**Lesson 1: Qualitative (Categorical) Data and Quantitative (Numerical) Data.**

In research, understanding the distinction between Qualitative (Categorical) Data and Quantitative (Numerical) Data is essential for selecting appropriate data collection methods, statistical tools, and interpretation techniques. Here's a clear explanation:

**Qualitative (Categorical) Data in Research**

**Definition:** Qualitative data represent non-numeric information that describes characteristics, categories, or labels. These data help researchers classify or group subjects based on traits or attributes.

**Purpose in Research:** Used to understand patterns, opinions, behaviors, or traits in a population, especially when researchers are interested in classification rather than measurement.

**Examples in Research:**

* **Demographics:** Gender, religion, civil status
* **Preferences:** Favorite brand, preferred mode of transportation
* **Responses:** “Yes” or “No” to a survey question
* **Categories:** Type of school (public/private), blood type

**Common Tools for Analysis**:

* Frequency tables
* Bar charts or pie charts
* Mode (most frequent category)
* Chi-square tests (for relationships between categories)

**Quantitative (Numerical) Data in Research**

**Definition:** Quantitative data are numeric values that measure amounts, counts, or magnitudes. These data can be analyzed statistically using mathematical operations.

**Purpose in Research:** Used to determine how much, how many, or to what extent a variable is present or has changed. This type of data supports more detailed statistical modeling.

**Examples in Research:**

* Age of respondents
* Income level (in pesos/dollars)
* Number of hours spent online per day
* Exam scores, blood pressure readings

**Common Tools for Analysis:**

* Mean, median, standard deviation
* Histograms, scatter plots
* T-tests, ANOVA, regression analysis

Summary Table:

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| **Aspect** | **Qualitative (Categorical)** | **Quantitative (Numerical)** |
| **Data Type** | Non-numeric (labels, categories) | Numeric (counts or measurements) |
| **Purpose** | Describe qualities or classify groups | Measure and analyze quantities |
| **Examples** | Gender, brand, color, type of job | Age, height, score, income |
| **Tools for Analysis** | Frequency, mode, chi-square test | Mean, standard deviation, t-test |
| **Visualization** | Bar chart, pie chart | Histogram, scatterplot |