GAME OF CARDS.

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The hands-on stage - being able to work with data in practical ways.

Key Abilities:

Acquire raw data ad transform it into a tidy structure structured form, ready for analysis.
Use basic tools like Excel for analysing data and basic coding.
Formulate questions that clarify what you want to learn and drive meaningful analysis.
Interpret charts that use various techniques and understand the benefits of design simplicity.
Understand the basic statistics (averages, trends, distributions).

Typical Learner Mindset:

"I can work with data, explore it, and draw meaningful conclusions"

GAME OF CARDS.

This activity encourages you to think differently about how you approach data and explore different ways to communicate the same simple data set by looking at a set of cards.

AGENDA.

- Overview
- Introduction
- Activity 1 – Your Card Is Your Data Point
- Activity 2 – Sample Vs Population
- Question
- Activity 3 – Hypotheses Testing Lite
- Activity 4 – Predict The Next Card
- Data Quality Check

- Conclusion

OVERVIEW – 5 MINUTES.

- This activity uses a **standard of cards** to give participants a live experience of how **data behaves** in the real world.

  - Each card becomes a "**data point**," and participants physically sort themselves into categories based on the attributes of their card.
  - As we move, observe patterns, and form conclusions, we will **notice how the dataset behaves**.

  - By the end, we should have a concrete, memorable metaphor for why data literacy is about **thinking**, not tools, and why **critical questioning** of data sources is essential.

INTRODUCTION.

- Today we're going to **explore** data using a deck of cards. Each card is a data point.

- Together we'll **build** an understanding of a dataset, **analyse** it, and see what we can learn — without touching a spreadsheet.

  - Data literacy is about ***thinking***, not tools.
  - We will *experience* **data behaviour**.

ACTIVITY 1 – YOUR CARD IS YOUR DATA POINT – 10 MINUTES.

- Deal a single card face down to each person in the room and explain that this is their "**data point**".

- Around the room there are 4 charts.
  - Each chart has either:

    - ♣ Club
    - ♦ Diamond
    - ♥ Heart
    - ♣ Spade

  - Now look at your card and move to the board with your card **suit**.
  - Add up the number of cards in the **suit** and write it on the board.

ACTIVITY 1 – YOUR CARD IS YOUR DATA POINT.

- On a separate board (facilitator) write down **responses** to these questions:
  - What do you **notice** about the distribution?
  - Does anything feel **unexpected**?
  - If this were real data, what might **explain** this pattern?
- **Takeaway**
  - Data rarely behaves as expected.

ACTIVITY 2 – SAMPLE VS POPULATION - 10 MINUTES.

- Explain a standard set of cards has the following population:

  - 50% red
  - 50% black

  - 13 cards per suit – Ace through to King

ACTIVITY 2 - SAMPLE VS POPULATION.

- Turn over the sheet on the board.

- Now you will see 3 boards with a range of numbers based on the **value** of the card.

  - **2, 3, 4, 5 (Low)**
  - **6, 7, 8, 9 (Medium)**
  - **10, J, Q, K, A (High)**

  - Now look at your card and move to the board with your card **range**.
  - Add up the number of cards for your **value** and write it on the board.

ACTIVITY 2 - SAMPLE VS POPULATION.

- On a separate board (facilitator) write down **responses** to these questions:
  - What do you **notice** about the distribution?
  - Does anything feel **unexpected**?
  - If this were real data, what might **explain** this pattern?
- **Takeaway**
  - Small samples can be **misleading**.
  - Representativeness is an **assumption**, not a **guarantee**.

QUESTION.

- What else could we explore?

  - **Odd vs Even**
    - What would be our expectation on this?

ACTIVITY 3 – HYPOTHESES TESTING LITE – 10 MINUTES.

- Now we will form some **hypotheses** about the data we have collected.

  - Then we will look at **evidence** to **support** our theories.

  - Our **hypotheses**:

    - Clubs ♣ are over-represented
    - High cards dominate
    - Diamonds ♦ are rare

ACTIVITY 3 – HYPOTHESES TESTING LITE.

- **Hypothesis 1: Clubs are Over-represented**

  - Look around
  - Count or estimate Clubs ♣ vs other suits ♥♦♠

Hypothesis	Data Supporting / Not Supporting
Clubs are Over-represented	Yes / No

ACTIVITY 3 – HYPOTHESES TESTING LITE.

- **Hypothesis 2: High Cards Dominate**

  - Check your own card
  - Look at nearby cards
  - Count 10-K vs 2-5

Hypothesis	Data Supporting / Not Supporting
High Cards Dominate	Yes / No

ACTIVITY 3 – HYPOTHESES TESTING LITE.

- **Hypothesis 3: Diamonds are Rare**

  - Look for Diamonds ♦
  - Count how many appear

Hypothesis	Data Supporting / Not Supporting
Diamonds are Rare	Yes / No

ACTIVITY 3 – HYPOTHESES TESTING LITE.

- **Takeaway**

  - Hypotheses need **evidence**.
  - Samples can **suggest patterns** but **cannot confirm** them.
  - Many organisational decisions rely on **weak** evidence.

ACTIVITY 4 – PREDICT THE NEXT CARD - 5 MINUTES.

- **Predict the next card – colour, suit high/low**.

  - How **confident** are you?
    - Not very – the underlying structure is unclear.

  - What information would you need to **improve** your prediction?
    - **Full visibility** of the deck.
    - **Documentation** about how it was constructed.
    - A **larger** sample.

  - How does **unclear data structure** affect forecasting?
    - It makes forecasts **unreliable**.
    - It increases **uncertainty**.
    - It can lead to **overconfidence in flawed predictions**.

DATA QUALITY CHECK – 5 MINUTES.

- Now let's check the **quality** of our data set.
  - Look for missing **values**, unusual **patterns**, or anything **unexpected**.

- What **assumptions** did you make?
  - That the deck was **standard**
  - That the sample was **random**
  - That missing categories were **meaningful**
  - That the data source was **trustworthy**

- Where does this happen in real organisations?
  - **Undocumented** data merges
  - Silent **filters**
  - Pipeline **changes**
  - Analysts inheriting datasets **without context**

Harts	Diamonds	Spades	Clubs
2♥	10♦	2♠	2♣
3♥	J♦	3♠	3♣
4♥	Q♦	4♠	4♣
5♥	K♦	5♠	5♣
6♥	A♦	6♠	6♣
7♥		7♠	7♣
8♥		8♠	8♣
9♥		9♠	9♣
10♥		10♠	9♣ (dup)
J♥		J♠	10♣
Q♥		Q♠	10♣ (dup)
K♥		K♠	10♣ (dup)
A♥		A♠	J♣
			J♣ (dup)
			Q♣
			Q♣ (dup)
			K♣
			K♣ (dup)
			K♣ (dup)
			A♣
			A♣ (dup)

CONCLUSION – 2 MINUTES.

- What **surprised** you most?
- *Where did **assumptions** creep in?*
- *How does this mirror the datasets **you** work with?*
- *What would you do **differently** next time you encounter **messy data**?*

- ***Final Takeaway***

  - We leave with a lived experience of:
    - **Sampling bias**
    - **Hidden structure**
    - **Data quality issues**
    - **Uncertainty**
    - **The danger of assumptions**