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

1. What is the goal of central tendency?

The goal of central tendency is to find the middle of 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 5.55 Median 5 Mode 5

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

X	f
6	1
5	2
4	2
3	2
2	2
1	5

Mean 2.78 Median 2.5 Mode 1

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

X	f
8	1
7	1
6	2
5	5
4	2
3	2

Mean 5.07 Median 5 Mode 5

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

The median is often preferred to the mean as a measure of central tendency for a skewed distribution because, it allows the score to be fair and not distorted.

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 9.25

Calculate mean treat treatment 2 and put your answer here 6.86

Calculate the median for treatment 1 and put your answer here 6.50

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: 4.18 Mean for non-humorous group: 3.06

Do the data suggest that humor helps memory? Answer "yes" or "no" and why:
The data suggest that humor helps memory, because the mean of the humorous group was higher the mean of the non-humorous group.

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: N/A

Name the sample: Caldwell University students.

How many participants are in the sample? 37

What is the scale of measurement? Interval.

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:

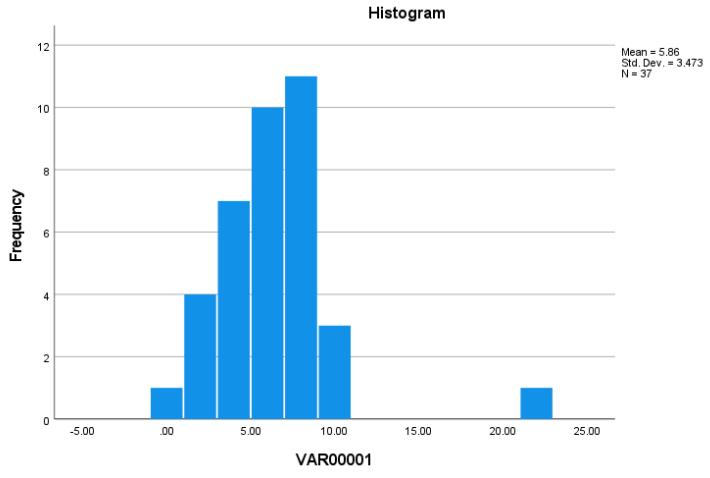
Statistics

VAR00001

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

VAR00001

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	2.7	2.7	2.7
	1.00	1	2.7	2.7	5.4
	2.00	3	8.1	8.1	13.5
	3.00	3	8.1	8.1	21.6
	4.00	4	10.8	10.8	32.4
	5.00	5	13.5	13.5	45.9
	6.00	5	13.5	13.5	59.5
	7.00	6	16.2	16.2	75.7
	8.00	5	13.5	13.5	89.2
	9.00	3	8.1	8.1	97.3
	21.00	1	2.7	2.7	100.0
	Total	37	100.0	100.0	



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

What is the mean? 5.8649 What is the mode? 7 What is the median? 6.0000

What is the shape of this distribution? Answer= Positively skewed distribution.

Which is the "best" measure of central tendency for these data?

Why?

The median is the best measure of central tendency for this data because the mean is outliers.

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?

    Mean, Median, and Mode.

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

    The mean will not be appropriate for a nominal scale of measurement, because objects, people, places, and words cannot be divided, nor added. For example, I wanted to find the mean of the many dogs breeds I have, I cannot use Poodles + Great Danes then divide the result by 2. Animals cannot it be added nor divided.

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

    The mode can be considered as a measure of central tendency when a nominal scale is presented.

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 Both, Mary and John scores are the same because the value is the same.

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.

    Answer: Brandon Linda Vincent

15. A professor gave a very, very easy exam. Dan scored at the mode, Luci scored at the median, and Stephen scored at the mean. Place the names in order from who got the lowest exam score to who got the highest exam score:

    Answer: Stephen Luci Dan

True / False Questions

Please type "T" is the statement is true, and type "F" if the statement is false in the provided spaces

__F___ 16. A student takes a 10-point quiz each week in statistics class. If the student's quiz scores for the first three weeks are 2, 6, 5, and 10, then the mean score is M = 9.

__T___ 17. A sample of $n = 6$ scores has $\Sigma X = 48$. This sample has a mean of M = 8.

___F__ 18. For the scores in the following frequency distribution table, the mean is M = 3.

X	f
4	1
3	4
2	2

__T___ 19. The mean is considered to be the "balance point" for a distribution because exactly half of the scores are located above the mean and exactly half are below the mean.

_F___ 20. In a sample of $n = 3$ scores, if two scores are each below the mean by 2 points, then the third score is above the mean by 4 points.

___F__ 21. A sample has $n = 5$ scores: 2, 4, 5, 8, and 11. The median for the sample is 6.5.

___T__ 22. There are situations for which it is either impossible to compute a mean or the mean does not provide a central, representative value.

__T___ 23. A distribution of scores has a mean of 50, a median of 53, and a mode of 56. Based on this information, it appears that the distribution is negatively skewed.

___F__ 24. If a negatively skewed distribution has a mean of 50, then the median and the mode are probably both greater than 50.

___T__ 25. For a positively skewed distribution, the mean usually has a larger value than either the median or the mode.