WEEK 4 LAB ACTIVITIES: EXPLORATORY DATA ANALYSIS (EDA)

Lab Activity Guide

Module: Analytics and Business Intelligence (Level 5) **Topic:** Exploring Conjectures/Prediction with Data and Tableau

Objective

Apply the five-step conjecture method to explore patterns in a dataset, formulate hypotheses, test them, and present your findings using Tableau.

Dataset

Use the following dataset from Kaggle: **Title:** Mental Health in Tech Survey **Link:** https://www.kaggle.com/datasets/osmi/mental-health-in-tech-survey

This dataset includes fields such as:

- Age
- Gender
- Country
- Work Environment
- Mental Health Diagnosis
- Family History
- Treatment Access
- Remote Work
- Supervisor Support

Step-by-Step Instructions

Step 1: Accumulate the Data

- Download and open the dataset in Excel or Tableau. DOWNLOAD DATASET
- Review the variables and discuss in your group what relationships might be worth exploring.
- Consider both numerical and abstract data (e.g., age vs. support access).

Step 2: Examine the Data

- Load the dataset into Tableau.
- Create visualisations such as:
    - Bar chart: Mental Health Diagnosis by Work Environment
    - Pie chart: Distribution of Family History
    - Heatmap: Supervisor Support vs. Treatment Access

Questions to consider:

- Do people with family history of mental illness report higher diagnosis rates?
- Is there a link between remote work and mental health support?

Step 3: Formulate Conjectures

- Based on your visualisations, write at least **three conjectures** (smart guesses).
- Example: “Employees working remotely with unsupportive supervisors are more likely to report mental health issues.”
- Express your conjectures clearly, using logic or formulas where possible.

Step 4: Test Your Conjectures

- Use Tableau filters and calculated fields to test your ideas.
- Example: Filter for remote workers with low supervisor support and check diagnosis rates.
- If the data is insufficient, note what additional data would help.
- Record whether your conjectures hold true or need revision.

Step 5: Devise an Argument

- Write a short explanation for each conjecture:
    - Was it supported by the data?
    - What evidence did you find?
    - If it was incorrect, explain why and what the data showed instead.

Final Output

Your group should produce:

- A Tableau workbook (.twbx) with your visualisations
- A short report (1–2 pages) summarising:
    - Your process
    - Your findings
    - Your conclusions

Reflection Questions

- What surprised you in the data?
- How did visualisation help you spot patterns?
- What would you do differently with more data?