

Statistics Assignment

Differences Between Mean and Median

1. You're given $n = 5$ measurements: 0, 7, 1, 1, 4. Find the mean, median, and mode. Show your work (Don't use the calculator; show the calculations.) (2 points)
2. The VCR (videocassette recorder) is a common fixture in most American homes. In fact, most American households have VCRs, and many have more than one. (2 points)

You take a simple random sample of households and get these numbers—each one represents a count of VCRs from one house. (**Note:** These data are hypothetical)

3	1	0	1	1
1	0	2	2	1
1	1	2	1	0
0	1	2	2	3
1	1	1	0	2
3	1	0	1	1
1	0	2	2	1
1	0	2	2	1
1	1	2	1	0
0	1	2	2	3
1	1	1	0	2
3	1	0	1	1
1	0	2	2	1
1	1	2	1	0
0	1	2	2	3
1	1	1	0	2
1	1	2	1	0
0	1	2	2	3
1	1	1	0	2
3	1	0	1	1

Based on these data and the fact that they represent a simple random sample, how many VCRs would you say *most* American households have? Which measure of center did you use, and why?

3. The top ten movies and their profits (in millions of dollars) from the weekend of May 23-25, 1997 are presented here. (3 points)

<i>The Lost World: Jurassic Park</i>	\$90.2	<i>Father's Day</i>	\$4.7
<i>Addicted to Love</i>	11.4	<i>Liar Liar</i>	3.0
<i>The Fifth Element</i>	8.0	<i>Volcano</i>	2.3
<i>Austin Powers</i>	5.6	<i>Night Falls on Manhattan</i>	2.1
<i>Breakdown</i>	5.4	<i>Anaconda</i>	1.73

- A. Calculate the mean profit for these ten movies for the May 23-25 weekend. Calculate the median profit. Show your work (Don't use the calculator; show the calculations.)
- B. Which of the two measures in part A best describes the center of the data? Explain.

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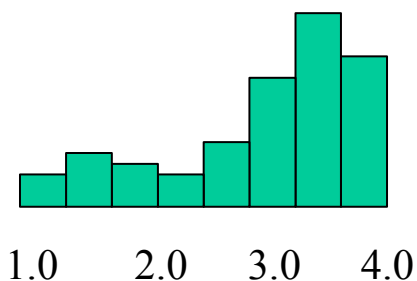
4. The local school system has a salary dispute: schoolteachers and administrators claim they're being underpaid, while school district officials disagree. (3 points)
- A. Bearing in mind that the salaries of some top administrators in this particular district are actually quite high, would it be in the best interest of the district budgeting officials to use the mean or the median when quoting the "average" salary in the district? Why?
- B. Should the teachers use the mean or median when quoting the "average" salary? Why?
- C. Which measure is probably a better measure of the pay for most teachers and administrators?
5. In a psychological experiment, the time on task was recorded for ten subjects. (6 points)

These measurements are in seconds:

175	190	250	230	240
200	185	190	225	265

Show your work (Don't use the calculator; show the calculations.)

- A. Find the mean time on task.
- B. Find the median time on task.
- C. If you were writing a report to describe these data, which measure(s) of central tendency would you use? Explain.
- D. Suppose an eleventh subject was actually tested and his time on task was recorded as 784 seconds. Calculate the mean and median for the set of eleven measurements. Why might the scientists have decided to throw out this outlier? Give a possible scenario.
6. Consider the following histogram of class GPAs. (4 points)



Which measure of central tendency would be greater, the mean or the median, and why?

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7. (On this question it's acceptable to use your calculator to calculate the measures of center.) (5 points)

Suppose the yearly salaries in a small law firm are as follows:

\$45,000	\$50,000	\$50,000
\$50,000	\$65,000	\$280,000

- A. What is the mean and median of these six salaries?
- B. Adjust some of the six original salaries so that the mean increases, while the median decreases.
- C. Adjust some of the six original salaries so that the mean decreases, while the median increases.

Acknowledgements

Question 2:

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Question 3:

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Question 5:

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