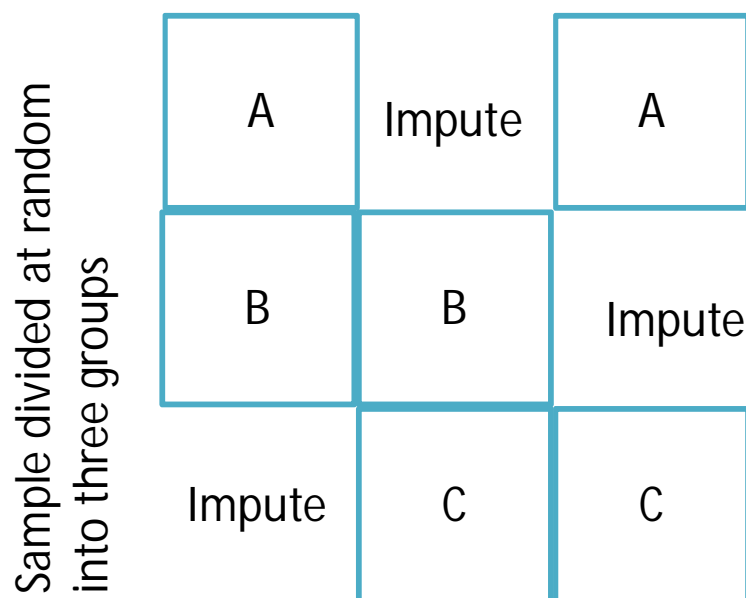
-Since I have started to reply but it seems to take a longer time as expected or the questions are too boring, I will continue to answer even I am too tired to think really my answers.

-OK, I will answer although too many questions are not smart; my solution is that I will put there 'I don't know' or 'I don't like to say my opinion' or I put an average score.

This satisficing is not much examined and it is not easy either. Try to work for it.

Rotating (split) questionnaire

A solution to response burden and satisficing could be a rotating questionnaire in the case the questionnaire seems to be too long and there is danger for increasing measurement errors. The below scheme illustrates this strategy. Here the whole questionnaire has been divided into three sub-questionnaires, A, B and C. Basic background questions are included in all subs. Naturally, auxiliary variables are available.



This strategy gives opportunity to obtain good results also concerning association between all sub-questionnaires.

Very little exploited. **WHY NOT?**

The ESS questionnaire piloting uses a partially similar strategy. In the end I give examples of this piloting.

Rotating questionnaire 2

This strategy is used in the Pisa literacy assessments (reading, maths, science, problem solving) so that there are three exams in fact, thus three different groups of questions. They are delivered at random for students. Hence it is also more difficult to try to look at neighbours' answers. On the other hand, the questions may be a bit different in their requirements. This has been taken into account so that there are in final data file, five different scores to each student. These are called 'plausible values.' Naturally, their variation is not big. When handling the data, it is best to take the average of all five values first, and take into account the variation as well in standard errors. Fortunately, the major components of the standard errors are in a sampling design and in a net sample size.

In general, I hope that the split questionnaires would be more used. This requires to impute missing data if done well.

NO ANSWER is a general problem in all surveys

There are different options for no answer like:

- Don't know (DK)
- Isn't willing to answer (refusal)
- The question does not concern him/her/it (screening e.g.)
- Unable to answer correctly
- No time to answer correctly
- Lost answer
- Other reason

Naturally, it is a purpose to avoid 'no answer' answers and formulate the questionnaire so that the number of such answers is as minimal as possible except in the third case that can be often a key indicator in some cases (like if this is a second question relating to details of crimes occurred for example when the first question gives already information that whether crime was occurred).

Thus if the relative number of 'no answer' answers is high, the questionnaire or interviewing is not working well, and any estimates should not be published.

NO ANSWER

Filtering "Don't Know"

There are three ways of dealing with "don't know".

Standard format. The "don't know" option is presented to the respondent, but is recorded if the respondent volunteers it.

Quasi filter. The "don't know" option is included among the possible responses.

Full filter. First the respondent is asked if they have an opinion (screening). Then, if yes, they ask the question.

Basically similar filtering can be applied for the 'Isn't willing to answer' alternative. Some questionnaires do not give opportunity to give any of these alternatives at all. I have stopped to fill in such questionnaire but tried to write somewhere my opinion: "I cannot tell my opinion, since your questionnaire is catastrophic. Do not publish anything based on such violated data!"

Example of human values of Schwartz pattern

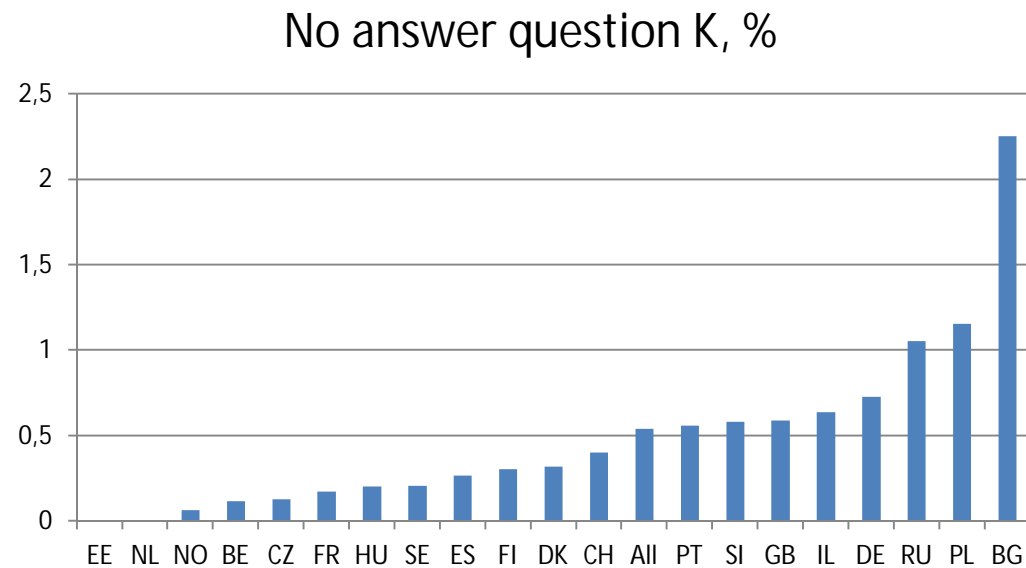
It is good to note that the scales without a mid-point means that the respondent cannot give the 'no answer' answer except keeping all boxes empty. Below is the question K of all 21 human value questions.

How much like you is this person?

	Very much like me	Like me	Some- what like me	A little like me	Not like me	Not like me at all
K						
	01	02	03	04	05	06
It is important to her to make her own decisions about what she does. She likes to be free and not depend on others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Next page you find the percentages of 'no answer' answers by country.

No answers by country in the ESS Round 5 for the question of the previous page, given that she/he answered to the first question of the pattern. This is from the supplementary questionnaire filled in by hand for the paper after the *f2f*. *This could be an indicator of satisficing.*



Straightlining seems to be a general problem when using a pattern of the questions with the same scales. This is common in paper questionnaires where are e.g. the patterns by Shalom Schwartz, and also in web but it is easy to avoid this format in web showing one question only on the screen. Below is an example found by googling.

Building Your Brand
www.gwkuhn3.com

Using a scale of 1 to 5, where "5" indicates very satisfied and "1" indicates not at all satisfied, how satisfied are you with each of the following factors?

Typical Responses

	1	2	3	4	5
Cost				●	
Service			●		
Colors					●
Features				●	
Comfort					●

Straightlining

	1	2	3	4	5
Cost				●	
Service				●	
Colors				●	
Features				●	
Comfort				●	

@gwkuhn3 on Twitter

Example of the different scales

ESS test questionnaire, Round 4.

Question in all the three questionnaires: "*Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?*"

But there are three scales as follows:

-Core questionnaire with 11 alternatives (without no answers):

0 = You can't be too careful, 10= Most people can be trusted.

-First pilot questionnaire with 6 alternatives:

0 = You can't be too careful, 5= Most people can be trusted.

-Second pilot questionnaire with two alternatives:

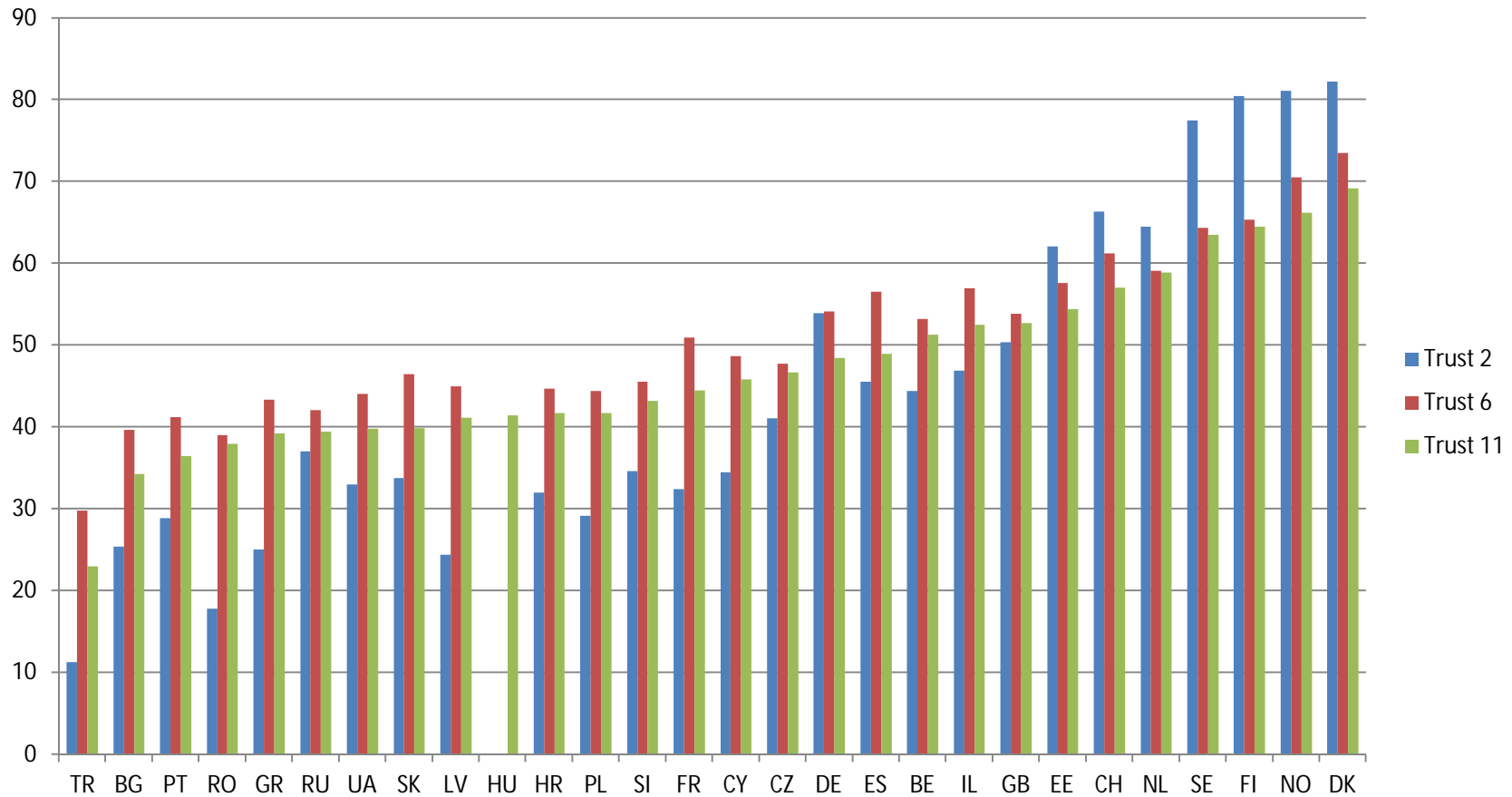
1 = You can't be too careful, 2 = Most people can be trusted.

Although the samples are not exactly as accurate, we can quite well compare these three alternatives. On the following page, all three questions have been linearly transformed to the same scale so that:
0 = You can't be too careful, 100= Most people can be trusted.

Interpret the results.

Trust other people in the country

Three different scalings for one question. The countries sorted by the scaling with the maximum categories, that is, 11 categories = Trust 11. Respectively 6 categories (Trust 6) and two categories (Trust 2).



Hungary did not participate in the pilot

Web and other internet solutions in surveys

The web questionnaire is fairly easy to use, and good software's are available. We used Digium in the Finnish Security Survey for the web part. It worked well. It is used by many public and private bodies but it is not free. In this university, we have e-lomake basically freely available but certain administration is needed. The completely free is SurveyMonkey, in its basic meanings. If you wish to use some better tools, they charge for them. If you have a small scale survey and you are willing to work a bit more, it is completely free, and you will receive the individual answers, for example, and some tables or graphics about the fieldwork.

Obs. I found in the SurveyMonkey case and many others have found that web is coming more difficult to correctly answer since so many are using new tools (smartphone, iphone, ipad, ipod,...) where the screen is smaller and the typing is more demanding.

SurveyMonkey example in Finnish

Testasin SurveyMonkey ennen kevään 2015 eduskuntavaaleja, Koillisen Helsingin Kehrä-lentokenttäryhmälle mikä kansalaisryhmä syntyi jostakin kuin itsestään. Syynä oli Malmin lentokentän hävittämislinja ja samalla alueen ainoan kunnollisen viheralueen poistaminen kartalta. Tämä herätti ja herättää valtavaa ärtymystä. Yksi Kehrän jäsenistä lähetti sähköpostilla kutsun osallistua pienimuotoiseen nettikyselyyn, jonka teknisesti laadin eli siis sitä kommentoivat monet. Lomakkeen tekeminen on melko helppoa myös siksi, että on valmiita kysymystyyppejä kuten muissakin ohjelmistoissa. Kun kaikki on valmiina, sen voi lähettää käyttöön. Saat hetimiten nettiosoitteen mistä löytyy nettilomake ja pääsee vastaamaan.

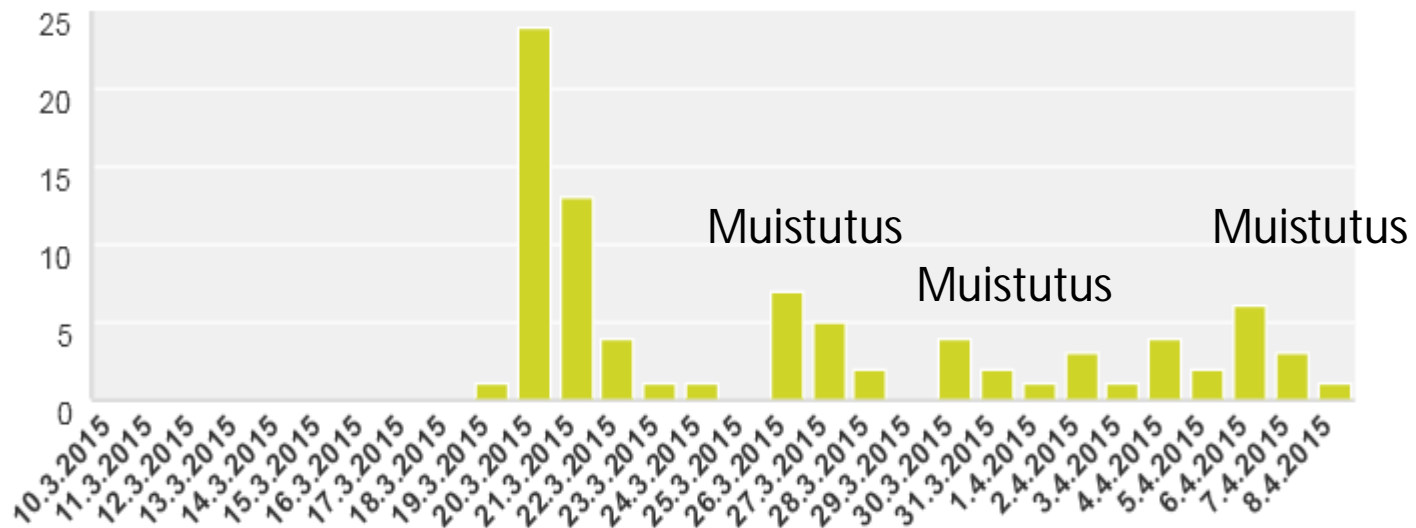
Tämä osoite annettiin kaikkien kuuden eduskuntapuolueen Helsingin ehdokkaille ja pyydettiin heitä vastaamaan. Hyvin nopeasti tuli muutamia vastauksia mutta pian tulva tyrehtyi.

SurveyMonkey example in Finnish

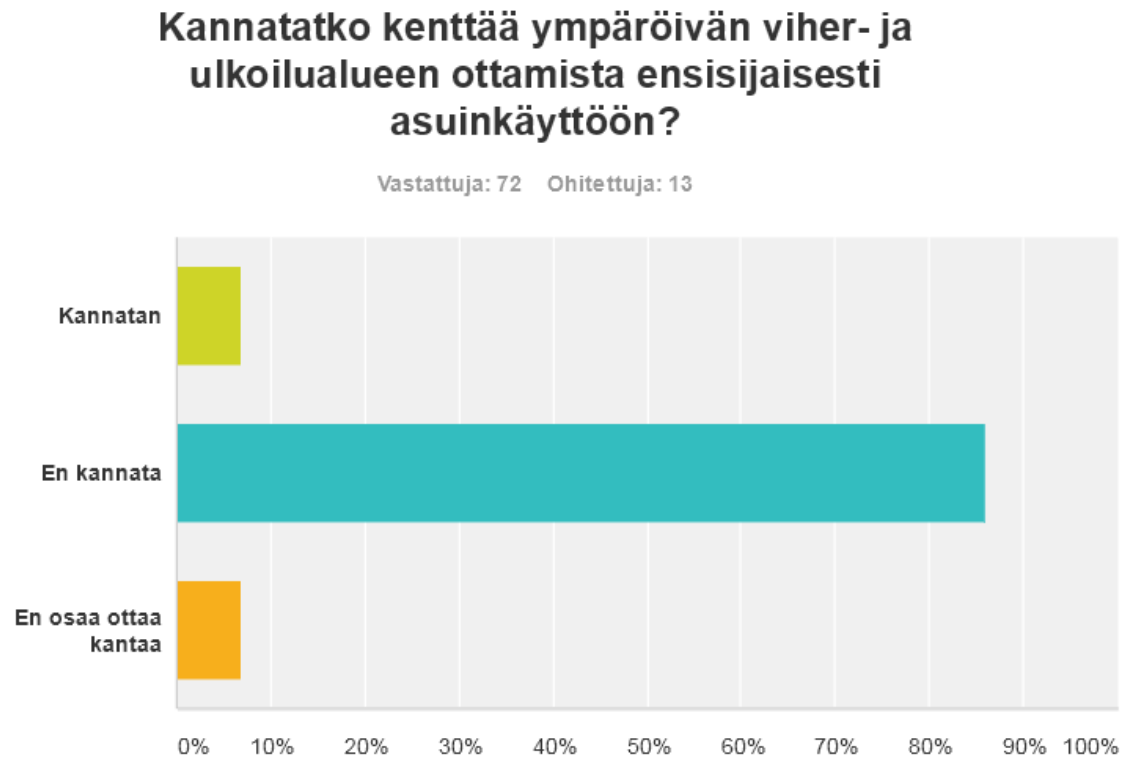
Ohessa on kuvio minkä SurveyMonkey tuottaa. Muistutuksia vastata lähetettiin useita ja uusia vastauksia tuli. Viimeisissä sanoin että käytän kokemaani tällä kurssilla. Vihreistä ei siltikään tullut ainoatakaan vastausta eikä demareiltakaan montaa. Nämä ja merkittävät kokoomuslaisethan (jotka eivät vastanneet) ovat noiden suunnitelmien takana. Seuraavalla sivulla vastausten jakauma yhteen kysymykseen.

Vastausmäärä

10.3.2015 - 8.4.2015



Tämäkin vastausjakauma osoittaa selvästi, että vastaamattomat mitä ilmeisimmin olisivat olleet ensimmäisen vaihtoehdon takana, koska tuota nimenomaan on ryhdytty suunnittelemaan. Koska etukäteen kerrottiin, että vastaukset ovat julkisia, moni ei rohjennut kertoa kantaansa. SurveyMonkey toimi mielestäni ihan hyvin. Ehkä käytän sitä toisenkin kerran.



Online or Internet panels

An Online panel is a group of selected participants who have agreed to reply survey questions by web during a reasonable time. What this time is, it depends on a survey organization but it is usually expected that it lasts more than one year. Some incentives have been usually given so that the incentive is higher if participating a longer time.

I was once some months a member of the panel of a market research enterprise for testing. The technology is good but the incentive did not correspond to the workload required. I do not here continue with such marketing panels but point out some aspects of the internet panels that may replace a standard survey. That is, there are questions about attitudes, opinions, employment and daily life questions.

Online or Internet panels

Most market research institutes (e.g. TNS Gallup, Taloustutkimus in Finland) have created an internet panel. There are tens thousands registered persons usually. These have been tried to recruit so that some population figures are close to those of an ordinary population of certain ages (e.g. 15 to 79 years) of the country. The registered persons will receive a web questionnaire and it is expected that they answer very quickly. The entire panel is not necessarily needed in each case but a sample is enough in most cases. This depends also on the target population of each survey. The results using this technology are ready immediately, and it thus is a big advantage of it. The main problem is how representative the 'sample' is? If people without internet access are not in the panel, it leads to a clear bias, but this is avoided if the survey organization gives this technology to him/her; it is of course needed to train all to use the survey tools correctly.

Online or Internet panels

The recruitment thus should be made successfully when using online panels. On the other hand, nonresponse is still there, and often worsening while the participation time lasts. This has been found in some cases such as the Dutch LISS panel (Longitudinal Internet Studies for the Social sciences) of households and their members. Panel members complete online questionnaires every month of about 15 to 30 minutes in total. Naturally, new recruitments are all time needed in order to keep the quality. Its initial wave is well representative since the internet technology is given to those who have not it already. They say that: "The reference population for the LISS panel is the Dutch speaking population permanently residing in the Netherlands who are 16 years old or more."