Food and Agriculture Organization of the United Nations
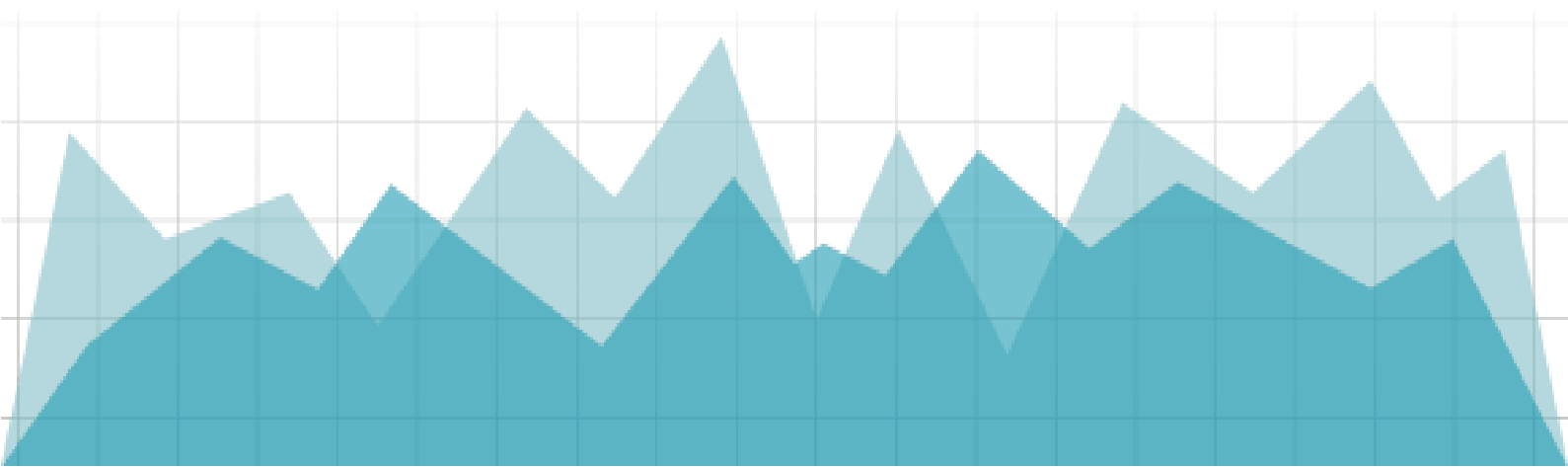
Statistical Standard Series

Handbook for questionnaire design

FAO usually collects data from official secondary sources through standard questionnaires sent to national official focal points nominated by the relevant Government institutions. For this purpose, the OCS has developed standard guidelines that were endorsed by the IDWG on Statistics in December 2019 and are already being used by the different statistical units at the FAO.
(https://home.fao.org/fileadmin/user_upload/scp/,DanaInfo=intranet.fao.org+SSS_Questionnaire_design_CAWI_Annex__endorsed_December_2019_.pdf).

In addition, various units and FAO country offices often times collect data from primary sources (households, farms, etc.) through dedicated surveys to address their specific data needs. This handbook is therefore **designed as a quick and easy guide to help FAO staff to improve the questionnaire design, which in turn will have a significant impact on the quality of data collected. These standard guidelines can be applied to any data collection mode, but when necessary, mode-specific recommendations are provided.**

A number of manuals and guidelines on this topic have been already produced by authoritative Statistical Institutions and are available on the web. The content of this handbook mainly relies on the following publications: *World Programme for the Census of Agriculture 2020: Operational Guidelines (2018, Chapter 16); Quality Guidelines (Statistics Canada, 2009); Survey Methods and Practices (Statistics Canada, 2003); Handbook of Recommended Practices for Questionnaire Development and Testing in the European Statistical System (Eurostat, 2006).*

Sections 1 and 2 of this handbook provide a brief overview of **the questionnaire design process that normally includes six important steps.** The details about these six steps are described in detail in section 3, which contains **guidelines and suggestions for the design of the different components of a survey questionnaire**.

A summary of these guidelines is provided in section 3.7 that contains a useful **checklist of recommendations.**

CONTENTS

1. WHAT IS A QUESTIONNAIRE?

A questionnaire is a set of questions designed to gather information from a respondent. It plays a very important role, as it is the main interface between the respondent and the Institution, and it influences significantly the outputs of the analysis and the image of the agency. It has a major impact on respondent behaviour, interviewer performance, collection costs and, therefore, on data accuracy. In few words, it plays a central role in the data collection process.

For these reasons**, it is essential to design a "good" questionnaire**. A "good" or well-designed questionnaire should collect data that correspond to the survey's objectives, while at the same time consider the statistical requirements of data users, the administrative and data processing requirements, as well as the nature and characteristics of the surveyed population.

A good questionnaire normally imposes a **low burden on respondents** and it is perceived as **user-friendly by both respondents and interviewers**.

The **question design and wording** must encourage respondents to complete the questionnaire as accurately as possible.

Therefore, a good questionnaire:

- ✓ must focus on the topic of the survey;
- ✓ must be as brief as possible;
- ✓ must flow smoothly from one question to the next;
- ✓ facilitates respondents' recall;
- ✓ facilitates the coding and capture of data;
- ✓ minimizes non-response and therefore the required amount of edit and imputation; and
- ✓ leads to an overall reduction in the cost and time associated with data collection and processing.

2. STEPS TO DESIGN A SURVEY QUESTIONNAIRE

Before starting to write questions, establish how to group them and in which sequence to administer them. Some other **important activities must also be carried out**, especially when the questionnaire design starts from scratch.

These preliminary activities are listed below:

1. Literature review
2. Specification of the survey objectives
3. Definition of the basic concepts
4. Definition of variables and draft the tabulation plan
5. Choice of data collection model
6. Design of a first draft of the questionnaire
7. Test of the questionnaire

Only at step 6, questions can be written and a provisional structure of the questionnaire "can see the light". The questionnaire design is therefore **a very well-structured process made up of several steps** that, if well performed, allows obtaining a high-quality questionnaire that should have a negligible impact (bias) on the total survey error.

Each of the above steps is briefly described below. More detailed explanations will be provided on point 6, which represents the "core" part of this handbook.

✓ **Step 1: Literature review**

It is very important to verify whether other surveys about the same phenomenon exist and can provide useful suggestions on how to design the questionnaire. It is recommended to undertake the following actions during this step:

- ✓ Carry out a review of literature about the topic of the survey.
- ✓ Verify if the questions of your survey have already been covered in other surveys, with a special attention to those surveys belonging to your organization.
- ✓ Analyse reports and tests of similar surveys, especially those in your organization, to avoid similar problems.

✓ **Step 2: Specification of the survey's objectives**

Two straightforward principles are essential for this point:

- ✓ *"A prerequisite to design a good survey instrument is deciding what is to be measured"* (Fowler, 2002).
- ✓ *"Ask what you want to know, not something else"* (Bradburn, 2004).

To meet these two principles, the definition of the survey's objectives should be done involving subject experts and key-users.

✓ **Step 3: Definition of the basic concepts**

To design a good questionnaire, it is essential to check whether the main concepts of the survey are properly understood by the respondents. Therefore, when designing your questionnaire, ask yourself the following question:

- ✓ *Are these concepts understood by respondents in the same way I (the survey expert) do?*

It is recommended to use as much as possible standard concepts and definitions. Moreover, the concepts used in the questionnaire should be harmonised with those of other data collection instruments commonly used on the topics on which we are conducting the survey; this will help to facilitate data comparability at the data analysis stage.

Testing the basic concepts through qualitative interviews with some key-users might help in getting a reliable answer to this question. Specifically, such a test may allow to:

- ✓ Verify the level of respondents' knowledge about certain topics.
- ✓ Verify whether respondents understand the terminology to be used in the questionnaires or if alternative ways of expressing the basic concepts must be used.
- ✓ Better clarify the reference periods.
- ✓ Detect if some topics are perceived as sensitive.

✓ **Step 4: Definition of variables and draft of a tabulation plan.**
This step represents a very crucial moment in the questionnaire design; it allows the survey expert to understand how the questionnaire/questions should be formulated to achieve the survey's objectives. To do this, **the expected output must be defined in terms of tables of variables**, where:

- ✓ Clear and unambiguous definitions of variables must be provided.
- ✓ Domains of variables must be specified.
- ✓ Distinction between directly measured variables and calculated ones must be made, to avoid asking questions that can be derived from others.

✓ **Step 5: Choice of data collection mode (including choice of the languages in which the survey is administered and the software used for data collection and processing) and evaluation of the impact on the questionnaire**
Although, this handbook contains guidelines for questionnaire design, independent from the data collection mode, it is important to observe that the data collection mode influences the questionnaire's design, and reciprocally the questionnaire's content and structure also influence the choice of the collection mode. For example, modes assisted by a computer and administered by an interviewer, such as CATI or CAPI[1], will allow for a more complex questionnaire in terms of check and skip rules; on the other hand, a questionnaire containing many sensitive topics will be more suitable for self-administered modes, like paper (PAPI) or web questionnaires (CAWI)[1].

In general, to better understand the impact of the interaction between data collection mode and questionnaire (i.e. may some modes hamper the collection of some data?), it is preferable to consider from the very beginning of the survey design phase which data collection modes could be used, and afterwards (step 5) decide which is/are the most suitable one(s). A Pre-test or a pilot survey (Step 7) are good tools to evaluate the mode choice.

In order to facilitate the data collection process, whenever possible, the questionnaires should be translated into the language used by most of the respondents participating in the survey.

It is also critical to evaluate carefully, before the beginning of questionnaire design, the data collection/processing software to be used in the survey, to ensure good quality results. When developing the questionnaire design, we should make sure that the flow of the questions and the decision on the questionnaire layout are properly handled by the software. Hence, it is always advisable to involve the data processing experts from the initial stage of the questionnaire design to avoid complications during data processing.

✓ **Step 6: Design of a first draft of the questionnaire**
In this stage of the design process, the questionnaire begins to take its shape, since the survey expert defines:

- ✓ the content and formulation of the questions;
- ✓ the structure of the questionnaire (how to group questions);
- ✓ the interview's flows (the sequence of questions); and
- ✓ the questionnaire layout (the look and feel of the questionnaire).

During this step, it is essential to conduct user-producer consultations to discuss/agree on the questionnaire content and design, in order to ensure that the users' needs are properly satisfied, taking into account, at the same time, the producer's challenges.

This step is extensively described in the section 3 below.

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[1] CATI (Computer Assisted Telephone Interviews); CAPI (Computer Assisted Personal Interviews); PAPI (Paper and Pencil Interviews) and CAWI (Computer Assisted Web Interviews).

✓ **Step 7: Test of the questionnaire**

The first version of the questionnaire must undergo various types of testing that can provide useful suggestions for reviewing the design phase, re-starting from Step 3 (Definition of concepts).

This testing could begin with mock interviews, field pre-tests and, when resources are available, conducting a representative pilot survey should be considered. The most common strategies to test the questionnaire are not treated in this handbook, as they are comprehensively described in the publications mentioned in the bibliography. It is worth mentioning, however, that the type and the sample size of the pre-tests/pilot tests should be determined according to different factors including time, resources availability and the complexity of the questionnaire.

3. GUIDELINES FOR QUESTIONNAIRE DESIGN

This section provides guidelines for questionnaire design, organised with respect to the different "components" of a questionnaire, specifically:

- ✓ the questions' wording;
- ✓ the types of questions and question formats;
- ✓ the use of definitions, examples and instructions;
- ✓ the interview flow; and
- ✓ the questionnaire layout.

3.1 Questions' wording

Formulating a good question is quite a difficult task. **A question must collect the required information and must be understood by everyone taking part in the survey**, whatever the data collection mode is: a written question through a paper, or a web questionnaire, or an oral question through a telephone, or a personal interview. The wording of a question can provide inaccurate data if respondents do not understand the meaning of the words, interpret them differently than intended or if they are unfamiliar with the concept(s) conveyed by the wording of a question.

Few simple and direct rules can help in designing the survey questions:

a) **Keep the wording simple**:
   - ✓ Avoid using technical words, unless respondents are experts in the topic.
   - ✓ Avoid difficult words that can be unfamiliar to the majority of respondents. Focus groups or cognitive interviews[2] may help finding the "right" words to express the intended concepts (that is, the words that respondents are familiar with). **Acronyms** and **abbreviations** can be considered as "difficult" words. They can be used, but should always be defined first.

   Example 1:

   Difficult question:

   Q.1: Are you aware of the impending consolidation of the neighbouring constituencies in the New Metro area?

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[2] Focus groups are composed of a small number of target population members guided by a moderator, while cognitive interviewing is a collection of different techniques (think aloud, probing, vignettes, etc.) for studying the answering processes of respondents during the interview (Eurostat, 2006).

Q.2: Have you ever received a pneumococcus vaccination?

It is better to ask: *Q.2 Have you ever received a flu vaccination?*

b) **Keep the wording short:** lengthy or complex questions, with a relative large number of words, are more difficult to understand or to process than short ones. Although it is impossible to specify the maximum length of a question, each sentence should convey a single item of information (see also double barrelled-questions).

Example 2:

Long question:

Q.2: When deciding which type of school to enrol in, which assessment elements did you particularly consider?

To answer this question the respondent is likely to:

   a) Start concentrating on the time when he/she had to choose the school.

   b) Reflect on what is meant by evaluation elements.

   c) Rank the evaluation elements that was able to identify (specification of "particularly").

It is better to ask:

Q.3: Why did you choose the type of school you enrolled in?

c) **Be as specific as possible, regarding the object of your question:** specificity ensures that respondents really understand what they have been asked. In a well-designed question it should be specified:

   ✓ **Whom** the questions apply to (example: the respondent himself/herself, his/her households, etc.).
   ✓ **What** information should be included or excluded from the response.
   ✓ **Where** the phenomena investigated happened (example: work or household context).
   ✓ **When:** what time period the question refers to.

Example 3:
Ambiguous, not specific question:
What is your income?
The questions should specify:
Personal income or household income?
Net income or gross income?
Annual or monthly income?

d) **Avoid Double-Barrelled Questions:** a double-barrelled question is a question that incorporates two different questions.

Example 4:
Double-Barrelled Questions:
Q4. Do you intend to leave work and return to teach English this year?
A person may be intending to leave work, but not to return to teach English, and vice versa; in this case it is not possible to understand which part of the question the answer corresponds to.

Therefore, **the rule is: ask one question (concept) at a time.**

e) **Avoid leading/unbalanced questions:** this type of questions leads respondents towards a particular response, introducing a response bias. It occurs when the question makes it easier to choose one response alternative over another, due to the question formulation or because the formulation is not neutral.

Example 5:

Leading question:

Q.5 Are you personally in favour of soil conservation?
>   1.   Yes
>   2.   No

This is a leading question since only the 'positive' attitude is mentioned.

It is better to ask:

Q.5 Are you personally in favour or not of soil conservation?
>   1. Yes, I am in favour
>   2. No, I am not in favour

Unbalanced and leading question:

Q.6 Do you think that the utilization of a high amount of chemical fertilizers has a negative impact on the environment?

In the formulation above, the amount of chemical fertilizers is already considered as excessive (not neutral) and the impact is described only as negative (leading).

It is better to ask:

Q.6 *Do you think that the amount of chemical fertilizer currently used in your farm has a positive or a negative impact on the environment or has no impact at all?*
>   1.   *Has a positive impact*
>   2.   *Has a negative impact*
>   3.   *It has no impact*

f) **Avoid using negative forms and double negative:** questions expressed in negative forms can be easily misinterpreted by respondents. The use of negative words may slower the response process, because it may require an additional effort for the respondents that have to think too much about the answers rather than giving them automatically.

Example 6:

Negative form:

Q.7 Do you think that non-organic farming should not be allowed?

It is not completely incorrect, but it is less direct and may slower the response process than its "positive" alternative: *Q.7 Do you think that non-organic farming should be forbidden?*

Double negative question:

Q.8 Would you be for or against not allowing mixed crop farming?

This question is a very tricky, misleading question. In fact to answer it, the respondent has to think very carefully that "being for not allowing mix crop farming" would be to be against allowing it and "to be against not allowing the mix crop farming" would be equivalent as allowing it.

Therefore, this alternative formulation should be used:

Q.8 Would you be for or against allowing mixed crop farming?

The above rules can be applied to any type of questions and to any question format. In the following sections of this handbook, the main types of questions and the most frequently used formats are described, together with indications about their pros and cons.

3.2 TYPE OF QUESTIONS

There are **three main types of questions**: factual questions, behavioural questions and opinion questions.

3.2.1 Factual questions

These are questions that request information about facts, objective situations, like for example *"Do you own a tractor?"* or *"How many employees work in your farm?"*.

The most commonly used and known factual questions are **socio-demographic questions** that ask for gender, age, level of education, number of household members, etc. These questions are in general simple to answer, and they are placed at the beginning or at the end of a questionnaire depending on their purpose, as it will be explained in section 3.5.

Another type of factual questions are **knowledge questions**, which are aimed at evaluating the respondent's knowledge about some issues. For example, "*Who is the actual Italian Prime Minister?*".

3.2.2 Opinion questions

These questions are used to 'measure' subjective opinions. They can be very difficult to answer, either because respondents may not have their own opinion or because the topics are rather sensitive. These questions are made of two elements: the objects to be evaluated and the evaluation scale.

The evaluation scale could be about:
- ✓ agreement (approval or disapproval, yes or no);
- ✓ truthfulness (true or false);
- ✓ assessment (good or bad);
- ✓ importance (important or not important); and
- ✓ intensity (minimum, maximum).

Example 7:

Q.1. Considering your job, could you please indicate how much do you agree with each of the following statement?

OBJECTS	EVALUATION SCALE			
	Totally agree	Fairly agree	Totally disagree	Not applicable
- My office is easy to reach	1	2	3	4
- My room is comfortable	1	2	3	4
- I work with nice people	1	2	3	4
- I enjoy having lunch with my colleagues	1	2	3	4

When designing these questions, pay attention to the way labels that describe the objects are written: use words that are simple and easy to understand by everyone. Besides, use an appropriate evaluation scale for the objects.

One problem for this type of questions is that it is not possible to check the validity of opinions. Therefore, it is quite important to test if they are well understood by respondents to avoid quite common respondents' behaviours such as *acquiescence* and/or *satisficing*:

- ✓ **Acquiescence** happens when respondents tend to find everything agreeable.
- ✓ **Satisficing** happens when respondents tend to give the first reasonable answer, rather than make the effort to find the most suitable one.

These two attitudes happen more frequently when:

- ✓ The terms used for the question are ambiguous or difficult to understand.
- ✓ The different objects under evaluation are not so different among each other.
- ✓ The list of objects to be evaluated is too long.

In order to avoid *acquiescence* it is recommended to use a balanced scale, while to avoid *satisficing* the advice is to define a non-ambiguous and short list of objects.

The question format for this type of question is in general a rating or a rank question, which are described in Section 3.3.1.1.

3.2.3 Behavioural Questions

These questions ask for information about respondent's activities, like for example "*How many times have you been visited by the extension workers in the last 12 months?*" or "*In the last 3 months, how often have you had an alcoholic drink of any kind?*".

For these questions it is important to pay attention to the difficulty of the **recall task** for the respondents. It is extremely important to choose a reasonable period that does not generate errors due to the so-called *memory effect*. In fact, an unsuitable period can generate two type of errors:

1) *Recall error*, when respondents do not recall the events that occurred within the reference period, thus generating an under-reporting of behaviours.
2) *Telescoping error,* when respondents tend to report behaviours as having occurred more recently that they actually did. This will result in an over-reporting of behaviours.

A problem that may affect both opinion questions and behavioural questions is their possible connection with

sensitive topics. Sensitive questions are about topics that respondents perceive as personal or threatening: questions about income, debts, sexual habits, religious or political belief, etc. Answers to these questions might be affected by *social desirability bias*, which means that respondents tend to answer in a manner that is viewed favourably by the majority of the population.

There are different ways to try to limit this kind of measurement error:
- ✓ Introduce the topic before asking a sensitive question. The introduction can state that the sensitive behaviour is not uncommon, thus making respondents more comfortable when answering the question (be mindful of not introducing other type of bias, by pushing respondents towards behaviours that are not so common).
- ✓ Start with warm-up questions that are topic related but less sensitive.
- ✓ Use a closed question with a range of response categories. This last approach is in generally used for question about income and age. Closed question can also be used if a respondent refuses to answer to a sensitive open question.

Example 8:
Sensitive open question:
Q1. How old are you?
Years |__|__|
Refuse to answer |__|

(If Refuse to answer in Q.1)
Q.1a Could you please tell me at least which is your age class?

Less than 15 years	1
15-29 years	2
30-44 years	3
45-60 years	4
More than 60	5

3.3 Question formats

Three type of formats are available to design questions:
- ✓ closed questions
- ✓ open questions
- ✓ table/matrix questions.

3.3.1 Closed questions

In general, **closed questions** are the most frequently used, since they are simpler to answer for respondents, who can choose among a list of response categories rather than formulate a response in their own words. Moreover, they are easier to process.

The response choice can be **single choice**, only one answer is possible, or **multiple-choice** – more than one answer can be selected.

In general, single choice is very common and therefore it is advisable to provide indications to respondents only when more than one answer is possible. Statements like '*Tick all that apply*' or '*Tick no more than three responses*' must be reported just after the question text and before the list of answer categories.

Example 9:

Single choice question	Multi-choice question
Which is your preferred colour?	*Which are your preferred colours?*
	(Tick a maximum of 3 answers)
Black 1	Black 1
White 2	White 2
Red 3	Red 3
Green 4	Green 4
Yellow 5	Yellow 5
Blue 6	Blue 6
Brown 7	Brown 7
Grey 8	Grey 8

When defining the response categories, remember that they must be:

- ✓ **self-explanatory**: they must use simple and direct words so to make sentences clearly understood by everybody;
- ✓ **mutually exclusive**: they must not overlap among each other or convey similar concepts. An example of overlapping categories is shown below, where the question about age contains categories 2 and 3 that **are not** mutually exclusive:

How old are you?

Less than 15 years	*1*
*15-**30** years*	*2*
***30**-44 years*	*3*
45-60 years	*4*
More than 60	*5*

- ✓ **exhaustive**: all possible answers should be covered when possible. Otherwise, it is suggested to always add the answer category "Other, please specify" where respondents can provide a different answer using their own words. This is particularly useful for the first wave of a survey, when the phenomenon is not well known by researchers; in the following wave of the survey the list of response categories can be enriched by adding the most frequent answers specified by respondents in "Other, please specify".
- ✓ **not too many:** it is advisable to make a list with a limited number of answer categories, so as to keep the list at a manageable length. This will also help avoiding the so-called *primacy* or *recency effects* that happen when respondents choose, respectively, the first option of the list of answer categories or the last one.

Primacy effect happens more frequently in self-compiled questionnaires because respondents do not go through the whole list of answers and stop reading the response options at the very beginning.

Recency effect can happen more easily in oral interviews (face-to-face or by telephone) when the interviewer reads aloud the answer categories: in this case, it is highly possible that respondents remember more easily the last response options they have heard.

The best way to avoid or to reduce either *primacy* or *recency* effects is to use a limited number of answer categories.

If this is not possible, another way to address this problem is to **rotate** the answer categories: this does not avoid *primacy* or *recency* effects, but may limit their impact on the estimates. This suggestion, anyway, is feasible only for computer assisted questionnaires.

Another solution, valid for any data collection mode, is to use filtering questions, whose response categories are more aggregated, and then to pose questions that ask for more detailed information depending on the selected branch of the filtering question. The example below can clarify the options.

Example 10:

<u>Question with long list of answer categories:</u>

Q.1. Who looks after your child when you are at work?

Myself, he/she is with me when I work	1
The babysitter	2
My husband / his-her father	3
His-her grandparents	4
His-her brothers/sisters	5
Other relatives	6
Public day nursery	7
Private nursery	8
Other types of asylum	9
My neighbours	10
Other people (specify)	11

The above question with eleven answer categories can be changed in the following one, which has only four answer categories. According to the answer provided, only <u>one</u> of the subsequent questions (Q.2, Q.3, Q.4) is asked.

Q.1. Who looks after your child when you are at work?

Myself, he/she is with me when I work	1
Relatives	2 → go to Q.2
Nursery/asylum	3 → go to Q.3
Other people (specify)	4 → go to Q.4

(If 'Relatives' at Q.1)
Q.2. Which relatives specifically?

My husband / his-her father	1
His-her grandparents	2
His-her brothers/sisters	3

(If 'Nursery/asylum' at Q.1)
Q.3 What sort of asylum?

Public day nursery	1
Private nursery	2
Other types of asylum	3

(If 'Other people' at Q.1)
Q.4 Who in particular?

Baby-sitter	1
My neighbours	2
Other people	3

The solution above requires a greater effort than the first solution for testing the electronic questionnaire. This is counterbalanced, however, by a reduced response burden and a potentially higher data quality.

The use of **"Don't know"** and **"Refuse"** response categories is a widely controversial issue. On one hand, their presence among the response categories could induce the respondent not to engage in providing any meaningful answer; on the other hand, their absence could lead to a distortion of the results, inducing the respondent to choose one answer category that does not represent him/her adequately.

The decision about whether to include these categories depends, to a large extent, on the topic or the role of the question. The following general **rules** can be suggested:
- ✓ If a question is a core survey question, then "**Don't know"** and **"Refuse"** options should not be allowed.
- ✓ If a question is sensitive or not essential, the possibility of nonresponse might be considered.
- ✓ If a question is different from those described above, but the researcher knows that it is "difficult" to answer, then the "Don't know option" or "Refuse" option should be allowed.

Some examples will help clarify.

Example 11:
- ✓ Demographic questions can be used for classification purposes; they are therefore core survey questions and therefore the "*Don't know*" and "*Refuse*" option should not be used.
- ✓ Behavioural questions about alcohol consumption (sensitive) might contemplate the use of these two answer categories, unless of course, they are core survey questions.
- ✓ Knowledge questions that ask for an estimate of future trend can be difficult to answer. In this case the "Don't know" option can be allowed. In the example below, the option "Do not know" may prevent respondents who really do not know what will happen from choosing the neutral position 'remained unchanged', which would be an incorrect answer and would introduce bias.

Q.11. During the next harvest, do you expect your production of maize to increase, decrease or remain unchanged?

Increase	1
Decrease	2
Remain unchanged	3
Do not know	4

Besides, in paper questionnaires the use "**Don't know"** and **"Refuse"** can be avoided, since respondents that do not want to answer a question may just leave it empty. In this case, anyway, specific instructions for the data entry program must be defined.

In case of electronic questionnaires, it is not advisable to give the chance of leaving a question unanswered as in paper questionnaires. This is because this can happen by mistake (for example by involuntary pressing "enter" on the PC keyboard). For this reason, to manage the "**Don't know"** and **"Refuse"** options it is advisable either to follow the general rules given above or to always provide them but displayed on the PC screen in a different text colour, for instance a grey colour, to make them less visible.

3.3.1.1 Special type of closed questions

Rating and rank questions are special types of closed questions.

Rating questions
In this type of closed questions, the answer categories represent a rating scale. They are aimed at knowing "the

position" of respondents with respect to an opinion or a feeling, like for instance the level of satisfaction for a service or for their economic conditions.

There are many types of scales and many studies are available on the advantages and disadvantages of each scale. For example, the different number of points in the scale impacts the result of the question, as well as the use of a middle neutral point or the use of full labelled or partially labelled scales, etc.

Therefore, it is almost impossible to provide clear recommendations on the "best" scale to use. Instead, all the available different types of rating scales are described below, along with advice on what to avoid when using them.

The type of scale depends on:
- ✓ the labelling: verbal or numeric
- ✓ the number of scale points: how many and if they are an even or an odd number
- ✓ the direction: ascending or descending.

Example 12: Some examples of different types of scales

Verbal scales: satisfaction and agreement

Satisfaction				Agreement			
Even points		*Odd points*		*Even points*		*Odd points*	
Very satisfied	1	Very satisfied	1	Strongly agree	1	Strongly agree	1
Satisfied	2	Satisfied	2	Agree	2	Agree	2
Dissatisfied	3	Neither satisfied or dissatisfied	3	Disagree	3	Undecided	3
Very dissatisfied	4	Dissatisfied	4	Strongly disagree	4	Disagree	4
		Very dissatisfied	5			Strongly disagree	5

Numeric scales - Partially labelled (endpoints labelled):

Q.5. How important is to study math at school? Please give a score from 1 to 10, where 1 means totally unimportant and 10 totally important.

Totally unimportant								Totally important
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐
10☐								

Numeric scales - Fully labelled

Q. 6. How important is to study math at school?

Totally unimportant	Unimportant	Neither unimportant or important	Important	Totally important
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

When designing a rating question, the following elements should be considered:

✓ **Number of points**

The most frequently used scales have up to 5 points. Scales with 7 to 9 points are usually too demanding as it can be hard for respondents to select the exact value in presence of a too detailed discrimination. Anyway, the number of points really depends on the topic investigated.

The key characteristic is that, whatever the number of points, scales **must be balanced**. This means that they must have the same number of positive and negative alternatives to avoid biased results. Moreover, also the wording of the answer should be chosen very carefully: the wording should be clearly distinct between each other and the negative and positive options should be of the same intensity (i.e. balanced).

For example: "Very difficult" versus "Very easy": they are opposite and with the same intensity
"Extremely difficult" versus "Fairly easy": they are opposite, but with a different intensity

✓ **Neutral point**

Should rating scales show a neutral option?

This issue is rather controversial: when it is offered respondents seem to concentrate on it, but when it is not offered respondents seem to choose more frequently the positive options. This is especially true for questions on opinion for which *acquiescence* effect might apply (tendency to agree).

The indication therefore is to use the neutral option or not depending on the question. If the researcher knows that respondents have an opinion, for instance when asking them their level of satisfaction with a service they have used, then the neutral option may not be used. On the contrary, it should be used when respondents do not have a well-informed opinion or when a neutral position can be a possible answer, like for example in questions about the choice of a political party.

Another indication is to provide at least the "Do not know" option in case the neutral point is not offered.

✓ **Order and layout of the scale**: the order of a scale (from positive to negative or vice-versa) and, in self-compiled questionnaires, the way it is visualised (horizontally or vertically) may affect the results. There are no indications on which order to adopt or visualisation to choose; what can be suggested here is to run a pre-test that will help deciding the best design.

✓ **Consistency**: when a scale format has been chosen, this should be used throughout the whole questionnaire.

Rank questions

In this type of closed questions respondents are asked to order the response categories in order of importance, like in the example below.

Example 13: Rank question with a long list of answer categories

Q.1. Below you will find a list of environmental problems. Could you please rank them in order from the most worrisome to the least worrisome?

− Greenhouse effect, ozone hole	□
− Extinction of some plant / animal species	□
− Climate change (temperature increase, variation of the precipitation regime)	□
− Waste production and disposal	□
− Air pollution	□
− Soil pollution (e.g. caused by pesticides)	□
− Noise pollution	□
− Pollution of rivers, seas, lakes	□
− Hydrogeological instability (floods, floods, flooding, landslides, avalanches)	□
− Catastrophes caused by man (industrial accidents, leaks/spills of oil and other toxic substances)	□
− Deforestation	□
− Ruin of the landscape caused from the excessive construction of buildings	□
− Exhaustion of natural resources (water, minerals, oil, etc.)	□
− Electromagnetic pollution (caused by radio-TV and telephone repeaters, high voltage power lines)	□

In general, ranking all possible answers is very burdensome. The advice, therefore, is to ask respondents which are the most important categories for them, providing that their choice is limited to three or five categories depending of the length of the list.

If, anyway, a rank question has to be used, then the main suggestions are:

✓ use a limited number of categories; and
✓ try to avoid them in telephone interviews, as the burden they generate may be higher in this case than in other interview modes.

Example 14: Rank question with an adequate number of answer categories

Q.1. How do you reach your working place? Please rank the way most frequently used, in terms of distance covered.

Indicate zero in case of no use

Metro |__|
Train |__|
Bus |__|
Car |__|
Scooter |__|
Bicycle |__|
By foot |__|

3.3.2 Open questions

Open questions are not so frequently used in quantitative research because, unlike closed questions, they are more difficult to answer and to process. Besides, there is a high risk that respondents' answers will be vague and not so useful for the aims of the research. In general, open questions are better used with face-to-face interviews, since interviewers are trained on how to administer them and on how to probe to obtain meaningful answers.

However, in some cases open questions are the preferred option. In particular:
- ✓ When the investigated topic is not very well known or is too broad. In this case, respondents' answers can help in defining the possible answer categories to be used for a closed question in the next survey edition.
- ✓ In a test phase, they can help understand how respondents express themselves, to use the most suitable words in the final version when formulating the questions and the answer categories.
- ✓ To obtain exact numerical data.

A special case of open question is represented by those cases whose answers must be coded according to a classification. This can be an official classification, such as the Statistical classification of economic activities in the European Community (NACE), or any other sort of classification.

The coding of the answers can be done automatically or manually:

- ✓ **Automatic coding**: in this case the answers can be coded either during the interview, with an on-line coding system, or at the end of the data collection phase, with a batch coding procedure.

In both the cases it is extremely important for the success of the coding procedure - amount of coded texts and level of reliability of the assigned codes- that the respondents' answers are written according to given criteria that allow the coding software to understand the meaning of the words in the context of the sentence. The presence of a trained interviewer is therefore highly advisable to properly collect the answers. In case of self-administered questionnaires, it is necessary to provide respondents with clear and simple instructions on how to fill in the open question.

- ✓ **Manual coding**: it is performed at the end of the data collection phase by coding experts, who read all answers and assign to each of them a code according to the official classification. Like the automatic coding, the success of the manual coding is strictly related to the way the answers are written by interviewers or respondents.

For large amount of data, manual coding is obviously too expensive; in general, both systems should be used, leaving experts to manually code those cases that the computer was not able "to understand".

3.3.3 Tables and matrix questions

Table questions are tables where variables are displayed in rows and the answer categories in columns. In matrix questions, instead, both rows and columns of the table contain variables.
Examples of this type of questions are reported below.

Example 15: Matrix and table questions

Q1. Please indicate your home heating system and the fuel or type of energy it uses[*]

	Methane	Gas oil	GPL	Solid fuel (woods, carbon, etc.)	Fuel oil	Electric energy	Other
Centralized heating system	☐	☐	☐	☐	☐	☐	☐
Autonomous heating system	☐	☐	☐	☐	☐	☐	☐
Fixed heating systems (air conditioners, fireplaces, etc.) to warm the entire house	☐	☐	☐	☐	☐	☐	☐
Fixed heating systems (air conditioners, fireplaces, etc.) to warm only some parts of the house	☐	☐	☐	☐	☐	☐	☐

[*] *Derived from the 15° Italian Population Census (Istat, 2011)*

Q.2 To what extent the following problems are affecting the area where your family lives?(*)

	Very	Fairly	Little	Not at all	Do not know
Dirty roads	1 ☐	2 ☒	3 ☐	4 ☐	5 ☐
Difficulties of parking	1 ☐	2 ☒	3 ☐	4 ☐	5 ☐
Difficulty of connections with public transportations	1 ☐	2 ☒	3 ☐	4 ☐	5 ☐
Traffic	1 ☐	2 ☒	3 ☐	4 ☐	5 ☐
Air pollution	1 ☐	2 ☒	3 ☐	4 ☐	5 ☐
Noise	1 ☐	2 ☐	3 ☒	4 ☐	5 ☐
Risk of crime	1 ☐	2 ☐	3 ☒	4 ☐	5 ☐
Unpleasant odours	1 ☐	2 ☒	3 ☐	4 ☐	5 ☐
Poor street lighting	1 ☐	2 ☒	3 ☐	4 ☐	5 ☐
Poor condition of roads surface	1 ☐	2 ☒	3 ☐	4 ☐	5 ☐

[*] *Derived from the Istat survey "Aspects of daily life" (Istat, 2018)*

The first example above shows a matrix question. This question is quite hard to answer and it is likely to generate a heavy burden among respondents.

The second example shows a table question and an example of *satisficing* behaviour from respondent (please note the options selected with "X"); to avoid losing time, the respondent choses almost always the same answer category, for all variables.

Attention should be paid to the use of these two types of question format. On one side, they offer respondents a complete overview of the question's aim but, on the other side, they can be difficult to complete properly, especially in the case of matrices with many dimensions. They can also induce to a *satisficing* behaviour, like in the example above, when respondents tick answers belonging to the same column.

In paper questionnaire, matrix questions are commonly used to save space, but this does not mean that they save respondent's time (on the contrary, they might increase the response burden). So, they should be used with caution.

3.4 Types and order of clauses

When formulating a question, the need may arise to add explanations in order to help respondents in formulating their answers. Explanations can come in three forms:
- ✓ definitions
- ✓ examples
- ✓ instructions

Definitions should be placed generally before the question, while examples and instructions should always be placed after the question and before the answer categories.

It is well known how respondents in general tend not to read "extra texts", so it is highly important to use simple, short and straightforward sentences for all of them.

3.4.1 Definitions

There might be the need to use a separate document to include all the definitions of terms, words and concepts used in the questionnaire. If this is the case, then it is advisable to start first with the general definitions, which apply to the survey as a whole, and then continue with specific definitions that refer to single words, terms or concepts used in the questionnaire. It is important that such document can be easily consulted by respondents, therefore it is suggested to:
- ✓ List definitions in alphabetical order, especially for paper questionnaire.
- ✓ Create a link among a term and its corresponding definition in electronic questionnaires.

Sometimes it is necessary to insert definitions in the questionnaire next to questions. As said before, it is better to put definitions before the question, because if placed after the question mark it might be easier to ignore them. The choice depends on the definition itself (its length, the words used, etc.) and on researcher's feeling and experience.

Example 16:
Definition after the question:
Q.1[3] **Have any of your immediate blood relatives ever been told by a doctor that they have diabetes? By "immediate blood relatives" we mean your parents, your children, and your brothers and sisters, whether or not they are still living.**

Definition before the question:
Q.1a   The next question is about immediate blood relatives – by that we mean your parents, your children, and your brothers and sisters, whether or not they are still living –. Have any of your immediate blood relatives ever been told by a doctor that they have diabetes?

---

[3] The different use of definitions described in the Q.1, is drawn from the work of Paul Beatty (National Center for Health Statistics), Carol Cosenza and Floyd J. Fowler (Center for Survey Research, University of Massachusetts-Boston): Beatty P., Cosenza C. and Fowler F.J. 2007. *New Experiments on the Optimal Structure of Complex Survey Questions*. ESRA conference 2007. Prague.

If we ignore the definition in Q.1, respondents might wrongly interpret "blood relatives", for instance by interpreting the term more broadly than intended, leading to over reporting in Q.1.

What is extremely important is to write definitions with direct, easy and short sentences, in order to limit, especially in self-compiled questionnaires, the common habit among respondents of skipping them without reading what they say.

Even the font used can influence respondents' attitude towards definitions. If the font used is different from for the text of the question (e.g. it is smaller), then it is more likely that respondents consider it less important and ignore it; the same might happen if definitions are in brackets.
Therefore, it is advisable to use the same font as for the question and catch the respondent's attention by writing a short sentence before the definition such as '*please read carefully before answering the question*'.

Example 17:
Q.4. Let's talk now about professional training courses. These are courses aimed at acquiring skills to be spent on the labor market, to learn a trade or to enter a profession. Have you ever enrolled in one of these courses since your graduation?

Yes	1
No	2

In the example above, the definition is placed before the question and it is written with the same character as the question to reduce the possibility that respondents ignore it.

In the case of electronic questionnaires, definitions can be managed through online help functions or tooltips. They are especially useful for not very short definitions. Online helps or tooltips appear on the video screen as icons placed next to a word or at the end of the question; only in case respondents click on the icon a "window" containing the definition opens. In this way, it is possible to insert definitions without deteriorating the questionnaire layout. An example of online help is shown below.

> **Courses aimed at acquiring skills to be used on the labor market, to learn a trade or to enter a profession.**

Q4. Let us talk now about professional training courses ⓘ
Have you ever enrolled in one of these courses since your graduation?

Yes	1
No	2

In summary, if it is essential that respondents read a definition before answering the question, then the definition should be:
✓ placed closed to the question;
✓ written in the same font of the question;
✓ not too long.

3.4.2 Examples

Examples should be placed after the question and before the answer categories. Their aim is to clarify to respondents what kind of answer they should provide. The main rule when writing examples is that they must

be **exhaustive,** to avoid driving the answers in one direction and making the question unbalanced. The following example will clarify.

Example 18:

Q.2[4]. **In the last 12 months, have you ever seen a doctor about skin problems? For instance about a tumor, cyst, etc.**

Yes   1

No   2

The example used in the above question is not exhaustive since it specifies only very serious problems; it might produce biased results (underreporting) since less serious problems, like, for instance, small spots or dry skin, might not be reported. A better way of formulating the questions could be to write a list of problems that ranges from the least serious to most serious ones (although how much a problem is serious depends on one's own perception).

In general, examples are quite difficult to list, since it is rather difficult to ensure they are exhaustive and, at the same time, not too numerous. The suggestion is to try to balance length and exhaustiveness and then test it. Another suggestion is to use them for specific and not too broad topics, so that they really help clarify the concept behind the questions. Such case is reported in the following example:

Q.3. In the last 12 months, have you ever played videogames with a videogames console (for example Play-station, X-box, Nintendo Wii, etc.)?

Yes   1

No   2

3.4.3 Instructions

The instructions described in this section are aimed at helping respondents in understanding the concepts behind a question. We do not refer here to the instructions about the interview flow, which will be treated in section 3.5.

This type of instructions indicates which aspects, elements or factors respondents must or must not consider when formulating their answers. In other words, the instructions describe the domains of the variables, and therefore they are similar to definitions, but they are more operational. They are quite important because if not well formulated they can cause over or underreporting.

Some examples will help clarify the role played by instructions clauses.

Example 19:

Q.1 Which economic sector does your job belong to?
If you do more than one job, please consider the main one. *(Instruction)*

Q.2 In the course of your life, have you ever worked?
Please consider paid jobs, and unpaid jobs only if you worked regularly in your family business *(Instruction)***.**

Q.3 During 2018, what was the average monthly consumption expenditure of your family?
Please include all your family's expenses for both food and non-food items such as expenses for:
Food
Household (utility bills, heating system, etc.)

---

[4] Beatty P., Cosenza C. and Fowler F.J. 2007. *New Experiments on the Optimal Structure of Complex Survey Questions*. ESRA conference 2007. Prague.

Clothing
Travels and free time
Education and culture
Medical expenses
Exclude, instead the following expenses:
Expenses for durable goods (cars, furniture, domestic appliances)
Home loans
Rents of the house
Insurances

The last example is drawn from a survey of the Central Bank of Italy about households' incomes and consumptions. The original formulation of the question provided only instructions about the expenses to exclude. In a later survey experiment[5] the above formulation was used. It resulted that adding the instruction about the expenses to include in the answer provided less biased results (higher consumptions level).

3.5 The interview flow

The interview flow is the sequence of topics investigated, or, in other words, the sequence of questions asked to respondents. In designing this sequence, the researcher must consider the informative needs of the survey, and the risk of not concluding the interview if particularly sensitive topics are treated rather early in the questionnaire.

This is especially true for self-compiled surveys, where respondents are "alone", and for telephone surveys, where the interaction between respondent and interviewee is less tangible and communication-friendly.

In designing the questionnaire, it is therefore important to establish a logical sequence of questions, obtained by organizing the questionnaire in **sections**: each section must contain questions related to the same or similar topics.

It is good practice to indicate on the first page of the questionnaire the sequence of sections that the respondent is going to answer. For example, the questionnaire consists of the following sections:

> Section 1: Demographic
> Section 2: Occupation
> Section 3: Crop Production
> Section 4: Livestock Production

To facilitate respondents' comprehensions of the investigated topics, it is suggested to start each section with a title. Introductory sentences, called **transition texts,** should be used to make the move from one section to another easier. This is especially useful in case it is not possible to design a logical sequence between one section and the following one.

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[5] Lo Conte M. and Murgia M. 2019. *L'Indagine sperimentale web sulle famiglie italiane. Una valutazione della tecnica CAWI per rilevare in-formazioni sul reddito e la ricchezza (2019)* ("The experimental web survey on Italian households. An evaluation of the CAWI mode for collecting information on income and wealth"). https://www.istat.it/it/archivio/228589

Example 20: Sections title and transition texts.

<div style="border:1px solid #000; padding:8px; text-align:center">

Section 1- Demographic data

</div>

Q.1. Please indicate your date of birth |__|__|/|__|__|/|__|__|__|__|

Q.2. Please indicate your nationality |_____|

<div style="border:1px solid #000; padding:8px; text-align:center">

Section 2- Occupation

</div>

Let's now talk about your current occupation. *(transition text)*

Q.3. In the course of your life have you ever worked?
Please consider paid jobs, and unpaid jobs only if you regularly worked in your family business.

Yes   1
No   2

3.5.1 Structure of the questionnaire

In general, the questionnaire should be structured in this way:

Opening page: it must contain the name and logo of the organization running the survey, together with a brief description of the objective of the survey. This description should in general also be included in the invitation letter sent to respondents. The opening page of the questionnaire should also clearly highlight that the survey is an "Official" survey. All surveys should include a confidentiality statement to protect the anonymity of the respondent. For example:

> "We assure you that your responses to our survey are completely anonymous and they will not be traced back to the respondent. Your responses will be combined with those of many other people interviewed and summarized in a report to further protect your anonymity. Additionally, we commit to use your responses exclusively for statistical purposes".

First section: the first questions play a very important role, because it is at the beginning of the questionnaire that respondents usually decide to proceed with the interview or to stop their cooperation. For this reason, the very first section of the questionnaire should contain questions that are related to the survey topic and/or questions that are easy to answer; it must not contain sensitive questions.

Other sections: structured around the other investigated topics.

Last section: it can contain questions asking respondents' opinions about the interview and the questionnaire. For instance:
- ✓ Which question(s) was(were) the most difficult to answer or to understand.
- ✓ If respondents would like to suggest any improvements to the questionnaire.
- ✓ How respondents judge the interviewer's behavior and professionalism.

✓ If respondents would have preferred another interview mode to participate to the survey: e.g. web, telephone, face-to-face, etc.
✓

Apart from this general questionnaire structure, there are two types of questions whose sequence in the interview flow deserves special attention. They are the Sensitive and Demographic questions:

✓ **Sensitive questions** must be placed at the point in the questionnaire where the researcher thinks that respondent feels more comfortable in answering them or near a section that has a logical connection with them. Please do not insert them in the first section, because the trust with the respondent is not yet established, and do not put them at the end of the interview, since they might be skipped because of the respondent's fatigue.

✓ **Demographic questions** can be used for two purposes during the data analysis phase: for comparison and classification or to update the data reported in the registry. They are generally placed at the end of the questionnaire if the objective is the first (comparison/classification), while they are placed at the beginning if the objective is the second (registry updating).

Since demographic questions are usually not related to the survey topic, it is important to **always specify the reason** why they are asked; this helps avoid either that respondents feel controlled (if placed at the beginning of the interview), or that respondents skip them because they consider them not important for the purpose of the survey (if placed at the end of the interview).

A pre-test or a pilot survey are useful tools to understand the most suitable sequence of questions and of sections.

3.5.2 Skip rules

The interview flow is determined by the **skip rules,** that are instructions generally written next to a filter question that indicates which is the next question or section to answer.

Skip rules must be clearly written in both paper and electronic questionnaires: in the first case, they are used by respondents/interviewer to "navigate" the questionnaire; in the second case, they are used by IT experts to implement the electronic data collection instrument. Besides, for electronic questionnaires, pay attention to the answer categories "Don't' know" and "Refusal" that might lead to different paths of the questionnaire than the other answer categories**.**

Skip rules can be written in two ways:

✓ By using the statement 'Go to question X' or
✓ By using the statement 'Only if Q.X=y' or equivalently by 'Only if you answered y at Q.X'.

Example 19:

Q.1 Are you married?	Q.1 Are you married?
Yes 1 → go to Q.2	Yes 1
No 2 → go to Q.3	No 2
	(If you answered married at Q.1)

Q.2 Is it your first marriage?	Q.2 Is it your first marriage?
Yes 1	Yes 1
No 2	No 2
Q.3 How many people live in your household? |__|__|	Q.3 How many people live in your household? |__|__|

Skip rules should be indicated consistently through the entire questionnaires. It is therefore advisable to always use:
- ✓ the same verbatim (always 'go to question' or always 'Only if question=x')
- ✓ the same symbol (for example: ➔, >>,…)
- ✓ the same colour (for example 'go to question' , ➔).

In practice, it is quite common to use both ways of writing skip rules in the same questionnaire. In this case, pay attention to ensuring that skip rules referring to the same questions are not contradictory (see example 22).

Example 22: Contradictory skip rules

Q.1 Are you male or female?

Male	1 → go to Q.3
Female	2

Q.2 Are you older than 16?

Yes	1 → go to Q.3
No	2

(If you answered yes at Q.2) → Incorrect, since it does not consider Q.1
Q.3. Is it your first marriage?

Yes	1
No	2

The above mistake is quite common when both ways of writing skip rules are used.
The figure below shows the paper questionnaire used for the Italian Population Census (2001). Questions are in Italian, but what it is intended to show is how the "go to" instructions are consistently written by always using red arrows and the same statement.

Example 23:

The example below is drawn from the Istat survey "Aspect of daily life (2018)" (questions have been translated into English). Notice how both types of instructions can be consistently used at the same time: the instruction "for people aged more than 11" and the "go to" instruction.

Example 24:

3.5.3 Check rules

In electronic questionnaires, the interview flow is influenced also by **check rules.** These rules are aimed at collecting consistent data during the data collection phase, to improve data quality and to speed up the editing and imputation phase.

The number of check rules depends on the data collection mode:

✓ For **self-administered questionnaires** (web for instance) the advice is to limit the amount of check rules: too high a number can increase respondents' burden and induce respondents to stop cooperating due to the high number of warning messages to solve potential inconsistencies in their responses.

✓ For **interviewer-administered questionnaires**, the number of check rules can be higher, because interviewers are trained on how to manage them during the interview. However, they should not worsen the fluidity of the interview causing interviewers to interrupt the "conversation" too frequently to ask for clarifications. In designing check rules, the general advice is to seek for a balance between data consistency and response burden.

Check rules can be probe answers to a specific question or probe the consistency among variables, as exemplified below.

Example 25:

<u>Domain check rule:</u>   **D.1. How many rooms are there in your house?**
|__|__| nr. of room

Check rule: values range from 1 to 10
An answer lower than 1 or greater that 10 activates the check.

<u>Consistency check rule:</u>

Questions	*Answers*
Q.1. How old are you?	*30*
Q.2. What year were you born?	*1969*

Check rule: 2019-Q.2=Q.1
The rule is activated since the 2019-1969=50

3.6 Questionnaire layout

The questionnaire layout plays an important role in improving respondents' participation. This is especially true for self-administered questionnaires. There are few simple rules to follow for the questionnaire layout:

✓ Improve the look and feel of the questionnaire by using light colours for the background to put in evidence the questions and answers.

✓ Do not make pages (or video screens) too dense of information: respondents/interviewers must be able to easily find the information they need.

✓ Each question must always be preceded by an identifier (numbers or letter).

✓ Colour and size of the font must be established according to the different function of the texts, and these choices must be applied consistently throughout the questionnaire. For instance, instructions always in red, section title always in green and with a bigger font, etc.

✓ Avoid the need for horizontal scrolling for computer assisted questionnaires.

✓ In electronic questionnaires, mainly when self-administered, tables should not be larger than the screen and headings should not disappear when filling-in questions at the bottom of the table.

✓ If possible, a questionnaire section should correspond to a questionnaire page (video screen). In any case, make it clear when a section starts and when it ends.

✓ In a paper questionnaire, always try to place questions and their answer categories in the same page.

✓ Do not use a too small font size that requires too much effort to read questions.

✓ If you need to catch respondents' attention on some parts of the questionnaire, or on some words, use graphical elements to do it. For instance, underline words that should be highlighted in a question, or underline the reference period in case, for instance, it changes between two questions.

3.7 List of recommendations

This chapter summarises the suggestions and recommendations described in the previous pages. The following list is designed as a checklist to be used during the design of a questionnaire, but also after the questionnaire is ready, in order to understand which standards have been followed and which ones still need to be implemented.

Questions' content:

- ✓ Ask questions that are connected to the objective of the survey. Ask yourself:
    1) Does this question really measure what it is intended to be measured?
    2) What do I need this question for?
- ✓ Do not ask questions if the same information can be derived from other questions.

Questions' wording:

- ✓ Use a simple language for questions.
- ✓ Always translate the questionnaire in the language understood by your respondents.
- ✓ Use terms that are familiar to respondents.
- ✓ Avoid the use of technical words, unless respondents are topic experts.
- ✓ If acronyms and abbreviations are used, remember to always define them first.
- ✓ Avoid the use of long sentences: keep the wording short.
- ✓ Write questions in a balanced way, not leading questions.
- ✓ Ask one concept at a time.
- ✓ Avoid the use of negative forms.
- ✓ Be specific, by following the four Ws rule: Who, What, Where, When.
- ✓ Use a suitable reference period to limit the memory effect.

Questions' format:

- ✓ Limit the use of open questions. Use them only when the knowledge about the topic investigated is limited.
- ✓ Limit the use of matrix and table questions; when they are used, limit the number of their dimensions.
- ✓ Prefer the use of closed questions.
- ✓ Use simple words for the answer categories: they must be self-explanatory.
- ✓ The answer categories must not overlap; must be mutually exclusive and must not convey the same or similar concepts.
- ✓ The list of answer categories must be exhaustive. If you are not able to guarantee exhaustiveness, then add the option "Other, specify". Remember to process the resulting *verbatims*, so to enhance the list of answer categories for the next survey edition or wave.
- ✓ Limit the number of the answer categories: keep the list at a manageable length.
- ✓ If the list of the answer categories is long:
    - ✓ Try to group answers in broader categories and define a specific question for each of them.
    - ✓ For electronic questionnaires, explore the possibility of rotating the list.
- ✓ Use "Don't know" and/or "Refuse" options for questions that you consider difficult or for sensitive not core questions. If possible, test your choice before taking the final decision.
- ✓ Use appropriate scales for rating questions:
    - ✓ Try to limit the number of points of the scale.
    - ✓ Make the scale balanced.
    - ✓ Use appropriate words for the labels of the scale points: labels for negative and positive points must be real opposite and with the same intensity.
    - ✓ Use a neutral point if you know that its presence might avoid biased results. Test your choice.
    - ✓ Choose the most appropriate order of the scale.

- ✓ Whatever your choices for rating questions, be consistent and apply them through the entire questionnaire.
- ✓ Avoid the use of rank questions. If used, limit the number of answers to be ranked.

Definitions, examples and instructions:

- ✓ Use simple and direct words; do not use too long sentences.
- ✓ Remember that respondents usually do not read extra clauses: the longest they are, the easiest to ignore.
- ✓ Write them in the same font of the question text.
- ✓ Make sure you always use standard definitions for ensuring comparability of the results
- ✓ Definitions should be placed before the question. They can also be placed after, but in this case, it might be easier for respondents to ignore them.
- ✓ Examples and instructions must always be placed after the question:
    - ✓ Use exhaustive examples, otherwise, it is better to avoid them.
    - ✓ Use straightforward and easy to apply instructions.
- ✓ For electronic questionnaires, evaluate the possibility of exploiting online helps or tooltips for managing definitions.

Interview flow:

- ✓ The questionnaire flow should follow a logical stream.
- ✓ Group questions in sections and base the grouping on the investigated topic.
- ✓ Use a "transition text" before a question or at a beginning of a section when there is a change of topic, and especially if this change does not follow a strict logic.
- ✓ Use an opening page where you describe the questionnaire structure. In this page, include a brief description of the survey's objectives.
- ✓ Do not forget to put your organisation logo in the opening page.
- ✓ Remember that respondents usually decide whether to cooperate or not at the beginning of the questionnaire, therefore:
    - ✓ Start your questionnaire with easy to answer questions and, if possible, related to the survey topic;
    - ✓ Never start with difficult questions and with questions on sensitive topics: you first need to create a climate of trust with the respondent.
- ✓ Put demographic questions at the end if you use them for classification purposes.
- ✓ Put them at the beginning if:
    - ✓ They are aimed at updating your registry.
    - ✓ You want to start with the easiest questions.
- ✓ Whatever the position of demographic questions, remember to explain to respondents why you are asking them.
- ✓ Evaluate the most suitable section to ask sensitive questions: place them after a section whose topic is related to them, but less sensitive.
- ✓ You may close your questionnaire with a section where you ask for respondents' opinion about the survey or about any improvements they would like to suggest.
- ✓ Close your questionnaire with easy to answer questions: especially for long questionnaires, respondents might feel tired, so make their job easier at the end of the interview.

Skip and check rules:

- ✓ Write skip rules close to a filter question or close to its answer categories.
- ✓ Write skip rules in a simple and clear way.
- ✓ Be consistent: try to use always the same format for the skip rules statements, and use always the same font and colour.
- ✓ Keep the interview flow in paper questionnaires simpler than in electronic questionnaires.

- ✓ Check if "Don't know" and "Refuse" options follow specific paths of the interview flow and design consistent skip rules.
- ✓ Use check rules in electronic questionnaires where you can exploit the use of a computer to collect consistent data.
- ✓ Use a larger amount of check rules for interviewer-administered modes; reduce it for self-administered modes.
- ✓ To find the "good" amount of check rules, try to balance the need of consistent data and the respondent/interviewer burden.

Questionnaire layout:

- ✓ Improve the look and feel of your questionnaire: use light background colours to make texts easy to read.
- ✓ Do not make pages (or video screens) too dense of information.
- ✓ Avoid horizontal scrolling for computer assisted questionnaires.
- ✓ Make it clear when a section starts and when it ends.
- ✓ Put a question and its answer categories on the same page.
- ✓ Do not use a too small font size since it would require a too big effort to read the questions.
- ✓ Use graphical elements if you need to catch respondents' attention on some parts or on some words of the questionnaire.
- ✓ Use different colours and sizes according to the different functions of the texts, and be consistent throughout the questionnaire.

Confidentiality rule:

- ✓ All surveys should include a confidentiality statement to protect the anonymity of the respondent. For example:

  "We assure you that your responses to our survey are completely anonymous and they will not be traced back to the respondent. Your responses will be combined with those of many other people interviewed and summarized in a report to further protect your anonymity. Additionally, we commit to use your responses exclusively for statistical purposes".

REFERENCES

Beatty P., Cosenza C. and Fowler F.J. 2007. *New Experiments on the Optimal Structure of Complex Survey Questions*. ESRA conference 2007. Prague.

Bradburn, N.M. 2004. *Understanding the question-answer process.* Survey Methodology, 30 (No.1).

Eurostat. 2006. *Handbook of Recommended Practices for Questionnaire Development and Testing in the European Statistical System.* Luxembourg. Also available at : https://ec.europa.eu/eurostat/web/quality/ess-practices/selected-ess-practices)

Fowler, F. J. 2002. *Survey Research Methods* (3rd ed.). Thousand Oaks (USA): Sage Publication.

FAO. 2018. *World Programme for the Census of Agriculture 2020: Operational Guidelines*, Rome. Also available at: http://www.fao.org/3/CA1963EN/ca1963en.pdf.

Lo Conte M. and Murgia M. 2019. *L'Indagine sperimentale web sulle famiglie italiane. Una valutazione della tecnica CAWI per rilevare in-formazioni sul reddito e la ricchezza (2019)* ("The experimental web survey on Italian households. An evaluation of the CAWI mode for collecting information on income and wealth"). https://www.istat.it/it/archivio/228589

Statistics Canada. 2009. *Quality Guidelines*. Also available at: https://unstats.un.org/unsd/dnss/docs-nqaf/Canada-12-539-x2009001-eng.pdf

Statistics Canada. 2003. *Survey Methods and Practices*. Also available at: https://www150.statcan.gc.ca/n1/en/pub/12-587-x/12-587-x2003001-eng.pdf?st=jF8xSl1f.