

Homework #9 – Due Nov. 19
STAT-UB.0103 – Statistics for Business Control and Regression Models

Problem 1

Does the winner of the superbowl cause the stock market to go up? Historically, the S & P 500 has advanced an average of 14.5% in years when a team from the NFC wins the superbowl, compared with an average of 7.3% in years when a team from the AFC wins. Explain why this does not necessarily mean that when a team from the NFC wins, it *causes* the market to advance more.

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Problem 2

If $\text{Var}(X) = 25$, $\text{Var}(Y) = 16$, and the correlation between X and Y is -0.5 , Find the following:

- (a) $\text{Cov}(X, Y)$,
- (b) $\text{Cov}(2X, 3Y)$,
- (c) $\text{Var}(X + Y)$,
- (d) $\text{Var}(2X + 3Y)$.

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Problem 3

Suppose you have two stocks, X and Y . Stock X has a mean annual return of 4% with a standard deviation of 2%; stock Y has a mean annual return of 10% with a standard deviation of 20%. Suppose you invest \$20 in stock X and \$30 in stock Y . What are the mean and the standard deviation of your gain in the following three scenarios?

- (a) The stocks are uncorrelated.
- (b) The correlation between the returns is 0.7.
- (c) The correlation between the returns is -0.7 .

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Problem 4

Sincich, Ex. 11.7

(Note: if you have the 2nd edition of the textbook, then the problem number is 10.7)

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Problem 5

Sincich, Ex. 11.9.

(2nd edition: Ex. 10.9)

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Problem 6

Sincich, Ex. 11.10.

(2nd edition: Ex. 10.10)

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Problem 7

Sincich, Ex. 11.15.

(2nd edition: Ex. 10.15)

Note: If you have the 2nd edition of the textbook, then the data is slightly different, as is the regression fit. On your assignment, add a note for the TA to let him know that you are using the older edition; otherwise, he might mark your answer as incorrect.

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Problem 8

Sincich, Ex. 11.22. Use Minitab to fit the model.

(2nd edition: Ex. 10.20)

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