

Asking the Right Questions: Designing a Survey That Works

Presentation Notes

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Before you even begin to design a survey, you need to determine whether or not a survey is the appropriate methodology for answering your research questions. Surveys are best for measuring important outcomes that you are able to anticipate. Generally speaking, they should not be used for exploratory research.

Surveys depend on “self-reporting” which makes them better for measuring some things than others. Surveys are best for measuring attitudes, perceptions, and opinions. Surveys are weak for behaviors, depending upon the time between the experience and the survey. The longer the time between the experience and the survey, the less likely you are to get good information on the behavior. Surveys are weakest for measuring skills. They can be used for measuring confidence in a skill, but not as an objective measure of level of skill.

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There are 8 basic steps to designing a survey that works. This workshop will cover the first five steps.

Step 1: Establish the goals of the project. What do you want to learn?

Step 2: Determine whom you will survey. Identify your sample.

Step 3: Determine the questions to be asked. Link your research aims with individual questions.

Step 4: Write the questions. Select the question type and specify the wording.

Step 5: Format the survey. Decide on layout and question sequence.

Step 6: If practical, pre-test the survey.

Step 7: Conduct the survey. Depending upon the survey format, you may need to input the data.

Step 8: Analyze the data.

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The first step in any survey is deciding what you want to learn. The goals of the survey determine whom you will survey and what you will ask them. If your goals are unclear, the results will probably be unclear. The more specific you can make your goals, the easier it will be to get usable answers.

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In order to determine who you will survey, the first concept you need to understand is the difference between a population and a sample. To create a sample, you first need to identify your population. The **population**, also called the universe or the target population, is the group of people to whom you want to generalize your findings. A **sample** is a part of the population from which it is drawn. **Sampling** is the act, process, or technique of selecting a representative part of a population for the purpose of determining characteristics of the whole population. The goal of sampling is to determine a population’s characteristics by asking only a portion of the population. If information is obtained from the whole population, it’s called a census, not a survey.

Often, the population you end up surveying is not the population you really wanted because some part of the population cannot be surveyed. As long as the portion of population from which the sample is able to be drawn is a high proportion of the larger population, the results obtained should also be true for the larger population.

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There are three main benefits to sampling, one of which may surprise you.

First, in most cases, a sample survey costs less than a census. If fewer people are surveyed, fewer surveys need to be produced, administered, and analyzed.

Second, because there are fewer surveys administered and collected, they can be completed more quickly and there is usually a shorter turnaround time for results.

Finally, and this is the one that may surprise you, sampling can lead to more precise results. If conducted properly, the results of a sample can be generalized to the entire population. A census has no sampling error when the whole population participates. However, if the whole population does not participate, you essentially end up with a sample that was not collected in any random or uniform way. Therefore a random sample can be more precise, or representative. If you don't believe this yet, hopefully you'll be more convinced by the end of the workshop.

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There are three types of bias or error related to sampling that you need to keep in mind.

Sampling error is the degree to which a survey finding differs from its true value due to the fact that the survey was conducted with only one of the many possible survey samples. This is what is usually referenced as the "margin of error". This fluctuates depending upon the size of the sample relative to the population. When you do a census, there is no sampling error as long as the whole group participates in the census.

Coverage error is the degree to which a survey finding differs from its true value due to the fact that the sample used doesn't properly represent the target population. That is, some members do not have a known, non-zero probability of being included in the sample. For example, your population is audience members and you draw your sample from the list of email addresses but you do not have everyone's email address. The survey mode is not providing complete coverage of the population.

Non-response error is the degree to which a survey finding differs from its true value due to the fact that those who responded to the survey differ in some way from those that did not respond to the survey.

There is some, but not much, you can do to prevent these types of error.

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Samples can be drawn in several different ways. We will focus on three types: simple random sampling, systematic sampling, and convenience sampling.

A **random sample**, also known as a probability sample, is the most accurate of all. Let's be clear about what we mean by random. In common speech, random means anything will do, for example, "some random person off the street". But the meaning of random used in statistics is much more exact. In a random sample, every member of the population has an equal, or known, chance of being included in the sample. If some people have a higher chance of selection than others, it is not random.

With a random sample, the first step is to determine the sampling frame. The **sampling frame** is a list of all of the members of the population. Some examples of sampling frames are email addresses for all ticket buyers, your membership database, or a registration list for a workshop. Don't worry, if you do not have access to a sampling frame, there are still ways to do a random sample without one.

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A **systematic sample** is a proxy for a simple random sample when no list of the population exists, or the population is too large, or the sampling frame is not computerized. The first step in systematic sampling is to identify the length of the sampling interval. The sampling interval is equal to the size of the population divided

by the size of the sample. Once the sampling interval has been set, select the first person on a random basis and then select additional people at evenly-spaced intervals.

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What does systematic sampling look like in the real world? In a visual arts setting, it may mean on any given day, handing a survey to every 50th visitor. In a performing arts setting, it may mean putting a survey in every 20th program or on every 20th seat.

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A **convenience sample** is a matter of taking what you get. It is an accidental sample. The main source of the problem with convenience sampling is the proportion of the population that volunteer to participate. If too few of the population volunteer, you must wonder what is so special about them and there is usually no way of finding out how those who volunteered are different from those who didn't. Convenience samples are generally treated with suspicion.

There is a natural tendency to think that the best approach to surveying would be to offer a survey to everybody and if the number of surveys returned is large enough, the lack of sample design isn't important. If you take this approach, you will have results, but you will have no way of knowing how representative the respondents are of the population. You may not even know who the population is.

Don't get me wrong, all survey research involves some element of volunteering. There is no fixed line between a convenience sample and a random/probability sample. The main difference is that in a convenience sample, the volunteers make all the effort. The less effort that goes into distributing questionnaires to particular individuals and convincing them that their participation is worthwhile, the more likely it is that those who complete and return the survey will be a very small, and probably not typical, section of the population.

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The next thing to decide is how many people you want/need to survey.

You do not need to collect a lot of information from every single visitor/audience member all of the time. It will waste both your time and that of your constituents. For most research a representative sample is sufficient. Consulting a greater number of people doesn't make your results more valid or more representative. A huge sample will take a long time to analyze and is not likely to give you different information than a smaller representative sample. What is more important is who you ask. You need to ensure they are representative of your target population overall, for example, same proportion of male/female, different ethnicities, age ranges, geographies.

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For the majority of surveys, the sample size is between 200 and 2,000. A sample below 200 is useful only if you have a very low budget and little or no information about the population. A sample size of 2,000 is probably a waste of time and money unless there are many subgroups of the population that must be studied in detail.

If you don't vitally need such large numbers, and have more funds than you need, don't spend it on increasing the sample size beyond the normal level. Instead spend it on improving the quality of the work. Better still, do two surveys: a small one first to get some idea of the data, then a larger one. With the experience you gain on the first survey, the second one will be of higher quality.

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A common misconception about determining sample size is that as the population size grows, the sample size needs to grow proportionately. This is not true. When you have a small population, you will need to survey a larger percentage of the population to get a representative sample. As the size of the population grows, the percentage responding needed for the same level of accuracy decreases.

Here is a non-technical example:

Imagine that you have a bowl of soup and you don't know what flavor it is. So you stir the bowl of soup, take a spoonful and sip it. The bowl of soup is the population and the spoonful is the sample. As long as the bowl of soup is well-stirred, so that each spoonful is a random sample of the soup, the size of the bowl is irrelevant. If the bowl was twice the size, you wouldn't need to take two spoonfuls to assess the flavor, one spoonful would still be fine.

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There are four principles for good survey question construction:

- #1: **Brevity** – Create the shortest way to ask a question without losing its intent.
- #2: **Objectivity** – Use neutral words.
- #3: **Simplicity** – Use language that is simple in both words and phrases.
- #4: **Specificity** – Ask precise questions.

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There is a potential source of bias that is related to how survey questions are written. **Measurement error** is the degree to which a survey finding differs from its true value due to imperfections in the way the information was collected. The respondent's answer is inaccurate or imprecise as the result of questionnaire design and wording, the mode of survey delivery, or poor instructions.

This is the one type of error that is very much within your control.

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The 2012 Kubla Khan Tours of Xanadu survey produced by the Knowitall Educational Travel Company is an example of a poorly designed survey (See **Ineffective Survey Handout**). Take a few minutes to review the survey and jot down all of the problems that you can find with the survey. (For answers see **Ineffective Survey Answers Handout**).

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Always begin your survey with an introduction that explains the purpose of the survey. For online surveys, it is helpful to provide an estimate of how long the survey might take, particularly if the survey is on more than one screen. If you can, offer an incentive or prize for taking the survey. Incentives can entice up to 50% of the people who would not normally complete the survey. Vouchers are most effective in longer surveys, while prize draws are best in short surveys.

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Demographic data is data about the characteristics of people, such as age, income, and zip code. When it comes to demographic questions, people need to know why we want such detail and what we intend to do with it. It is

usually best to ask for demographic or personal information toward the end of the survey when presumably respondents will have developed confidence in the survey's objective.

Here are some suggestions for collecting demographic data:

- Age – People will be more likely to respond if you ask for year of birth or for an age range rather than just asking for their age.
- Race/Ethnicity - The wording in the Census is what has historically directed how race/ethnicity questions are asked. Using the same wording as the Census enables comparisons of your population data to regional population data. Currently race/ethnicity is captured in two questions, one multiple choice question about race (using the following categories: White, Black or African American, American Indian and Alaska Native, Asian, and Native Hawaiian and Other Pacific Islanders) and one yes/no question about Hispanic/Latino origin.
- Income data – People will be more likely to respond if you ask for household income in ranges rather than just asking for their income.

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Survey questions can be either open-ended or close-ended. There are advantages and disadvantages to each.

Open-ended questions allow respondents to answer in their own words. **Close-ended** questions have pre-written responses with either a small or large set of potential choices.

Open-ended questions allow for the collection of richer, more detailed information. They also reduce the likelihood of response bias because they require the respondent to generate the response rather than choose from a list of prescribed options. Open-ended questions are good for the following uses:

- Measuring attitudes or feelings
- Determining likes and dislikes
- Eliciting memory recall
- Getting opinions
- Allowing for additional comments
- Collecting quotable quotes

One disadvantage of open-ended questions is that they take more time and effort to fill out. Respondents may find it difficult to express themselves in writing. This can lead to open-ended questions having a larger skip rate. Their biggest disadvantage is that they're time consuming and difficult to analyze. If you find that you have to fall back upon open-ended questions, then you don't know enough about the subject matter to conduct a broad-based survey. You need to do some exploratory research first, like interviews or focus groups.

Close-ended questions are generally easy and quick to answer and are more easily analyzed. The disadvantages to them are that the wording of each choice, the number of choices, and the order of the choices can all influence how people respond. If not crafted carefully, the choices may seem leading and therefore be irritating or threatening to the respondent.

There are two subtypes of close-ended questions, dichotomous and multichotomous. Dichotomous questions have two answer choices, such as yes or no. Dichotomous questions are prone to a large amount of measurement error because the alternatives are polarized. Question wording is even more critical in dichotomous questions. Multichotomous questions are multiple choice. In multichotomous questions, the answer choices should cover all possible answers expected from that question. If only one response is allowed, the answer choices must be mutually exclusive, that is unable to all be true at the same time.

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Here are three types of questions you should avoid.

1. **Loaded** questions contain emotionally charged items like words, stereotypes or prestige images or have an unjustified presumption built into them.
2. **Double-barreled** questions have more than one part, idea, or meaning, but allow for only one response.
3. **Leading** questions encourage respondents to answer the question in a certain way.

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Rating scale questions ask respondents to choose one response category from several arranged in some hierarchical order. Rating questions are useful for determining the prevalence of an attitude, opinion, knowledge, or behavior.

Unipolar rating scales measure the presence or absence of a quality or attribute. Only one extreme is anchored. For example: Not at all satisfied, Slightly satisfied, Moderately satisfied, Very satisfied, Completely satisfied.

Bipolar rating scales measure either positive or negative responses to a statement. They are anchored on both extremes. For example: Completely dissatisfied, Mostly dissatisfied, Somewhat dissatisfied, Neither satisfied or dissatisfied, Somewhat satisfied, Mostly satisfied, Completely satisfied.

Whenever possible, a unipolar scale will be the better choice. Unipolar scales are less mentally taxing for the respondent. You're also less likely to get a unipolar scale wrong. In a bipolar scale, there is potential for choosing attributes for both poles that are not in fact polar opposites, further confusing respondents. If a bipolar scale is used, the anchors must possess opposite meanings. A good approach is to preface the positive scale anchor with "in-", "un-", or "not". Many bipolar scales actually measure only one dimension. If "not at all X" is synonymous with "Very dis-X", then use the unipolar scale instead.

Balanced (or symmetrical) scales have equal amounts of positive and negative positions. Unbalanced scales have an unequal number of favorable and unfavorable response options. Generally, rating scales should be balanced. The only justification for using an unbalanced rating scale is in a situation where it is known in advance that virtually all respondents are leaning in one direction.

A forced choice rating scale is one in which the neutral option has been removed. This is a hotly debated issue among researchers, with very little consensus. Neutral options provide an easy out for respondents who don't want to express their opinion. On the other hand, the neutral response can be a valid response.

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There are three potential respondent biases with the use of rating scales.

Central tendency bias is the tendency for respondents to avoid using the extreme response categories. The stronger the anchor, the less likely respondents will be to select it.

Acquiescence bias is the tendency for respondents to agree with statements as presented. This bias can be mitigated by using an equal number of positive and negative statements.

Social desirability bias is the tendency for respondents to try to portray themselves in a more favorable light.

Here are some rating scale best practices:

1. Use fully labeled scales without showing respondents any numeric ratings
2. Use common rating scales where possible (See **Common Rating Scales Handout.**)
3. Use at least 4-point scales when rating against one attribute (unipolar)*⁰
4. Use at least 6-point scales when rating against polar opposites (bipolar)*

*These best practices are not universally agreed upon.

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Ranking questions require the respondent to rank all the choices listed according to a level of specification, for example, level of importance in your decision-making. The advantage of a ranking question is that it guarantees that each item ranked has a unique value. The disadvantages of ranking questions are that they force respondents to differentiate between items that they may regard as equivalent; they return different results depending on the completeness of the list of items being ranked; and they limit the range of statistical analysis available. Ranking questions should not be analyzed using averages. You can only report the percentage of respondents that gave a certain rank.

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Response rate is defined as the percentage of people that respond to your survey. Your response rate equals the number of completed surveys divided by the number of people contacted. Response rates are more important when trying to make generalizations to a larger population and less important when you're trying to gain insight.

Here are some tips for maximizing your response rates:

1. Request participation in advance.
2. State the purpose of the survey.
3. Allow enough time to complete the survey.
4. Design an easy to follow survey.
5. Offer an incentive.

The better you know your respondents, the more likely you will have a higher response rate.

Some statistics about response rates in email surveys:

1. 50% of email surveys are completed within 12 hours.
 - ✓ 65% within 24 hours
 - ✓ 80% within 48 hours
 - ✓ 90% within 3 days
2. Personalization of the email can lift response rates by 7% or more.
3. The likelihood of the email being read is higher if it is sent mid-week after 12pm.
4. Sending out one reminder email can generate 15% more responses.

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Survey fatigue leads to lower response rates, which in turn leads to reduced statistical accuracy. Survey fatigue means that those with extreme views are more likely to respond leading to serious bias. The main take away is to use random sampling. If you have ongoing interactions with the same people, don't send a survey invitation to everyone, every time.

The Tragedy of the Commons is an economic principle in which every individual, acting independently and rationally, tries to reap the greatest benefit from a given resource. As the demand for the resource overwhelms the supply, every individual who consumes an additional unit directly harms others who can no longer enjoy the benefits. It is the unintentional/inadvertent depletion of a shared resource. We, as a sector, do not want to deplete the resource that is the arts participant by over surveying them.

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To summarize, here are the main principles of survey design:

1. **Keep it short.** Keep the survey as short as possible. Resist the temptation to turn it into an "all things for all people" survey. More people will complete a shorter survey. If a question is not necessary, don't include it.
2. **Make it attractive.** Always consider the layout of your survey. You want to make your survey attractive, easy to understand, and easy to complete. Paying attention to the layout will reduce the likelihood of errors on the respondent's end when answering and on your end when coding.
3. **Build a rapport.** Always include a short introduction. Explain the purpose of the survey, an estimate of how long the survey will take and, if possible, offer an incentive or prize for taking the survey. Ideally, early questions in a survey should be easy and pleasant to answer. Initial questions should grab the respondent's attention and encourage them to continue the survey. Whenever possible, leave difficult or sensitive questions until near the end of the survey. Any rapport that has been built up will make it more likely that respondents will answer these questions. If they quit at that point anyway, at least they will have answered most of your questions. Thank your respondents at the end of the survey. This also helps build rapport with the respondent, possibly increasing the likelihood that they will participate in future survey invites.
4. **Design questions carefully.** Use open-ended questions judiciously. Open-ended questions take longer and can be challenging to answer. Open-ended questions also require extra time and resources to review the responses. For close-ended questions, whenever there is a logical or natural order to answer choices, use it. Answer choice order can make individual questions easier or more difficult to answer. Make sure you include all the relevant alternatives as answer choices. Leaving out a choice can give misleading results. When in doubt, include an "Other" option. Avoid asking two questions at once. You will have no way of knowing if the response applies to only one part of the question or to both. Avoid

technical terms and jargon. Use language familiar to participants. If you must use an acronym, spell it out the first time it is used. Group similar questions together. Have your questions build on one another in a logical manner.

5. **Allow for additional comments.** Leave space at the end of the survey for general comments. Sometimes respondents offer casual remarks that are worth their weight in gold and cover some area that you did not think of, but they consider critical.
6. **Don't over survey the same people.** Think through your entire survey program before you conduct your first survey.