

A guide to good survey design

Sixth edition





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Message from the Government Statistician

At Stats NZ, we're about *data that improves lives today and for generations to come*. This talks to both our data system leadership role, and our commitment to ensuring New Zealand has access to quality data and statistics.

Sharing our knowledge and expertise in designing surveys is one way we can help achieve this. Having high quality survey design leads to high quality research and data. It is an important factor in data quality, response rates, and building trust and confidence with respondents. It also guides quality analysis and decision-making.

This introductory guide takes you through best practice when designing surveys, highlighting the elements that make for good survey design. These range from having the right questions, to producing good measures.

You'll also see insights on sample and questionnaire design, as well as things to consider when interacting with survey respondents.

This edition has updated guidance on questionnaire development (including online questionnaire development), and information on contracting out surveys based off lessons learnt. There are also many new and current examples in the appendix section.

This guide is for anyone involved in developing, commissioning, or carrying out surveys. I hope it is of value.

Ngā mihi nui

Mary Craig

Acting Government Statistician and Chief Executive Tumu Whakarae

1 Introduction

Information is the cornerstone of our society. Relevant and timely information is essential so well-informed decisions can be made by individuals, organisations, central and local government, iwi, business, and the wider community.

Surveys are an accepted way of producing statistical information that is used for planning vital public services such as education, health, housing, and transport. This information is also used to help understand our country's economic performance, to see how our society changes over time, and to plan for the future.

Essentially, a survey involves collecting information from some (or all) members of a population. Well-defined concepts, methods, and procedures are used, and the information collected is combined and summarised so it is useful.

This guide outlines the issues, and steps to take when planning and undertaking a survey. We present an overview of good survey design principles – this is not intended to be a technical, comprehensive guide.

2 Before beginning a survey, ask yourself ...

2.1 Is suitable information already available?

The information you need may already be available from existing sources, which may mean a new survey is unnecessary. Where to look for existing sources will depend on the type of information required. The following list is a starting point.

- **Literature search**

Libraries are a good place to start, searching under relevant topic headings. Using the internet to search for information will also be useful. The indexes of professional journals could be used to take your research further.

- **Published statistics**

Stats NZ publishes a wide range of economic, social, demographic, and environmental statistical information. Other sources of published statistics include local councils, various government departments, universities, and other research agencies.

- **Stats NZ**

We lead the Official Statistics System, which is a government-wide system of policies, practices, processes, and people involved in producing official statistics. Our role is to:

- ensure all government statistics efficiently meet the country's needs for relevant, trustworthy, and accessible information
- produce the majority of New Zealand's official statistics.

[Stats NZ website](#) has a wealth of publicly available information. Even if the published information does not appear to have enough detail, more may be available. Find out by contacting our Information Centre on 0508 525 525 or info@stats.govt.nz. We also have more complex datasets that are not available on our website. For more information, contact our Customised Data Services team using the above details.

- **Government agencies and professional associations**

Other government agencies, professional, or business associations can be good sources of unpublished information.

- **Local sources**

If you need quantitative data for local planning, you can find useful information in local authority records, from the local Chamber of Commerce or other agencies. Piecing together information from various sources may provide much of the data to meet your information needs.

- **Related information**

Searching available information may not precisely meet your information need, but it might provide related data. This proxy information may be adequate for research purposes, particularly because running a specialised survey can be expensive and time-consuming. For example, sales data could be used to approximate production or consumption data.

- **Administrative forms and records**

Administrative data records people's contact with public organisations, for example, a hospital stay, tax returns, immigration applications, student loans and allowances, or birth

registrations. Forms associated with a service, applications, and membership registrations are also being used more often as sources of readily available statistical information.

However, particular issues are associated with using administrative data for statistics. One issue is that definitions set for a regulatory purpose may not suit your information need. For example, income statistics derived from Inland Revenue returns (which come from information collected for tax purposes) may use different measures of income than you need.

- **Seeking expert knowledge and opinion**

Not all problems require a statistical approach, even when at first they seem to. Controlled experiments, case studies, participant observations, or subjective evaluation may provide useful common-sense solutions. Talking with experts on the topic you are interested in will sometimes provide the guidance needed to obtain the required information. Possible contacts include Stats NZ, other government departments, non-governmental agencies, universities, Crown Research Institutes, the New Zealand Statistical Association, and various experts on the topic of interest.

2.2 You've established a survey is needed – what next?

Careful planning is vital to ensure a satisfactory result. Here are some factors you need to consider.

Timeframes

The time set aside needs to be realistic. Designing and undertaking a survey can take months. Even a relatively small survey can have many interrelated phases.

Finances

A survey needs a financial outlay. The more detail needed the more it will cost. It is important to check that you, or the organisation sponsoring the survey, has the necessary resources or the funds to buy them.

Information collected matching produced measures

The information you propose to collect must measure what it is intended to measure. For example, reported opinion may not be a good way to predict behaviour.

Cooperation and participation

Any survey needs respondents to participate and possibly the cooperation of other organisations and agencies. If a survey contains questions on sensitive issues, the cooperation received from respondents may be affected. Before undertaking a survey, make an assessment of response rates (for example, using pilot surveys) to ensure it is possible to achieve an acceptable level of response.

Adding questions to an existing survey

Rather than undertaking a new survey, you may be able to get sufficient information by adding questions to an existing survey questionnaire. Investigate if there is an existing questionnaire appropriate to add your question(s) to – and if the organisation running that survey is agreeable to it.

Contracting out your survey

You may choose to contract out all or part of the work of a survey project because of staffing, financial, time, or expertise constraints.

[Chapter 14 Contracting out surveys](#) discusses issues associated with contracting out surveys.

Sampling or a census

Once you've decided to undertake a statistical survey, you need to decide what type of survey is most appropriate.

You'll need to decide whether to seek information from the whole population (a census) or from a sample of the target population. In many cases, a census is ruled out by a shortage of money, time, or trained personnel. In other cases a census may be desirable, because the population of interest is relatively small.

A sample survey uses a subset of the population of interest. If you use correct statistical techniques, you can make estimates about the characteristics of the whole population, and associate a measure of error to the estimates.

[Chapter 4 Sample design](#) discusses sampling issues in more detail.

Advantages of sample surveys

- Sample surveys are generally cheaper and faster. A census is sometimes impossible due to a lack of resources or the difficulties of contacting the whole population within a limited period of time.
- Sample surveys are easier to control. The small number of measurements from a sample may well be more accurate than the large number of measurements from a census. This is because more resources can be employed and directed at careful selection of personnel who can be given intensive training along with more careful supervision of the fieldwork and processing of results.

Disadvantages of sample surveys

- Sampling error. As samples are only part of the population, different selections of samples can give different results: different from each other and different from the results which would be obtained if the whole population was surveyed. These differences are due to sampling error. Censuses do not have sampling error.

[Chapter 5 Sources of error](#) discusses sampling and non-sampling errors in more detail.

- Detailed data analysis may not be possible as there may not be enough information on small subgroups from which to draw conclusions.

2.3 Do you have a thorough plan for the whole process?

Before you begin a survey, make sure you have a thorough plan for the whole process. The quality of data analysis and reports produced depends very much on what happens in the early stages. Poor

planning may result in the objectives of the survey not being met, and statistically invalid estimates being produced.

[Chapter 3 Survey management](#) has more detail about survey management.

2.4 What expert advice will you need?

It's almost impossible to think through all the ramifications of a survey without some advice and guidance from people knowledgeable in one or more aspects of any problems that come up. This includes help in defining goals and objectives, designing a questionnaire, developing sampling methodology, and working out what data analysis is needed. Market research companies or experts may be able to help with some or all of the planning and operational phases.

If the project is large, difficult, or beyond your or the survey sponsor's technical and planning resources available, an advisory committee can provide help and support. A well-selected committee can give objective advice from several points of view at relatively little and sometimes no cost. If you form a committee, it's important to define its objectives and have a plan for what you want to achieve at each meeting.

The committee should be appointed while ideas (and the survey sponsor's commitments) are still flexible enough to allow change. If the problem is a big one in terms of scope, geography, or technically, a committee large enough to reflect all relevant expert knowledge and skills is needed. If the problem is more limited, a small group will do, but it still helps to consult outsiders.

2.5 Have your survey objectives been adequately defined?

Survey objectives tend to be expressed in broad and often over-simplified terms when first conceived. As planning progresses, you may find the objectives are so broad that meeting them fully would not be feasible. The original vague terms need to be more clearly defined so they can be used as the basis for taking specific action when designing the survey.

2.6 What is the end-use of your survey results?

Clarifying the end-use of the information collected helps determine the objectives, tailor the overall approach, formulate the actual questions, and make decisions on processing, analysis, and the format of the final report.

The results of a survey may be used for one or more of the following:

- future policy decisions
- programme monitoring
- facilities or operational planning
- market research
- contingency planning
- creating, updating, or expanding a database
- planning more detailed surveys in the future
- public relations planning

- measuring customer satisfaction
- improving general knowledge about a situation.

It may also be worthwhile at this stage to determine any end-uses the results would not be suitable for. Once an end-use has been clearly stated, selecting survey topics and designing the questionnaire will be simplified and the groundwork for analysis will already be established.

2.7 What will your survey proposal include?

A proposal sets out the survey's intent and plan for its implementation. If the work is contracted out, the proposal may be a specification to your supplier of survey services (see [chapter 14 Contracting out surveys](#)). The exact content and aim of a proposal may vary, but items which could be included are as follows.

Abstract

An abstract is an overview of the need for the survey and how it fits with the needs of the organisation sponsoring the survey.

Background

Include any relevant information relating to the survey topic and comments on any work that has been done previously.

Administration

Include:

- the title of the survey
- the sponsor of the survey
- the organisation or person who is carrying out the work
- whether the survey is a one-off or will repeat
- the frequency of a repeating survey.

Finance

The total estimated cost and a breakdown of costs.

Objectives

You should state the survey's objectives as specifically as possible to define the kind of information needed. This also puts in place a system to measure how effectively these objectives have been met when the survey is completed. Some questions to consider:

- What period of time is the survey to be conducted over? When are the results required?
- What is the population of interest, and is information required for some subgroup of that population (for example, women, a particular age group, an ethnic group, a geographical region)? If detailed cross-tabulations are required, they need to be specified at an early stage.
- What questions need to be answered? What information is required to answer them? What form should the results take? What is the general form, range, details, etc of required outputs?

- What unit of measurement will be used (dollars, numbers, etc)?
- Why is the information needed? Who is going to use it and for what purpose?
- How will the information be used? For example, is it to be used for internal research, limited release, or public release?
- What is the desired accuracy of the results? The sample size affects the accuracy and a larger sample will have less sampling error. A well-planned and well-supervised survey will have less non-sampling error.
- How often is the information required? When is it first needed? Is the survey a 'one-off' or will it be administered on a monthly, quarterly, annual, or longer basis?

Time frame

Have a clear indication of the start and finish times for each phase of the survey.

Topics covered

A list of the specific pieces of information to be collected.

Resources available/needed

- Personnel
- Money
- Time
- Skills and software tools to process the survey, analyse the data, produce outputs, and present results

Sampling methodology

- Target population
- Sampling frame
- Sample selection method
- Basis for decision on sample size
- Mode of collection to be used

Questionnaire

The procedures for developing, testing, and managing changes to the questionnaire should be outlined, along with any related documentation. The procedures should also include the steps to take to ensure the data collected is consistent and accurate.

Outputs

What kinds of statistics are required? Will you need tables, reports, or datasets?

[Chapter 13 Presenting results](#) has more information.

3 Survey management

This chapter covers the issues to consider and the decisions needed when managing a survey.

Even a relatively small survey may involve a significant amount of organisation and coordination – balancing time and resources with the needs of the survey sponsors and users. A survey needs to be planned as a whole project right from the start.

A survey manager needs to make decisions, or get the relevant people to make them, at the right time. Some of the issues raised are dealt with in more detail in other chapters.

Even if a survey is contracted out, the sponsor still needs to do a significant amount of survey management, for example, monitoring the supplier's progress of work done to date, work remaining to be done, and progress against time and money allocations.

3.1 Planning

Once you have decided to undertake a survey, you also need to decide who will be responsible for the proposals for approval in principle, approval for funding, invitations to supply a proposal, survey specifications, evaluating proposals, preparing a formal contract, etc. Other approvals may also be needed when survey planning is well advanced.

Prepare detailed timetables and set in place a system for monitoring them. Timetables must be specific about interlinking and critical phases of the project. Create a plan to follow if the timetable is not being met.

For all phases of the survey, quality assurance procedures are needed and should include contingency resources, funding, and time to fix any quality issues.

3.2 Consultation

A programme needs to be drawn up in consultation with the users of the survey results. Consulting sponsors or funders of the survey is also important. It needs to be clear at what stages changes can be made, and when it becomes too late to make changes. You also need to consult suppliers of goods and services, such as contractors, designers, and printers.

3.3 Design

Design phases must be coordinated. You'll need to agree on:

- who will decide on and design the survey methodology
- what type of collection method should be used
- who will do the questionnaire and sample design
- who will do the interviewer training, if necessary
- who will design any supporting documents such as reminder letters, emails, interviewer instructions, brochures, and timesheets
- how the printing and publishing of these documents will be organised – including making sure you get the right quantities and quality, in time
- whether any special equipment will be needed.

Another important consideration in the early stages of survey planning is what classifications and definitions you will use. You may need to create new classification.

[Chapter 6 Classifications](#) has more on classifications and statistical standards.

3.4 Pre-tests and pilot surveys

Develop a programme to test survey methodology at an early stage. This is likely to involve pre-tests and pilot surveys. Decide:

- when they should be done
- what they should achieve
- who will decide when enough testing has been done
- who will review feasibility and provide checks and balances during design phases.

3.5 Operation

The mechanics of dispatch, return, storage, recording, security, and destruction of questionnaires need to be clearly established as being feasible and in line with what is required by survey sponsors and ethical practice.

You'll need to decide how the data will be collected. If interviewer-administered, consider how you'll recruit interviewers and plan employment contracts, wages, and conditions. You may need to consider the match of interviewers to target respondents, for example, interviewers that have Māori language skills or a female-only interviewer force.

Other things to consider include how interviewers will get to the right households or businesses, if the survey uses a face-to-face interview method, or what the processes will be for phone interviews.

There will be issues of quality assurance. Decide how to make it clear to interviewers whether or not they have done their job properly.

3.6 Non-response

Put methods in place to ensure the response rate is as high as possible. This may include call-backs or reminder letters or emails. Decide how many of these to send, and at what intervals.

[Chapter 11 Respondent experience and non-response](#) has more on non-response.

3.7 Processing and analysis

If the survey uses paper questionnaires, plan how and when to get completed forms from respondents to the office. Other important points to consider in processing include:

- what data is to be captured?
- what checking, coding, or editing of data will be done?
- who will design editing rules?

- what reconciliations will be done to identify non-respondents and ensure there is a questionnaire for every respondent?
- what system/program will be used to capture the data?
- how will the dataset be organised?
- what special computer programs will be written? Or will a standard statistical software package be used to analyse the data?
- will processing or analysis be contracted out?
- who will ensure that what is planned for is what is wanted?
- how will you check the rules for deriving measures from the survey data to make sure they're theoretically correct? For example, for deriving a measure of health status from answers to questions
- will you need supplementary data, not from the survey, to calculate or finalise results?

Back up data so that it can be restored if accidentally lost. Store or archive it so it can be retrieved and further analysed at a later date.

Data quality and the timetable for processing and analysis need to be monitored.

3.8 Publicity

Consider what publicity – if any – there will be before, during, and after the survey. This may include news releases or media articles.

How will you persuade respondents to take part? Methods to persuade respondents may include providing feedback, sending a copy of the results, entering them into a prize draw, or perhaps just thanking them nicely.

It will also be helpful to assign someone to deal with respondent reaction and correspondence, and to be responsible for managing any adverse publicity. Also assign someone to take ultimate responsibility for publicity.

3.9 Report and other outputs

Think about how you will produce and release a report or other outputs from your survey. Decide:

- who will be responsible for text, tables, and graphs in a written report
- how you will confirm that the report is what the sponsor wants
- how the report will be reviewed to ensure validity of cross-tabulations, interpretive text, etc
- what mechanics of drafting, incorporating tables and graphs, printing (if necessary) to use, and how to distribute the report or other outputs
- whether you will give a dataset to the sponsor
- will the report or outputs contain anonymised data or individually identifiable data
- how to deal with any implications for privacy or confidentiality
- how the results will be released

- what caveats there will be on using the results – and how to ensure these caveats are obeyed.

3.10 Costs

Plan how to organise costings. Things to consider may include:

- what progress reports there will be on expenditure
- whether expenditure will be forecasted
- what happens if there are cost overruns
- whether you will try to recover any costs from selling the report or survey data.

4 Sample design

4.1 Target population

The target population is the entire collection of units about which information is desired. It needs to be defined as exactly as possible, for example, 'Māori females living in the greater Auckland area aged between 18 and 24 years on 1 January 2025'.

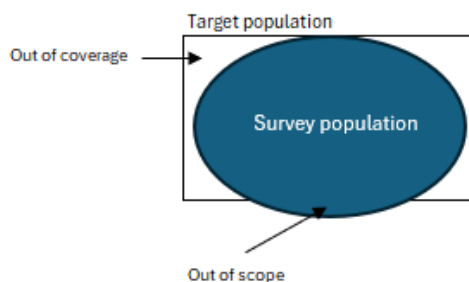
If information is also required for a subgroup of the population, you also need a clear definition of that subgroup.

4.2 Survey population

The survey population is the members of the target population who have a chance of being selected as part of the sample.

Sometimes, for practical reasons, the survey population is not the entire target population. The survey population may exclude those who would be very costly or difficult to survey, such as those who live in remote areas or offshore islands. These are called out of coverage units. On the other hand, groups outside the scope of the survey may be included in error, for example, overseas visitors and children included in a survey designed for adult usual residents in New Zealand. These are called out of scope.

Differences between out of coverage or out of scope members and the rest of the survey population can lead to bias in the survey. To minimise this bias, it is important to ensure that the survey population is as close as possible to the target population.



4.3 Sampling frame

Once the survey population is defined, the next step is to develop a means of accessing it. The sampling frame provides this means of access. In its simplest form, a sampling frame is just a list of elements covering the target population. Possibilities include:

- a physical list such as the electoral roll, a membership list, a list of businesses
- a conceptual list such as people entering a train station
- an area frame, as geographical areas can form part of a multi-stage sampling frame, with lists of dwellings for each selected area, and lists of people for each selected dwelling.

4.4 What is a good sampling frame?

- **Each unit must be counted.**

Excluding units introduces a bias if those units have different characteristics from the included ones.

- **Each unit must be counted only once.**

If some units are accidentally duplicated, you cannot tell what chance a unit has of being sampled. The results will be biased towards the duplicated subgroups of the population.

- **Each unit must be distinguishable from other units.**

If a unit is selected we should be able to tell exactly what it refers to and we should be able to access it.

- **Up-to-date information should be provided.**

Unit names, addresses, etc should be current.

4.5 Sample selection

Sample selection principles can be summed up by the phrase “everyone has to have a measurable chance of being selected”. A sample selected with known probabilities allows generalisations to be made about the entire population and estimates of associated errors. To do this, you need to randomise the selection procedures. For example, random numbers can be generated by using a random number generator on a computer. If systematic sampling is being used, that is, sampling every Xth unit from a list, then there must be a random starting point, between 1 and X to establish the first unit.

Random selection of respondents reduces the chance of getting a non-representative sample. Randomisation is the only safe way to overcome the effects of unforeseen biasing factors. The selection probabilities can be used to calculate weights to be applied to individual responses.

The method of sample selection used depends on the sampling scheme being used. The more complex the design, the more difficult the selection procedures required and expert guidance is essential.

4.6 Sample size

Choosing a sample size for a survey involves considering factors such as:

- **Available resources:**

- time
- money
- personnel
- equipment (for example, computers, software, smartphones, envelopes).

The extent of resources available may dictate the scale of the survey.

- **The required accuracy of the results:**

- acceptable margin of error
- level of confidence required.

The acceptable margin of error is the accuracy you want from the survey. It gives the chance that your results do not reflect the attributes of the population due to the particular sample that was chosen. The smaller the acceptable margin of error, the larger the sample required. There is, however, an optimal size after which little appreciable gain in accuracy is made.

The level of confidence required refers to a range above and below the estimated value which may be expected to contain the true value with a known probability. For example, a 95 percent confidence interval implies that if 100 samples were taken, we would expect the confidence interval to contain the true value in all but five cases. The greater the level of confidence required that the results fall into the range, the larger the sample size you'll need.

- **The amount of detail needed in results**

If you need information for a smaller subgroup of the entire sample, then you'll need a larger sample to maintain the accuracy levels for subgroup estimates.

- **The proportion of the population with the attributes being measured**

If only a small percentage of the population have the attributes being measured, you'll need a larger sample to get enough data to maintain accuracy levels for these subgroup estimates.

- **The variability of the attributes being measured**

If the attribute you're measuring varies a lot in the population, you'll need a larger sample size to achieve your desired accuracy level.

- **The expected level of non-response**

If you expected that a large proportion of units will not respond to the survey, you'll need to approach more units to achieve the sample size required.

- **The sample design used**

Some sample designs are more efficient than others – in general, if you use known information about the population, a smaller sample size is possible.

Once you've determined these factors, you can calculate the sample size required to obtain the required level of accuracy. For more information on sample size calculations, consult references in [Appendix 2: Stats NZ's survey advice and other services](#) or a sample design expert.

4.7 Sampling strategies

There are two types of sampling methods: probability sampling and non-probability sampling.

In probability sampling, every unit of the population has a measurable chance of selection. This allows sampling errors to be calculated and an accurate estimation of population characteristics to be made.

Probability sampling includes:

- simple random sampling
- systematic sampling
- stratified sampling
- sampling with probability proportional to size
- cluster sampling

- multi-stage sampling
- multi-phase sampling
- replicated sampling.

Non-probability sampling includes:

- haphazard sampling
- sampling of volunteers
- judgement (purposive) sampling
- snowball sampling.

It is beyond the scope of this guide to give details of various sampling schemes, but the lists above are provided for interested readers to research. Brief notes on these sampling schemes are also in the glossary.

4.8 Non-response

It is almost inevitable that you won't get information from some units in the sample. This is referred to as non-response.

[Chapter 11 Respondent experience and non-response](#) has more information about non-response.

5 Sources of error

There are two types of survey error: sampling and non-sampling error.

5.1 Sampling errors

Sampling errors are a result of the sample survey collecting information from only a fraction of the population, rather than all members of the population. The extent of the error depends on many factors, including:

- **Sample size**
Increasing the sample size reduces the sample error. However, there is a point beyond which little appreciable gain is made by further increasing the sample size.
- **The variability of the characteristics of interest**
The greater the variation in the population, the greater the sampling error.
- **The sample design**
Designs which use information known about the population reduce the sample error.

With careful design and estimation procedures, you can minimise sampling errors and make calculations to determine their extent.

5.2 Non-sampling errors

Non-sampling errors are present in both surveys and censuses. They are not easy to measure and may be larger than sampling errors. Non-sampling errors can occur in many ways and can arise at any stage of the survey process.

One possible effect of non-sampling errors is to introduce bias into the results, where the estimated value moves to one side of the true value.

Non-sampling errors may be related to:

- **Definition of the target population**
Excluding groups within the scope of the survey or including groups outside the scope of the survey will cause non-sampling errors. For example, excluding a remote geographical area due to expected difficulties with collection, or including children in a survey that was designed for adults may cause bias. The target population needs to be accurately and carefully defined.
- **Selection of the sample frame**
A frame which does not match the target population will cause bias.
[Chapter 4 Sample design](#) has more information.
- **Sample design**
The design should give everyone in the target population a known chance of selection.
- **Sample selection**
Use random selection procedures to eliminate bias due to selection by, for example, interviewers, survey sponsors, or the respondents themselves.

- **Non-response**

[Chapter 11 Respondent experience and non-response](#) has more information.

- **Defining the objectives**

Imprecise objectives may lead to survey information which does not meet requirements, for example, confusion about whether information is required for families or households.

- **Questionnaire development**

[Chapter 8 Questionnaire development](#) has more information.

- **Time period survey – seasonality factors**

Many quantities differ according to the time of the year or even the day of the week. Surveys designed to measure such quantities may need to be run over a long enough period to measure any seasonal effects.

- **Collection of information**

[Chapter 10 Collecting information](#) has more information.

- **Inadequate interviewer training**

[Chapter 10 Collecting information](#) has more information.

- **Data coding and entering**

[Chapter 12 Processing](#) has more information.

6 Classifications

An important consideration in the early stages of survey planning is what classifications are needed. The value of your data will increase if you use common classifications. Using these also permits the repeated collection of comparable data over time and across different surveys.

6.1 What are classifications?

A classification is a way to group a set of related categories in a meaningful, systematic, and standard format. They allow us to group and organise information meaningfully and systematically, usually in exhaustive and structured sets of categories.

For example, in a survey of businesses, respondents may need to be classified according to their industrial activity. If you use standard classifications, the resulting statistics can be compared with existing published statistics or with a later repeat of the survey.

In cases where the subject of the survey has not been researched in-depth before, you may need to develop new classifications. This could mean a long development phase, but it is vital for producing meaningful statistics.

It's especially important to use standard definitions and classifications for:

- economic variables – industry, harmonised system (trade), and institutional sector
- social variables – for example, occupation, household and family type, ethnicity, and age
- geographic regions.

[Standards and classifications](#) has more information.

7 Privacy, security, and confidentiality

This chapter outlines the importance of protecting respondents' information when conducting a survey. Respondents to your survey have the right for their information to be kept confidential, stored securely, and only used for the stated purpose of the collection.

The terms confidentiality, privacy, and security are often used interchangeably:

- **Confidentiality** refers to not releasing information that could identify the respondent.
- **Privacy** refers to collecting only the information you need and using it for that purpose.
- **Security** refers to keeping data safe from unauthorised access or use.

7.1 Privacy

The respondent has the right to control who has access to their information and what is done with it. You must minimise respondents' privacy concerns. Consider the following questions:

- Is the need for all information justified?
- Have you limited the intrusiveness of survey questions?
- Have respondents been informed about access limitations to their data (see [section 7.2 Security](#))
- Have respondents been informed about their rights and obligations in providing data?

7.2 Security

You must consider the security of any forms or surveys during collection, transporting, processing, storage, and destruction. Online surveys need similar consideration.

Access to forms

- Access to forms supplied by the respondent should be controlled.
- We recommend keeping an up-to-date list of staff who are entitled to access the forms. Keep a log of anytime someone accesses the forms.
- Store forms securely. Paper forms should be stored in locked areas, and electronic forms should be password-protected.

Respondent interaction

- If a respondent has to be contacted again after the survey has been completed and collected, ensure that the correct person is approached.
- When dealing with a respondent be careful not to divulge information previously gathered from other respondents.

Disposing of forms

Once the required information has been extracted from the forms, dispose of the forms securely.

7.3 Confidentiality

When publishing findings from your survey you must ensure that the respondent cannot be identified or deduced. Provide your respondents with assurances that their information will be kept confidential. This can be done before or during the survey. If respondents are assured their information will be kept confidential, response rates to your survey may increase.

Here are some other factors you need to consider:

- Confidentiality of the respondents' information must be strictly conserved unless consent has been given directly from the respondent. Get this consent in writing.
- Microdata (individual response data from surveys) may only be released when:
 - data has been confidentialised, for example, through random rounding or by suppressing cells
 - there are conditions on access to the data, for example, researchers may be approved for access under certain contractual conditions.
- Information is protected for the life of the data.
- Data in tables should also be protected, for example, through random rounding, suppressing cells, and/or other statistical disclosure techniques.

[Privacy, security, and confidentiality of survey data](#) has details about these techniques.

- Information about a single unit should not be able to be identified through other releases. For example, a business must not be able to obtain data from one release and compare it to another release to then calculate information about their competitor.

8 Questionnaire development

This chapter outlines things you need to consider when developing a questionnaire, along with a useful set of steps for questionnaire development. It also provides examples of some of the common pitfalls to avoid when writing questions.

8.1 Introduction

While a survey is the process of collecting, analysing, and interpreting data, a questionnaire is the set of questions that will be asked. It is the survey's content and its measuring instrument.

Questionnaires play a central role in the data collection process and the quality of the questionnaire directly impacts the quality of the data. The importance of good questionnaire design cannot be overestimated.

Simply put, questionnaire design is the process of developing the questions and format of the questionnaire. It is not a straightforward process and often requires a great deal of consideration. When the design of the questionnaire is regarded as a trivial task, or people are unwilling or unable to put the time and effort into proper development, the likely result is a poor-quality questionnaire and therefore poor-quality data.

8.2 The impact of poor questions and questionnaires

Poor questionnaires and badly written questions run the risk of:

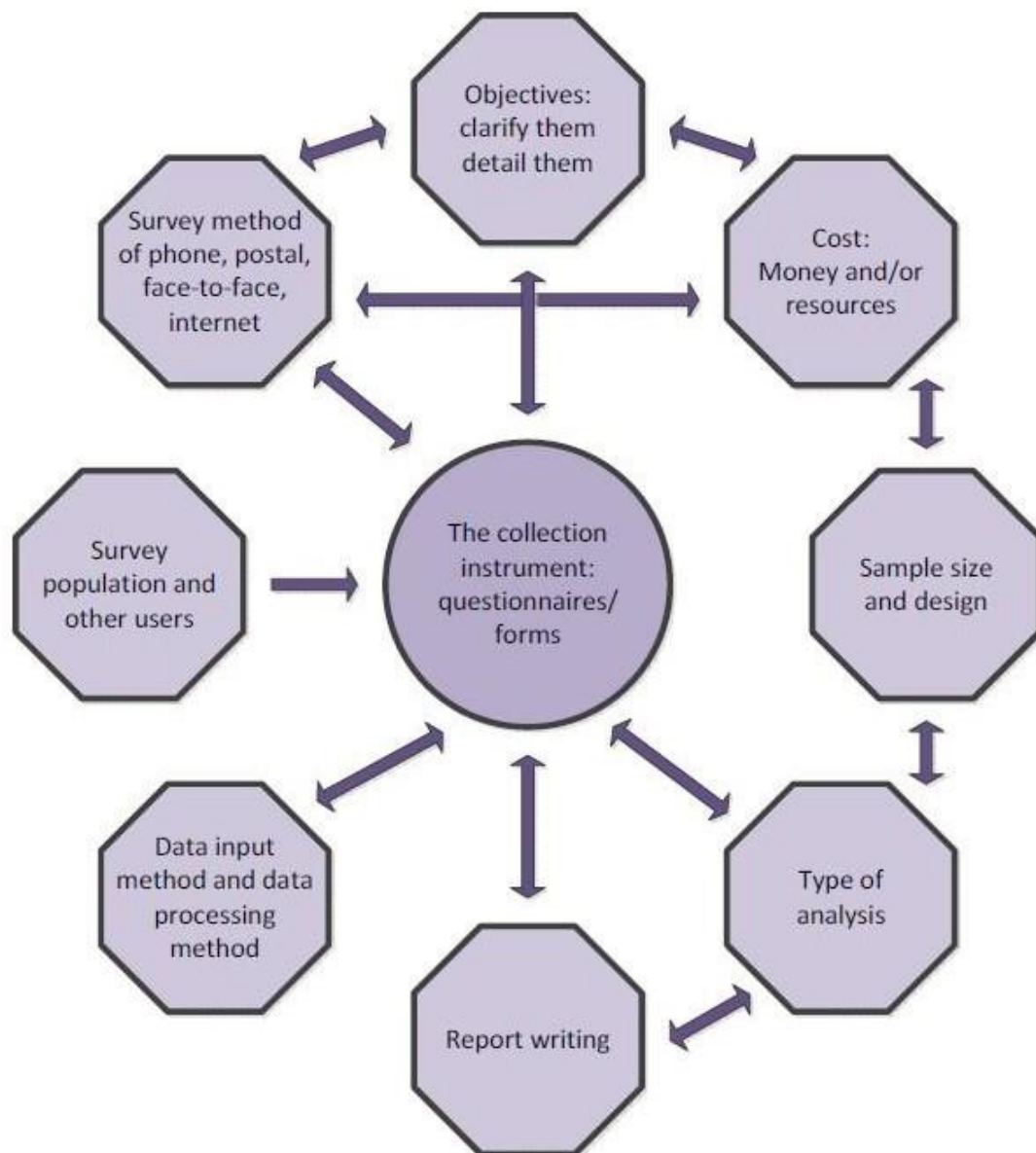
- an increase in non-sampling error (the error that is not due to the sampling process, the error that occurs even in a census)
- an increase in overall non-response and item or partial non-response, especially in self-complete surveys (non-response also contributes to non-sampling error)
- cost in data repair – checking, correcting, and imputing data takes time and effort, and reduces confidence in the quality of the data.

One of the main goals of questionnaire design is to reduce the amount of non-sampling error in a survey. Getting the sample design right and ensuring that the sampling error is at the level wanted is pointless if there is a high (and unknown) level of non-sampling error.

[Chapter 5 Sources of error](#) has more information about sampling and non-sampling error.

Well-designed questions are easier for respondents to answer and lead to better quality data. The way questions are worded, the response options, question ordering, and question formatting can all affect the reliability and validity of your data. Improving your questions is one of the easiest and most cost-effective ways to increase the quality of survey data.

[Section 8.6 List of pitfalls to guard against and check for](#) outlines common issues in question writing.

Figure 1: Impact of other aspects of a survey on questionnaire design

8.3 What to consider when developing a questionnaire?

The objectives, the survey mode, and the respondents are the main things that should determine what questions to ask and how to ask them. For each question, it's important to consider if:

- this question will help fulfil an objective?
- respondents are likely to be willing, and able, to answer the question as intended?
- there is any way to make it easier for respondents to give accurate data?
- the information is already available elsewhere (for example, administrative data)?

8.4 The steps to take when developing a questionnaire

There is no magic formula for proper questionnaire development, but the steps outlined below are useful, and if followed, mean you can be reasonably confident that your questionnaire will work.

What is needed to develop a questionnaire?

1. Clear precise information needs – agreed by everyone involved.
2. List of groups who will ‘use’ the questionnaire – with information about them.
3. Questions written and approved.
4. Reasonable confidence the questions work – based on evaluation with all ‘users’.
5. Questionnaire produced and approved by everyone who needs to approve it.
6. Reasonable confidence the questionnaire works – based on evaluation involving all concerned.

Note: These steps are to develop a questionnaire for the first time. If you are revising an existing questionnaire, start with an evaluation of its performance.

Each step is explained in more detail in this section.

Some general points about these steps

Designing a questionnaire is not the simple linear process these steps suggest. It’s iterative, so you must be prepared to double back to an earlier step. For instance, at step 3 you may decide it is impossible to get a satisfactory answer to a certain question (perhaps because most people do not have the information they need to answer it). You may then have to go back to the information needs (step 1) and drop one, then decide whether it is worth developing the survey with a reduced set of objectives.

Evaluation at two stages is suggested because there is usually a great deal of work involved in producing a finished questionnaire, well laid out, with all pages, questions, code numbers, and other elements in their right places. If you wait until this stage before evaluating how questions are performing, a lot of work (for example, on layout) will have to be repeated each time changes are required. Evaluating questions before doing most of this work saves a great deal of time and effort.

While the steps show two evaluation stages, in practice it may be easier to carry out evaluations at several stages throughout the design process.

The steps in more detail

Step 1: Clear, precise information needs

Before you can start with the design of the content, structure, or layout of a questionnaire, it is important to determine what kind of information you need from it. Generally, this includes identifying or clarifying the following:

- Survey objectives derived from research objectives/questions (see also). Objectives need to clearly spell out the data that the questionnaire should generate. Having clear objectives for writing questions ensures that the right questions are asked, and the purpose of the survey is achieved.
- All concepts to be measured are defined clearly. This includes explaining any characteristic(s) or attributes of a concept. For example, in a survey looking to collect data on the number of hours a respondent exercises in a week, it is important to first detail what sort of activities constitute exercise.
- Who the data is going to be collected from.

- The mode of collection. The main modes are discussed in [chapter 10 Collecting information](#).

If you are working on the questionnaire development as a service provider, it is essential to get the survey sponsor or owner to document information needs, rather than supplying draft questions. Similarly, if other parties are involved in the survey (for example, a client or fellow researcher) it's important they agree with the detailed information needs. Otherwise, you may discover that the information the questions would collect is not the information other parties need.

Step 2: List of groups who will 'use' the questionnaire

List all the people who will 'use' the questionnaire, and what you know about them. They are referred to in this chapter as 'users'.

Respondents are users even if the survey is interviewer-administered. What is known about them? If they are 'the general public', research suggests that they may have trouble with some types of calculations and may not necessarily read or listen to questions in detail.

Unless a questionnaire designer is doing everything themselves, there will be other users of the questionnaire such as interviewers, programmers, coders, and researchers who will analyse the data. A designer will probably know a lot about the skills, expectations, and what the people in these groups are likely to be able to adapt to. Even if the designer is the one doing some of these tasks, the tasks should be listed as a reminder to check that the questionnaire will meet all relevant needs, for example, for scanning and processing.

Although all users' needs have to be considered as questionnaires and associated documents are developed, the most important group is the respondents. This is largely because the designer has least control over them. In most cases, respondents cannot be trained as people employed to work on the survey can be trained. Respondents also give their time and effort, often with little to no compensation, and the designer owes it to them to make their experience as easy and pleasant as possible. Ultimately, a good understanding of respondent needs informs good questionnaire design, which encourages respondents to provide accurate and complete information. This mitigates the time, effort, and cost required to process or repair data later.

Step 3: Questions written and approved

You should now start developing the questions. Keep in mind all aspects of the survey (as shown in figure 1), all users who are relevant at this stage, and be aware of all the possible pitfalls.

Generally, there are two forms of questions used in questionnaires:

- Close-ended questions require respondents to choose from a set of response options predetermined by the questionnaire designer. These can be categorical, ordered, attitudinal, and semantic differential questions.
- Open-ended questions allow respondents to answer in their own words.

A thorough discussion on types of questions, including specific guidelines on crafting them, can be found in Williams (2003) and Dillman et al. (2014).

Layout is not important at this stage – only do what is absolutely necessary to do an evaluation. The question order should be as correct as possible, but it should be evaluated and revised if necessary.

If the questions need to be approved by a client or a manager, get approval at this stage – don't wait for a later draft. Some or all of the evaluation work will be wasted, and a re-evaluation necessary, if questions are changed after the evaluation is underway.

Step 4: Evaluate the questions

A series of evaluations is needed. Elements may be added (for example, tick boxes or instructions) throughout the evaluation process.

[Section 8.5 Evaluation](#) describes the types of evaluation.

Step 5: Questionnaire produced and approved

To turn the questions into a questionnaire, all remaining elements must be added. Number the questions, as the order should now be well established. The questionnaire should be laid out in a way that will make it easy to use, and, if this does not interfere with its function, good to look at. Add a cover or an introduction, routing instructions, codes, and page numbers (if needed). Whatever is needed to produce the final questionnaire, except printing paper questionnaires, should now be done.

In practice, you don't need to do all of this at once. For instance, if you are using codes that are based on question numbers, it is sensible to leave adding them until the last possible moment, when it is certain that the question numbers will not change. Similarly, you can complete quite a lot of evaluation while awaiting input on cover design. However, a near-final product should always be evaluated. Colour can be added later, and if used properly, it should have a positive effect on the questionnaire's performance.

If the questionnaire needs approval, gain that approval before beginning evaluation. It is highly undesirable to change the questions at this stage – any input to questions should be at step 3. If changes are made to questions, they need to be evaluated again.

Step 6: Evaluation of questionnaire performance

All that is left to do is have the questionnaire printed, or go 'live' if it is an online form, and put it into use – although interviewer instructions, coding instructions, and other documents may still need to be written and evaluated.

If the questionnaire will be used for some time, and a revision is possible, arrange an evaluation of its performance over the first convenient period, to establish whether any revision is needed.

8.5 Evaluation

Two basic types of evaluation should be used when developing a questionnaire: peer review and user testing. A peer review can be done just by having a colleague look at the questionnaire, while user testing involves having users of the questionnaire actually working with it.

Peer review

In a peer review, you are simply looking for things that are likely to cause problems.

It should be done by at least one other person, preferably someone who was not involved in designing the questions. With practice, people get good at picking likely sources of problems, but it does take experience. Among other things, people have to develop a readiness to be super-critical, and a willingness to accept such criticism.

[Section 8.6 List of pitfalls to guard against and check for](#) includes a list of pitfalls known to cause problems. This list is useful when doing this sort of review.

Three important types of checks are checks:

- against objectives
- for consistency
- against what is known about the users.

A peer review can help simplify questions and instruction wording. A useful rule of thumb is that if something can be said more simply, it should be. There is, in theory, a danger of getting too simple and ‘talking down’. But that is a remote danger, while the danger of being too complex or technical is real. This is partly because questionnaire designers often write questions to collect information on topics that have a set of terms with technical statistical definitions. The questionnaire is the conversation you have with the respondent so, wherever possible, use everyday language.

When to do peer reviews

Peer reviews should take place at each stage of the evaluation process and after changes are made to the questionnaire. Where possible, peer reviews should be done by more than one person to increase the effectiveness of the evaluations.

Why peer reviews are important

While ‘user testing’ could be relied on entirely to discover problems, it is quicker and cheaper to get rid of obvious sources of problems at each stage before beginning user testing. Otherwise, a larger number of user tests will be needed to reach a stage where you are reasonably confident that the questions and questionnaire will work as intended.

User testing

User testing is used here to cover any evaluation that involves people (respondents, interviewers, coders, etc) actually working with the questions/questionnaire in a way that allows problems and their causes to become visible. User testing covers:

- observation studies and other types of pre-tests (described in this section)
- pilot surveys – full ‘dress rehearsals’ – where all types of users are involved and all processes are tested, from the delivery of questionnaires to processing of the data, and where everything is done as it will be in the main survey
- other tests of the questionnaire with specific groups of users (for example, a trial of scanning and processing data from the questionnaire).

This chapter deals with small-scale evaluations.

[Chapter 9 Pilot surveys](#) covers pilot surveys.

Whether a pilot survey is carried out depends on several factors, but the small-scale evaluations of the type described in this chapter should always be part of questionnaire development. If a pilot survey is done, it should be seen as part of a systematic development. It is not efficient to do only pilot surveys, as many problems can be identified earlier and corrected during a set of small-scale cheaper evaluations. In fact, the types of evaluation described here can identify problems that would not be discovered in a pilot.

Why user testing is essential

User testing is necessary because no one, not even a very experienced questionnaire designer, can be confident that a question or a questionnaire will work until it has been proved to work. A

designer can look for sources of problems, as suggested, in a peer review. But they will never see the questions through the eyes of respondents, because the designer:

- knows too much about the questions
- is not exactly like many respondents.

Nor can a designer be sure that the questionnaire will suit the needs of other users until they have had the opportunity to try it.

User testing will discover both where errors are made and why they are being made. You can't do this by simply looking at completed questionnaires.

The aim of user testing is to ensure that the questionnaire will work for the respondent, and for everyone else involved. If compromises need to be made, respondents' needs should always be put before the needs of other users. Unfortunately, this is not always possible – but do all you can to make the questionnaire suit the respondent.

User testing with respondents

How you test a questionnaire with respondents can differ depending on how a survey is administered. However, the most effective method is cognitive testing.

Cognitive testing is used to investigate how respondents interpret and understand questions and to ensure that a questionnaire, or part of a questionnaire, is working as intended. The goal is to identify any potential issues with question wording, response options, or instructions for respondents, and is a chance to make sure that the questions (as well as other structural elements, such as question order and flow) are clear and make sense.

Cognitive testing is essentially qualitative and involves semi-structured interviews, ideally with respondents that are representative of the target population of the survey. The method makes use of two main interviewing techniques:

- verbal probing
- thinking aloud.

Verbal probing is helpful for understanding respondents' comprehension and can identify where questions are badly worded or ambiguous. Probes such as "what does that term mean to you?" and "was it easy or difficult to answer that?" can give the researcher insight into how specific concepts are being understood and how easily information is able to be recalled.

Thinking aloud involves encouraging the respondent to talk through their thought process as they answer the questionnaire. This provides the researcher with insight into their decision-making processes and the types of information they draw on to think about and respond to specific questions.

These techniques help to reveal potential sources of confusion or difficulties that respondents might encounter in the questionnaire, which gives the designer the opportunity to improve the clarity and validity of questions and reduce response errors.

How cognitive testing is carried out depends on the mode of the survey (see sections [10.1 Self-complete / self-administered surveys](#) and [10.2 Interviewer-administered surveys](#)):

- A face-to-face questionnaire would be most effectively tested in an environment that closely resembles how the survey will operate in the field, with the interviewer using spontaneous verbal probes based on the respondent's comments or behaviour.

- A self-administered questionnaire in paper form might best be tested by the researcher observing and taking notes while a respondent is encouraged to think aloud, followed by some verbal probing when they have finished.
- An internet questionnaire could be tested by observing how the respondent completes it, either in person or with a shared screen. It would be beneficial to use both usability testing (to assess functionality, accessibility, etc) and cognitive testing (to evaluate questions) – a combination sometimes referred to as ‘cogability testing’.

An alternative approach to cognitive testing is sometimes taken if the answering process cannot be observed (for example, with a business questionnaire that different people fill in different parts of, over several days). In this situation, you can follow up after the questionnaire is completed with a check for any obvious errors, and then ask questions about:

- those errors
- how they arrived at those answers
- what they understood certain words or concepts to mean
- the respondents’ perceptions of problems and changes they’d like to see made.

Follow-up questions almost always need to focus on selected items – otherwise the process would take too long – but you should ask a general question about which items the respondent thought caused them problems.

One important point to remember when doing any type of user testing with respondents is that the focus must always be on the faults of the questionnaire. Respondents should never feel that they have failed, that they are being judged, or that they are in any way the source of the problems identified.

You can obtain important information by having interviewers evaluate and report problems with specific questions and the questionnaire more broadly, as they are the ones working with it. It is also beneficial to observe actual interviews, if possible, as at times respondents and/or interviewers can report that there are no problems yet still be making errors. For example, because a question is being interpreted in a different way than the designer intended, or an interviewer is adapting the way they ask a question (usually to accommodate for a flaw in design) without realising. The likelihood of this is reduced with thorough cognitive testing in the development stages of the survey, yet it is useful to double check how the questionnaire is actually working in the field.

Who should be the subjects for user testing?

Do not assume that the respondents are like the designer, or even that they are like the people a designer knows. That does not rule out doing some user testing with friends, family, or colleagues as a first step. These tests are usually easier to organise (and cheaper) and may show up problems that can be fixed before doing more testing.

Further testing should be with people like the survey respondents, and/or a sample from the same frame as the survey respondents.

How many rounds of user tests to do

In most cases, three rounds of testing with respondents are recommended. After the first round, any problems that arise can be resolved for round two. The second round tests that the problems have been fixed and uncovers any issues that might have not been picked up in round one. The third round then makes sure everything is working as intended.

Sometimes you will need to do extra evaluation of questions expected to be, or found to be, troublesome. It is not necessary to evaluate the whole set of questions every time, though keep in mind that how a question is answered can be affected by its position in a questionnaire.

No questionnaire is ever perfect, but you cannot go on forever. The important thing is being systematic. That means not having a brainwave about better ways to write the questions after the first two rounds have been done. Otherwise, the third round is really the first. For the same reason, all people who have input into the design of the questionnaire should do so at a very early stage, before user testing takes place.

The number of people to test within each round of testing is specific to each survey. It depends on the quality you want for the required outputs, the complexity of the topics, and question wording. The number of rounds of user testing with other groups will vary with the survey and the number of interviewers, programmers, processing staff, etc involved. At least one user test should be done with all relevant groups at steps 3 and 6 (see [section 8.4 The steps to take when developing a questionnaire](#)). At step 3, it is unlikely that there will be a document suitable for processing. In fact, whenever there are changes that would affect a particular group, user testing should be done with them.

8.6 List of pitfalls to guard against and check for

This list of pitfalls is not exhaustive. Every designer could develop their own list as they read the literature and develop questionnaires over the years. In the absence of a personal list, use this as a:

- guide, or set of warning signs, when designing questions and questionnaires
- checklist for undertaking peer reviews.

[Appendix 4: Questionnaire pitfall examples](#) includes examples to clarify problems described below. Many examples, however, have more than one thing wrong with them.

Pitfalls with language

In general, the written content of your questionnaire should meet the average reading age or literacy level of the country the survey is being conducted in. The recommended reading age is 12 years old in New Zealand (Digital Government, 2022).

[Readability testing tools](#) can be used on initial drafts of questions to check if they meet this reading level.

Language that is hard to understand, or overly technical and full of abbreviations and words that are not defined, make it difficult for respondents to answer as intended.

Avoid the following language pitfalls:

- Hard to understand or just badly written questions.
- Overly educated, complex or technical words and sentences.
- Abbreviations that respondents may not understand.
- Undefined terms or concepts.

Pitfalls with questions

Avoid the following question pitfalls:

- Questions that do not fit the objectives. This is very important. It is difficult to check this without a clear and precise set of information needs.
- Ambiguity where it is hard to be sure what is being asked.
- Questions that are too long. Questions with long response options and/or many response options are unsuitable for telephone interviews. Even for self-administered questionnaires, numerous response options can affect how respondents answer. Respondents tend to read only as much of the question and response options as they think they need to, to answer the question.
- Double or triple questions.
- Unreasonable recall period.
- Questions that use double negatives.
- Questions that assume a state of affairs exists.
- Unbalanced scales and leading or loaded questions.
- Questions that require information, or a level of skill, which respondents may not have.
- Response options that are not mutually exclusive.
- Response options that are not exhaustive.
- Response options that do not fit the questions.
- Response options that are presented in an illogical order.
- Question order that is likely to bias response.

Pitfalls with the questionnaire

Avoid the following universal layout and design characteristics to enhance overall clarity, engagement, and accessibility of the questionnaire. Accessibility in this guide refers to designing your questionnaire in an inclusive manner, so respondents with disabilities can also access it.

- Crowded or untidy appearance
Various elements of a questionnaire (for example, headings, instructions, question stems, response options, answer spaces) that compete for attention or are and overcrowded can confuse respondents. Use white space to separate the different elements or groups. Space words evenly and use a 1.5 space between lines.
- Font hard to read
Highly stylised fonts (or script fonts) and block capitals are harder to read than sans-serif fonts in sentence cases. Words or terms that need emphasising should be in bold, not underlined, capitalised, or in italics. The recommended body font size is 12-point type for most populations, and 16-point for people with poor eyesight or learning disabilities.
- Inconsistent use of terms
Decide on one term and use it consistently throughout the questionnaire. For example, if the term 'business' is used in one question and 'company' and/or 'enterprise' is used in other questions, respondents may think the words have different meanings.

- Inappropriate title for the questionnaire or for sections

Titles and headings can be used to group content, reduce clutter, and make it easier for users to scan and understand. Take care, particularly with section titles, as people can misinterpret them and skip sections they think do not apply to them. User testing can help evaluate respondents' understanding of titles.

- Routing instructions which are incorrect or hard to follow
- Layout that is difficult for respondents

Poor layout results in respondents having to expend extra effort in navigating the various elements. Aligning the elements on a vertical line can help mitigate this. Vertical alignment is consistent with the natural reading order in most languages in which people begin in the top left-hand corner of a page.

- Layout that is difficult for interviewers
- Inconsistent layout

Inconsistent arrangement of question parts can confuse respondents as they advance through the questionnaire. This may also contribute to non-sampling error. For example, if the questionnaire has 'yes' before 'no' most of the time, respondents may make mistakes if the order is occasionally reversed.

- Layout that is likely to cause mistakes when answering

One of the most common problems is having a large gap between the response options and the tick boxes.

- Mistakes in numbering

This includes having parts of questions without numbers, or with too many numbers. Sometimes designers number questions, sections, and even tables. This can lead to confusion. Only use the numbers necessary to lead respondents through the questionnaire.

8.7 Political neutrality in survey research

"A major characteristic of New Zealand's constitutional arrangements is that public sector organisations are apolitical" ([Impartial – Te Kawa Mataaho Public Service Commission](#)). This means that for any survey or research conducted by (or for) a government agency in New Zealand, it is essential that the design is free from any suggestion of political bias. The principle of political neutrality is central to public trust and confidence in the State sector.

This section provides guidance on best practice for writing survey questions that adhere to the principle of political neutrality.

Key considerations in writing and assessing questions for political neutrality

Designing question and response options

Does the question use language that could be reasonably interpreted as politically biased? An example of this would be referencing the specific Government rather than the institution of government. Even a simple modifier like 'new' (for example " ... the new Government ...") suggests to the reader that we want them to contrast this specific Government with that or those that came before. This means the question could now be interpreted as actively encouraging respondents to

consider their biases when forming their response.

In general, **avoid** wording questions to:

- refer to “the Government” when a specific agency is the focus for the question
- refer to particular political parties (or coalitions of parties)
- refer to politicians or Ministers, either specifically or in general refer to the various points on the political spectrum (for example, left, centre, right)
- describe the government in terms relative to other governments (for example, “new Government”, “minority Government”, “coalition Government”).

Table 1: Examples of question wording to avoid perceived political bias

Question wording with potential for perceived political bias	Question wording now free of perceived political bias
How would you rate the service you received from the government when looking for a new job?	How would you rate the service you received from Work and Income when looking for a new job?
To what extent do you agree or disagree with the spending priorities for Education as outlined in the Finance Minister’s second budget?	To what extent do you agree or disagree with the spending priorities for Education as outlined in Budget 2025?

Think about the whole question design, not just the question wording itself. There should be no suggestion of bias in response options or supporting materials (for example, invitation to participate or in any other guidance offered to the respondent).

When presenting a list of response options, think about whether respondents might interpret the order and design of the options in a way that could lead them to give biased responses. Where appropriate, consider randomising the way you present the options. This will counter the known respondent behavioural bias of selecting near the top of lists in self-administered formats or from the bottom of lists in interviewer-administrated formats – particularly telephone interviews.

Where it’s not possible or appropriate to randomise the options, make sure you have a clear rationale for choosing an ordering method and apply it consistently throughout the survey – even consider providing an explanation for the ordering method you have chosen. A common method is to list options alphabetically, which is less prone to suggestions of bias than other methods.

Where a set of options for a response are spaced or framed, it is important that the spacing or frame sizes are the same across all options. For example, response options set in larger frames than other response options for the same question can trigger biased responses. Often this happens where the frame is sized specifically to the text for a particular option, that is, options with more text have larger frames than options with less text and vice versa (as shown in figure 2).

Figure 2: Examples of possible biased and unbiased design response option design

Biased design	Unbiased - equal area (narrow)	Unbiased - equal area (wide)
Strongly agree	Strongly agree	Strongly agree
Agree	Agree	Agree
Neither agree nor disagree	Neither agree nor disagree	Neither agree nor disagree
Disagree	Disagree	Disagree
Strongly disagree	Strongly disagree	Strongly disagree

The design shown in the first column has the potential to bias responses because, although the response scale is balanced, some of the options have a larger area/frame than others. The second and third columns show two different unbiased designs. These are unbiased because the area/frame is the same shape and size for every option in each design.

In short, aim to minimise the potential for respondents to infer unintended meaning from your question design.

Considering context in question design to ensure political neutrality

You must consider the context behind each question when you are designing survey questions. These might be environmental contexts or situational contexts.

- **Environmental context**

The most obvious example of an environmental context is the period leading up to a general election. In the lead up to a general election, the public are exposed to more political messaging and will be more sensitive to potential biases. Additionally, during an election campaign, the potential impacts of a politically biased question are more serious.

It may be better not to survey at all over a particular period leading up to a general election, but if this is unavoidable, you will need to be extra careful in your survey design.

- **Situational context**

An important situational context to consider is what other content is being collected in the same survey. This is particularly important for omnibus surveys, where an agency commissions questions to be included as part of a larger survey collecting data for other clients. The content of the other clients' surveys might expose otherwise balanced questions to potential political bias.

Even within surveys that don't have a range of different clients' content, you will need to be careful to ensure content in other parts of the survey doesn't introduce the potential for political interpretations, regardless of how neutral you have made the questions.

Considering the role and function of the agency conducting the survey

You must consider the role and function of the agency conducting the survey and how survey respondents might perceive questions as a result. Questions that relate to the agency's area of expertise will typically be less prone to uninformed bias than questions that are outside their area of expertise, but conversely, the agency would need to be careful to clearly demonstrate a lack of bias towards their desired outcome. Agencies with statutory independence may be better placed to ask questions that evaluate policy outside their area of expertise as they will have no obvious agenda or vested interest.

Communicating the intended purpose of the survey

You will also need to think about the purpose of the survey. Surveys should always be transparent about how the results are going to be used, and the survey questions you design should be relevant to that stated purpose.

Communicating purpose is important as otherwise the respondent will form potentially biased assumptions about the purpose and will answer questions according to these biases. Clearly communicating the purpose for the survey, which itself should be politically neutral, ensures that the respondent's responses can only be influenced by their personal biases based on their world view.

9 Pilot surveys

A pilot survey is a 'dress rehearsal' for the main survey. It is a trial run which should be a full test of the entire process, including collection and processing, but using a small sample selected from the target population. You should have a mechanism in place to ensure that people who took part in the pilot survey are not selected for the main survey (unless the pilot survey is for a census).

This guide distinguishes pre-tests from pilot surveys, though they are both types of 'user testing'. A systematic programme of both pre-tests and pilot surveys should be part of survey development.

[Chapter 8 Questionnaire development](#) discusses pre-tests and relatively small-scale exercises.

Pilot surveys are an important part of quality assurance for statistical surveys. Some surveys fall short of expectations, especially where controls are not established. Reasons for this include instructions being misunderstood, unforeseen difficulties arising, and errors made by survey personnel.

A successful survey follows procedures which ensure that deviations from the intended design are minimised. This principle of operational control, which is difficult to achieve, requires the survey designer to subject all survey operations to a verifying or validating procedure.

If an error in the questionnaire or a mistake in the sampling or processing methodology is discovered once the survey is underway, a great deal of money and time has been wasted.

As well as further testing of questionnaire wording, respondent burden, and interview length, all of which are likely to have already been pre-tested, pilot surveys should be able to provide preliminary information on the:

- feasibility of the sample selection plan
- variability in the target population
- fieldwork procedures
- response rate
- processing procedures
- estimates of costs.

If problems are identified in any of these areas, they can be solved, or at least their effects minimised, before the main survey gets underway.

The number of pilot surveys undertaken and the sample sizes used are likely to be determined by the complexity of the main survey and cost considerations. Pilot surveys can also be used to test alternative procedures or designs being considered for the main survey.

If statistical output from a pilot survey is usable, it is only likely to be usable in a highly aggregated form because of the small sample size or low response rate. In some cases, however, it may be acceptable for pilot survey data to be used as part of the main survey data.

10 Collecting information

For many surveys and censuses, information is obtained primarily by asking people questions – although the information collected may relate to objects such as cars or houses, or to establishments such as households or businesses, rather than to people.

In other cases, information may be obtained by direct measurement (for example, heights of students at a school or time spent watching television).

In the case of direct measurement, the way information is collected will depend on the type of measurement required. The more complex the measurement, the greater the amount of training required for those performing the collection process. It is possible that the quantity being measured will vary due to any one of many factors (time of day, heat, food intake, etc). Seek expert advice to ensure there is consistency.

The two main ways to collect information from people are self-complete or self-administered surveys, and interviewer-administered surveys.

10.1 Self-complete / self-administered surveys

- **Mail questionnaires**

Written responses are provided on a paper questionnaire that is posted or delivered to respondents.

- **Internet questionnaires**

Written responses are entered into a questionnaire that respondents access through a website on a computer, tablet, or smartphone. There are web-based questionnaire design tools that you can download, or buy a licence to use.

Once respondents submit their completed forms the data is usually held by the survey supplier. They will often have tools for analysing the data that you can access or you could download the data file and do your own analysis. Decide what sort of analysis you need and discuss this with your survey supplier to determine whether their tools will meet your needs.

10.2 Interviewer-administered surveys

- **Face-to-face interview**

Interviewers ask the respondents questions in a face-to-face interview. The responses are often recorded by the interviewer directly into a computer.

- **Telephone interview**

The interviewer records the respondent's answers to questions asked over the telephone. Again, responses are recorded directly into a computer.

10.3 Mixed collection methods/modes

Unless everyone selected in a survey sample can complete the questionnaire using one mode, the researcher may need to provide an alternative. For example, you may offer a paper form to respondents who cannot complete an internet questionnaire.

The benefits of using mixed collection methods include:

- an increased response rate, as more respondents can complete the survey and are not restricted by access to a particular mode
- a decrease in respondent burden
- improved data quality, by reducing restrictions and burden on respondents.

One disadvantage of using a mixed collection mode approach is that mode effects may occur between survey responses. Mode effect is the bias in responses intrinsic to the mode of data collection. Mode effects may occur when asking questions of a sensitive nature. For example, in a survey asking about alcohol consumption during pregnancy, respondents may give different estimates in person than if they were asked anonymously online.

The level of response bias that arises from mode effects is difficult to measure. It may or may not affect the output significantly. However, you must consider mode effects – particularly when changing the collection mode, or moving a survey from using one mode to mixed modes.

The designer can use techniques to minimise potential mode effects, or simply accept that these effects will be present. Dillman et al (2014) provide a list of guidelines for the former. As a general comment, it is even more important to apply universal principles of good questionnaire design in mixed collection mode surveys. As far as possible, the questionnaire in each mode should be designed in a way that respondents are willing and able to understand the questions as intended, retrieve the information needed, formulate the correct answers, and provide their answers in the required format.

Mixed-mode designs can be either sequential or concurrent. Which option is best depends on the situation. In general, we advise you use sequential design. This is where one mode is offered, and another used only if needed. Concurrent design is where you offer several modes at the same time. This can leave respondents with too much choice and may reduce response rates.

10.4 Factors influencing the choice of method

- **Nature of the questions**

The depth, complexity, and sensitivity of the topics to be covered will in many cases dictate what collection method is used. In highly complex questionnaires, the use of interviewers can support the answering process by motivating the respondent, explaining a questionnaire item, and ensuring that instructions are followed. For questionnaires containing sensitive topics, self-administered surveys may be better in encouraging more accurate responses.

- **Response rates**

The quality and reliability of survey data is affected by response rates. Face-to-face interviews often achieve a better response rate than other methods.

- **Resources**

Costs of recruiting, training, and deploying interviewers into the field make face-to-face interviews the most expensive method. Mail questionnaires can, under certain circumstances, be less expensive than telephone interviews. Online surveys are the most cost-effective as they usually involve no postage or paper supplies and no interviewer.

- **Time**

Telephone and online surveys can be much quicker than mail surveys or face-to-face interviews.

Processes associated with interviewer-administered surveys require extra time to be scheduled. A team of suitably qualified interviewers need to be recruited and trained in time for the fieldwork phase of a survey. If there is a large team of interviewers, you may need several levels of interviewer supervisors. These supervisors will have to be trained as well.

Training interviewers is vital to ensure that each interviewer is behaving in the same way when collecting information from respondents. Otherwise, different information may be collected simply because of a different interviewer. During data collection, interviewer behaviour needs to be monitored, which includes checking that the right individual in the right household has been interviewed, and that the interview was conducted according to standard practice.

- **Population of interest**

The characteristics and geographical location of the population of interest may have a bearing on the collection method. Certain groups are difficult to reach and gather data from by any method other than face-to-face or telephone interviews. These include individuals who live in remote locations or have difficulty in reading and writing, the homeless, and criminal offenders.

11 Respondent experience and non-response

The quality of your results relies on the cooperation of your respondents. Some respondents will be happy to complete the survey, while others will see it as a burden.

Response rates to your survey can be influenced by respondent burden. This is the amount of time and effort the respondent feels it takes to complete the survey.

Aim to reduce respondent burden when designing your survey. If you do this, respondents are more likely to have a good experience. If they have a good experience, they are more likely to respond.

Inevitably though, you won't get information from some respondents. This is referred to as non-response. You may find complete refusal or inability to take part in the survey, or partial non-response – where the respondent provides only some of the requested information. Non-response introduces bias into survey results if the non-respondents have different characteristics to those who responded.

This section will help you understand, minimise, and deal with non-response.

11.1 Reasons for non-response

Some reasons for non-response are:

- sensitivity of the questions
- fear of information being misused
- length of questionnaire
- difficulty of the questions – for example, hard to recall / can't locate information
- wrong person approached to provide the information
- respondent does not understand the language of the questions – for example, if the language is too technical
- illness
- inability of the respondent to provide the information requested
- inability to contact the respondent – for example, pandemic lockdown
- inaccuracy in the sample frame.

11.2 Minimising non-response

You may be able to minimise non-response if you:

- **Call back**

Interviewers return if they can't contact the person.

- **Provide warning**

Interviewers contact potential respondents in advance and arrange a convenient interview time. It may be useful when conducting a telephone interview to establish the credentials of the interviewer by, for example, sending a letter of certification in advance.

- **Call at suitable times**

Interviewers call at times most likely to suit the respondent.

- **Send reminder letters or emails**

Send reminders to people who have not responded to an online or mail-back questionnaire.

- **Give assurances of confidentiality and purpose of the survey**

Respondents should be told who will see the information they supply (with or without the associated name and address), the purpose of collecting the information, procedures for data security, and how results will be published. Encourage response by being truthful, reassuring, brief, and unambiguous.

[Chapter 7 Privacy, security, and confidentiality](#) deals with confidentiality in more detail.

- **Design questionnaires carefully**

Wording, length, order, the sensitivity of questions, and how easy the questions are to respond to all affect response.

[Chapter 8 Questionnaire development](#) has more detail.

- **Provide incentives**

Provide incentives as to why someone should complete your survey. Even a simple incentive such as supplying survey results to respondents may increase the response rates. Explaining the benefits of the survey may also increase rates.

However, take care when choosing an incentive. Some incentives may only be relevant to one group, biasing the results to that group. Or some respondents may complete the survey just for the incentive, and not take their answers seriously.

11.3 Dealing with non-response when processing survey data

You can deal with non-response during data processing in various ways. You may choose to:

- ignore non-response
- make a non-response adjustment to the survey responses, or sample weights, to “rate up” to account for non-response. This can be done for sub-groups based on their different response rates
- study non-respondents to establish their characteristics, then develop a scheme to impute data for non-respondents.

In any case, report your response rates and how you calculated them.

12 Processing

This chapter expands on the processing-related issues mentioned in [chapter 3 Survey management](#).

Processing refers to the procedures by which a 'clean' dataset (without detectable errors or omissions) is produced from respondents' information.

The clean dataset is then analysed to produce the information required by survey sponsors, such as totals, averages, population estimates, and cross-tabulations. Statistical analysis is a broad area and is beyond the scope of this guide. You should seek expert assistance on the type of analysis required, given the nature of the survey and the information needs of survey sponsors and other relevant factors.

Data processing requirements need to be addressed in the early stages of survey planning. The processing system must be able to check that the correct person, household, or business has been surveyed. It also needs to be able to track the status of questionnaires, from when blank ones are provided to respondents through to receiving completed questionnaires and the status of questionnaires at any given stage during processing.

The processing system needs to:

- automatically code respondents' answers, with the ability for manual coding as necessary
- contain editing procedures to check each respondent has answered the correct group of questions, and that answers to these questions are not outside the range of expected responses
- identify the number of expected but missing responses and produce error reports – for example, what records are still in error or missing
- contain a mechanism for correcting data, if the correct answer can be deduced, the respondent re-contacted, or data imputed.

If only a small number of people were surveyed, the questionnaires may be able to be checked, corrected, and analysed manually, provided only a few simple questions were asked. However, more than a few hundred responses are difficult to deal with by hand.

Set up the processing system and test it before you start to collect the data.

Exactly how data will be processed must be decided at the questionnaire design stage. Questions either allow space for a respondent's answer to be recorded (open questions), or they require the answer to fit into a set of pre-determined responses (closed questions).

Responses to open questions often need to be manually coded. Closed questions can have their response categories automatically coded. Other questionnaire items that are not automatically coded will need to be manually coded. This is best decided during questionnaire design, so a consistent set of rules can be developed to use within the questionnaire and during processing.

Questionnaire designers must follow established practices that allow data to be captured easily. A program, or a series of programs, needs to be written to get the data into a form where editing can be completed to enable statistical analyses to be carried out.

Some questions to consider:

- How will the data get into an electronic format if responses are returned on a paper questionnaire?

- Who will write the data capture programs?
- Are the questionnaires in a format in which data can easily be captured?
- Once data has been inputted into a data file, what will be done with it?
- Rules must be correctly specified to handle seemingly incorrect data. Who will specify the rules?
- Who will write the computer programs necessary to edit the data to produce a clean dataset?
- How much editing will be automatic, manual, or automatic with manual validation?
- What type of alterations will they be able to make?
- What checking mechanisms will be in place to check that the data is now correct?
- What will be done with any missing data?
- Is it feasible to impute any missing responses?
- Is there an off-the-shelf product that can process the data in a way that meets the survey sponsor's need?
- What security procedures are needed to ensure respondents' information is kept confidential?
- Finally, the format of the final dataset is important and will be determined in part by the available software and by the type of data analysis required.

13 Presenting results

Presenting the results is the main and often only way a survey is judged. It is a chance to display the data obtained in your survey to a wider audience.

When reporting survey statistics, you must maintain the confidentiality of the respondents' data. Take great care to ensure that a published report does not contain information which could be used to identify any individual or their responses.

Here are some factors to consider when you are ready to present your results.

13.1 Ideas for presenting results

Who is your audience?

Before deciding the best way to disseminate your data you need to consider your audience. That is, who will be looking at and using your data. Understanding who your audience is will help you decide what level the data can be presented at.

Is your key audience going to be expert data users or the general public? This knowledge will help you publish your findings at the right level of complexity and will meet the needs of your audience. The medium you use to present your results (for example, online, print) will also be determined by your audience. Knowing your audience helps you to distribute information that is relevant and will be used.

Methods for presenting results

The method you choose to present your results will depend on your audience, budget, and available resources. Potential methods include:

- **Text**

Text is a simple and effective way to explain your results. Text often accompanies visual displays (for example, graphs or tables). Write clearly, using language appropriate to your audience.

- **Tables**

Tables are a simple way to display data. Make sure that all the data in tables is confidentialised (see [chapter 7 Privacy, security, and confidentiality](#) for further information).

- **Graphs**

Graphs can help you show trends in your data. They can be static or interactive. Make sure that all graphs are correctly labelled and easily interpreted by your intended audience.

- **Maps**

Maps can be useful for displaying data that includes geographical location. For example, results from a nationwide survey on household income can be displayed on a map to show the average income across different regions.

[Geographic data and maps](#) has more information.

- **Other infographics**

Using infographics to present data is becoming increasingly popular. Infographics help bring your numbers to life by using graphics.

[Infographics](#) has examples published by Stats NZ.

13.2 Technical detail

Many people will only be interested in your results, but you should include or link to technical detail for people who wish to examine survey procedures. This detail could be presented in the form of a technical appendix. Survey results should include a brief explanation of their limitations, such as sampling errors, response rates, or survey population. These limitations will vary for different population subgroups.

Information in a technical report should include the following:

- A statement of the objectives of the survey, including a definition of the target population.
- A description of its coverage in terms of inclusion or exclusion of geographical regions, particular social or age groups, size, or industrial activity of businesses or any other categories of the population covered.
- Collection procedures, such as:
 - sample frame used
 - sample selection procedure
 - expected sample size or achieved sample size, including subgroups
 - response rates, and how they are calculated
 - non-response methodology or reasons for non-response
 - collection procedure
 - date and duration of the survey fieldwork
 - quality control (for example, efforts to reduce non-sampling errors, interviewer training, imputation procedures).
- Numerical results including:
 - actual results
 - derivation of accuracy.
- Sampling errors

For each estimate reported there should also be an associated measure of the sampling error. The report should also include the method used to calculate sampling errors.
- Assessment

This could include interpretation of the reasons for the results, and recommendations for future action (for example, further research or policy implementation).
- Responsibility

Indicate who commissioned and sponsored the survey, who did the work, and who wrote the report.

14 Contracting out surveys

Survey sponsors often contract out some, or all, of the work to plan and conduct a survey, and analyse the results. This chapter outlines some of the factors to consider when contracting out survey work.

14.1 Reasons for contracting out

Survey sponsors will normally need to prepare some sort of request for approval to spend funds on survey suppliers. It is useful to identify a specific rationale for the request such as:

- specialised knowledge and skills can be obtained to deal with complex problems which are outside the skills or experience of existing staff
- objectivity and a fresh viewpoint are available from outsiders who are not personally involved in the outcomes of the project
- the survey can be performed promptly and on schedule because the required workforce is already trained and in place at strategic locations throughout New Zealand
- special interviewing facilities are required for conducting effective group or in-depth interviews
- all or some of the specialist skills needed, for example, designers, programmers, online survey expertise, interviewers, data processing, and analysts etc, are in place. This means workforce and cost savings can be achieved by reducing or eliminating the need for establishing and maintaining a full-time survey staff in the sponsor's organisation.

14.2 Preparing survey specifications

Written survey specifications describe the work to be done, the amount of work, when it is to be done and, if relevant, how it is to be done. Do not expect the supplier to make assumptions about any significant factor. The sponsor must develop a carefully considered survey specification. It is important that the specification is complete and consistent. Detailed specifications will enable the supplier to give an accurate estimate of cost, and allow the supplier and sponsor to discuss any potential issues in the specifications early.

Specifications should include:

- objectives of the survey
- a description of the information need
- a description of the end-use of results
- an explicit statement of any assumptions the researcher or survey sponsor may have made
- some indicators of the scope of the survey
- an indication of the available budget (see [section 14.3 Indicators of scope and budget](#))
- nature and scope of analysis and reports required
- materials and services (if any) to be provided by the sponsor
- relationship to other research (if any) to be provided by the sponsor
- any information or decisions on approach to survey methodology or questionnaire content

- what tasks are expected to be carried out by the sponsor and the supplier
- requirements of any resulting datasets produced by the supplier, if relevant
- requirements of how the data delivery will occur and the timeline, if relevant
- quality requirements and processes for quality assurance
- the sponsor's operational requirement
- any required qualifications of the supplier
- any and all approvals needed from organisations involved in the survey.

Not every item in this list will necessarily apply in every case, but any exclusion from the specifications should be the result of a conscious decision. Several items are discussed in more detail below, while objectives and end-use of survey results are covered in [chapter 2 Before beginning a survey, ask yourself ...](#).

14.3 Indicators of scope and budget

Without knowing the background situation or the relative importance of survey results to a sponsor, the supplier may be unable to estimate the survey's scope, the amount of work, or the accuracy of the results expected. As well as a description of the sponsor's needs, and a statement of the end-use of the results, give some specific indicators of the scope and size of the project, such as:

- nature and complexity of the underlying problem
- definition of the population to be studied
- number of interviews, paper, and/or online questionnaires that need to be completed, if known at this time
- geographic area to be covered
- desired accuracy of results
- some indication of budget limitations.

14.4 Analysis and reports

The survey sponsor must identify what analysis and reports of the results are needed. Statistical analysis is a large subject in itself. Expert assistance may be needed about which analytical tools are most appropriate for the job.

Reports covering survey results may range in style from a comprehensive report, containing all available supporting material, to a condensed summary supported only by significant graphs or tables. In all cases the sponsor must request details from the supplier of the survey methodology (sample selection, method of collection, call backs or repeat contacts, quality control) because the methodology used can greatly affect the analysis and interpretation of results. Reports may also contain recommendations for action by the sponsor.

14.5 Materials supplied by the sponsor

Note the availability of background material, because it may affect the amount of work to be done by the supplier and/or the timing of the survey. Possible examples include:

- list of the survey population
- proposed sample
- draft questionnaire
- draft data dictionary for proposed dataset.

14.6 Relationship to other research

Some surveys are part of a larger research project, or in some cases the current survey is:

- exploratory and is to be followed up by more detailed surveys
- one of several surveys, each of which is dedicated to some part of a complex problem
- a detailed survey for which many of the concepts, assumptions, or baseline data was obtained from earlier surveys
- required to be consistent with other surveys to ensure that results are comparable over time or with surveys in other areas.

Unless you inform suppliers of such situations, the specifications may appear to be incomplete or based on unwarranted assumptions. Suppliers may be confused or misled about the precise scope of the work to be done.

14.7 Decisions already made

The decision to conduct and contract out a survey (or any part of it) may happen at any time during a complex review of a programme. Much of the context and any limitations within which the survey must be conducted may therefore depend on decisions already made. Considerable survey development work may also have been done before the decision was made to contract out the actual survey or some phase of it.

If any prior activities have established conditions or caused decisions to be made which affect the planning or running of the survey, describe them in the specifications.

14.8 Sponsor's operational requirements

Operational requirements may consist of:

- progress reporting timeline
- time restrictions, deadlines, and completion date
- how the privacy and confidentiality of the data will be managed
- technical requirements of the sample selection and questionnaire design – to determine if tools available to the supplier can meet these requirements
- access by the sponsor to completed questionnaires, or a dataset of individual information
- form and scope of the final report and/or datasets, level of detail, personal presentation, and interpretation of the findings
- approval procedures for survey and questionnaire design (including approvals under the Data and Statistics Act 2022 for surveys undertaken by Stats NZ)
- any other requirements particular to the research.

Many of these requirements will affect the price. For example, obtaining design approval may involve successive drafts, repeated trips, and many phone calls.

Realistic completion dates are important. The competitive attainment of a survey provider almost always takes several weeks. The chosen supplier requires time for background or exploratory research, planning, sample design, questionnaire preparation, pre-testing, and assigning survey staff.

Unless the sponsor allows sufficient lead time, the supplier will be forced to cut corners and the quality of the findings is likely to suffer.

14.9 Data requirements and timeline

If the supplier is building the survey and/or delivering data, an understanding of the data structure and delivery requirements should be specified early. Specifications could include:

- what information is required from the response data (and paradata and/or metadata if relevant), such as the level of detail, what is represented in the columns and rows, what wrangling, classification, or processing should be completed by the supplier
- the file format, any repositories or storage systems to be used for data delivery to the sponsor, and security measures to be implemented for data delivery
- when the data should be delivered and to what standard – whether a final dataset should be delivered at the end of collection, or an iterative dataset on a daily, weekly, or monthly basis
- how data quality will be managed and reported on and who will be responsible for issue identification and resolution (where possible).

Depending on the scope, relationship to other research, and outsourcing goals of the project, these tasks may be better specified by the supplier. The supplier and sponsor should also determine what the project priorities are in terms of budget, timeliness, and quality, and how these three parameters should be balanced in the data delivery.

14.10 Required qualifications of suppliers

When defining the research question and preparing objectives, the sponsor will note specialised skills or facilities which the supplier must be able to provide. The sponsor should outline these requirements in the specifications.

14.11 The supplier of survey services

Some organisations have developed particular research expertise and/or facilities, such as:

- in-depth interviewing
- face-to-face interviewing
- telephone interviewing
- mail questionnaires
- online questionnaires
- mailing services for questionnaires

- regular ‘omnibus’ surveys which collect information for clients from a pre-selected sample of known size taken from the general population
- structured panel surveys
- shopping mall interview techniques
- surveys in particular subject areas.

Still other organisations specialise in processing services, such as data capture and tabulation, or are active only in management consulting. Some supply simple cross-tabulations only, while others can carry out more sophisticated statistical analyses.

14.12 Locating suppliers

Regular purchasers of research generally have a list of organisations whose activities suit their needs. If you do not have such a list, find out about the qualifications and capabilities of each organisation before sending them an invitation to submit a proposal. You can find suppliers of survey services through an internet search under headings such as: research, management consultants, economic research, market research, marketing consultants. Marketing and social science departments of universities and polytechnics may also offer a contract survey service.

14.13 What a proposal should contain

A proposal should cover all the information required in the sponsor’s invitation to supply a proposal, and should not normally need further expansion or explanation. Survey providers should, in general, cover the following in their proposal document:

- their interpretation of the sponsor’s description of the project and its objectives, particularly if the original specifications are vague or if any details were expanded in discussion between the sponsor and survey provider
- a description of their proposed approach, when the approach and techniques were not outlined in the specifications or where they feel strongly that the sponsor’s approach is not suitable for the project
- a description of the proposed work plan including survey size, an outline of the type of questions to be used, methodology, quality controls, scheduling, and completion date
- a description of any subcontracting of part of the work to other companies or to individuals who are not their regular employees
- a description of the type and amount of resources planned for each phase of the project, particularly in the case of a large project
- a statement concerning any materials or services to be provided by the sponsor and their effect on the specified completion date
- a statement concerning any formal briefing sessions or other meetings requested by the sponsor
- a description of the reports to be presented to the sponsor, including progress reports and the final report
- acceptance or otherwise of terms and conditions
- price, with a reasonable breakdown of the survey by component, and the contribution of each component to the overall price

- identification of the staff members responsible for the survey and their qualifications
- related experience of the organisation and of those staff members designated to work on the survey
- stability of the organisation and the adequacy of its reserve resources to ensure the survey is implemented on schedule.

14.14 Proposal evaluation

Prepare criteria for evaluating proposals before you receive any. Some suggested evaluation criteria follow:

- The survey provider shows an understanding of the survey as specified in the objectives and information need.
- The sponsor's problem is analysed in the survey provider's proposal and demonstrates originality and creativity, if these are called for.
- The work plan is realistic and adequate. The various steps are spelt out adequately to show the levels of quality control to be exercised.
- The roles and responsibilities of the supplier are well understood between the supplier and the sponsor.
- The proposed work schedule is reasonable. If the schedule appears unbalanced, it may be that the organisation's resources are already heavily committed, and this project must wait its turn to use these resources. Consider whether rigid adherence to the schedule is important to the sponsor.
- The project control techniques are suitable and adequate for the type of project. It's clear when the sponsor will be informed of significant delays.
- The survey provider has resources in place to carry out the project or, if not, they have a clear plan for which phases they will subcontract. Some organisations are equipped to carry out only certain phases of a project and must subcontract other phases.
- The survey provider should indicate they have reserve resources available to cope with delays or unexpected problems.
- The survey provider should give evidence of financial stability and overall capability of meeting the contractual commitments.
- The proposal should identify the people who will actually work on the survey, or a list of partners or principals.
- The qualifications and experience of the designated individuals should be spelt out.
- The survey provider agrees to abide by the terms, conditions, and timing specified in the invitation.
- The price is competitive for the work proposed.

The process of evaluation needs to be undertaken carefully and ethically. It needs to be well documented. The task of evaluating the proposals may itself be contracted out.

14.15 The contract

After selecting the supplier, the sponsor needs to prepare a formal written contract to be signed by

both parties. The contract is extremely important. Legal advice may be necessary on the contract's terms and content.

14.16 Evaluation of a supplier's performance

On completion of a contract the sponsor should prepare an evaluation of the supplier's performance. This should be carried out promptly, while the relevant facts are fresh in the sponsor's mind. Points which could be covered in an evaluation include:

- a description of the work done
- the quality of the work performed when measured against the original specifications
- the quality of communication maintained with the sponsor during the project and in the interpretation of the survey findings
- the supplier's adherence to the schedule during the survey, and the timeliness of the final report
- comments regarding the possible selection of the supplier for any future contract.

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Appendix 1: Glossary

The bolded terms within these definitions have also been defined in this glossary.

Bias – The amount an estimate differs from a true population value because of some quality of a measurement instrument, sample selection method, or other aspect of survey methodology. This difference tends to result in a misrepresentation of what is being measured in a particular direction.

Computer coding – The computer allocates a **code** for a respondent's answer to a question. If no exact match exists, an operator may have to make a judgement. Automatic computer coding allows more consistent coding of question responses than manual coding.

Census – Involves surveying the total **population** of interest.

Computer assisted personal (face-to-face) or telephone interviewing – Allows interviewers to enter data directly into a computer database from a questionnaire displayed on a computer screen. This speeds up data collection and processing and reduces errors. Also known as CAPI and CATI.

Closed questions – Provide a complete set of alternative answers from which respondents select their choice.

Cluster sampling – A sample selection method where the sampling unit in the population units belong to natural groups (clusters). The population units are selected by first selecting some clusters and then selecting all or some of the population units within the selected clusters. In this form it is a two-stage sampling scheme. See **multi-phase sampling**.

Codes – Identifiers, usually numeric, which are assigned to represent responses or categories of information during processing.

Coding – The process of converting answers to survey questions into numerical form (**codes**) to help compile the survey statistics.

Cross-sectional study – In contrast to a **longitudinal study**, is based on observations at a single point in time.

Data capture – The process of transferring data from questionnaires to an electronic database in preparation for analysis.

Dataset – Data collected in a particular survey that is usually stored electronically.

Estimate – The value of an **estimator** for a specific sample.

Estimator – A rule or method of estimating a parameter of a **population**.

Filter question – A question asked to determine which subsequent questions (if any) will be asked.

Haphazard sampling – A non-probability sample selection method in which the interviewer arbitrarily selects respondents for the survey without using systematic or random selection methods. For example, casually asking passers-by, or casually selecting households.

Imputation – A method for entering a value for missing or unusable data.

Item or partial nonresponse – The respondent answers some questions but not others.

Judgement sampling – A non-probability sample selection method where respondents are selected according to a personal judgement about which members of the population will be surveyed. Also known as purposive sampling.

Level of confidence – The level of confidence required refers to a range above and below the estimated value which may be expected to contain the true value with a known probability. For example, a 95 percent confidence interval implies that if 100 samples were taken, we would expect the confidence interval to contain the true value in all but five cases. The greater the level of confidence required that the results fall into the range, the larger the sample size required.

Loaded questions – Questions that intentionally or unintentionally persuade the respondent towards a certain answer because of the way they are worded.

Longitudinal study – In contrast to a **cross-sectional study**, collects the same information at different points in time. See **panel survey**.

Measurement instrument – The means used to collect information. For example, for many surveys the measurement instrument is the questionnaire.

Metadata – Structured information that describes the characteristics, origin, structure, or context of data, helping users understand and work with the data more effectively.

Multi-phase sampling – A sample selection method where certain items of information are collected from the entire sample and other items from a subsample of the larger original sample. Typically only two phases or double sampling is considered. Here, a large sample of population units is selected and information that can be used to classify them into specified groups is collected. Then a subsample within each of these groups is selected and more detailed information is collected from them.

Multi-stage sampling – A sample that is selected by stages, where the sampling units at each stage are subsampled from the larger units chosen at the previous stage. For example, for a survey of individuals (the population units), a country may be divided into physical areas (the first-stage units). In the areas selected, dwellings are identified and some selected (the second-stage units). In the households selected, people are identified and some selected (the third stage and population units).

Non-response – A respondent refuses or is unable to provide the information requested.

Non-sampling error – Other errors present in surveys that come from sources other than sampling, for example, reporting error, processing error, non-response error.

Open questions – Questions that require respondents to provide an answer in their own words because a complete list of answer categories is not provided. See **closed questions**.

Paradata – Auxiliary data collected about the process of data collection itself, rather than the content of the data being collected. It provides insights into how data was gathered and can be used to assess or improve data quality.

Panel survey – A type of **longitudinal** study in which information is collected from the same sample (the panel) at several points in time.

Pilot survey – A small trial run, or ‘dress rehearsal’, of the entire survey process. It is completed before the final survey goes into the field, to alert the surveyor to any difficulties that were not anticipated. Pilot surveys are undertaken after **pre-tests**.

Population – The target population is the entire group of units about which information is desired. The survey population is the group of units which have a chance to be selected for the sample. The survey population should ideally be identical to the target population, but may not be exactly the same in practice.

Pre-test – A small trial run of questions, or of the questionnaire. The intention is to alert the surveyor to any unseen difficulties.

Probability proportional to size sampling – A **probability sample** selection method where the sampling units are given a chance of selection proportional to their size. It is often used in **multi-stage sampling** where each first-stage unit is selected with a probability proportional to size.

Probability sample – A sample selected so that each unit in the population has a non-zero chance of being included. This chance, in principle, can be calculated.

Purposive sampling – See **judgement sampling**.

Quota sampling – A sample selection method in which units are selected on the basis of achieving a specific number of units in the sample. Typically, but not invariably, these are non-probability samples.

Replicated sampling – A **probability sample** selection technique where different sample groups within the same population are surveyed so the results can be compared between the different groups.

Representativeness – The extent to which a sample has the same distribution of characteristics of interest as the population from which it was selected.

Routing instructions – Instructions to respondents or interviewers on which question to go to next.

Sample – A subset of the population that surveyors hope will be representative of the total population, and which will enable them to make generalisations about the total population.

Sampling error – An error resulting from collecting information from a fraction of the population rather than the whole population.

Sampling frame or frame – A list or notional list of the units in the population. A sample is selected from a sampling frame. For the sample to be representative of the population, the sampling frame should include all the members of the target **population** only once – though this may be not fully achievable in practice.

Sampling of volunteers – A non-probability sample selection method in which respondents are selected by asking for volunteers.

Selection probability – The probability or likelihood that a specific element from the population is included in the sample.

Simple random sampling – A **probability sample** selection method where each member of the population has an equal probability of selection.

Snowball sampling – A non-probability sample selection method in which respondents are asked to suggest additional respondents for the survey.

Social desirability bias – The tendency of respondents to answer a question in a way that puts them in a favourable light or won't make them look bad, for example, over-reporting good behaviour (for example, exercise) and under-reporting bad or undesirable behaviour (for example, drinking).

Stratified sampling – A **probability sample** selection method in which the population is divided into homogeneous groups (strata) and different sampling methods are applied to the different strata.

Systematic sampling – A **probability sample** selection method in which the sample is obtained by selecting every k th unit of the population, where k is an integer greater than 1. The first member of the sample must be selected randomly from within the first k units.

Variation – A measure of the variability within a **population**.

Appendix 2: Stats NZ's survey advice and other services

Stats NZ offers advice to the Official Statistics System for both social and economic survey design. We can also undertake surveys of national importance on a contract basis.

Questionnaire design

Our Data Concepts and Design team provides advice about questionnaire design and development.

Sample design

Our statistical methodologists provide technical advice on sample design.

Statistical classifications

Our Classifications and Standards team provides advice on the use of classifications for various topics. Using statistical classifications may save time, improve the accuracy of results, and make comparison with other statistics easier.

[Standards and classifications](#) has more information.

Customised data requests

Our Customised Data Services team produce data specific to your needs, to help you make a more informed decision. A fee applies for this service.

[Customised data services](#) has more information.

Data Lab

The Data Lab provides secure access to anonymised microdata for research. We are legally required to protect confidential individual and corporate information. A rigorous application process and strict eligibility criteria apply based on the requirements of the Data and Statistics Act 2022. Researchers can apply to access microdata for bona fide research or statistical purposes that are in the public interest.

[Apply to use microdata for research](#) has more information.

Data archive

We have a Store House that contains digitised publications, survey questionnaire forms, research, and older publications that are no longer on our website.

[Stats NZ Store House](#) has more information.

Appendix 3: Case studies and examples

To see some of the practices discussed in the guide used in real-life survey design, check out the following examples.

Annual Enterprise Survey (AES)

[About the Annual Enterprise Survey \(AES\)](#) has information about the AES, an annual financial collection that measures the financial performance and financial position of New Zealand businesses.

[Annual Enterprise Survey – DataInfo+](#) gives the sample design, data sources used, and how businesses are selected.

Household Labour Force Survey (HLFS)

[Household Labour Force Survey \(HLFS\) sources and methods: 2025](#) provides HLFS users with a technical description of the survey's sample design and other aspects, including collection methods, estimation and imputation processes, and coding and data processing procedures.

This example relates to chapters 5, 7, 8, 9, 11, 12, and 13 of this guide.

Sources of available information – Stats NZ

[Stats NZ website](#) has statistics available to be used in businesses, organisations, community groups, and central government.

While the releases don't focus on survey design, they include information on survey objectives, and sourcing already available information. This relates to chapter 2 of this guide.

Technical documentation – Ministry of Health

The Ministry of Health designs and runs many of its own surveys.

[Annual Update of Key Results 2023/24: New Zealand Health Survey](#) has information about the 2023/24 New Zealand Health Survey including the questionnaire and methodology.

These examples relate to chapters 4, 8, 10, 11, 12 and 13 of this guide.

Appendix 4: Questionnaire pitfall examples

Pitfalls with language

- Hard to understand or just badly written questions.
- Overly educated, complex or technical words and sentences.

Example

Do you engage in leisure time pursuits involving aerobic exercise during school vacations?

The words 'engage in' and 'leisure time pursuits' are unnecessarily formal, 'aerobic' is a technical term, and 'vacation' is not a term commonly used in New Zealand.

- Abbreviations that respondents may not understand.

Example

NEC or NFD

Passport no.

The abbreviations NEC (Not elsewhere classified) and NFD (Not further defined) are not widely understood. It may seem safe to use the shortened form of 'number' but some respondents, especially those with English as a second language, may be confused by it. The use of abbreviations depends on who the respondents are.

- Undefined terms or concepts.

Example

What was the income of your business last year?

'Year' may mean calendar year, March or June financial year, or even the 12 months that ends today. 'Income' also needs to be defined in terms of what is included and what is excluded, and whether it is before or after tax. Instructions on how to treat the income of subsidiary companies should also be given. Ensuring terms or concepts are well defined lets respondents know what sort of answer is expected.

Pitfalls with questions

- Ambiguity where it is hard to be sure what is being asked.

Example

How many people live in your household?

It is not clear to respondents if they should be including themselves in their response. Some may choose to include themselves, others may not, depending on what meaning they see. This ambiguity can be avoided by rewording the question in a clear and specific manner: “Including yourself, how many people live in your household?”

- Double or triple questions.

Example

During the last 12 months did your business import or export any goods?

☐ Yes

☐ No

Questions like this may make logical sense but respondents are likely to be confused about how to answer if they want to say ‘yes’ to one part and ‘no’ to another. This can lead to respondents giving an answer that is not true.

Example

Do you agree that buses, and trains, and taxis are kept clean?

☐ Yes

☐ No

Logically you must say ‘no’ unless you can say ‘yes’ about all three things, but people find this confusing.

- Unreasonable recall period.

Example

How many drinks containing alcohol have you had in the past two years?

- Questions that use double negatives.

Example

Do you agree or disagree that people should not be expected to obey the law?

People find it hard to work out that they have to disagree in order to say that, yes, people should be expected to obey the law.

- Questions that assume a state of affairs exists.

Example

What is the income of your spouse or partner?

- ☐ zero income
- ☐ \$1 to \$25,000
- ☐ \$25,001 to \$50,000
- ☐ \$50,001 to \$75,000
- ☐ \$75,001 or more
- ☐ not applicable

This question assumes that the respondent has a spouse or partner. Making inappropriate assumptions about a respondent and/or their living situation runs the risk of confusing or offending them. In both cases, a respondent is likely to skip the question because they think the question does not apply to them or is unmotivated to provide a response. Such questions lower respondent motivation to complete subsequent questions properly or might even cause them to drop out of the survey entirely.

The other error that they can make is to tick 'zero' because they have no partner. If there are no other questions about partners, the researcher may never realise this.

The solution is to use a filter question to find out whether the respondent does have a spouse or partner and then route them to the next part of the questionnaire they need to answer.

- Unbalanced scales and leading or loaded questions.

Example

How satisfied were you with this course?

- ☐ Very satisfied
- ☐ Satisfied
- ☐ Dissatisfied

This is an unbalanced scale – it has no negative category for ‘very dissatisfied’ nor does it have a neutral category for those who were ‘neither satisfied nor dissatisfied’.

If the person taking the course were asking the participants this question, students may feel pressured to say what they think the course facilitator would like to hear.

Example

How often do you get drunk?

This question is problematic in two ways. First, it assumes a state of affairs – that alcohol consumption is part of the respondent’s lifestyle.

Second, even if the question applies to them, people may not want to say that they get drunk, let alone how often. A social desirability bias may exist, where respondents tend to answer a question in way that puts them in a favourable light or won’t make them look bad. Under-reporting would be expected.

- Questions that require information, or a level of skill, which respondents may not have

Example

Give your electricity costs for the 2024 calendar year as a percentage of your electricity costs for the 2025 calendar year.

Most people will not have the information. Even if they have perfect records, and are willing to try to answer this question, they are likely to find the calculation difficult and get it wrong. Many respondents will not attempt it.

- Response options that are not mutually exclusive.

Example

What types of assets does your business hold?

- ☐ land
- ☐ real estate
- ☐ computers
- ☐ telecommunications equipment
- ☐ tractors
- ☐ plant and machinery
- ☐ other

A number of pairs of response categories overlap – land and real estate, computers and telecommunications equipment, tractors, and plant and machinery. Overlapping categories confuse respondents. For example, respondents who have tractors may tick the box marked 'tractors', or the box marked 'plant and machinery' or both. You will not know which assets have been indicated by a particular response. It will not be possible to analyse the resulting data in a meaningful way.

- Response options that are not exhaustive.

Example

How do you usually get the magazines you said you read?

- ☐ buy them
- ☐ borrow them from a library
- ☐ read them online

Other possible categories exist, for example, read them at work, or read them in a café. An 'other' category will give people an option if their situation does not belong in the categories provided. Pre-survey evaluation work should indicate whether there is likely to be a large number of different responses under 'other'. Whether this matters depends on the survey objectives.

- Response options that do not fit the questions.

Example

Some people say the new material given to students this month makes it easier to choose courses. Other people say that it has made no difference. Which of these is closest to what you think?

- ☐ made it easier
- ☐ made no difference
- ☐ I have changed my choices since seeing the new material
- ☐ don't know

The third response is not an answer to the question. It cannot legitimately be used as a measure of the number of people who have made a change.

- Response options that are presented in an illogical order.

Example

In general, how much difficulty do you have communicating about your feelings?
Would you say some difficulty, no difficulty, or a lot of difficulty?

Because the response options vary in intensity, it is potentially confusing to have 'no difficulty' in between 'some difficulty' and 'a lot of difficulty'.

- Question order that is likely to bias response.

Example

1. How important is career progression in evaluating your job satisfaction?
2. What factors do you think are important when evaluating your job satisfaction?

A question order bias exists here because asking the specific question about career progression before the broader question may make the respondent more likely to consider and mention career progression when responding to the general question.

A rule of thumb would be to organise questions by topics, with earlier questions being more general in nature and subsequent ones being more specific.

Pitfalls with the questionnaire

- Layout that is difficult for interviewers.

Example

Not counting payments from NZ superannuation (the pension), did you get payments from a NZ superannuation scheme in the last 12 months?

It is unclear for the interviewer whether parts in parentheses should be read out loud. The question needs to be rephrased as, "Not counting payments from NZ superannuation, also known as the pension, did you get payments from a NZ superannuation scheme in the last 12 months?"

- Layout that is likely to cause mistakes when answering.

Example

Nothing	☐
House broken into and/or burgled or vandalised	☐
Pocket picked or purse snatched	☐
Car stolen	☐
Money stolen	☐
Property damaged	☐
People attached	☐
Other (please specify)	☐

Another common problem is having options halfway between tick boxes or having too small a gap between because respondents may tick the wrong box.

☐ divorced/widowed	☐ never married	☐ married
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