

Summary of the Lecture: Statistic Tables and Figures

1. Describing Data by Tables and Graphs

1.1 Qualitative Variables

- **Frequency (or Count):** The number of observations in a specific category.
- **Frequency Distribution:** A table listing all categories and their frequencies.
- **Relative Frequency (Percentage):** The percentage of observations in a category, calculated as:

Relative Frequency = $\frac{\text{Frequency in the class}}{\text{Total number of observations}} \times 100$

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- **Relative Frequency Distribution:** A table listing all categories and their relative frequencies.
- **Cumulative Frequency:** The sum of frequencies up to a specific category (used for ordinal variables, not nominal).
- **Graphical Representation:** Qualitative data can be presented using **pie charts** or **bar graphs** (horizontal or vertical).

Example 3.1: Blood Types

- Data: Blood types of 40 people.
- Frequency distribution table created using SPSS:

- **Analyze -> Descriptive Statistics -> Frequencies**
- **Analyze -> Custom Tables -> Tables of Frequencies**

Blood Type Frequency Percent

O	16	40.0%
A	18	45.0%
B	4	10.0%
AB	2	5.0%
Total	40	100.0%

- Graphical representation: Pie chart showing the distribution of blood types.

1.2 Quantitative Variables

- For **discrete** or **continuous** variables with many values, data is grouped into **class intervals**.
- **Steps for Grouping Data:**
 1. Find the **minimum** and **maximum** values in the dataset.
 2. Choose **equal-length intervals** covering the range without overlapping.
 3. Count the number of observations in each interval (**class frequency**).

4. Calculate the **relative frequency** for each class.

- **Graphical Representation:** Quantitative data is usually presented using **histograms** or **bar graphs**.

Example 3.2: Age of 102 People

- Data: Ages of 102 people.
- Frequency distribution table created using SPSS:
 - **Analyze -> Descriptive Statistics -> Frequencies**
 - **Analyze -> Custom Tables -> Tables of Frequencies**

Age Group Frequency Percent Cumulative Percent

18 - 22	6	5.9%	5.9%
23 - 27	10	9.8%	15.7%
28 - 32	14	13.7%	29.4%
33 - 37	11	10.8%	40.2%
38 - 42	19	18.6%	58.8%
43 - 47	8	7.8%	66.7%
48 - 52	12	11.8%	78.4%
53 - 57	12	11.8%	90.2%
58 - 62	4	3.9%	94.1%
63 - 67	2	2.0%	96.1%

Age Group Frequency Percent Cumulative Percent

68 - 72	4	3.9%	100.0%
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Total	102	100.0%	
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- Graphical representation: Histogram showing the distribution of ages.

Questions

1. Qualitative Data Example:

- Given pneumonia types of 30 patients: AAACCAACCACACAACACACACCCAAA
- Summarize the data in a frequency table with percentages.

2. Quantitative Data Example:

- Given mathematics' degrees of 30 students:

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50, 66, 30, 40, 33, 45, 21, 18, 71, 19,

22, 31, 20, 44, 27, 61, 50, 34, 70, 41,

18, 12, 43, 25, 39, 41, 60, 67, 51, 50

- Tasks:
 1. Find the **minimum** and **maximum** values.
 2. Choose **interval classes**.

3. Find **class frequency**.
4. Calculate **relative frequencies** for each class.