# Research Methods

## Lecture Title: Collecting and Organising Quantitative Data

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Masters in
Human Resources Management

# Lecture Outline

- The uses of quantitative data in HR research
- Sources of quantitative data
- Undertaking your own survey
- Administering surveys
- Collecting, organising and presenting quantitative data
- First level data analysis

# Collecting Quantitative Data in HR Research

## What Is Quantitative Data?

- Quantitative data refers to information that can be **counted, measured or expressed numerically**.
- In HR research, it helps us understand **patterns, trends and relationships** within organisations.
- It supports both **macro-level questions** (e.g. national HR practices) and **micro-level questions** (e.g. team-level attitudes).

# Macro-Level Uses in HR Research

- Examining national or sector-wide HR trends.
- Example: *To what extent are local organisations adopting HR practices that support neurodiversity?*

Useful for policy development, benchmarking and identifying broad patterns.

# Micro-Level Uses in HR Research

- Exploring what is happening within a specific organisation or team.
- Example: *What are the levels of commitment across different teams?*

Helps managers understand internal differences and target interventions.

# Types of Quantitative Variables in HR

- **Counts** (e.g. number of employees leaving).
- **Measures** (e.g. tenure in years).
- **Ratings** (e.g. engagement scores).
- **Behavioural logs** (e.g. time spent in meetings).

These variables can be **described, compared or correlated** to answer research questions.

## Example – Employee Turnover

Data: number of employees who left in a given year.

- Can be used to calculate **turnover rates**.
- Helps identify retention issues and evaluate HR interventions.

## Example – Employee Tenure

Data: length of time an employee has worked for the organisation.

- Useful for analysing **career progression**, **loyalty** and **workforce stability**.
- Can be compared across departments or demographic groups.

## Example – Measuring Engagement

Engagement can be measured using **Likert-scale questionnaires**.

- Example: Utrecht Work Engagement Scale (Schaufeli & Bakker, 2004).
- Respondents rate the **frequency** of certain feelings or behaviours from **0 to 6**.
- Numeric scores allow researchers to interpret engagement levels in a structured way.

# Example – Big Data in HR Analytics

- Digital tools (e.g. Microsoft Outlook, Teams) record patterns such as:
  - Time spent answering emails
  - Time in meetings
  - Indicators of overtime
- This creates **large datasets** capturing everyday work behaviour.
- Useful for identifying workload issues and improving staffing practices.

# 📘 Using Quantitative Data: Descriptive and Inferential Statistics

## Descriptive Statistics

Descriptive statistics help us **summarise and describe** what the data shows. They do not explain *why* something happens; they simply present the patterns.

- **Frequency** – counts of how often something occurs

*Example: number of employees over 50; number of times a behaviour is observed.*

- **Central tendency** – typical or average value

*Example: average salary in the organisation.*

- **Dispersion** – how spread out the data is

*Example: difference between the lowest and highest absence rates across departments.*

Descriptive statistics help organisations **identify trends**, **compare departments** and **support everyday HR decisions** such as monitoring training spend or tracking absenteeism.

# Inferential Statistics

Inferential statistics allow us to **go beyond the sample** and make cautious claims about the wider population.

- They help us explore **relationships** between variables.
- They allow us to **test hypotheses** (e.g. “Are men and women equally satisfied at work?”).
- They rely on the idea of **confidence levels**, because results are never 100% certain.
- They require a **representative sample** to make meaningful generalisations.

**Common uses in HR:**

- **Comparing groups** *Example: comparing mean job satisfaction between men and women.*
- **Correlating variables** *Example: examining the relationship between job satisfaction and intention to stay.*
- **Predicting outcomes (causality patterns)** *Example: whether affective commitment this year predicts turnover next year.*

Inferential statistics help HR researchers **explain patterns**, **test ideas** and **support evidence-based decisions**.

# Sources of Quantitative Data in HR Research

## Main Sources of Quantitative Data

Quantitative data in HR can come from several structured sources:

- **Structured observations** – counting behaviours or actions in a systematic way.
- **Content analysis** – turning text (e.g. job adverts, policies) into numerical categories.
- **HR information systems (HRIS)** – data on absence, turnover, training, performance and other HR metrics.

These sources provide numerical information that can be analysed statistically.

# Three Main Sources of Survey Data

- **Published surveys (secondary data)**

Large surveys carried out for general research purposes.

*Local example: National Statistics Office (NSO) Labour Force Survey (LFS), which provides national data on employment, skills and labour market trends.*

- **Unpublished surveys (secondary data)**

Internal surveys not created for your research. *Example: an organisation's annual employee engagement survey.*

- **Your own survey (primary data)**

Surveys designed specifically for your research question. *Examples: online questionnaires, telephone interviews, structured face-to-face interviews.*

## 📘 Data from Published Surveys

Students often overlook published surveys when doing HR research, even though these surveys can provide useful context or comparison. Most published surveys make their **raw, tabulated data** available online. Registration is sometimes required, but usually free.

### Useful types of published data

- **Census data:** Many countries collect detailed information from almost the entire population. *Maltese example: National Statistics Office (NSO) Census of Population and Housing.*
- **Regular surveys:** These are carried out by governments, research bodies or professional institutes. *Local examples:*
  - **NSO Labour Force Survey (LFS)** – employment, skills and labour market trends
  - **Jobsplus Employer and Employee Surveys** – recruitment, skills shortages, training

  *International examples:*
  - CIPD surveys
  - Eurofound's European Working Conditions Survey (EWCS)
- **Ad hoc surveys**

These are created for a specific purpose and often sponsored by organisations with an interest in the topic. *Examples:*

- CIPD ad hoc reports
- One-off surveys by Maltese ministries, employer associations or unions (e.g. surveys on remote working, skills gaps or wellbeing)

# Undertaking Your Own Survey

- Surveys are one of the most common ways of collecting data in business, management and HR research.
- Before designing a survey, it is essential to be **clear about its purpose** and what type of information you want to collect.

# Different Purposes of Surveys

- **Deductive surveys:** Used to **test relationships between variables**. A hypothesis is created, and the data is analysed to see whether the hypothesis is supported.

- **Inductive or exploratory surveys:** Used to **identify patterns, trends or frequencies**. These patterns can help with **theory building**, especially in early-stage research.

- **Comparative surveys:** Used to **compare groups or populations**, or to examine similarities and differences across research settings.

# Surveys in HR Projects

- Many HR surveys, especially in organisational settings, are mainly **descriptive** (e.g. summarising engagement levels or reporting satisfaction scores).

- At **Masters level**, students are expected to go beyond description and use **inferential statistics** to explain relationships and provide deeper insights.

# 📘 Determining a Sample in HR Research

- A **sample** is a smaller group selected from a larger population.
- Sampling allows researchers to **draw conclusions** about the wider population without surveying everyone.
- A **population** is the full group of cases you are interested in (e.g. all employees in Malta's public sector).
- Sampling is essential due to **time, cost and access limitations**.
- **Censuses** study the whole population — but are rarely practical in HR research.
- **Two main sampling approaches:**
- **Non-probability sampling** – often used in qualitative research.
- **Probability sampling** – preferred for quantitative research. It aims to select a sample that **statistically represents** the population.

# 📘 Sample Size and Selection

Two key decisions when planning a survey:

- **How many people** will be in your sample?
- **How will you choose** them?

- A good sample should:
  - Be **large enough** to support reliable analysis.
  - Be **selected fairly**, so it reflects the population's characteristics.

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# How Large Should My Sample Be?

- There is **no fixed rule** for sample size — it depends on your research design and practical limits.
- Some textbooks (e.g. Saunders et al., 2023) offer formulas, but these may not work well if your study includes **many variables**.
- You must balance **accuracy** with **practical issues**, such as:
  - **Expected response rate**
  - **Type of statistical analysis**
  - **Time and cost**
  - **Nature of your research question**

## Longitudinal studies

- These collect data from the **same people over time**.
- You must plan for **dropouts**, so your initial sample may need to be **larger** than for a one-time (cross-sectional) study.

# 📘 General Principles for Sample Size (Neuman, 2014)

- **Smaller populations** need **larger sampling ratios**.
  *Example: for a population under 500, aim for 30% or around 150 people.*
- **Larger populations** can be sampled with **smaller ratios**.
  *Example: for 150,000 people, a 1% sample (1,500) may be enough.*
- Increase your sample size if:
  - You need **high accuracy** and **generalisation**
  - The population is **very diverse**
  - You are analysing **many variables**

# Sample Size Guidance (Hart, 2013)

- Recommended sample sizes for different population sizes:

| Population Size | Recommended Sample Size |
|---|---|
| 10 | 10 |
| 50 | 44 |
| 100 | 81 |
| 200 | 134 |
| 400 | 201 |
| 1,000 | 286 |

These sizes offer a **reasonable level of statistical accuracy** for cross-sectional surveys.
**Key points to remember:**
**Smaller populations** need **larger sampling ratios**. *Example: for 50 people, aim for around 44 (nearly 90%).*
**Larger populations** can be sampled with **smaller ratios**. *Example: for 1,000 people, a sample of 286 (around 29%) may be enough.*

# 📘 Sample Selection Methods

- 📘 **Simple Random Sampling – What It Is**
- Simple random sampling is the **most basic probability sampling method**.
- Every person in the population has an **equal chance** of being selected.
- It helps reduce **bias** and supports stronger generalisation.
- You must first create an **accurate sampling frame** (a full list of all potential respondents).
- Each person is given a **number** (0, 1, 2, 3…).
- A **random number generator** or random number table is then used to select respondents.
- *(Examples: randomnumbergenerator.com, GraphPad, StatTrek)*

# Simple Random Sampling – Practical Points

- Continue selecting random numbers until you reach your **required sample size**.
- This method does **not guarantee perfect representation**, but it usually comes close.
- You can calculate the **confidence level** of your results because the selection is random.
- It is essential to **contact every selected person** — otherwise your sample becomes less representative.
- **Non-responses** reduce the accuracy of your findings, so follow-up reminders may be needed.
- The quality of your sampling depends heavily on the **accuracy of your sampling frame**.

# Systematic Sampling

- All cases in the sampling frame are **numbered**.
- Instead of selecting people randomly, you choose a **fixed interval** (e.g. every 10th person).
- Start by selecting **one person at random**, then count down the interval.

*Example: for a 10% sample, select 1 person randomly, then take every 10th case.*

**Important point**

- This method is **not fully random** if the sampling frame has a **pattern**

(e.g. sorted by department, grade, or alphabetically).

- Patterns in the list can create **hidden bias**.

# Stratified Sampling

- The sampling frame is divided into **sub-groups** (strata).

*Examples: departments, grades, age groups, job roles.*

- A **random sample** is taken from each sub-group.
- Ensures that **all key groups are represented**, even small ones.

**When useful**

- When some groups are **small** and might be missed in simple random sampling.
- When you want to **compare groups** or ensure **balanced representation**.

# Cluster Sampling

- The population is divided into **clusters** (e.g. branches, locations, teams).
- You then select **clusters**, and within each cluster you take a **random or systematic sample**.
- Often used when the population is **spread out** or difficult to access.

**Advantages and limitations**

- Usually **cheaper and easier** than simple random sampling.
- But each stage introduces **sampling error**, reducing reliability.
- Best used when travel, access or cost make other methods impractical.

# Sampling and sampling methods.

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# Survey Choice in HR Research

## Why Survey Design Matters

- Surveys are very common in HR research, but they are **not automatically easier** than interviews.
- A good survey must be:
  - **Valid** – it measures what it is supposed to measure *(Saunders et al., 2023)*
  - **Reliable** – it produces consistent results *(Saunders et al., 2023)*
- Poor survey design leads to:
  - Data that is **hard to analyse**
  - Findings that are **weak or misleading**

# Using Pre-Validated Instruments

- If you are doing a **cross-sectional survey**, it is often better to use a **pre-validated scale**.
- These instruments have already been tested for **validity and reliability** in HRM and organisational behaviour research.
- For examples see following slide.
- This approach strengthens your research because you are using tools that other scholars have already evaluated.
- *(Saunders et al., 2023 — on using established instruments)*

- 📘 **Examples of Pre-Validated Questionnaires in HRM & Organisational Behaviour (OB) Research**
- **High-Performance Work Systems (21 items)**

*Takeuchi et al., 2007 – Journal of Applied Psychology*

- **HR Attributions (25 items)**

*Nishii, Lepak & Schneider, 2008 – Personnel Psychology*

- **Perceived Organisational Support (36 items; short version 16)**

*Eisenberger et al., 1986 – Journal of Applied Psychology*

- **Employee Commitment (19 items)**

*Meyer & Allen, 1997 – Commitment in the Workplace (Sage)*

- **Psychological Contract Inventory (80 items)**

*Rousseau, 2000 – Carnegie Mellon University Technical Report*

- **Quality of Working Life (23 items)**

*Easton & Van Laar, 2012 – WRQoL Scale Manual*

- **Employee Engagement (17 items)**

*Schaufeli & Bakker, 2003 – UWES Manual*

- **Burnout (22 items)**

*Maslach, Jackson & Leiter, 1996 – Maslach Burnout Inventory*

# 📘 Designing Your Own Survey

If you or your organisation decide to create your own questionnaire:

- Make sure every question links directly to your **research objectives**.
- Pilot the survey to check for unclear or confusing items.
- Avoid questions that are too long, too complex, or too personal.

*(Academic link: Gill & Johnson, 2010 — on linking design to research purpose)*

# Two Golden Rules of Survey Design

- According to **Neuman (2014)**, effective surveys follow two essential rules:

**1. Maintain clarity**

- Use simple, direct wording.
- Avoid jargon, double meanings or leading questions.
- Keep the layout clean and easy to follow.

**2. Keep the respondent's perspective in mind**

- Make questions easy to understand and answer.
- Avoid asking for information people may not know.
- Respect the respondent's time and attention.

A+S

# SURVEY DESIGN

## BEST PRACTICES: HOW TO AVOID THE 6 COMMON MISTAKES

# Survey Strategy – Key Questions to Clarify

**Before designing your survey, think carefully about:**

- **Purpose of the survey:** What are you trying to understand or measure?
- **Research objectives or questions:** Which variables are important for your study?
- **Comparison with other surveys:** If you plan to compare your results with existing surveys, check **how their data was collected** and whether the methods match yours.
- **Planned data analysis:** If you want to test **relationships between variables**, your questions must allow this (e.g. measurable, comparable, numerical responses).
- **Impact of non-responses:** Missing answers can affect your analysis, especially if key variables are skipped.

# Question Structure – Key Design Decisions

- **Format and response method**
- Decide how respondents will answer:
  - **Tick boxes**, **circle numbers**, **select options** or **type text**
  - Paper surveys are still used, but most HR projects now use **email** or **web-based** surveys *(Robson, 2024)*
- **Type of response**
- Choose the response style that fits your research needs:
  - **Single choice**
  - **Multiple choice**
  - **Rating scales** (e.g., 1–5 between two ends of a scale)
  - **Ranking** alternatives *(Collis & Hussey, 2021)*

# Why Question Structure Matters

## Impact on analysis

- The structure of your questions determines what analysis you can do.
  - Some formats allow **statistical testing**
  - Others only allow **descriptive summaries** *(Gill & Johnson, 2010)*

## Why these decisions are crucial

- Poor choices limit the **quality**, **clarity** and **usefulness** of your data.
- Good structure supports:
  - Easier analysis
  - Stronger validity
  - More meaningful findings

# Open and Closed Questions

**Open questions**

- Allow respondents to **explain**, add detail or show their thinking.
- Produce **qualitative data**, so statistical analysis is not possible.
- Useful for clarification, but **time-consuming** to analyse.

**Closed questions**

- Easier and quicker for respondents.
- Answers are **clear, comparable and countable**.
- Enable repeated surveys across time or groups.

# Limitations of Closed Questions

- A fixed list of answers may **suggest options** respondents would not have chosen.
- People with **no opinion** may still choose an answer.
- Respondents may feel their preferred answer is **missing**.
- No way to check whether respondents **understood the question**.
- Some may answer **randomly** just to finish quickly.

**Common method bias**

- Using only one method (e.g., surveys) can create bias.
- *Podsakoff et al. (2003)* offer procedural and statistical remedies for large organisational surveys.

# Nominal Scale Questions

**What they are**

- Also called **category scales**.
- Used to classify people into **groups** (e.g., gender, department, ethnicity).
- No arithmetic value — you cannot calculate an average.

**Why they are useful**

- Allow comparisons between groups. *Example: comparing men and women who attended management training in the last 12 months.*

**Tip**

- Think early about which **biographical categories** you need.

# Ordinal and Interval Scale Questions

## Ordinal scales

- Show **order**, but the distance between points is **unknown**.
  *Example: satisfaction levels from 1 (low) to 4 (very satisfied).*
- Can also involve **ranking** items.
- Limited statistical analysis because distances are unclear.

## Interval scales

- Distances between points are **equal**, but there is **no true zero**.
  *Example: IQ scores.*
- Likert scales are technically ordinal, but **5-point or 7-point. Likert scales** are often treated as interval-like in HRM research.

# Ratio Scale Questions

**What they are**

- Highest level of measurement.
- Have a **true zero** (e.g., time, cost, weight).
- Allow statements such as “twice as long” or “three times as much”.

**Use in HR research**

- Rare in organisational surveys because many HR questions do not involve true-zero measures.
- More common in operational or financial data than in employee surveys.

# How to design a questionnaire?

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# Key Elements of Survey Design

- When designing a questionnaire, consider:
  - **Length**
  - **Structure**
  - **Order of questions**
  - **Layout**
  - **Method of administration** (telephone, post, email, online)
- These choices affect how easy the survey is to complete and how useful the data will be.

# Initial Request & Instructions

**Before the survey begins:**

- Explain the **purpose** of the survey clearly (often in a covering letter or email).
- Ensure **informed consent** requirements are met.
- State the **timescale**, how the survey should be returned and the **confidentiality/anonymity** arrangements.

# Layout & Question Structure



**Layout**

- Keep the questionnaire **neat, attractive and a reasonable length**.
- Make it **easy to read** with clear instructions.
- Provide enough space for respondents to mark answers.
- Use a **logical order** for questions.
- Number or sub-letter questions to show groupings.

**Questions**

- Start with **warm-up questions**.
- Keep questions **simple and relevant** — focus on “need to know”.
- Avoid jargon, slang, abbreviations and emotionally loaded language.
- Ensure each question has **one clear meaning**.
- Avoid **leading questions** and **double negatives**.
- Use **filter questions** when some items apply only to certain respondents.

# Final Thanks & Return Arrangements

- Thank respondents for taking the time to complete the survey.
- Make the **return process** clear (email, link, post, etc.).
- Do not promise more feedback than you can realistically provide.
- A clear closing message helps maintain professionalism and trust.

# Email-Based Surveys

**How they work**

- The survey is attached to an **email** sent to potential respondents.
- Respondents open the attachment, complete it and send it back using **reply**.

**Key considerations**

- Respondents must know **exactly what to do** and how to return the **completed** survey (not the blank one).
- Email returns can be **traced to individuals**, so anonymity is harder to guarantee.
- You must clearly explain how you will:
  - Save completed surveys **separately**
  - Remove or delete any **identifying information**
- **Limitations**
- Higher risk to **confidentiality**
- More manual work for the researcher
- Greater chance of **errors** in returning or saving files

# Web-Based Surveys

**How they work**

- The survey is hosted on a **webpage**.
- Respondents access it through a **hyperlink**.
- Responses are automatically collected into a **spreadsheet** by the software.

**Advantages**

- **Better anonymity** — no email trail linking responses to individuals.
- **Easier data handling** — automatic download into Excel or similar.
- **User-friendly** — clear layout, simple navigation.
- **Efficient** — suitable for large samples.

**Common platforms**

- SurveyMonkey
- Qualtrics

**Costs depend on:**

- Number of questions
- Length of time the survey is **live**
- Expected number of respondents

# Why Pilot a Survey?

- Survey design is **complex**, and errors are easy to miss.
- A poor survey leads to **weak or unusable data**.
- Piloting helps identify problems **before** the survey is distributed.
- Strongly recommended for all research projects *(Robson, 2024; Saunders et al., 2023)*

**Key purpose of piloting**

- Check whether the survey will actually produce **valid**, useful data.
- Ensure the survey is **clear**, **appropriate** and **practical** for respondents.

# Questions to Ask During Piloting

**Content & validity**

- Are the questions appropriate for the **research questions**?
- Have any important variables been **missed**?
- Will the questions provide the **information needed**?

**Practicality**

- How long does the survey take to complete?
- Is the length acceptable for respondents?
- Are the instructions clear?

**Clarity & sensitivity**

- Are all questions **clear and unambiguous**?
- Are any questions **too sensitive** for the respondent group?

**Design & usability**

- Is the **layout** appropriate?
- How easy was it to follow instructions and **submit answers**?

# 📘 Administering Surveys – Purpose of Distribution Choices

- The aim is to ensure the survey **reaches everyone in your sample** in good time.
- Higher **non-response rates** reduce the reliability of your findings.
- Different distribution methods offer different levels of:
  - Access
  - Control
  - Cost
  - Anonymity
  - Response quality

# Postal & Delivery/Collection Methods

**Postal, self-administered questionnaires**

- **Key issues:** covering letter, reply-paid envelope, follow-up reminders
  **Advantages:** low cost, wide geographical reach, anonymity, no interviewer bias
- **Disadvantages:** low response rate, late returns, no clarification, incomplete answers

**Delivered & collected questionnaires**

- **Key issues:** informed consent, personal explanation, collection box
  **Advantages:** higher response rate, controlled conditions, clarification possible
- **Disadvantages:** limited to those present at a set time/place, organisational permission needed

# Telephone & Face-to-Face Interviews

**Structured telephone interviews**

- **Key issues:** call-back arrangements, clear explanation, number of attempts
- **Advantages:** fast, overcomes geography, clarification possible
  **Disadvantages:** low response rate, interviewer bias, no non-verbal cues

**Structured face-to-face interviews**

- **Key issues:** interviewer competence, pre-contact, planned probes
  **Advantages:** high response rate, deeper probing
- **Disadvantages:** costly, time-intensive, geographical limits, interviewer bias

# Email & Web-Based Surveys

**Email questionnaires**

- **Key issues:** email addresses, covering message, anonymity arrangements, software compatibility
- **Advantages:** fast, no geographical limits, no interviewer bias, flexible timing
- **Disadvantages:** anonymity concerns, formatting issues, low response rate, risk of lost data

**Web-based surveys**

- **Key issues:** working hyperlink, clear instructions, secure system, monitoring hit rate
- **Advantages:** no interviewer bias, better control over layout, automatic data capture
- **Disadvantages:** excludes those without internet access, unclear sample unless link is targeted, risk of multiple submissions without security

# Why Quantitative Data Must Be Organised

- Raw quantitative data has **no value** until it is organised, analysed and presented.
- Data collection can feel **stressful**, as you lose control once the survey is sent out.
- When responses start arriving, you can finally begin to **answer your research questions**.
- A **systematic approach** is essential at this stage of the project.

# First Steps in Handling Returned Data

- The first challenge is often the **volume** of responses.
  - Example: 100 completed questionnaires can feel overwhelming for a first-time researcher.
- Start by describing the **frequency of responses** for each variable.
- A spreadsheet package such as **Excel** is usually sufficient for:
  - Counting responses
  - Creating simple charts
  - Summarising patterns
- This level of analysis is normally enough for **CIPD business investigations** and undergraduate projects only.

# When to Use Statistical Software

- For deeper or more complex analysis, specialist software is recommended:
  - **SPSS** (Statistical Package for the Social Sciences)
  - **Stata**
  - **Matlab**
- SPSS is commonly used in HRM research because it is:
  - Relatively **easy to learn**
  - Suitable for the **statistical tests** used in HR projects
- Your study centre should provide access to this software.
- Your **project tutor or supervisor** can advise which package is most appropriate.

# 📘 Why Record Keeping Matters in Surveys

**Purpose of keeping detailed records**

- Helps you **evaluate the quality** of your data.
- Allows you to calculate an accurate **response rate**.
- Makes your research process **transparent** and easier to report.
- Helps identify **sampling issues**, such as unreachable or ineligible participants.

**What to record**

- Every type of **non-response**
- Any **errors** in the sampling frame
- Any **incomplete** or partially completed surveys

# Types of Non-Responses to Track

**Non-located responses**

- People in your sampling frame who **could not be reached**.

  *Examples: postal surveys returned to sender; bounced emails.*

**Non-contact responses**

- Respondents who were **never available** during the survey period.
  *Examples: always out during telephone calls; away from work during data collection.*

**Ineligible responses**

- Individuals who **do not meet your sampling criteria** due to errors in the sampling frame.

*Examples: new employees, wrong department, wrong job role.*

**Refusals**

- People who were contacted but **chose not to participate**.
- Essential for calculating your **response rate** (e.g., 32%, 55%, 71%).

# Incomplete Responses & Practical Tools

**Incomplete responses**

- Surveys that were **started but not finished**.
- You must later decide whether to:
  - **Keep** them (if only minor data is missing), or
  - **Remove** them (if key variables are missing).
- All decisions must be **recorded clearly**.

**Practical record-keeping tools**

- For small surveys (fewer than 200 respondents), a **simple tally sheet** is usually enough.
- For larger surveys, consider using:
  - A spreadsheet (Excel)
  - A coded response log
  - A tracking sheet for each non-response category

**Why this matters**

- Good record keeping strengthens the **credibility**, **accuracy**, and **trustworthiness** of your findings.

# Establishing a Coding Structure

## Why coding matters

- Coding allows survey responses to be **recorded, organised and analysed** using software.
- Most packages (e.g. Excel, SPSS) use a **spreadsheet format**:
  - **Columns** = variables (questions)
  - **Rows** = individual responses
- **First step: assign a response ID**
- Each questionnaire gets a **unique code** (e.g. Q001, Q002, Q003).
- This creates an **audit trail** — you can trace back any entry if needed.
- The code refers to the **questionnaire**, not the person.

# Coding Example –

- **Question: What is your gender?**
- Male = 1
- Female = 2
- Non-binary = 3
- Prefer not to say = 4
- **Question: Do you feel fairly paid for the work you do?**
- Yes = 1
- No = 2
- **Question: To what extent do you trust your line manager?**
- A lot = 4
- Somewhat = 3
- Only a little = 2
- Not at all = 1

**Tip for students**

- Keep a **codebook** listing all variables and their assigned values.
- Use **consistent coding** across all responses.
- Avoid using text — numerical codes make analysis easier.

# Data Entry – Getting Started

**Once coding is complete:**

- Data entry becomes **quick and straightforward**, though it may feel repetitive.
- Web-based surveys often export responses directly into a **spreadsheet format**.
- You may need to **re-label columns** or **clean up cell contents**.

**Manual entry**

- Common in student projects.
- Not difficult but requires **care and concentration** to avoid errors.
- Best done in short sessions to maintain accuracy.

# Piloting the Data Entry Process

- **Why pilot data entry?**
- Establishing the coding structure **before** piloting helps identify:
  - Ambiguous categories
  - Missing codes
  - Variables that do not fit well
- Entering pilot responses helps you test:
  - Whether the coding works
  - Whether the spreadsheet layout is clear
  - Whether any questions cause difficulties during entry

**Benefit**

- Early piloting prevents major problems once the full dataset arrives.

# Methods of Data Entry

**Manual data entry**

- Most common for small-scale student projects.
- Responses are typed directly into Excel or similar software.

**Direct computer entry**

- Some software allows responses from **structured interviews** (with closed, pre-coded questions) to be entered directly during the interview.
- This is still **quantitative** data entry — not qualitative analysis.

**Optical mark reading (OMR)**

- Used in some organisations for paper questionnaires.
- Scans ticked boxes and converts them into digital data.

**Why this matters**

- Choosing the right method ensures your dataset is **clean, accurate and ready for analysis**.

# Cleaning the Data Set

## Why cleaning matters

- Errors in data entry are **almost inevitable**.
- Cleaning ensures your dataset is **accurate**, **trustworthy** and ready for analysis.

## Step 1: Visual check

- Scan the dataset for **impossible codes**.
  - Example: a value of *6* when only *1–4* were valid options.
- Any suspicious value signals that the **original questionnaire** must be checked.

## Step 2: Random accuracy check

- Select a **random sample** of completed questionnaires.
- Compare each one with the data entered in your spreadsheet.
- If the sample contains **too many errors**, the **entire dataset** must be reviewed again.

## Key message

- Early correction prevents misleading results and strengthens the **validity** of your findings.

# 📘 Presenting the Data – Purpose and Principles

## Why present the data?

- After entering and cleaning your data, the next step is to **describe and summarise** it.
- Tables and charts help you:
  - Identify **patterns**
  - Notice **associations** between variables
  - Begin to **interpret** your findings
- Descriptive analysis transforms raw numbers into **meaningful information**.

## Using tables and charts effectively

- Use a **combination** of tables and charts where appropriate.
- Charts are visually appealing but should be used **sparingly**.
- Only include a chart when it **adds value** to understanding the data.

# First Steps in Descriptive Analysis

**Start with frequencies**

- The first stage is to describe the **frequency** of each attribute in your survey.
- This helps you understand the **distribution** of responses before moving to deeper analysis.

**Tools for beginners**

- SPSS offers simple and effective tools for presenting data.
- Excel can also be used successfully, especially for those who are:
  - New to data analysis
  - Nervous about numbers
  - Unfamiliar with spreadsheets
- Step-by-step actions in Excel can help novices build confidence.

**Key message**

- Clear presentation supports accurate interpretation and prepares you for more advanced analysis.

# What are Descriptive Statistics?

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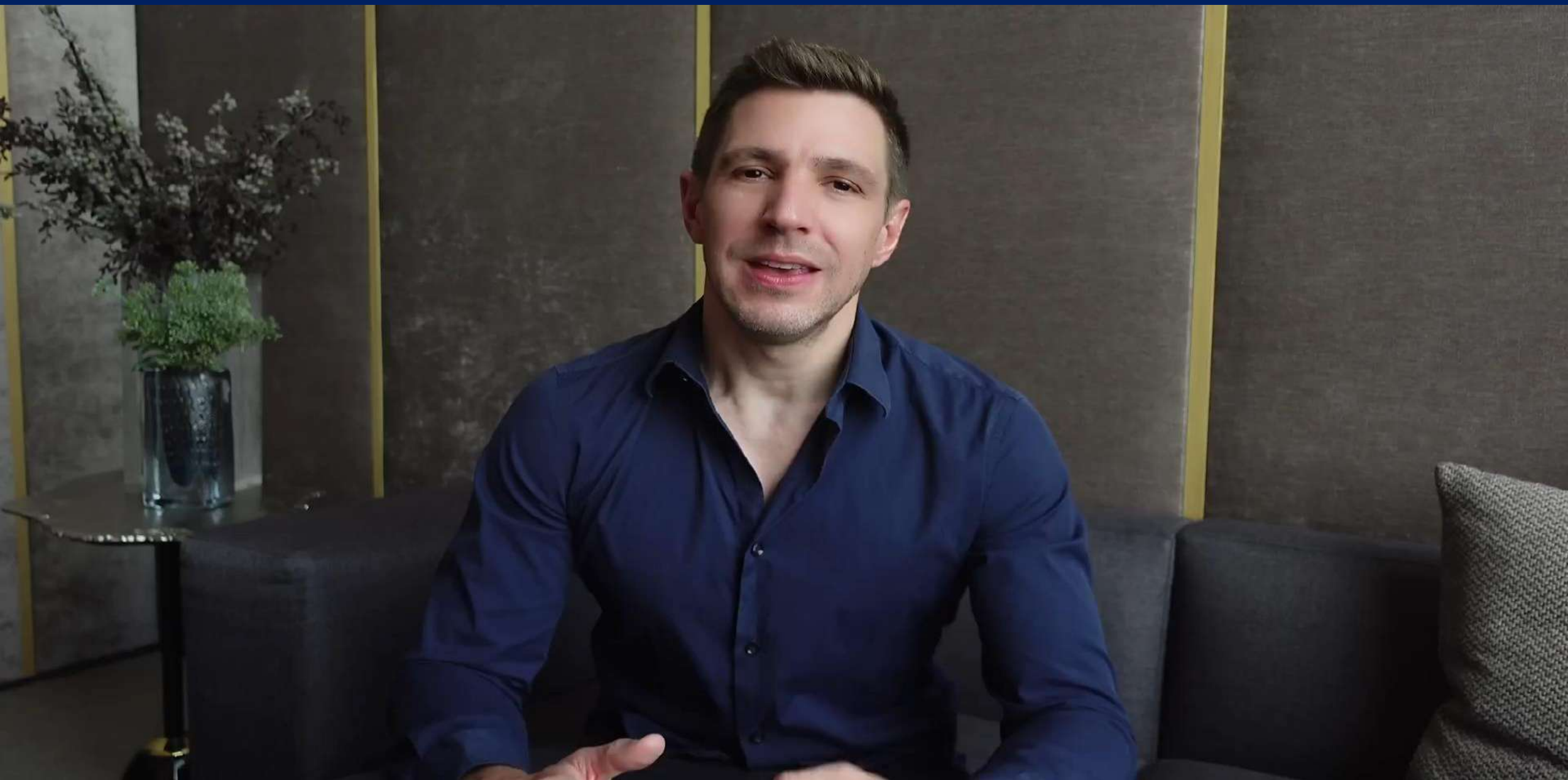

# Excel Data Analysis for Beginners

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# Thank You for paying attention!