資訊116 F74094075
張庭菀

1.22 The following data are the measures of the diameters of 36 rivet heads in 1/100 of an inch.

6.72	6.77	6.82	6.70	6.78	6.70	6.62	6.75
6.66	6.66	6.64	6.76	6.73	6.80	6.72	6.76
6.76	6.68	6.66	6.62	6.72	6.76	6.70	6.78
6.76	6.67	6.70	6.72	6.74	6.81	6.79	6.78
6.66	6.76	6.76	6.72				

(a) Compute the sample mean and sample standard deviation.

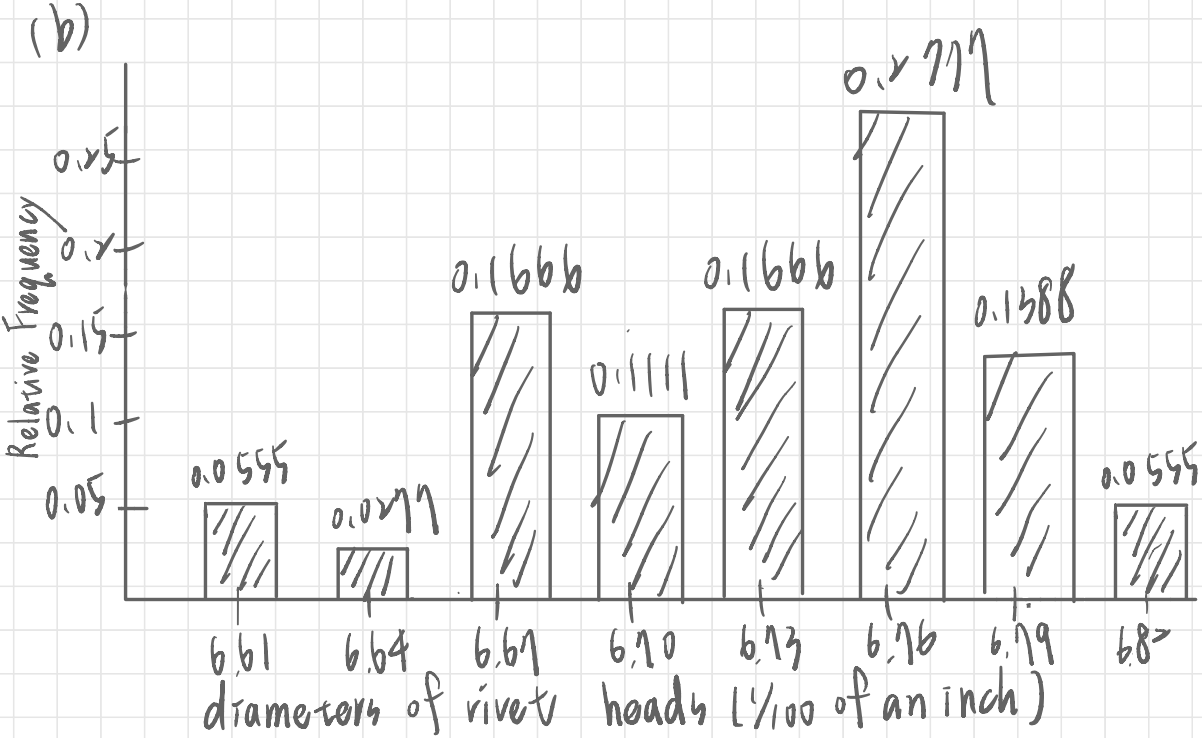
(b) Construct a relative frequency histogram of the data.

(c) Comment on whether or not there is any clear indication that the sample came from a population that has a bell-shaped distribution.

(a) sample mean = 6.7261

sample standard deviation = $\frac{\sum_{i=1}^{36}(x_i-\bar{x})^2}{35}$ = 0.05357

(b)



(c)

不是鐘型分佈，因為從上圖可看出其分佈高低相間，圖型凹凸不平，且有些落差大，故不符合鐘型分佈

2.8 For the sample space of Exercise 2.4,

(a) list the elements corresponding to the event A that the sum is greater than 8;

(b) list the elements corresponding to the event B that a 2 occurs on either die;

(c) list the elements corresponding to the event C that a number greater than 4 comes up on the green die;

(d) list the elements corresponding to the event $A \cap C$;

(e) list the elements corresponding to the event $A \cap B$;

(f) list the elements corresponding to the event $B \cap C$;

(g) construct a Venn diagram to illustrate the intersections and unions of the events A, B, and C.

2.4 An experiment involves tossing a pair of dice, one green and one red, and recording the numbers that come up. If x equals the outcome on the green die and y the outcome on the red die, describe the sample space S

(a) by listing the elements (x, y);

(b) by using the rule method.

(a) $A = \{(3,6), (4,5), (4,6), (5,4), (5,5), (5,6), (6,3), (6,4), (6,5), (6,6)\}$

(b) $B = \{(2,1), (2,3), (2,4), (2,5), (2,6), (1,2), (3,2), (4,2), (5,2), (6,2)\}$

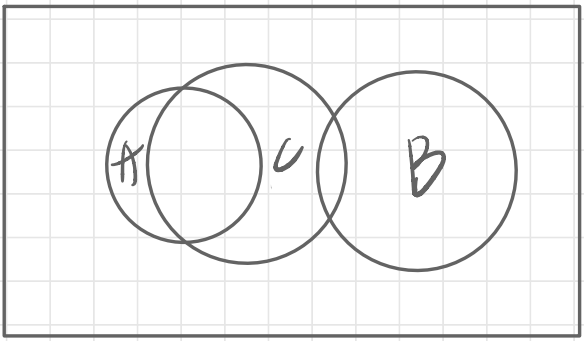
(c) $C = \{(5,1), (5,2), (5,3), (5,4), (5,5), (5,6), (6,1), (6,2), (6,3), (6,4), (6,5), (6,6)\}$

(d) $A \cap C = \{(5,4), (5,5), (5,6), (6,4), (6,5), (6,6)\}$

(e) $A \cap B = \emptyset$

(f) $B \cap C = \{(5,x), (6,x)\}$

(g)



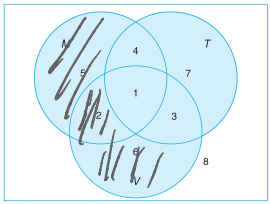
2.20 Referring to Exercise 2.19 and the Venn diagram of Figure 2.5, list the numbers of the regions that represent the following events:

(a) The family will experience no mechanical problems and will not receive a ticket for a traffic violation but will arrive at a campsite with no vacancies.

(b) The family will experience both mechanical problems and trouble in locating a campsite with a vacancy but will not receive a ticket for a traffic violation.

(c) The family will either have mechanical trouble or arrive at a campsite with no vacancies but will not receive a ticket for a traffic violation.

(d) The family will not arrive at a campsite with no vacancies.



2.19 Suppose that a family is leaving on a summer vacation in their camper and that M is the event that they will experience mechanical problems, T is the event that they will receive a ticket for committing a traffic violation, and V is the event that they will arrive at a campsite with no vacancies. Referring to the Venn diagram of Figure 2.5, state in words the events represented by the following regions:

(a) region 5.

(a) $M' \cap T' \cap V = 5$

(b) $M \cap V \cap T' = 2$

(c) $(M \cup V) \cap T' = 13$

(d) $V' = 1, 6$

2.38 Three married couples have bought 6 seats in the same row for a concert. In how many different ways can they be seated

(a) with no restrictions?

(b) if each couple is to sit together?

(c) if all the men sit together to the right of all the women?

(a) $6! = 720$

(b) $3! \times 2! \times 2! \times 2! = 48$

(c) $3! \times 3! = 36$

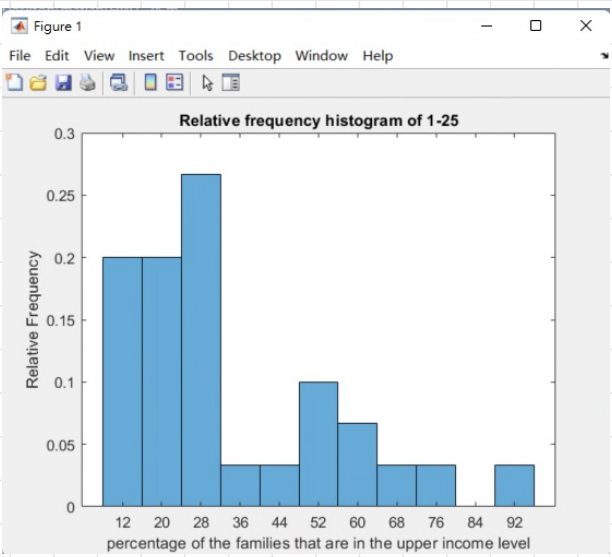
Matlab

1.25

(a) sample mean = 33.31

(b) sample median = 26.35

(c)

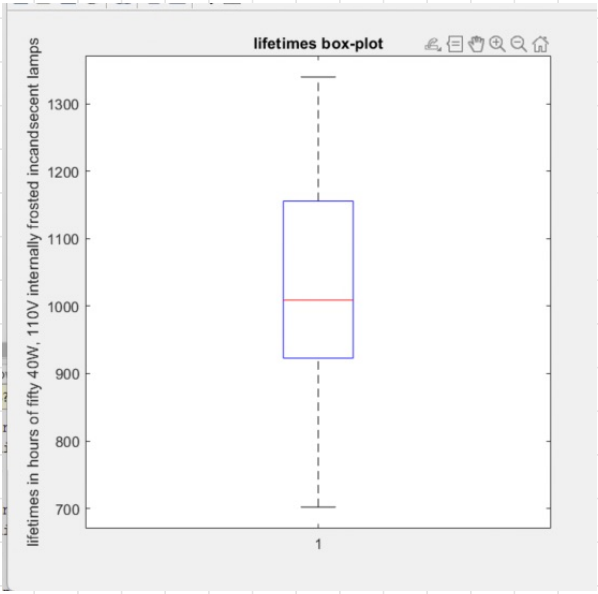


(d) trimmed mean = 30.97

trimmed mean < sample mean : 前後各刪除10%後造成的結果

trimmed mean > sample median : sample中可能存在幾個相對較大的極值

1.30



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