

AS1 (Assignment 1, Unit 2): Central Tendency and Shapes of Distributions

1. What is the goal of central tendency?

_to identify a single score that best describes all the scores in a data set. It aims to find the “middle” of the distribution.

2. Find the mean, median, and mode for the following sample of scores: 5, 4, 5, 2, 7, 1, 3, 5

Mean____4_____ Median____4.5_____ Mode____5_____

3. Find the mean, median, and mode for the following sample of scores: 3, 5, 7, 3, 9, 8, 3, 7, 5

Mean____5.5555555556_____ Median____5_____ Mode____3_____

4. Find the mean, median, and mode for the scores in the following frequency table.

X f

6 1

5 2

Mode____1_____

4 2

3 2

2 2

1 5

Mean____2.7857142857_____ Median____2.5_____

5. Find the mean, median, and mode for the scores in the following frequency table.

X f

8 1

7 1

6 2

Mode____5_____

5 5

4 2

3 2

Mean____5.0769230769_____ Median____5_____

6. Explain why the median is often preferred to the mean as a measure of central tendency for a skewed distribution?

_because median better represents the data. The mean becomes misleading representation of the “average” since it’s being pulled toward the outlier.

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7. A researcher conducts a study comparing two different treatments with a sample of participants divided into 2 treatments. The study produced the following data:

Treatment 1: 6, 7, 11, 4, 19, 17, 2, 5, 9, 13, 6, 23, 11, 4, 6

Treatment 2: 10, 9, 6, 6, 1, 11, 8, 6, 3, 2, 11, 1, 12, 7, 10

Calculate mean for treatment 1 and put your answer here 9.533333333

Calculate mean treat treatment 2 and put your answer here 6.866666667

Calculate the median for treatment 1 and put your answer here 7

Calculate the median for treatment 2 and put your answer here 7

Calculate the mode for treatment 1 and put your answer here 6

Calculate the mode for treatment 2 and put your answer here 6

8. Schmidt (1994) conducted a series of experiments examining the effects of humor on memory. In one study, participants were shown a list of sentences of which half were humorous and half were non-humorous. Schmidt then measured the number of each type of sentence recalled by each participant. The following scores are similar to the results obtained in the study:

Humorous	Non-humorous
4 5 2 4	5 2 4 2
6 6 6 6	2 3 1 6
2 5 4 3	3 2 3 3
1 3 5 5	4 1 5 3

Mean for humorous group: 4.1875 Mean for non-humorous group: 3.0625

Do the data suggest that humor helps memory? Answer "yes" or "no" and why:

The difference between the mean of the humorous group and the mean of the non-humorous one shows that on average the participants remembered more humorous sentences, so the data does suggest that humor helps memory.

9. A researcher measured the time that a sample of students selected from Caldwell University spent studying on a given week during a semester. Here are the data in hours:

4, 6, 5, 4, 5, 7, 8, 6, 5, 7, 8, 9, 9, 1, 0, 2, 3, 5, 6, 4, 3, 7, 8, 4, 5, 6, 7, 8, 7, 6, 21, 7, 8, 9, 2, 3, 2

ANSWER the following questions based on the information given in question #9

Name the population: all the students of the university

Name the sample: the students that were selected for the study

How many participants are in the sample? 37

What is the scale of measurement? ratio

Is the scale continuous or discrete? continuous

9a. Use SPSS to compute the following (using the data from question 9):

- generate a frequency table
- the appropriate graph
- mean
- median
- mode

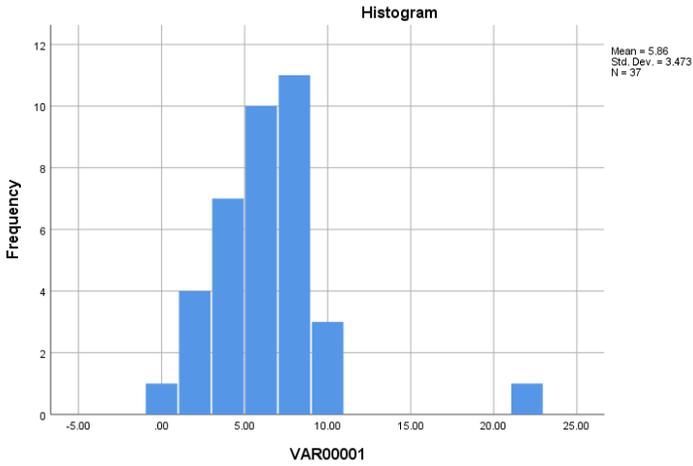
PASTE your SPSS results here:

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Statistics

VAR00001

N	Valid	37
	Missing	0
Mean		5.8649
Median		6.0000
Mode		7.00
Std. Deviation		3.47341



sed on your SPSS results, please answer the following questions:

What is the mean? 5.8649 What is the mode? 7.00 What is the median?
6.0000

What is the shape of this distribution? Answer= positively skewed

Which is the “best” measure of central tendency for these data?
 _____ median _____

Why?
 _____ Because of one obviously higher score (the outlier) that pulls the mean towards it and the mean gets distorted. In skewed distributions the median represents central tendency better.

Going on to a different set of questions, which have nothing to do with any of the above questions:

10. Why are there three measures of central tendency rather than just one?

_____Because depending on the data set we need different measures of central tendency that best describe the data set given

11. Name a situation where the mean would NOT be an appropriate measure of central tendency. Do not use an example from class lecture

_If we take 10 people and measure their weekly hours spent at the gym and get the results 2.3.1.4.5.2.4.5.2.25, the is not going to be the appropriate measurement of central tendency, because of the outlier of 25 which is significantly higher than the rest of the data.

12. Name a situation where only the mode could be used as a measure of central tendency

_If we take grocery shopping list and analyze how many loafs of bread, cartons of eggs, packs of butter and chocolate bars a person goes through during a month. The nominal data will be presented in a bar graph. The appropriate measure of central tendency will be the mode that will describe which item is bought more frequently.

13. If a distribution were perfectly symmetrical and Mary got an exam score that was equal to the median, and John got an exam score that was equal to the mean, what would you know about their scores?

Answer_____the scores are identical_____

14. A professor gave a very, very difficult exam. Vincent scored at the mode, Brandon scored at the mean, and Linda scored at the median. Place the names in order from who got the highest exam score to who got the lowest exam score.

