

Johnson Chapter 1 Exercise 8

The data set HOTEL contains some information about Choice Hotels International in the Washington, DC, area. The variables in this data set are:

Variable	Description
Location	Location of hotel
Rooms	Number of rooms in hotel
Min	Minimum 2-person 1995 summer rate
Max	Maximum 2-person 1995 summer rate
Dining	Whether the hotel has a dining room
Lounge	Whether the hotel has a cocktail lounge
Bkfst	Whether the hotel serves a free continental breakfast
Pool	Whether the hotel has a pool
Type	Type of hotel: CI = Comfort Inn QI = Quality Inn CH = Clarion Hotel

- a. What are the values of p and N for these data?
- b. Which variables, if any, in this data set represent continuous variables? Which variables are discrete or categorical variables? Which variables, if any, are discrete, but quantitatively ordered?
- c. Construct a scatter plot that illustrates any possible relationship that might exist between minimum room cost and the number of rooms in the hotel. Does there appear to be any relationship between these two variables? Explain your answer.
- d. Construct a scatter plot that illustrates any possible relationship that might exist between maximum room cost and the number of rooms in the hotel. Does there appear to be any relationship between these two variables? Explain your answer.
- e. Based on your plot in part d, do any hotels appear to be outliers?
- f. Construct a scatter plot that illustrates any possible relationship that might exist between minimum room cost and maximum room cost. Does there appear to be any relationship between these two variables? Explain your answer.
- g. Based on your plot in part f, do any hotels appear to be outliers?
- h. Consider only the variables ROOMS, MIN, and MAX. Find the mean vectors, $\hat{\mu}$, the sample variance-covariance matrix, $\hat{\Sigma}$, and the sample correlation matrix R, for these three variables.

- i. Find Z , the matrix of z-scores for the three variables specified in part h.
- j. Repeat part h for the CI-type hotels and for the QI-type hotels. Do the mean vectors and variance-covariance matrices for these two groups of hotels appear to be similar to one another? Explain your answer (no statistical justification of your answer is required).
- k. Repeat part h for hotels with and without pools. Do the mean vectors and variance-covariance matrices for these two groups of hotels appear to be similar to one another? Explain your answer (no statistical justification of your answer is required).