

CS381/780 Data Analytic Review Quiz 3

Instruction: For multiple choice questions, clearly circle one of the choice; for all other questions, write your answer right below the questions. All questions carry the same weights.

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Question 1: The household income distribution of a gated community should have a _____ standard deviation than a random sample of the whole population

- A. higher
- B. lower**
- C. similar
- D. unknown

Question 2: The Graduation Rate distribution among different colleges should have a _____ kurtosis than the average height distribution among different colleges.

- A. higher**
- B. lower
- C. similar
- D. unknown

$$(2 + 3 + 8 + -1 + 1) / 5 = 2.6 = \text{mean}$$

Question 3: Given the following data sets

$$(5 + 6 + 10 + 0 + 3) / 5 = 4.8 = \text{mean}$$

X	Y	X	mean	X - mean	(X - mean)^2
2	5	2	2.6	-.6	.36
3	6	3	2.6	.4	.16
8	10	8	2.6	5.4	29.16
-1	0	-1	2.6	-3.6	12.96
1	3	1	2.6	-1.6	2.56

$$\text{SQRT } ((.36 + .16 + 29.16 + 12.96 + 2.56) / 5) = \text{SQRT } (9.04) = 3.0067$$

- A. Calculate the standard deviation of X and Y. Show your work. **$\sigma_x = 3.0067$ $\sigma_y = 3.3106$**
- B. Calculate the covariance between X and Y. Show your work.

Y	mean	Y - mean	(Y - mean)^2
5	4.8	.2	.04
6	4.8	1.2	1.44
10	4.8	5.2	27.04
0	4.8	-4.8	23.04
3	4.8	-1.8	3.24

$$\text{SQRT } ((.04 + 1.44 + 27.04 + 23.04 + 3.24) / 5) = \text{SQRT } (10.96) = 3.3106$$