**1.Capstone Project: SPSS Analysis**

**Project Title:**

Does the type of background lighting affect reading speed?

**Objective:**

To find out if different lighting environments (Natural Light, White LED, or Dim Light) impact how quickly people can read a passage (measured in seconds).

**What Kind of Data Is This?**

| **Variable Name** | **Type** | **Description** |
| --- | --- | --- |
| Lighting\_Type | Categorical | Type of lighting used while reading |
| Reading\_Time | Numeric | Time taken to read a fixed passage (in seconds) |

**Step 1: Prepare Your Data**

Use this sample data for simplicity:

| **Person\_ID** | **Lighting\_Type** | **Reading\_Time** |
| --- | --- | --- |
| 1 | Natural Light | 120 |
| 2 | Natural Light | 125 |
| 3 | Natural Light | 118 |
| 4 | White LED | 135 |
| 5 | White LED | 132 |
| 6 | White LED | 137 |
| 7 | Dim Light | 145 |
| 8 | Dim Light | 150 |
| 9 | Dim Light | 148 |

**Step 2: Open SPSS and Create Variables**

1. Open SPSS → Click **Variable View**
2. Create two variables:
   * **Lighting\_Type** → Type: String
   * **Reading\_Time** → Type: Numeric

**Step 3: Enter the Data**

Click **Data View**, and input the data line by line as shown in Step 1.

**Step 4: Analyze the Data Using One-Way ANOVA**

1. Go to **Analyze** → **Compare Means** → **One-Way ANOVA**
2. Move Reading\_Time to **Dependent List**
3. Move Lighting\_Type to **Factor**
4. Click **OK**

**Step 5: Interpret the Output**

You’ll get two important tables:

**1. Descriptives Table (Sample Output)**

| **Lighting\_Type** | **Mean Reading\_Time** |
| --- | --- |
| Natural Light | 121 secs |
| White LED | 134.6 secs |
| Dim Light | 147.6 secs |

**2. ANOVA Table**

If **Sig. value < 0.05**, the result is significant.  
For example:  
**Sig. = 0.004** → Since 0.004 < 0.05 → **Yes, lighting affects reading speed**

**Final Conclusion:**

* **Natural Light** allows fastest reading
* **Dim Light** slows reading the most
* **White LED** is in between
* Result is statistically significant → **Lighting type impacts reading performance**

**Bonus Step: Bar Chart Visualization**

1. Click **Graphs** → **Chart Builder**
2. Select **Bar Chart**
3. Drag Lighting\_Type to x-axis and Reading\_Time to y-axis
4. Click **OK** to generate chart

Shorter bars = faster reading time.

**2.Capstone Project: SPSS Analysis**

**Project Title:**

Does noise level affect a person's concentration?

**Objective:**

To examine whether different levels of background noise (Quiet, Moderate, Loud) influence how well a person concentrates, measured through a standardized concentration test score.

**What Kind of Data Is This?**

| **Variable Name** | **Type** | **Description** |
| --- | --- | --- |
| Noise\_Level | Categorical | Environment condition: Quiet, Moderate, or Loud |
| Concentration\_Score | Numeric | Score on a concentration test (out of 100) |

**Step 1: Prepare Your Data**

Use this sample data:

| **Person\_ID** | **Noise\_Level** | **Concentration\_Score** |
| --- | --- | --- |
| 1 | Quiet | 88 |
| 2 | Quiet | 85 |
| 3 | Quiet | 90 |
| 4 | Moderate | 78 |
| 5 | Moderate | 74 |
| 6 | Moderate | 76 |
| 7 | Loud | 65 |
| 8 | Loud | 68 |
| 9 | Loud | 62 |

**Step 2: Create Variables in SPSS**

1. Open SPSS → Click on **Variable View**
2. Create:
   * Noise\_Level → **Type: String**
   * Concentration\_Score → **Type: Numeric**

**Step 3: Enter the Data**

Switch to **Data View** and enter the values row by row as shown in Step 1.

**Step 4: Run One-Way ANOVA**

1. Click **Analyze** → **Compare Means** → **One-Way ANOVA**
2. Move Concentration\_Score to **Dependent List**
3. Move Noise\_Level to **Factor**
4. Click **OK**

**Step 5: Interpret the Output**

**1. Descriptive Statistics Table (Example)**

| **Noise\_Level** | **Mean Concentration\_Score** |
| --- | --- |
| Quiet | 87.6 |
| Moderate | 76.0 |
| Loud | 65.0 |

**2. ANOVA Table**

If the **Sig. (p-value) < 0.05**, the result is **significant**.

Example:  
**Sig. = 0.002** → Since 0.002 < 0.05 → Yes, **noise level affects concentration**

**Conclusion:**

* **Quiet environments** lead to the highest concentration scores
* **Loud environments** result in the lowest scores
* The **difference is statistically significant**, suggesting background noise affects focus levels

**Bonus Step: Visual Bar Chart**

1. Go to **Graphs** → **Chart Builder**
2. Drag in a **Bar Chart**
3. Set Noise\_Level on the x-axis, Concentration\_Score on the y-axis
4. Click **OK**

Visual insight: Higher bars = better concentration.

**3.Capstone Project: SPSS Analysis**

**Project Title:**

Do more breaks really boost productivity?

**Objective:**

To examine if the number of breaks a person takes during a 4-hour work session affects their productivity, measured as a score out of 100.

**Variables Overview**

| **Variable Name** | **Type** | **Description** |
| --- | --- | --- |
| Breaks\_Count | Categorical | Frequency of breaks: No Break, 1–2 Breaks, 3+ Breaks |
| Productivity\_Score | Numeric | Productivity output score (based on tasks completed, accuracy, and pace) |

**Step 1: Sample Dataset**

| **Person\_ID** | **Breaks\_Count** | **Productivity\_Score** |
| --- | --- | --- |
| 1 | No Break | 60 |
| 2 | No Break | 58 |
| 3 | No Break | 62 |
| 4 | 1–2 Breaks | 75 |
| 5 | 1–2 Breaks | 78 |
| 6 | 1–2 Breaks | 72 |
| 7 | 3+ Breaks | 65 |
| 8 | 3+ Breaks | 66 |
| 9 | 3+ Breaks | 63 |

**Step 2: Variable Setup in SPSS**

1. Open SPSS → Go to **Variable View**
2. Add:
   * Breaks\_Count → Type: **String**
   * Productivity\_Score → Type: **Numeric**

**Step 3: Enter the Data**

In **Data View**, type the sample data row by row as above.

**Step 4: Perform One-Way ANOVA**

1. Click **Analyze** → **Compare Means** → **One-Way ANOVA**
2. Move Productivity\_Score to **Dependent List**
3. Move Breaks\_Count to **Factor**
4. Click **OK**

**Step 5: Interpret Your Results**

**Descriptive Stats (Example Output):**

| **Breaks\_Count** | **Mean Productivity\_Score** |
| --- | --- |
| No Break | 60.0 |
| 1–2 Breaks | 75.0 |
| 3+ Breaks | 64.6 |

**ANOVA Significance Test:**

* If **Sig. < 0.05**, the difference is statistically meaningful.  
  Example:  
  **Sig. = 0.01** → Significant → Break pattern affects productivity.

**Conclusion:**

* People who took **1–2 breaks** had the **highest productivity**
* No breaks and too many breaks (3+) both **lowered** performance
* A balanced break schedule seems ideal
* Result is statistically significant → Break frequency does affect output

**Optional: Visual Representation**

1. Click **Graphs** → **Chart Builder**
2. Select a **Bar Chart**
3. X-Axis: Breaks\_Count
4. Y-Axis: Productivity\_Score
5. Generate the chart

**4.Capstone Project: SPSS Analysis**

**Project Title:**

Does caffeine boost attention span?

**Objective:**

To evaluate whether different levels of caffeine consumption influence a person's ability to maintain attention during a 30-minute cognitive task.

**Variables Summary**

| **Variable Name** | **Type** | **Description** |
| --- | --- | --- |
| Caffeine\_Intake | Categorical | Caffeine level: None, Low (1 cup), High (3+ cups) |
| Attention\_Span | Numeric | Score from an attention span test (out of 100) |

**Step 1: Hypothetical Sample Data**

| **Person\_ID** | **Caffeine\_Intake** | **Attention\_Span** |
| --- | --- | --- |
| 1 | None | 64 |
| 2 | None | 67 |
| 3 | None | 62 |
| 4 | Low | 76 |
| 5 | Low | 79 |
| 6 | Low | 75 |
| 7 | High | 70 |
| 8 | High | 68 |
| 9 | High | 72 |

**Step 2: Set Up in SPSS**

In **Variable View**, define:

* Caffeine\_Intake → **String**
* Attention\_Span → **Numeric**

Then, enter data in **Data View** as shown above.

**Step 3: Run a One-Way ANOVA**

1. Go to **Analyze** → **Compare Means** → **One-Way ANOVA**
2. Move Attention\_Span → **Dependent List**
3. Move Caffeine\_Intake → **Factor**
4. Click **OK**

**Step 4: Interpret the Output**

**Example Descriptive Statistics:**

| **Caffeine\_Intake** | **Mean Attention\_Span** |
| --- | --- |
| None | 64.3 |
| Low | 76.6 |
| High | 70.0 |

**ANOVA Results:**

* **Sig. = 0.015** → This is less than 0.05 → **Statistically significant**

**Conclusion:**

* **Low caffeine intake** (around 1 cup) appears to **enhance attention span**
* **No caffeine** yields the lowest scores
* **High caffeine** doesn't give additional benefit and might slightly reduce performance
* The difference is statistically significant → **Caffeine affects attention, but more isn’t always better**

**Visualization Idea:**

Create a **bar chart** to show average attention span by caffeine level.

1. **Graphs** → **Chart Builder**
2. Choose **Bar Chart**
3. X-axis: Caffeine\_Intake, Y-axis: Attention\_Span
4. Click **OK**

**Bonus Ideas:**

* Add a line graph to track **attention over time** post-caffeine
* Explore interaction effects: **Sleep hours + Caffeine intake vs Attention**