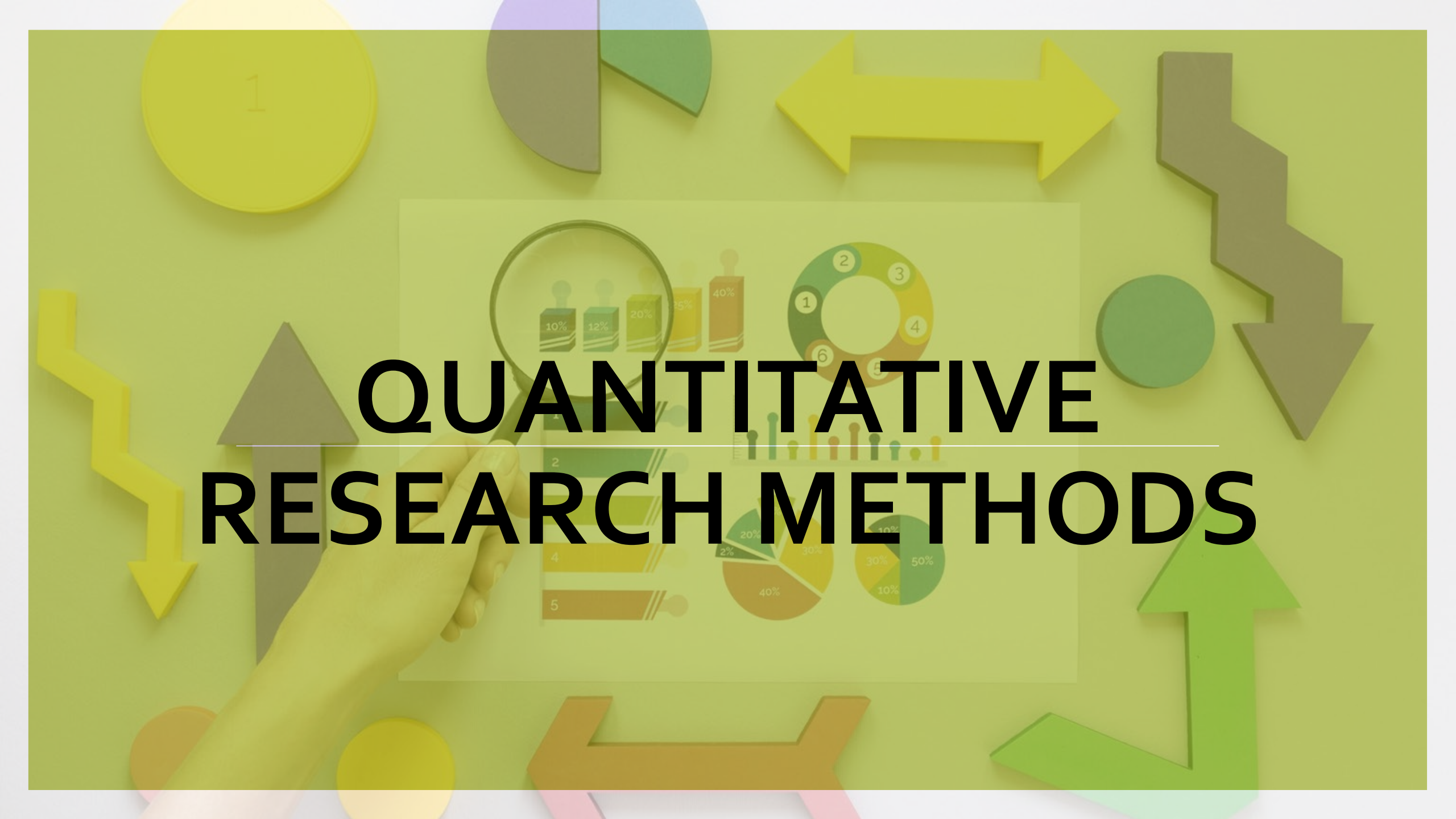




QUANTITATIVE RESEARCH METHODS

What Is Quantitative Research?

- Quantitative research is the process of collecting and analysing numerical data.
- It can be used to find patterns and averages, make predictions, test causal relationships, and generalise results to wider populations.



What Is Quantitative Research?

- **Objectivity** – Researcher neutrality is emphasised; data and findings should not be influenced by personal bias or interpretation.



What Is Quantitative Research?

- **Measurability** – Concepts are translated into measurable variables that can be quantified and analysed.



What Is Quantitative Research?

- **Statistical Analysis** – Uses mathematical and statistical tools to summarise, describe, and test relationships between variables.

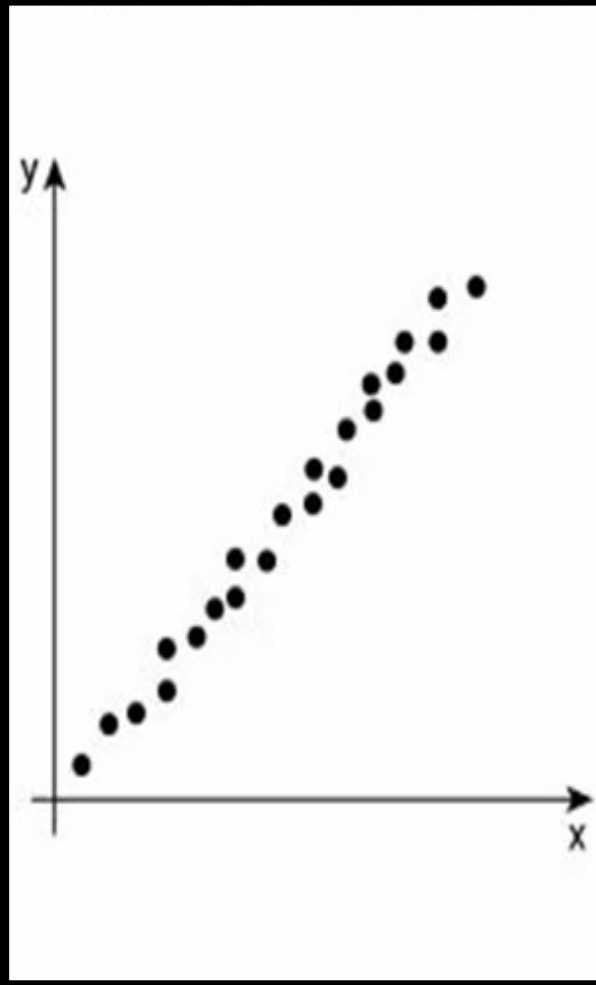


What Is Quantitative Research?

- **Replicability** – Procedures are standardised and transparent, allowing other researchers to repeat the study and verify results.

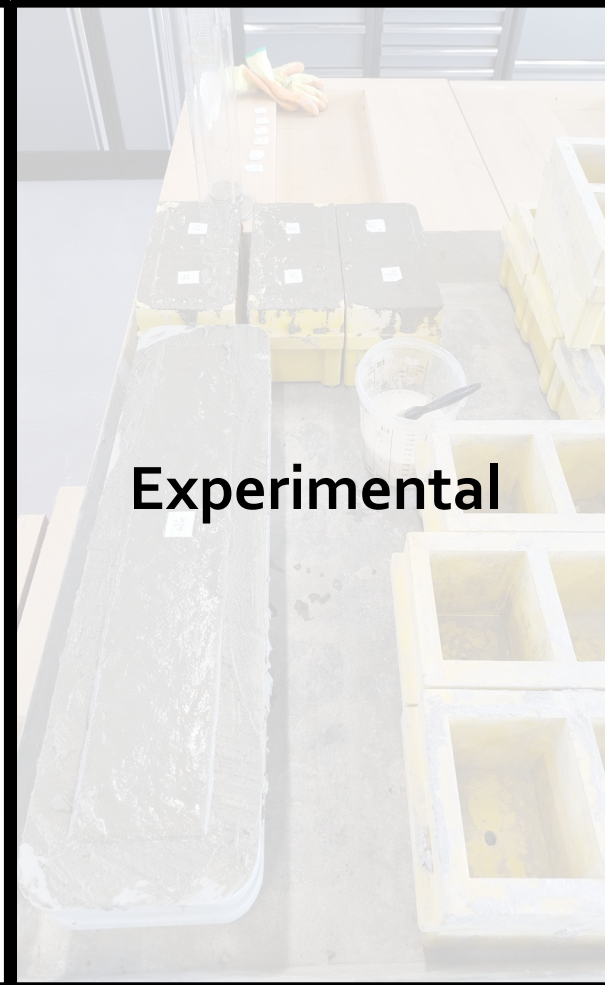
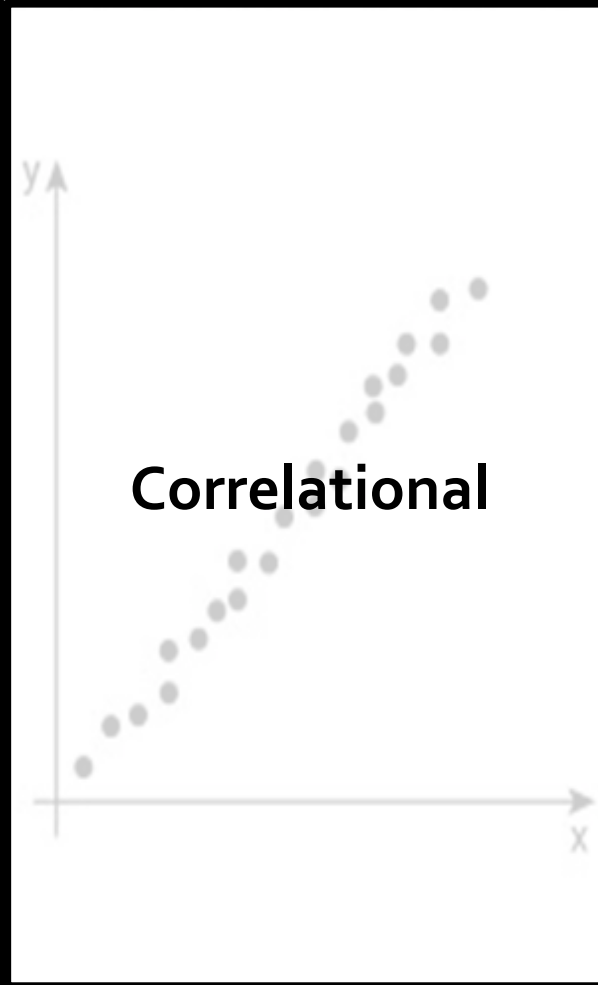


Types of Quantitative Research



- There are different types of quantitative research methods, including descriptive, correlational and experimental studies.

Types of Quantitative Research



- Each method has its own strengths and limitations and can be used to answer different research questions.

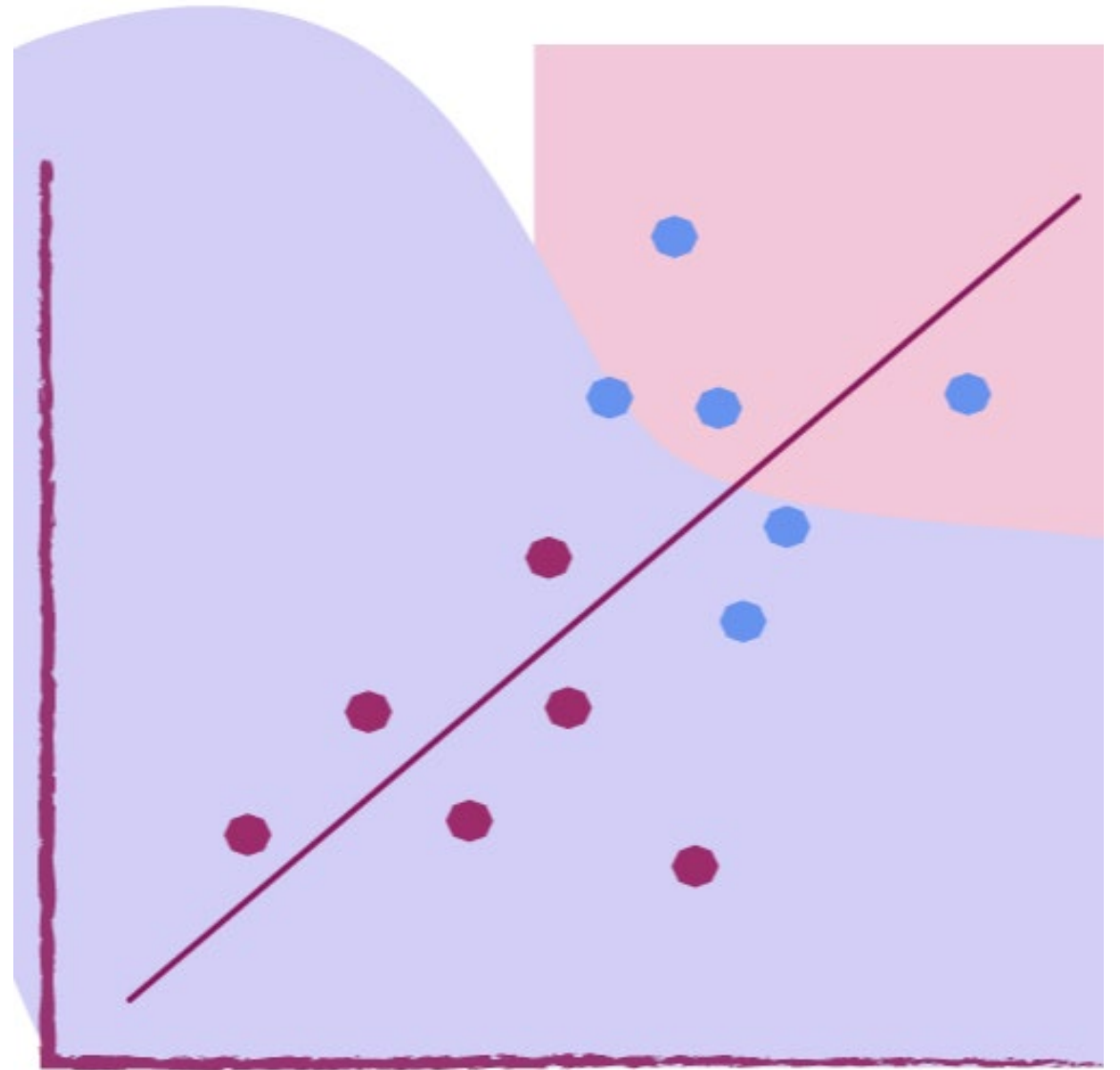
Types of Quantitative Research

- In descriptive research, you simply seek an overall summary of your study variables.



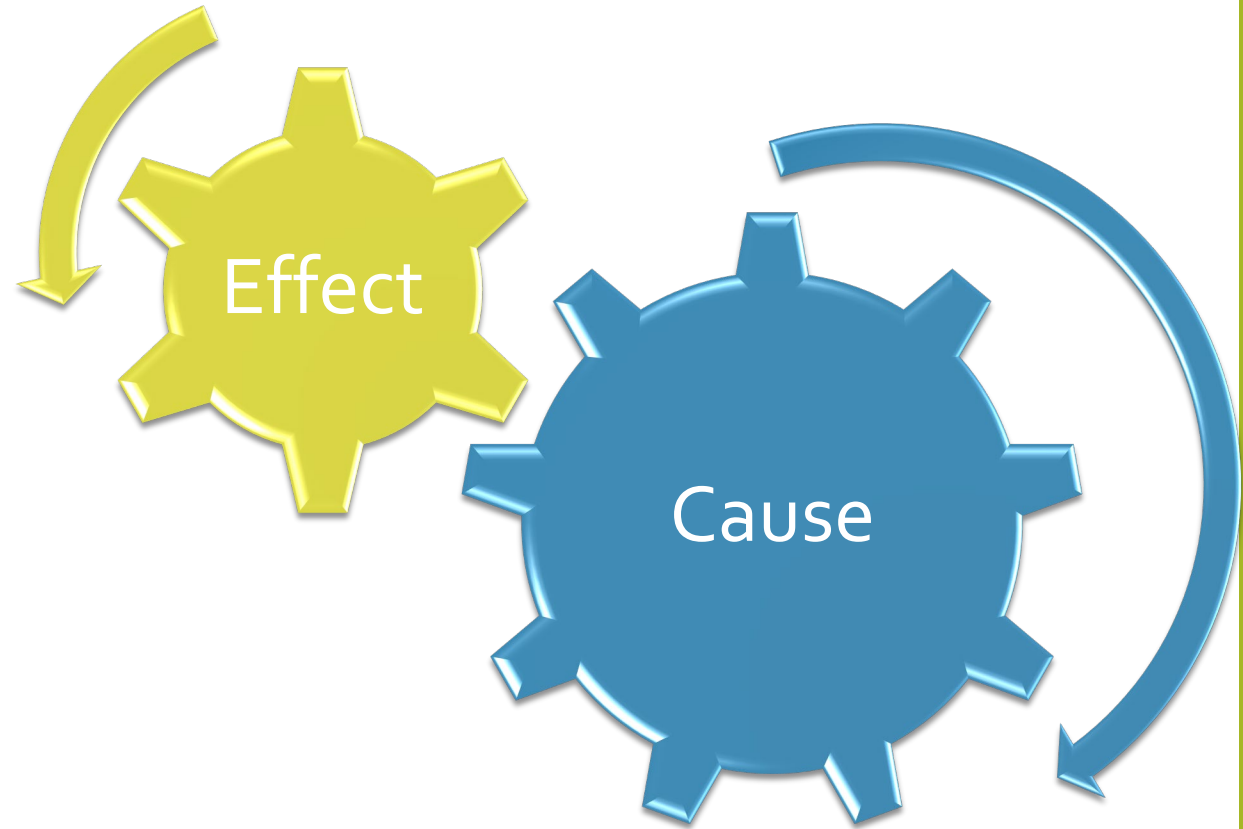
Types of Quantitative Research

- In descriptive research, you simply seek an overall summary of your study variables.
- In correlational research, you investigate relationships between your study variables.



Types of Quantitative Research

- In descriptive research, you simply seek an overall summary of your study variables.
- In correlational research, you investigate relationships between your study variables.
- In experimental research, you systematically examine whether there is a cause-and-effect relationship between variables.





Data Collection

- Data collection is the process of gathering information from the sample using various methods, such as surveys, experiments, or observations.



Data Collection

- It is important to ensure that the data collection process is reliable and valid to produce accurate results.

Surveys

Surveys are a commonly used quantitative research method to measure people's opinions, attitudes, and behaviours.





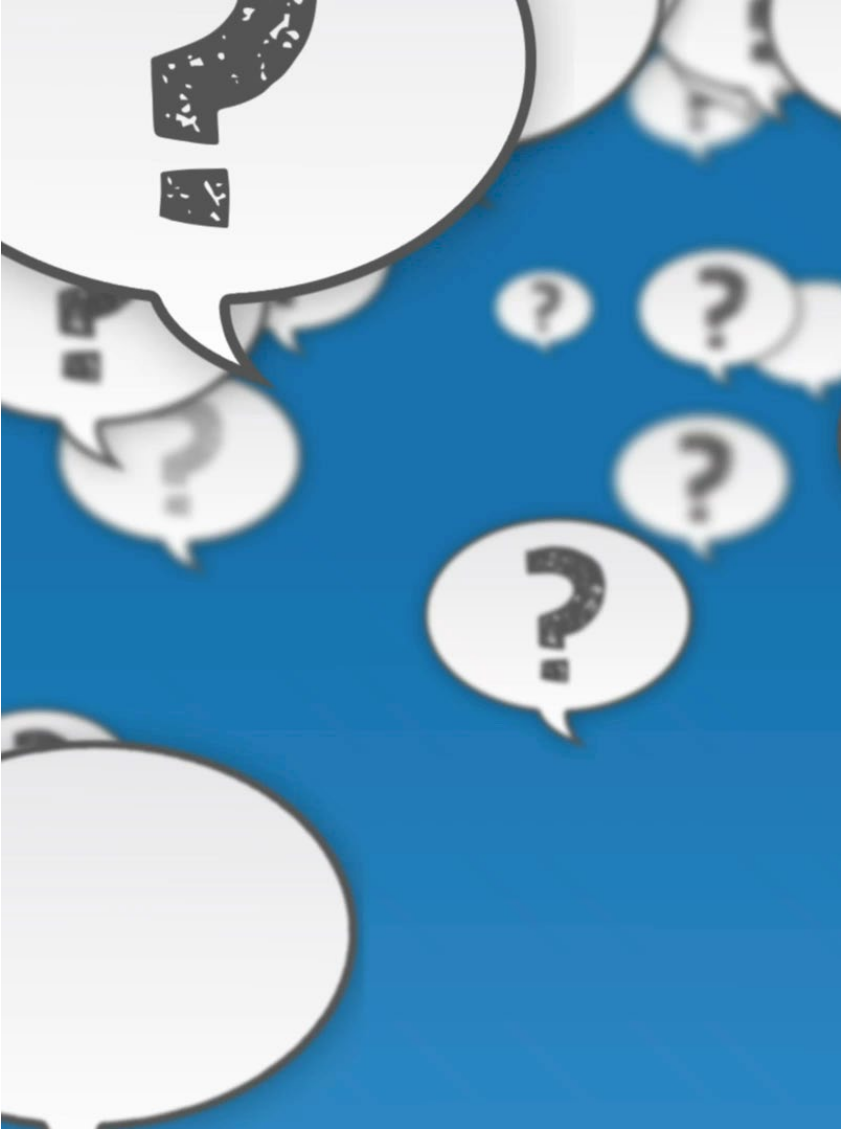
Surveys

Surveys can be conducted online, over the phone, or in person.

Surveys

Surveys can provide valuable insights into people's opinions, attitudes, and behaviours.

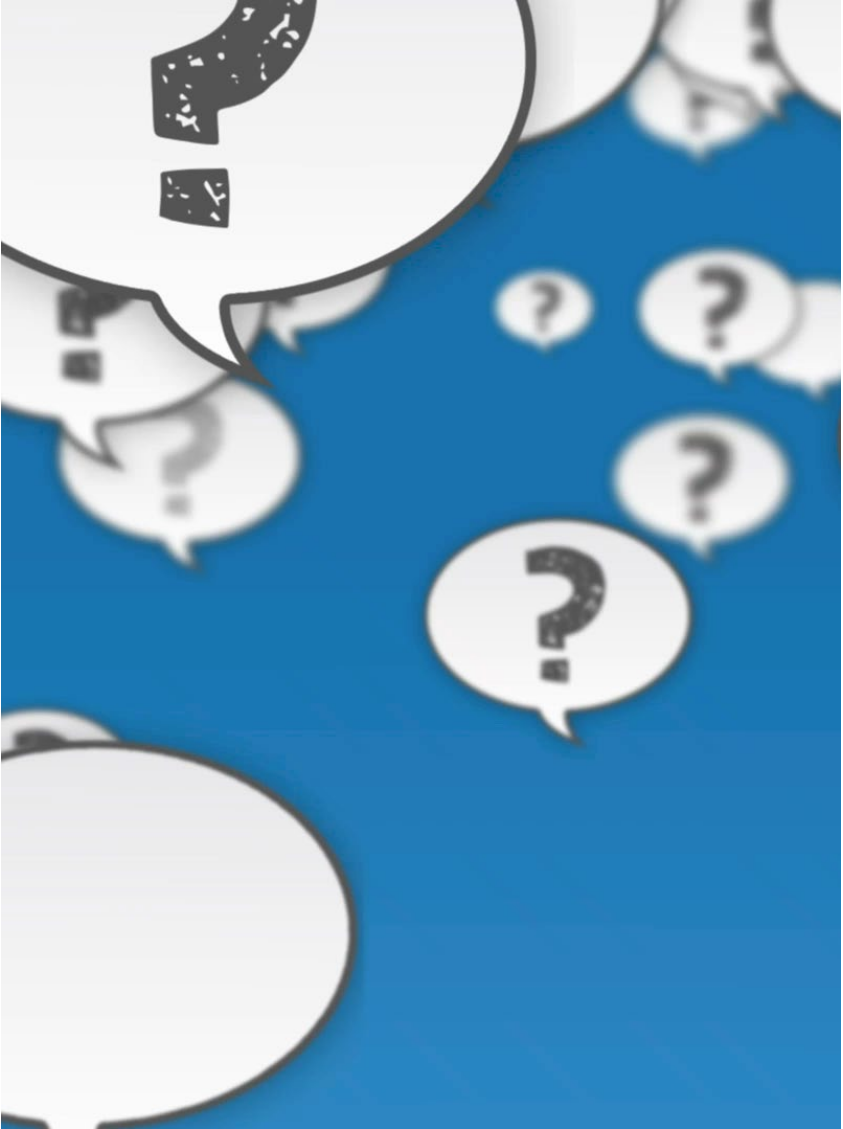




Questions

There are two basic types of survey: closed-ended, open-ended or a combination of both.

- A closed-ended question is one where people are offered a predetermined set of options.



Questions

There are two basic types of survey: closed-ended, open-ended or a combination of both.

- A closed-ended question is one where people are offered a predetermined set of options.
- An open-ended question is where the person responding *must* use their own words to provide an answer.

Closed Ended Questions

Yes /No

- Yes/No questions are a simple type of closed-ended question where respondents choose between two straightforward options: "Yes" or "No."
- These questions are designed to quickly capture a fact, preference, or decision.

Closed Ended Questions

Yes /No

- Yes/No questions are a simple type of closed-ended question where respondents choose between two straightforward options: "Yes" or "No."
- These questions are designed to quickly capture a fact, preference, or decision.

Multiple Choice

- Multiple-choice questions present respondents with several possible answer options, and they must select one (or sometimes more, if instructed).
- This format is used to capture specific preferences, behaviours, or demographic details, giving a clearer picture of choices among a limited set.

Likert Scale

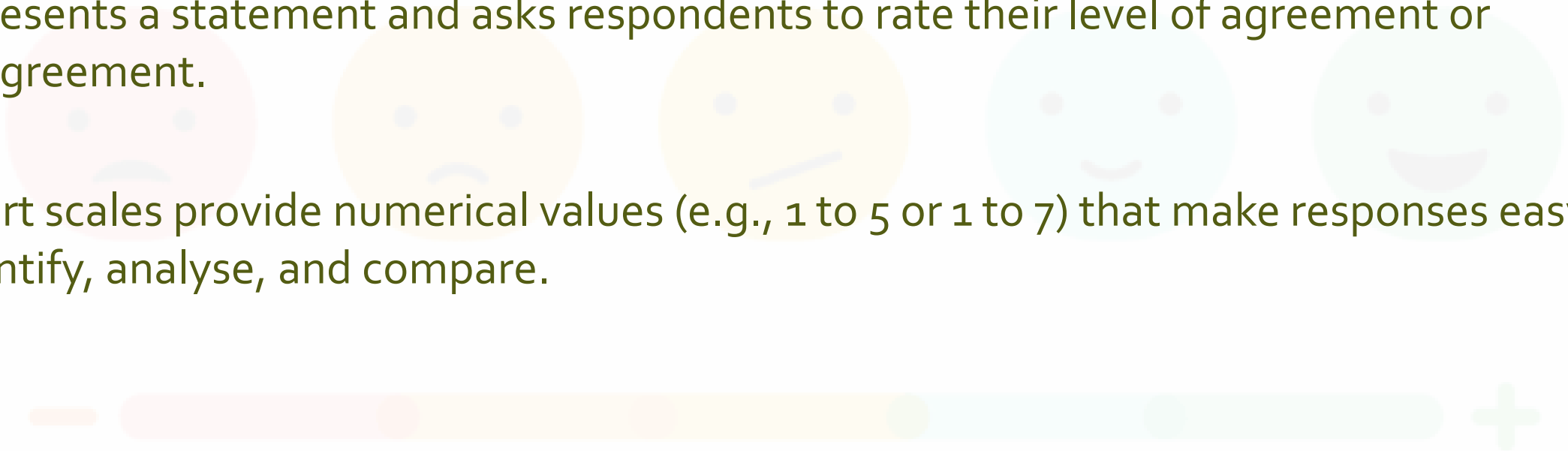


Likert Scale

A Likert scale is a popular survey tool used to measure people's attitudes, opinions, or perceptions on a particular topic.

It presents a statement and asks respondents to rate their level of agreement or disagreement.

Likert scales provide numerical values (e.g., 1 to 5 or 1 to 7) that make responses easy to quantify, analyse, and compare.



Likert Scale

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel that safety protocols are strictly enforced on this construction site.	1	2	3	4	5

Closed Ended Questions

Pros

- Quick & easy to answer
- Easier for people to understand
- People more likely to provide an honest response
- Easier to process the data

Cons

- The answer options may not represent what people actually think, feel or did.
- There is no opportunity for people to expand on their answers

Open Ended Questions

Pros

- Much richer data.
- Can elicit nuanced responses
- Can capture unanticipated answers
- Can use quotes to illustrate the findings of the research

Cons

- Requires more time & effort to answer
- A lot more time & effort required to process & analyse the data.
- People can be wary of being critical when using their own words

Pilot Surveys

- All questionnaires should be piloted (tested) on the type of people who will be taking part in the main survey.
- This helps to iron out ambiguities, work out which questions are unclear or badly worded, and shows you whether your questionnaire will help to answer their research question.
- You should alter the questionnaire, if required



Design a Survey on Construction Site Safety

Construction Site Safety



Sampling



- In quantitative research, sampling is the process of selecting a subset of individuals, units, or items from a larger population to study and make inferences about the whole population.

Sampling



- Good sampling is essential in quantitative research because it enables researchers to gather accurate, reliable data efficiently without needing to study every individual in a population.

Key Concepts in Sampling

Population:

The entire group you want to study (e.g., all construction workers in a region).



Key Concepts in Sampling

Sample:

A smaller, manageable subset of the population chosen for the study



Key Concepts in Sampling

Sampling Frame:

A list of individuals or elements from which the sample is drawn (e.g., a company's employee roster).



Key Concepts in Sampling

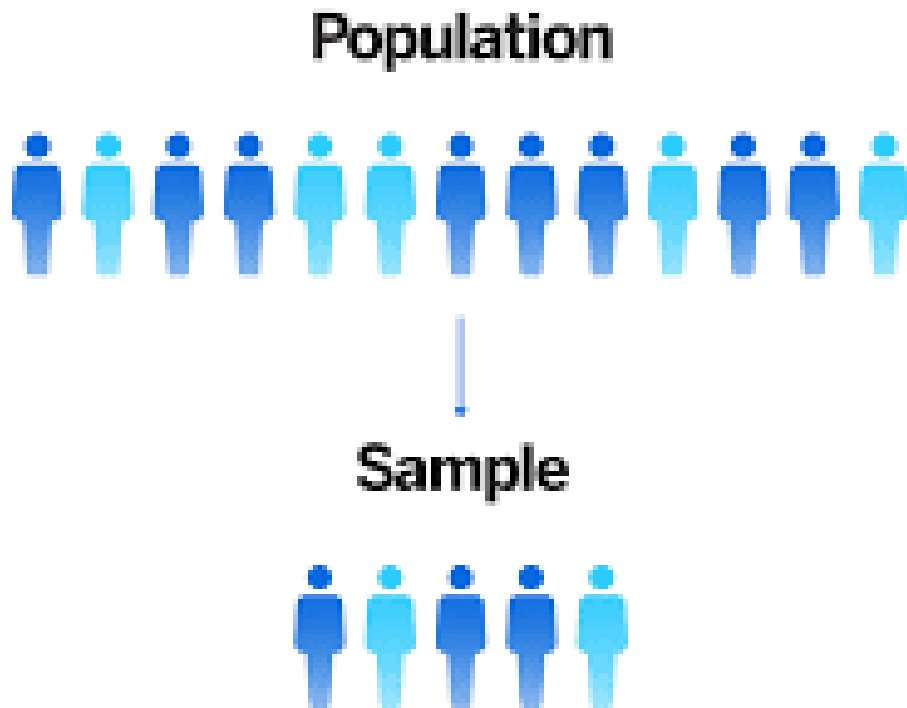
Representativeness:

The sample should accurately reflect the characteristics of the population, so findings can generalise to the larger group.

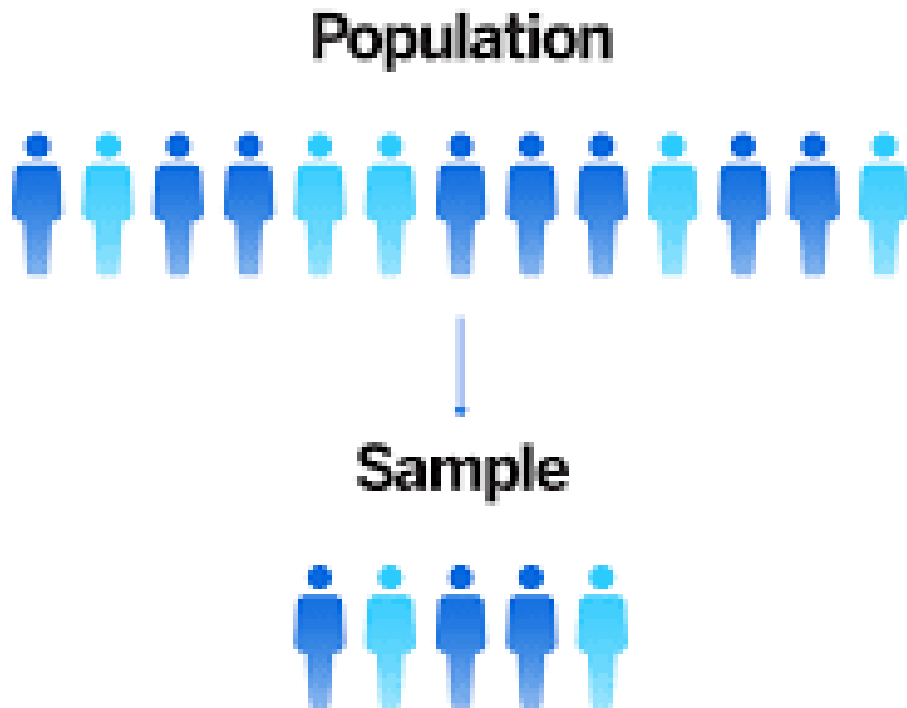


Probability Sampling Methods

- If you want to produce results that are representative of the whole population, probability sampling techniques are the most valid choice.

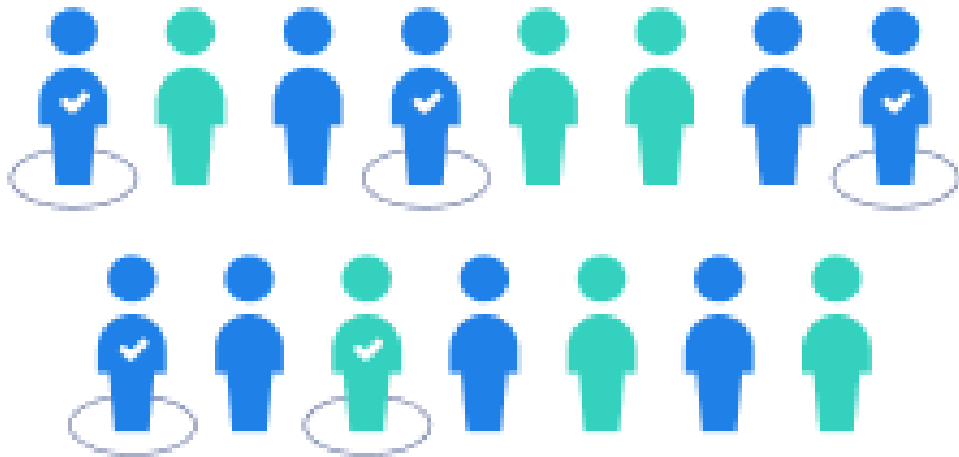


Probability Sampling Methods



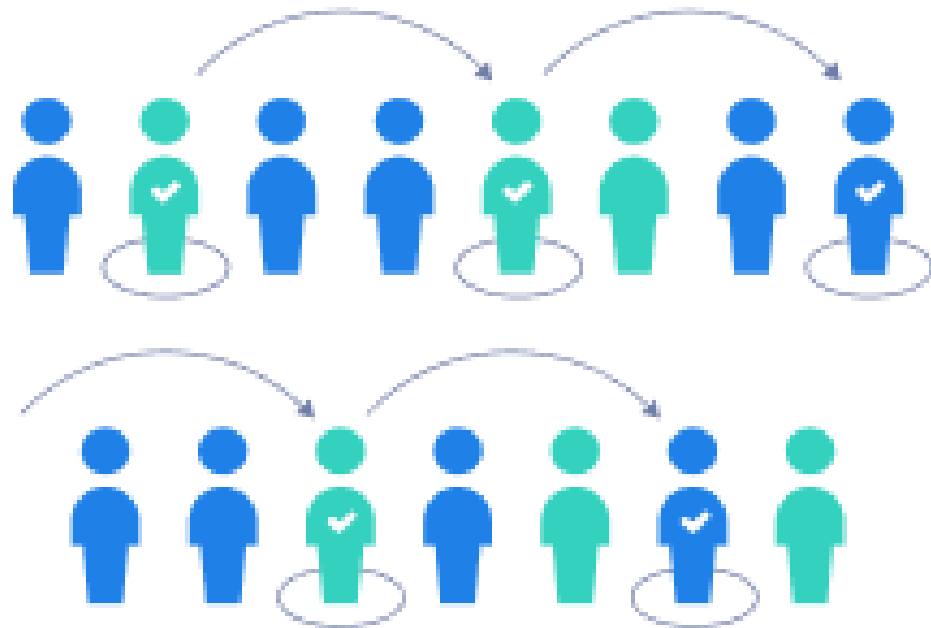
- Probability sampling means that every member of the population has a chance of being selected.
- If you want to produce results that are representative of the whole population, probability sampling techniques are the most valid choice.

Simple random sample



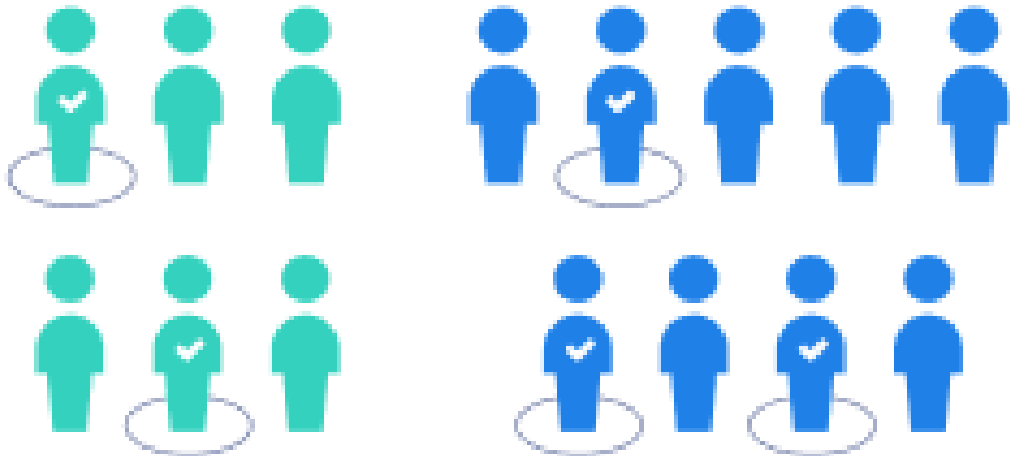
- In a simple random sample, every member of the population has an equal chance of being selected.
- Your sampling frame should include the whole population.
- To conduct this type of sampling, you can use tools like random number generators or other techniques that are based entirely on chance.

Systematic sample



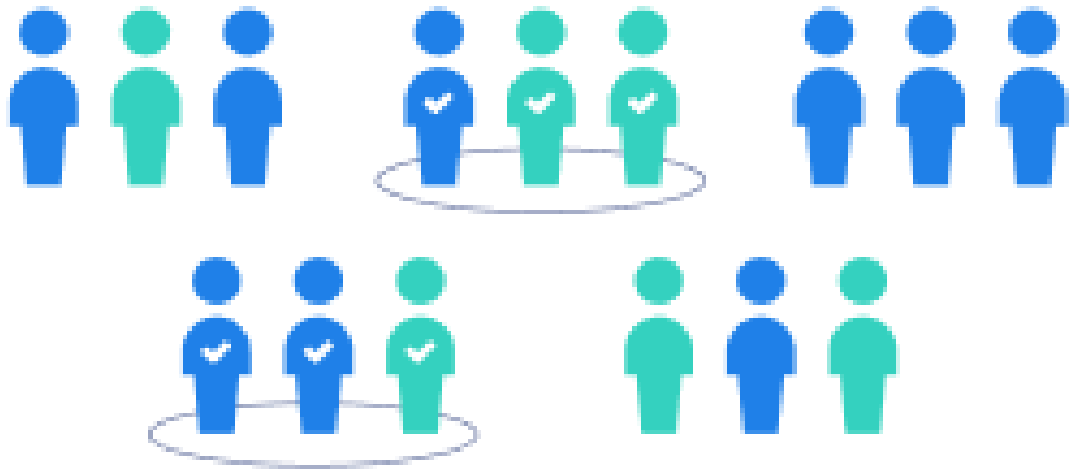
- Systematic sampling is similar to simple random sampling, but it is usually slightly easier to conduct.
- Every member of the population is listed with a number, but instead of randomly generating numbers, individuals are chosen at regular intervals.

Stratified sample



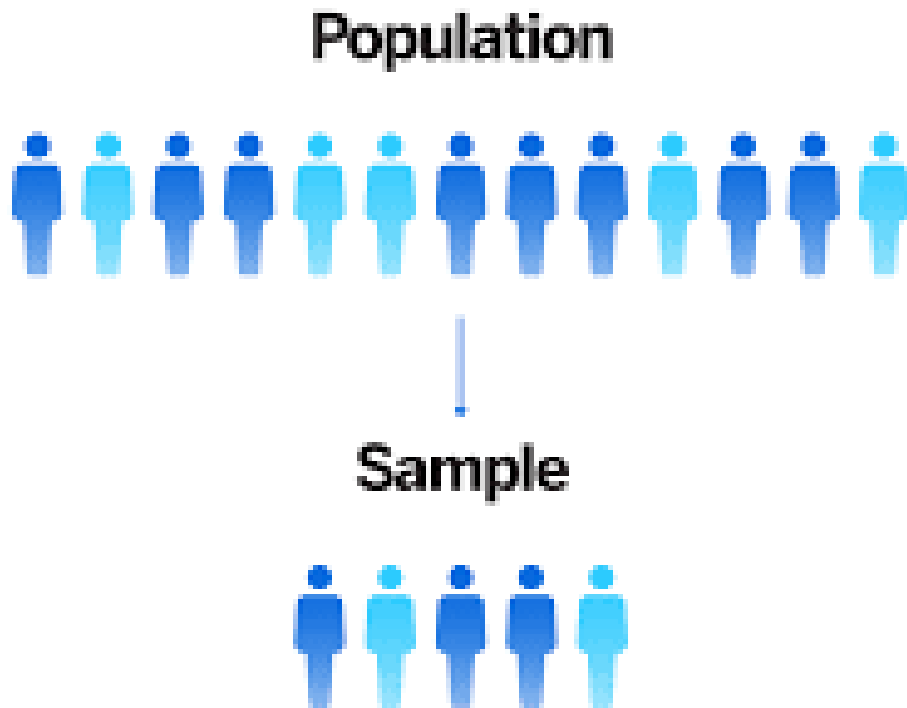
- Stratified sampling involves dividing the population into subpopulations that may differ in important ways.
- It allows you draw more precise conclusions by ensuring that every subgroup is properly represented in the sample.

Cluster sample



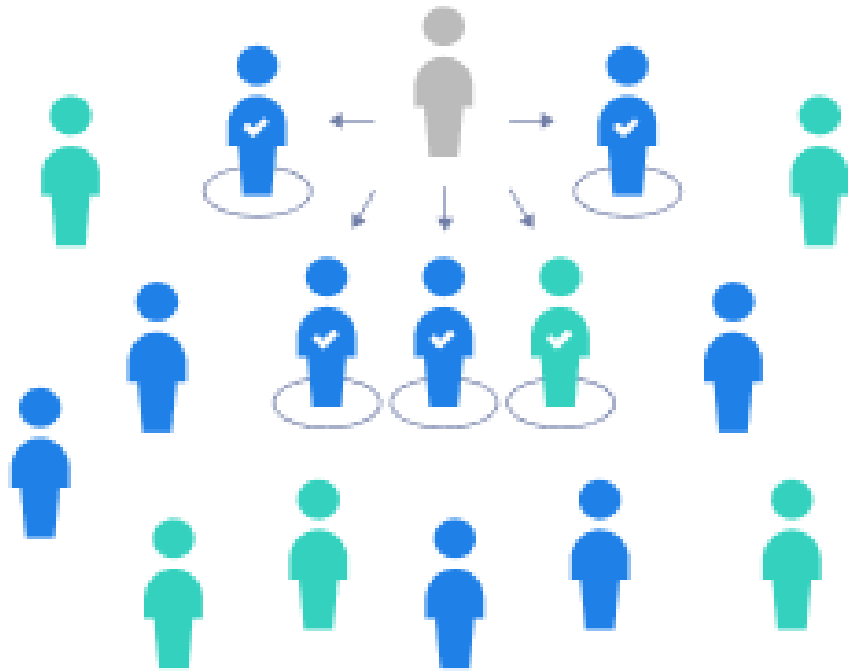
- Cluster sampling also involves dividing the population into subgroups, but each subgroup should have similar characteristics to the whole sample.
- Instead of sampling individuals from each subgroup, you randomly select entire subgroups.

Non Probability Sampling Methods



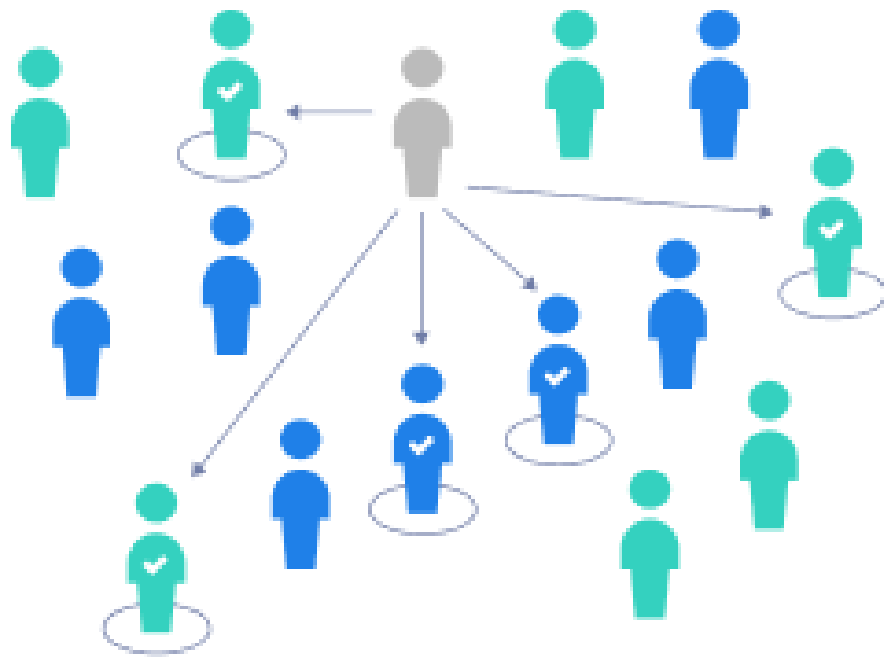
- In a non-probability sample, individuals are selected based on non-random criteria, and not every individual has a chance of being included.
- This type of sample is easier and cheaper to access, but it has a higher risk of sampling bias.

Convenience sample



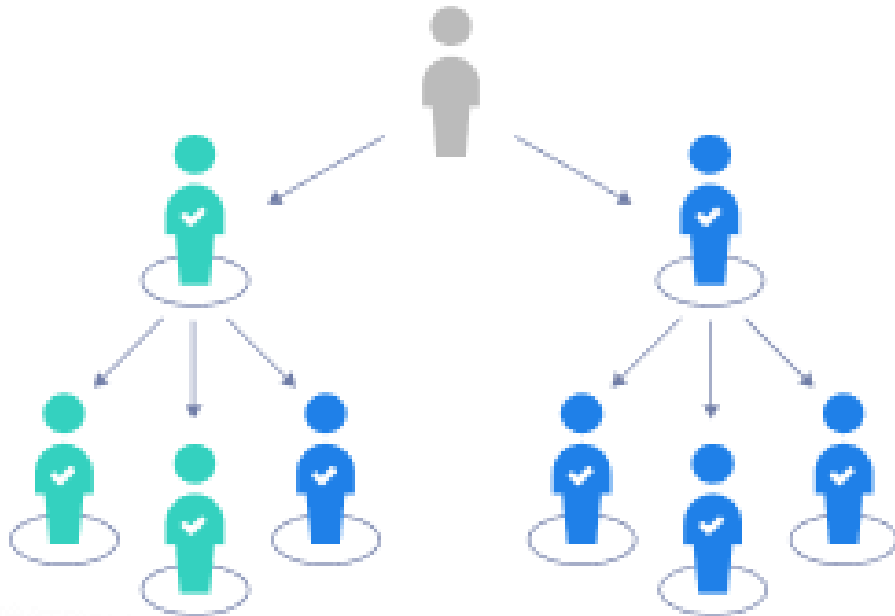
- A convenience sample simply includes the individuals who happen to be most accessible to the researcher.
- This is an easy and inexpensive way to gather initial data, but there is no way to tell if the sample is representative of the population, so it can't produce generalisable results.

Purposive sample



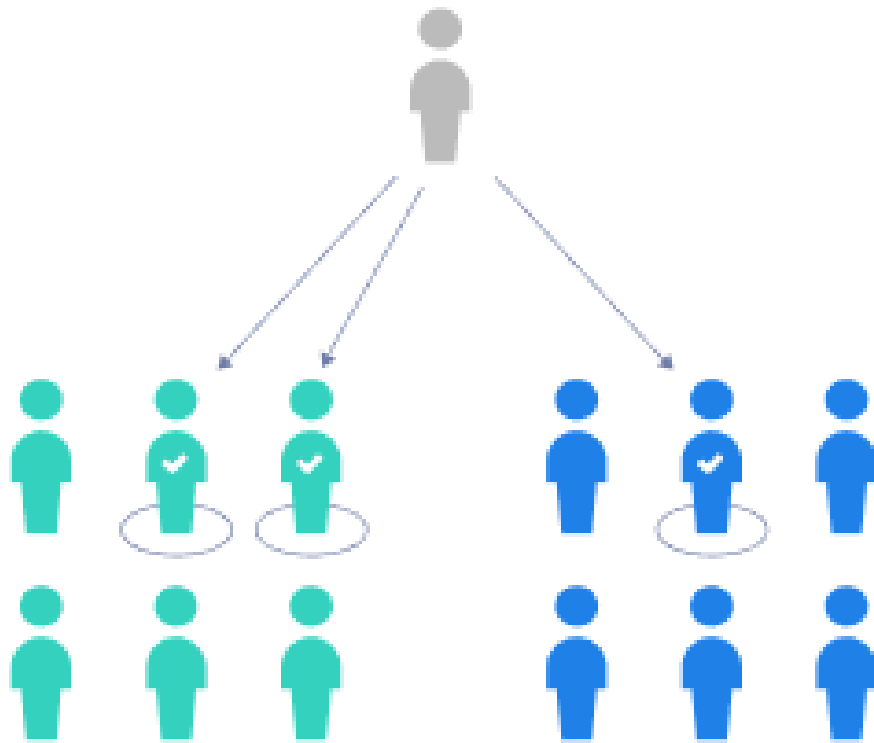
- Purposive sampling, also known as judgement sampling, involves the researcher using their expertise to select a sample that is most useful to the purposes of the research.
- An effective purposive sample must have clear criteria and rationale for inclusion.

Snowball sample



- If the population is hard to access, snowball sampling can be used to recruit participants via other participants.
- The number of people you have access to 'snowballs' as you get in contact with more people.

Quota sample



- A quota sample is mainly based on ease of access.
- Instead of the researcher choosing participants and directly contacting them, people volunteer themselves (e.g., by responding to a public online survey).
- Voluntary response samples are always at least somewhat biased, as some people will inherently be more likely to volunteer than others.