

Visitor Research Group

Effective questionnaires for all

A step by step recipe for successful
questionnaire

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October 2001

Step 1 – first define your project

As with all evaluation before you do anything else answer these questions **in this order**:

- 1 What do I want to find out? Who do you want to find this out from?
- 2 Why do I want to find this out?
- 3 How will this information be used?
- 4 How will I find this out – choose your methodologies (note the plural) and sample?
- 5 Who am I finding this out for and how shall I tell them the results?
- 6 How much money do I have for this project? How many staff? How much time?

Step 2 – what type of survey do you want?

OK so you have chosen to do a survey. Here are your options for the type of survey you might want to conduct:

Self-completion questionnaires

- pick-up – left lying around on tables or in rubbish bins
- on-line – via email or pop-up windows on web pages

Interviews

- face-to-face
- telephone
- postal
- email

And here are some hints to help you make your choice of survey

Self-completion questions

Pros

- quick
- cheap

Cons

- no control over sample
- exclude people who can't write
- mostly get negative comments
- often very low return rate

Interviews

Pros

- can get representative sample
- can probe for more detailed / useful answers

Cons

- time consuming
- costly in terms of staff and money

Summary

Self-completion questionnaires are cheap but largely useless. You really don't have any control over your sample.

With self-completion questionnaires you have no chance of obtaining a representative cross-section of your audience. Children, hassled parents with children, people without a pen, people who cannot read or write English and people who are generally happy with the Museum, will not be included in a self-completion survey. Instead you will end up surveying a few highly motivated individuals who are often incredibly pissed-off about something. Interviews are more costly and time-consuming but give you much more reliable data.

The only time it is worth using self-completion questionnaires are:

- When you want to do a quick pilot study
- When you want to develop a formal customer complaints system
- When you can 'force' a representative sample to complete the questionnaire e.g. a school group who will be 'encouraged' and supervised by a teacher

A word or two about postal, email and web questionnaire

Postal questionnaires

Postal questionnaires can be a very effective method of interviewing people but you must get a return rate of at least 60% for the data to be consider reliable.

Your first letter will elicit a return rate of about 10-20%. Your second (reminder letter) will increase this to about 30-40%. Hopefully your third reminder (plus repeat copy of the questionnaire for all those people with hungry dogs) should get you a return rate of 60% plus.

Adding an incentive helps – but not all that much and be careful there are legal implications. Prize draws are now tightly regulated.

Email questionnaires

We have found email to be a particularly effective method of surveying adult visitors (NB around 80% of the Science Museum visitors have access to email at home or work. However, be warned this is not the case for many segments of the population).

Email questionnaires we use are entirely within the body of the email i.e. they are not an attachment.

We have found that Friday's are the best days to send an email questionnaire since many people receive and answer them at work. We generally get a return rate of 50-75%.

Web surveys

Web surveys – where a questionnaire pops up when someone enters a web-site or a particular part of a web-site – generally get a low response rate. On average only 2-3% of people visiting a web-site will complete such a questionnaire. A 5% return rate is considered to be very good. This means that data from such questionnaires must be treated with caution as it is likely that segments of the audience are not being included in the survey for one reason or another. To be fair though pop-up surveys are sometimes the only way to collect data about a web-site's audience profile.

It is worth adding a 'cookie' to the questionnaire so as not to annoy regular visitors who would otherwise be sampled every time that they enter the site. The use of a cookie should also prevent people from giving multiple replies but this system is not fool-proof and many people set up systems to stop cookies being loaded onto their machines.

Step 3 - quantitative or qualitative?

Do you want data that you can analyse statistically or do you want very detailed in-depth data? You need to decide before you choose your methodology since this will determine the type of questionnaire you design and the size of sample you will take.

Here are some questions that will help you decide:

1. Do you want to know how many people think or do something?
2. Do you want to find out what the majority view is?
3. Do you want to find out how views/behaviour vary according to age, gender, frequency of visiting the museum?
4. Do you need statistical data to convince your audience?
5. Do you want to understand why people do or think something?
6. Do you want to find out in detail what people think about something?
7. Do you want to find out about people's emotional response to something?
8. Do you want to explore the range of views that your audience have?
9. Are you expecting to collect a lot of data from each respondent?

If the answer is yes to questions 1-4 you need quantitative data. This means interviewing a sample of at least 100 people. But remember size of sample does not necessarily equate with quality of sample. The sample needs to be an accurate cross section of your audience and not exclude people who only visit on weekends or who don't enter the building by a particular entrance.

If the answer is yes to questions 5-9 you need qualitative data. This means interviewing people in much greater depth. The sample still needs to be carefully and rigorously selected but it will be smaller.

Examples

Quantitative research would be required if you were trying to find out ...

- Average length of stay in museum
- Whether the type of gallery visited is affected by the age of the visitor
- Whether visitors with experience of using the internet have a different perception of the exhibition

Qualitative research would be required if you were trying to find out ...

- Why visitors of different ages want to visit different types of gallery
- The range of views visitors hold about an exhibition
- Why visitors have such difficult understanding this exhibit

Small does not mean sloppy

Just because a qualitative sample is small does NOT mean that it should be sloppy. You should be just as rigorous in collecting a small sample for qualitative research as a large quantitative sample. Qualitative research is no less rigorous than quantitative research.

Summary

The choice of quantitative or qualitative data should be driven by the needs of the project. It may well be that you need both types of data in which case you have to design more than one type of questionnaire and sampling strategy.

Basically quantitative research is about finding out about **what** is happening while qualitative data is about finding out **why** something is happening.

Step 4 - choosing your questions (the big step)

Think about your visitors! What are they going to make of your questions? Will they understand what you are after? Are they willing and able to provide this information?

Visitors are not passive recipients of questions who respond in predictable ways to external stimuli. Visitors are trying to work out who you are, why you are asking these questions, how they appear to you, how they feel about themselves. They will be trying to work all this out from how you introduce yourself, your reaction to them, the questions that you ask and the options that you offer them. There are many opportunities to mislead and confuse visitors and this can have a dramatic impact on the quality of your data.

I would therefore recommend two key rules;

- i) Be clear about what you are trying to do
- ii) Clearly explain what you are trying to do to the interviewee

Ultimately the objectives of your research will decide your questions. Everything must be checked against these objectives. One useful strategy is to add to your first draft of your questionnaire a description of why you want to ask each question and what sort of answers you are expecting to get.

However you must also be sure that your interviewees understand your questions in the way that you want them to and can give the answers you require. This depends not only on the wording of your questions but also on your initial introduction, any further explanation you provide, who you interview, where you interview them and many other factors.

When you choose your questions you need to consider many factors. The following section will give you some broad outlines of what to do and what to avoid but the best course of action is to carefully test your questionnaire before you launch your full scale survey (see step 7). What you need to do can be summarised by the acronym TAP

Topic – the topic should be clearly defined for you and for the respondent so that you are both understand what is being talked about

Applicability – The applicability of the question to each respondent should be established. Respondents should not be asked to give information that they do not have

Perspective – the perspective that the respondent should adopt when answering the questions should be specified

Types of question

There are two main types of question and you need to be clear which you want to use and when. Have a look at this scene from everyday life.

Darren – aged 16 – lives at home with his parents Bob and Shirley. He has just been out with his girl-friend, Tracy, to see a film and has returned home around 1.00 am to find his parents are still up. Here's what happens next ...

Bob	You're home late?
Darren	Yeah
Shirley	Did you have a good time?
Darren	Yeah
Bob	Did you see that film?
Darren	Yeah we did
Shirley	Was it good?
Darren	Yeah it was OK
Bob	Did Tracy like it?
Darren	Yeah
Bob	So it was worth seeing then?
Darren	Yeah it was worth seeing
Shirley	I've heard a lot about it. Do you think I'd like it?
Darren	I don't know maybe (long pause) ... well ... I'm off to bed. Night.
Bob	Night son
Shirley	Goodnight sweetie-pie
Shirley	I don't know what's wrong with Darren these days he hardly seems to have two words to say to us.

What problems were Bob and Shirley having communicating with Darren? Was it just his age? Was it his hormones? What was wrong with their questions?

Open or closed?

Open-ended questions are those where visitors have to answer in their own words for example:

If you were describing this exhibition to someone who hadn't seen it yet what would you say it was all about?

What do you think we could do to improve this exhibition?

Open-ended questions:

- provide very rich data
- they do not constrain visitors to answering in your terms
- elicit much more detailed answers
- gain greater understanding of interviewee's opinions
- allows interviewee to raise issues you did not think of

But ...

- difficult to record answers – may be better tape recording interviews
- difficult & time-consuming to analyse data - need to categorise answers
- more difficult for visitors to answer
- interviewees may not give a relevant answer
- interviewees may not give a full and comprehensive answer – you must:
 - clearly define the **scope** of the question
 - explain the perspective you want the interviewee to take i.e. your point of view, you and your family; your community's points of view etc.
 - probe to ensure that interviewee has fully expressed their point of view and

Closed questions only offer (or appear to offer) a limited set of answers for example:

Which of the following age categories do you fit into?

How much did you enjoy this exhibition?

Closed questions also include the following type of question:

Yes/no questions

Have you visited the Science Museum before yes/no?

Number scales

On a scale of 1 to 5 where 1 is not interested at all and 5 is very interested, how interested would you be in using this exhibit in an exhibition? (and don't worry I didn't make this exhibit so I won't be offended by what you say)

1 2 3 4 5

Rating scales

How would you rate the following facilities provided in the Science Of Sport exhibition? I would like you to tell me whether you think they were very good, good, average, poor or very poor.

	very good	good	average	poor	very poor	don't know
staff						
hands-on exhibits						
information panels						
the shop						
value for money						

Scale of agreement

I am going to read you five statements I would like you to tell me whether you strong agree, agree, disagree, strongly disagree or neither agree or disagree with each statement

	strongly agree	agree	neither agree nor disagree	disagree	strongly disagree
Statement 1					
Statement 2					
Statement 3					
Statement 4					
Statement 5					

Beware! Danger!

Some crucial points about scale questions

1. Any form of scale you used must be symmetrical i.e. there should be as many positive as negative options. Don't use the sort of rating scales you see on those self-completion questionnaires in restaurants where you are offered options of;

absolutely fabulous excellent very good good ok poor

2. Always include an open-ended question after a rating scale question along the lines of ...

{If interviewee rates any service 'average', 'poor' or 'very poor' ask} What can we do to improve that?

If you don't do this you will never know why a service is failing unless you do another time-consuming survey

3. When analysing data from rating scales avoid the temptation of lumping people who are 'very satisfied' with those who are 'quite satisfied'. The behaviour, loyalty, needs and wants of the people who fall into these categories are very different and they should not be confused. If someone chooses 'quite satisfied' instead of 'very satisfied' that means there is something that they do not like.
4. Be aware that interviewees may not have any opinion about an issue. Therefore offer a 'no opinion' option. Otherwise you will get people choosing an answer at random, that does not reflect their views simply because they are trying to be helpful and complete all the questions you are asking them.
5. There is a tendency for interviewees to choose either the central or a positive option. Hence the distribution of answers will be skewed. Negative answers should therefore be considered as more significant. If you are getting 20% or so of your visitors rating something as poor or very poor you are looking at a serious problem.
6. It is often important to gauge not only people's attitude towards an issue but also how important this issue is to them. For example you might strongly agree that Michael Portillo's hair is very nice but this issue is of relatively little importance to you when deciding what political party to vote for.

Other examples of closed questions

Semantic differentials

Which of these words describes the way you feel about the exhibition? You can choose more than one. (Show card to interviewee)

<i>jumbled</i>	<i>arranged</i>	<i>None of these words</i>
<i>relaxed</i>	<i>tense</i>	
<i>trivial</i>	<i>educational</i>	
<i>awe</i>	<i>indifferent</i>	
<i>disappointing</i>	<i>entertaining</i>	
<i>informative</i>	<i>confusing</i>	

Multiple Choice

Which one of the following statements do you agree with most? (Show card to interviewee & circle the appropriate bullet point)

- (a) I am not especially interested in sports and rarely participate in sporting activities.*
- (b) I am a keen sports fan and regularly participate in sporting activities.*
- (c) I have no interest in sports and never participate in sporting activities.*
- (d) I have a general interest in sports and occasionally participate in sporting activities.*

Closed questions are ...

- easy for interviewees to answer
- data is easy to analyse - already in pre-defined categories
- easy to compare answers from different interviewees
- good for large sample quantitative surveys

But ...

- you will only get very limited responses
- restrict answers to pre-determined list
- don't allow visitors to raise unexpected issues
- don't allow visitors to explain or qualify their answers
- you must only offer a limited number of options – people on average can only hold 5-9 items in their short-term memory so don't overload them with options to choose from

**Beware! Danger! Rubbish
questions ahead**

Have a think about the following questions

Example 1

What's wrong with this question?

Hades Pharmaceuticals Ltd. test new cosmetics by squirting them into the eyes of lovely fluffy rabbits while the senior executives stand around laughing demonically. Do you feel that Hades Pharmaceuticals Ltd. are a responsible and caring company?

yes [] no []

OK I made this one up, but the next one I copied from a 'national voters' questionnaire' sent out by a certain UK political party.

At a time when Britain desperately needs a solid base for regeneration, the CBI recently reported that manufacturing output is growing at its slowest rate for more than two years. Do you agree with the view that we must actively invest in people, infrastructure and skills to bring about economic growth?

yes [] no []

Example 2

What's wrong with these questions?

Should the United States cut its defence budget and spend more on social welfare?

yes [] no []

Example 3

What's wrong with this question?

What is your favourite flavour of ice cream – why?

Example 4

What's wrong with these questions?

To what extent do you think PCR techniques have revolutionised forensic science?

Is it safe for research to be funded by companies?

Does the level of scientific interference in food worry you enough to change your eating habits?

Example 5

What is wrong with these questions?

How much do you earn?

How old are you?

When did you leave full-time education?

Where did you buy those clothes?

Are you male or female?

On a scale of 1 to 5 how stupid are you?

Example 6

Will you visit this exhibition again?

Will you buy this product?

Answers

There are a number of things to avoid when designing questionnaire. One is using **rubbish questions**. Here are some examples of questions best avoided. Depressingly many of these are examples from real questionnaires that were actually used on people.

a) Loaded questions

Questions where you give, intentionally or otherwise, hints about which answer you want.

Hades Pharmaceuticals Ltd. test new cosmetics by squirting them into the eyes of lovely fluffy rabbits while the senior executives stand around laughing demonically. Do you feel that Hades Pharmaceuticals Ltd. are a responsible and caring company?

yes [] no []

You need to watch out for emotive language which can sway interviewees answers. For example lets try and avoid questions such as;

Are the public well informed about recent scientific developments or are they deliberately left in the dark?

Are scientists 'playing God' with their research into genetics?

However occasionally you *do* need to load questions just to get visitors to answer them. For example visitors are often wary about being critical (because they are scared of you and think that you will give them a good slap if they say anything negative). Therefore it is worth loading a question to indicate that you are expecting them to be critical.

What did you like least about this exhibition? How can we improve that?

b) Double barreled questions

These are two (or more!) questions masquerading as one.

Should the United States cut its defence budget and spend more on social welfare?

yes [] no []

There is no way that you could analyse data from this question. Someone may say yes meaning 'yes the US should cut its defence budget' but not support more spending on social welfare. Or vice versa. The data collected with such a question is worthless.

Double-barreled questions can be very difficult to spot for example the question:

For whom do you think you will vote for in the next election?

This is actually two questions:

Will you vote in the next election?

For whom will you vote at the next election?

Watch out for any question that contains the words – and, or – e.g.

Do you distrust banks and building societies?

This is of course two separate questions – one about banks and one about building societies.

c) The dreaded 'why' question

What is your favourite flavour of ice cream – why?

What would you actually answer to the second part of this question? Why questions often force people to rationalise what are irrational actions and feelings.

The reason why visitors think or do something is often what you are trying to get at but you have to be more subtle about it. You can't just rush in with the dreaded why question. Get visitors to describe in concrete terms what happened, when, under what circumstances and how they felt. You can usually infer from the answers to these questions why they did what they did.

d) Ice-berg questions

These are questions which appear simple but actually assume that the interviewee knows a great deal and understands terminology that they may actually be unfamiliar with. For example:

To what extent do you think PCR techniques have revolutionised forensic science?

Here you are assuming that the interviewee knows what PCR techniques are. Maybe they do, maybe they don't, or worse still, maybe they *think* they do but actually they are thinking of something else.

Do you think the media reports science accurately?

Which media – all of it, some of it? Some people might say that the TV reports are accurate but that some newspapers are inaccurate. Yet this was (note **was**) presented as a simple yes/no option.

Is it safe for research to be funded by companies?

Which research? Which companies? All of it? Some of it? The majority? Again this was presented (yes **was presented**) as a simple yes/no option with no chance to qualify your answers. These questions are just too restrictive.

Does the level of scientific interference in food worry you enough to change your eating habits?

What on earth do they mean by ‘scientific interference in food?’ I truly and honestly don’t know. With all these questions it is not clear what is actually being referred to. Your interviewees might well be talking about something completely different to the intended subject of your question and you will not necessarily know this.

Finally you also need to be very careful about the terminology that you use in your questions. We use terms such as ‘gallery, exhibit, interactive’ which are not in our visitors’ vocabulary.

For example we have experienced problems with questions such as:

Do you feel the information in this exhibition is about right, too much or too little?

We have found that visitors give positive answers to this question even when we know that far too little information is given. Partly this is because we are assuming that they are talking about themselves. In some cases what they actually mean is ‘yes there is enough information in this exhibition for children but not for me but I assume this exhibition is not meant for me’. Of course they only have the option of choosing ‘about right’ ‘too much’ or ‘not enough’ so they cannot expand upon their answer.

The question ...

What do you feel about the information in this exhibition?

... is also problematic because they may answer in terms of the amount of information, the quality of information, the way that the information is presented or some combination of these.

e) Slap in the face questions

These are questions that are just frankly insulting. Here are some for you to try out on your visitors. Enjoy!

How much do you earn?

How old are you?

When did you leave full-time education?

Where did you buy those clothes?

Are you male or female?

On a scale of 1 to 5 how stupid are you?

These questions are great fun but do seem to have a detrimental effect on visitors so frankly are best avoided. Believe it or not some of them we have in the past actually ask people. Can you guess which ones?

f) Hypothetical questions

Don't ask visitors to predict their future behaviour.

Will you visit this exhibition again?

Will you buy this product?

Predicting the future is a tricky business. People are notoriously inaccurate at predicting their future behaviour. Questions such as the ones above (apart from being too vague and unfocused, will yield unreliable data. It is much better to ask people about their past behaviour and then extrapolate from that to predict what they might or might not do.

Public opinion polls asking people about their voting intentions now ask not only 'how will you vote?' but also 'how did you vote last time?' They then adjust their figures accordingly to estimate the number of people who say they will do one thing but end up doing something else.

But you must also be cautious about interpreting people's recall of past events. Interviewees are prone to three types of error:

- Forgetting
- Time compression i.e. remembering things as being more recent than they were
- Rationalising decisions after the event

Other things to look out for

- When thinking about the sort of research questions you are trying to address it is important that you are clear whether you want general answers or specific answers. Do you for example want people to comment about the exhibition as a whole or about specific exhibits in the exhibition? Often people mistakenly ask questions that are too general and vague. This causes interviewees to select specific aspects of a topic to comment on. These answers are almost impossible to analyze since they only cover some of the possible options and different interviewees will focus on different aspects of the topic.

For example the question

Why are you visiting the museum today?

The answers to this question could include –

'Because my son wanted to visit'

'It is raining today'

'I wanted to see the steam engines'

'For a fun day out'

- and so on. The problem is that an interviewee could fall into more than one category. They might want to have a fun day out and their son suggested going to the museum and while they are in the museum dad wants to see the steam engines. A more effective line of questioning would be:

Who decided / wanted to visit the museum today?

What are you hoping to see in the museum today?

What are you hoping to get from your visit today?

- Watch out for words that have vague or ambiguous meanings in particular phrases where the interviewee is going to have to make their own judgment about what you mean:

Regularly

Frequently

Usually

Seldom

Often

Rarely

- Watch out for words or phrases that have different meanings in different cultures or different age groups. For example the word 'school' in the UK covers education from 5-18 years. In the USA 'school' also covers what would be called university in the UK. Similarly watch out for words with moral over-tones.
- Watch out for complex questions – e.g. sentences too long, too many options, qualifying clauses, unfamiliar or ambiguous terminology.
- Watch out for negative statements. Double negatives are notoriously difficult to understand. But even single negatives can be hard to interpret and require the interviewee to interpret the question carefully and accurately. For example the question -

Isn't a robin a bird?

- is far more difficult to interpret and answer than the question than

Is a robin a bird?

Double negatives can appear unintentionally. For example on rating scales that include the options disagree and disagree strongly, coupled to negative statements such as 'teachers should not be paid more money'.

- Visitors are often reluctant to be critical so don't ask them if maybe perhaps they might have some criticisms. Ask them what they liked least about the exhibit.
- If there is one overwhelming important thing to be addressed by the survey ask several different questions about this issue e.g. an open-ended question followed by a closed question and then a concluding question at the end of the interview. Generally at least one of your questions will not work so for really important issues have back-up questions
- Get visitors to describe what has happened / how they have or do feel rather than how they might feel or what they will do. People are more honest and accurate about the past than future. People are notoriously unreliable in predicting their future behaviour.
- There is a very complex relationship between people's attitudes and their actual behaviour. For example voters may believe that taxes should be increased to provide funds for health and education but they do not vote for political parties that advocate such tax increases.

Summary

- Good questions are:
 - reliable – consistent measures that can be compared when taken at different times / places
 - valid – answers correspond to what you intended to measure
 - as short as possible
 - clear and simple – no use of jargon
- Bad questions are:
 - too brief or incomplete
 - poorly define and ambiguous
 - complex – compound sentences, double negatives
 - poorly targeted e.g. asking children what sort of bank account they have
 - emotionally loaded
 - double-barreled

Step 5 – adding prompts and probes

One of the major weaknesses of open-ended questions is that visitors often do not give relevant or comprehensive answers. Visitors will not always understand your questions or will not immediately give a full and considered answer. Therefore you **must** include additional questions that will clarify what you are asking and encourage visitors to say more. These need to be written on the questionnaire as you do not want your interviewees making up questions on the spot.

Probing questions are ...

- pre-defined questions that ask interviewees to expand on their previous answers
main question
'What do you think this exhibit is trying to show people?'
probe question
'What do you think it was trying to show people about ...?'

Prompting questions are ...

- pre-defined questions that re-phrase a main question
- prevents interviewees from ad-lib'ing (a mortal sin please note)
- if they can't answer after the prompt mark as 'don't know' and move on

If an interviewee gives an incomplete answer you need to do one or more of the following:

1. Ask the question again – where the first answer given was not relevant
2. Ask the prompting question – where the first answer given was not relevant or no answer was provided
3. Ask the probing question – where the first answer was very limited; where you need to clarify what the interviewee has said or where you suspect that the interviewee has more to say

Step 6 – Think about the order of questions you are going to ask

The order in which you ask your questions can have a dramatic impact on the answers you get. You therefore need to consider very carefully how to structure your questionnaire.

Visitors' answers can be affected by the following three influences:

A: Priming

Their answers to previous question restrict the range of topics that they then go on to talk about.

For example an interviewer asks someone a general question such as:

Do you think things will improve over the next 5 years?¹

The interviewee might answer in terms of employment, the environment, health care, social security, education, the economy or many other topics or combination of topics. The interviewer writes down their answer without any further comment or attempt at clarification and continues with further questions. The interviewee trying to work out what the interviewer wants assumes not unreasonably that the topic they have mentioned is the topic and only topic, that the interviewer is interested in. Hence they continue to talk about this, and only this topic.

B: Anti-priming

This is where an interviewee answers a question and is later asked another related topic. Because the interviewee has already mentioned something in the previous answer they assume that the interviewer does not want to hear about that again so deletes that topic from their response.

C: Consistency

People like to be seen to be consistent in their views. Of course in many cases we are not consistent. However the temptation is to adapt one's answers to appear to be consistent.

For example you will get different answers to the question ...

Do you think National Service should be brought back?

... depending on whether you ask this set of preceding questions ...

*Are you worried about the rise in teenager crime?
Do you think this is caused by a lack of discipline?
Do you think that schools currently provide adequate discipline?*

... or these questions ...

Are you worried about the danger of war?

¹ (note this is a terrible question don't ever use one like this!)

*Do you think it is dangerous to teach young people how to kill?
Do you think it is wrong to force people to join the armed forces against their will?*

How to structure a questionnaire

In order to avoid the problems of priming, anti-priming and consistency it is worth applying the following rules;

- Clearly explain what the purpose of the survey is at the beginning of the interview. Ask if the interviewee understands your explanation and provide more information if required.
- Use a funnel structure to the questionnaire i.e. start with general open-ended questions, probing to ensure that the interviewee has express a full and comprehensive answer. Then move on to more specific focus questions about the topics of interest.
- Check your questionnaire for potentially leading questions. Are you forcing people to give a particular answer because of what they have already said?
- Add prompting questions or clarifying statements if there is any possibility of interviewees misunderstanding the nature of the question you are asking.
- Use probing questions to ensure that the interviewee has covered all of the topics you are interested in.

Step 7 - pilot your questionnaire

You should always pilot a questionnaire on 10 or so visitors before you start the main evaluation. You should aim to pilot your questionnaire in two ways – try out the questions to see what answers you get and ask a small group of visitors to paraphrase your questions back to you. This latter pilot is to check whether people understand the aim of your questions.

Look at how people have responded to the questions – is it how you intended them to? Modify the questionnaire and then test it again.

Even after you have piloted your questionnaire one or two questions will fail. So make sure that you have two or three versions of the really crucial questions.

Step 8 – decide on your sampling strategy

Now answer these questions

- Who are you going to interview?
- Why are you interviewing these people?
- Do these people represent an accurate cross-section of your target audience?
- Where and when can you find these people? Can you get to these people?
- Do they present any particular problems e.g. language, not enough time to be interviewed, location, communicable diseases etc?
- Will these people actually be able to provide you with the information that you require?

Size isn't everything

The size of sample does not necessarily equate with quality of sample. The sample needs to be an accurate cross section of your audience and not, for example, exclude people who only visit on weekends or who don't enter the building by a particular entrance etc.

A large sample is not necessarily a representative sample

A common fallacy one often comes across in quantitative research, is that a sample must be representative because it is large. A classic example of was the Literary Digest's 1936 opinion poll for the US presidential election. This survey consisted of the largest sample ever taken – 2.4 million individuals and predicted a clear victory for the Republican candidate against the incumbent, President Roosevelt, by a margin of 57% to 43%. In fact Roosevelt won by a huge landslide - 62% to 38%. The cause of this massive error was mainly due to the skewed sample the Literary Digest took which over sampled affluent Republican voters. This was because the Literary Digest used telephone directories and club membership lists to select interviewees. Poorer people, who overwhelmingly voted Democrat, tended not to have telephones nor to belong to clubs.

As a rule of thumb, for quantitative analysis you should have at least 100 cases in each important sub-group. For example if your audience profile is

Individuals	10%
Families	30%
Adults in couples or groups	40%
Schools	20%

Then you will need a sample size of 1000 so that you get at least 100 answers from individual visitors.

There is not enough room here to explain in detail how to design an effective sampling strategy but any social science text book will give you some guide-lines. What is set out below is only a brief introduction.

Different types of samples

There are two main types of sample – probability and non-probability samples. A **probability sample** is one where every member of a population has an equal chance of being selected. The resulting sample is said to be representative.

In a **simple random sample** you select people at random. However these samples have limitations. For one thing it is often very difficult to ensure that every individual in the population are included in the sample frame to ensure that they have a chance of being selected.

Stratified samples are where a population has been divided into homogeneous groups (strata) and a simple random sample is drawn from each group. This division of the population into strata is based upon prior knowledge of the population under study. This helps to ensure that all members of a population have an equal chance of being selected and reduces the chances that certain people are left out of the sampling frame. The criteria used to divide the population must be correlated with the variables being studied. For example suppose you thought that men and women may answer a key question in different ways. If you took a simple random sample of your visitors you might end up with a sample which is 80% male and 20% female thus making any comparison very difficult. In such a case it would be better to divide the population into two strata – male and female – and randomly sample equal numbers from each strata. It is important that a minimum number of people are included in each strata e.g. 20 people in each category. If you are not careful you will end up with a highly stratified sample of many categories requiring a massive number of interviews.

Cluster samples are where a population is grouped into small clusters and then a simple random sample of the clusters is taken. Every individual in that cluster is then sampled. This is often done because it is more convenient to sample every person from one unit (e.g. school, hospital etc) than to sample a few individuals from every school, hospital or whatever.

Systematic sampling starts with a randomly chosen individual and then selects every xth person thereafter. But watch out that you are not accidentally selecting certain types of people. For example suppose you took a systematic sample of classes in a school. Each year is divided into five classes denoted a, b, c, d, e. Suppose you decided to sample each class denoted a i.e. 1a, 2a, 3a and so on. It might be that the school uses a streaming system whereby the most able students are allocated to class 1a, 2a etc. (Believe it or not this is exactly what was done in my secondary school). In this case you would only be interviewing the most able students.

A **non-probability sample** include **convenience samples** those collected by accident on the basis that those were the people who were available e.g. first 50 people to leave the Museum. They also include **purposive samples** where people are chosen because they are subjectively judged to be representative a particular population. Quota samples are samples which aims to represent the larger population on the basis of previous knowledge about that population. For example you might know that 99% of people who

attend yoga classes are female. Therefore you ensure that 99% of your sample of yoga attendees are female. The problem with quota samples is that they may lead you to under-represent certain categories of the population that were not part of the definition of the quotas.

For all these short-comings non-probability samples often these are the only samples that can practically be taken. For example you may only have two months to sample your audience hence you cannot take a truly random sample of your annual audience. You may want to talk to people from a community but for various reasons you can only reach those who attend the local community centre.

Non-probability samples are quick and easy to collect but may be biased and not representative of the whole population.

Filter questions

You may want to de-select some people from your sample e.g. people who do not have any children, people who have not seen the exhibition yet, etc. In this case you need to include selecting questions to select out people early on. Here are some examples:

- 1a Do you have any children under the age of 15 years
yes / no?
{If no thank and close; if yes go on to Q1b}
- 2 Do you or any of your immediate family work in any of the following?
{Read out list. Circle appropriate response}
advertising marketing market research public relations
journalism museums exhibition design or management
{If yes to any of these thank and close interview; if no go on to Q3}
- 3 Have you attended a market research discussion group within the last
12 months? yes / no
{If yes thank and close; if no go on to Q4}

Summary

Be honest about the limitations of your sampling strategy. State the assumptions you have made and what effects these are likely to have upon the reliability of the data.

Step 9 – Now collect your data

This means talking to visitors. Remember visitors are trying to work out what you are doing and why, and how they should present themselves. Your behaviour – what you say, wear, your body language, what you do and do not write down – all have an impact on the visitor and what they say. Honestly, openness and clarity are often the best approaches to getting useful, reliable and valid data.

First of all think about what a visitor feels like when they are approached to take part in an interview. Here are some things that will be going through the visitors' mind:

- 'Who is this person? Is he safe?' - explain who and what you are
- 'This is going to take forever' -give them an estimate of how long it will take
- 'What is he trying to sell?' - quickly & simply explain what you are doing & why
- 'Where are you taking me? Will I ever see my family again?' - reassure them not very far; show them where you want them to go
- 'I'm I going to look stupid?' - quickly dispel this impression
- 'Am I on Candid Camera?' - no all information is confidential

Key things to do when interviewing people

- introduce yourself (wear a name badge and carry id)
- say where you are from
- explain what you are doing and why
- say how long it will take – anything more than 10 minutes you will probably need to provide seating and some form of incentive.
- ask permission of accompanying adults before interviewing people 16 or younger
- only take the response of the interviewee – this can be tricky as you sometimes encounter siblings, friends or partners of the interviewee who believe that they should be the ones being interviewed. Use your body language to indicate who you are talking to. Make it clear whose answers you are writing down. Maintain eye-contact with your interviewee. Repeat the question to the interviewee if necessary.
- give interviewees time to think and answer, don't just take their first response probe – visitors will often initially say 'I don't know'. This actually means 'give me a moment to think'. If you wait they will usually then go on and give you an answer.
- be careful about your intonation when you read out the questions e.g. the question 'why did you buy that book?' has different meanings depending on whether you stress the words 'why', 'you', 'buy', or 'that'
- inform members of staff - front of house, warders – what you are doing
- only have one questionnaire visible at a time – avoid having a giant stack of paper on your clip-board as it looks like the questionnaire is massively long
- never, never, never ad-lib not ever – stick to your script always!
- do not slap, kick or bite interviewees

Example of an introductory paragraph to be read to all interviewees

Hello, my name is ... and I work here at the Science Museum. We are asking people who have been to the Science Of Sport exhibition what they think of it to help us plan new temporary exhibitions in the future. Would you mind answering a few questions? It will only take five minutes.

Step 10 – now process and analyse your data

Firstly ...

**Never, Never, Never, Never,
Never, Never, Never, Never,
Never, Never, Never, Ever ...
churn out raw, unprocessed
data and call it a report
NOT EVER!**

It may seem a strange thing to say but you do have to analyse your data. I have received so many 'reports' which actually consist of transcribed interviews or long lists of answers. These are unreadable and useless. It is analogous to going to a restaurant, ordering a meal and then being given the raw ingredients by the waiter and told to go into the kitchen and prepare it yourself.

Whether your data is qualitative or quantitative you first need to sort your data in categories. Data from closed questions will of course already be in categories. Data from open-ended questions will need to be sorted.

How to sort and categorise your data

- i) Number each questionnaire – this will help you keep track of your data.
- ii) For each question list all of the answers you received in tables or on cards.
- iii) Divide your answers into categories sort the answers into no more than 20 categories at first.
- iv) Then merge these 20 categories into no more than 6-10 including a don't know and a miscellaneous category. Produce a **code book** which clearly and unambiguously defines and describes in detail each category. This will ensure that you are consistent in assigning answers to categories and that you know what each category means when you come to writing your report.
- v) There will be some overlap between these categories but don't worry too much about this. The boundaries between the categories are always going to be a little fuzzy. Also visitors may well have given more than one answer to a question. In such cases code this as two or more answers.
- vi) Check the miscellaneous category – it should contain no more than 10% of your answers. If there are more than 10% of the responses in 'miscellaneous' you have probably got another category in there by mistake
- vii) Check your allocation of answers
- viii) Tabulate the results – the aim is to display your data in a form that you can quickly review the results. From this tabulation you can ask questions of the data and write the report.

A box of socks

Do not stick too rigidly to the structure of the questionnaire – your respondents may not have done so. With less structured interviews you will find that respondents will answer questions before you have had a chance to ask them or go back to other questions you have asked previously. When you come to categorise the data you need to unpick this tangle of answers and assign them to the relevant question.

Remember to leave yourself enough time to analyse your data. It will take you at least as long to analyse data as it took to collect it. But be pragmatic if you need to get the report finished by the end of the week don't spend six months analysing the data.

Analysing your data – Quantitative data

Once all of your data has been processed you can start to analyse it. Quantitative data will need to be analysed statistically. You will be looking to correlate respondents' answers to their answers to other questions and/or to their demographic/psychographics profile.

There is not enough room here to discuss this in detail. I would strongly recommend using the statistics software package SPSS (Statistical Package for Social Scientists). This is easy to follow and can be used for a range of statistical processes from simple averages to really complex multi-factorial analysis. Information about SPSS can be obtained from

SPSS (UK) Ltd - 1st floor St. Andrew's House, West Street, Woking, Surrey, GU21 1EB;
<http://www.spss.com>

I have also found the following book to be a friendly and readable introduction to statistics for a complete novice.

The cartoon guide to statistics by Larry Gonick & Woollcott Smith (HarperPerennial)

Analysing your data – Qualitative data

Once you have categorised and tabulated your data start asking yourself the following questions

- In very general terms how common are the different responses – did everybody say that, most people, only one person
- Who said what? Can you divide your respondents into different types?
- What might be the underlying causes of these differences – age, gender, prior knowledge, the prompting given? Did adults say different things than children?
- What were the sequences of events
- Look at best and worst case scenarios – how did that person succeed/fail? Look at those out-lying cases they can often be very insightful.
- What did people not say? It is important to look at what people have failed to say or do.

Remember this is qualitative data so you should NOT be using percentages.

Step 11 – Now do something about it!

It is never enough just to do the evaluation. Remember the following

- Doing evaluation is the easy bit getting things changed is the hard part
- Only one person will read the report – you! Assume you are working in a pre-literate culture. You must go and **tell** people what you have found out.
- Keep on telling them – remember you are an audience irritant!

Suggested Reading

If you would like to do some background reading here are three books I would recommend as a starting point.

Constructing questions for interviews and questionnaires – theory and practice in social research by William Foddy (1994) published by Cambridge University Press ISBN 0-521-46733-0

Tainted Truth – the manipulation of fact in America by Cynthia Crossen (1994) published by Simon & Schuster) ISBN 0-617-79285-7

Qualitative Data Analysis by Matthew B. Miles & A. Michael Huberman (1994) published by Sage ISBN 0-8039-5540-5