

CHAPTER 1. DESCRIPTIVE STATISTICS

1.1. Statistics

- What is statistics?
- Definitions: Variable, data, population and sample
- Descriptive and Inferential statistics

1.2. Variables and Types of Data

Qualitative, quantitative, categorical, ordinal, discrete, continuous

1.3. Data organization, histograms and bar charts

1.4. Measures of:

- Central Tendency (Location):
 - o Mean
 - o Median
 - o Mode
 - o Midrange
- Variation (Dispersion)
 - o Range
 - o Variance
 - o Standard Deviation
 - o Coefficient of Variation
- Position
 - o Z-score
 - o Percentile
 - o Decile and Quartile
 - o Outlier

1.4. Data representation

- Box-plots
- Frequency distributions
- Graphs: Time series, Pie graphs, Scatter plots

1.5. Shapes of frequency distributions

- Shapes of distributions
- Skewness
- Kurtosis

Chapter 1: Assignments

1. The table below shows the height of students in classroom A (total of 15 students) and classroom B (total of 16 students), measured in centimeters. For each of the classroom, calculate the following:
 - a. Median
 - b. Mean
 - c. Mode
 - d. Midrange

Display the results on a table.

| Classroom A | Classroom B |
|-------------|-------------|
| 156 | 185 |
| 175 | 175 |
| 189 | 169 |
| 165 | 182 |
| 160 | 179 |
| 154 | 163 |
| 158 | 191 |
| 170 | 182 |
| 171 | 180 |
| 169 | 174 |
| 180 | 161 |
| 175 | 180 |
| 172 | 176 |
| 169 | 174 |
| 162 | 182 |
| | 173 |

2. Using the data from the previous exercise:
 - a. Develop an ungrouped frequency table for the students in each classroom and for all 31 students (three tables in total)
 - b. Construct a grouped frequency table for the students in each classroom and for all 31 students (three tables in total)
 - c. Plot the frequencies of each class for the students in each classroom and for all 31 students (three histograms in total)
3. Determine the type of variable:

| Variable | Nominal | Ordinal | Discrete | Continuous |
|-----------------------|---------|---------|----------|------------|
| Hair color | | | | |
| Temperature | | | | |
| School grade | | | | |
| Level of satisfaction | | | | |
| Height | | | | |
| Age | | | | |
| Inhabitants | | | | |

4. Twenty-five people were given a blood test to determine their blood type.
Raw Data: A,B,B,AB,O O,O,B,AB,B B,B,O,A,O A,O,O,O,AB AB,A,O,B,A
Can you construct a histogram? Can you construct a bar graph?
5. Find the mean of the following data:
20, 26, 40, 36, 23, 42, 35, 24, 30
6. If a researcher computes the mean for a set of measurements and then subtracts this mean from each measurement, the SUM of the resulting set will be equal to:
a. zero.
b. unity.
c. n , the number of measurements.
d. the mean.
e. n times the mean.
7. Find the median of the following measurements:
713, 300, 618, 595, 311, 401, and 292
8. Find the median of the following measurements:
684, 764, 656, 702, 856, 1133, 1132, 1303
9. Find the mode of the following measurements:
8, 9, 9, 14, 8, 8, 10, 7, 6, 9, 7, 8, 10, 14, 11, 8, 14, 11
10. Find the mode of the following measurements:
110, 731, 1031, 84, 20, 118, 1162, 1977, 103, 752
11. Find the midrange of these data:
2, 3, 6, 8, 4, 1
12. Which of the measures of central tendency is sensitive to extreme scores (values) on the higher or lower end of a distribution of data?
13. Can the median be negative?
14. Which measures of central tendency can have more than one value?
15. When is the mean the best measure of central tendency?
16. When is the mode the best measure of central tendency?
17. What is the most appropriate measure of central tendency when the data has outliers?
18. The average age of children adopted in Denmark, at the time of adoption, is 2.5 years old. Is this a good measure of central tendency for this data set?