Topics: Descriptive Statistics and Probability

1. Look at the data given below. Plot the data, find the outliers and find out μ, σ, σ^2

Name of company	Measure X
Allied Signal	24.23%
Bankers Trust	25.53%
General Mills	25.41%
ITT Industries	24.14%
J.P.Morgan& Co.	29.62%
Lehman Brothers	28.25%
Marriott	25.81%
MCI	24.39%
Merrill Lynch	40.26%
Microsoft	32.95%
Morgan Stanley	91.36%
Sun Microsystems	25.99%
Travelers	39.42%
US Airways	26.71%
Warner-Lambert	35.00%

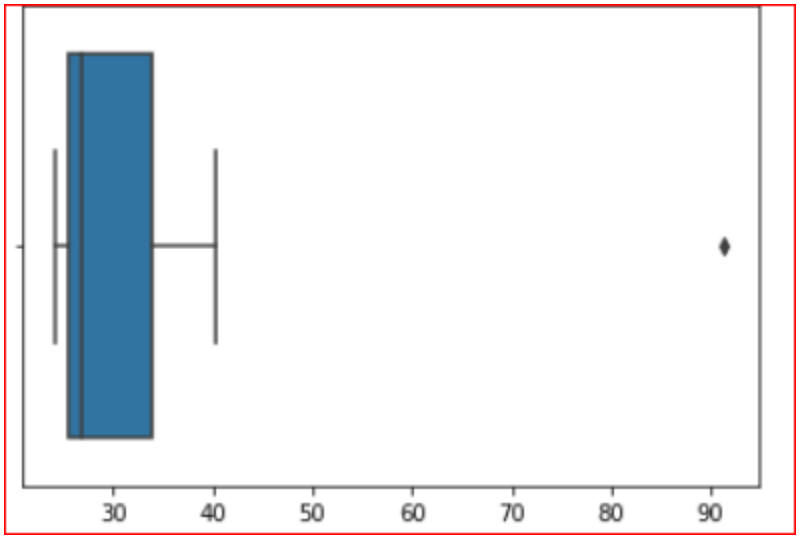
ANS :- Mean-33.27

Standard Deviation- 16.94

Variance- 287.14

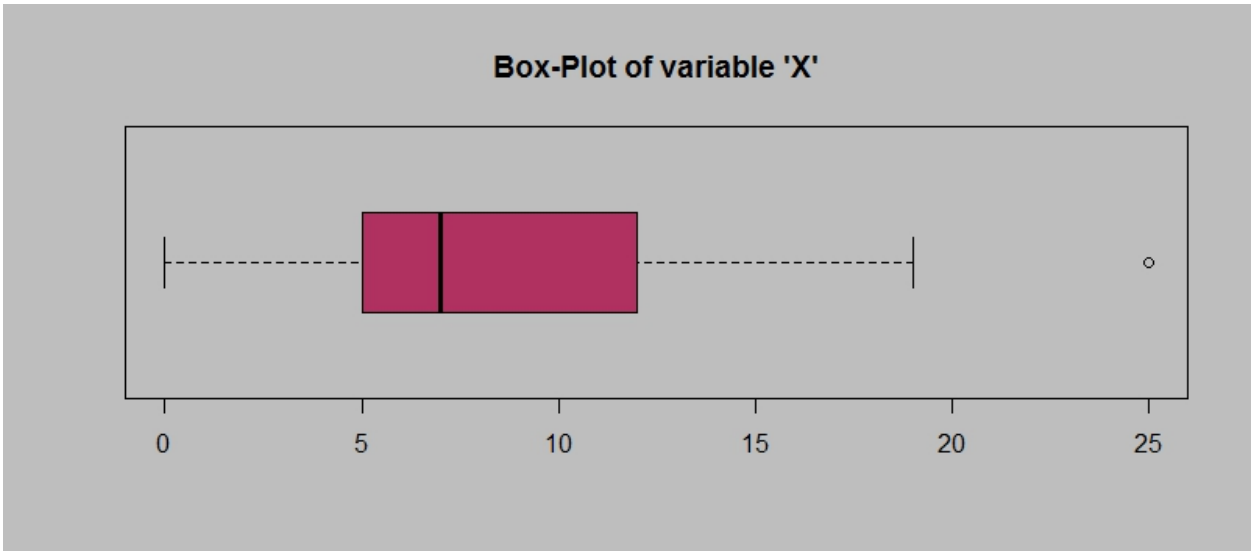
Outliar- 0.9136

Boxplot for outliars



uestions referred to from *Aczel A., Sounderpandian J., Complete Business Statistics (7ed.)*

2.



Answer the following three questions based on the box-plot above.

(i) What is inter-quartile range of this dataset? (please approximate the numbers) In one line, explain what this value implies.

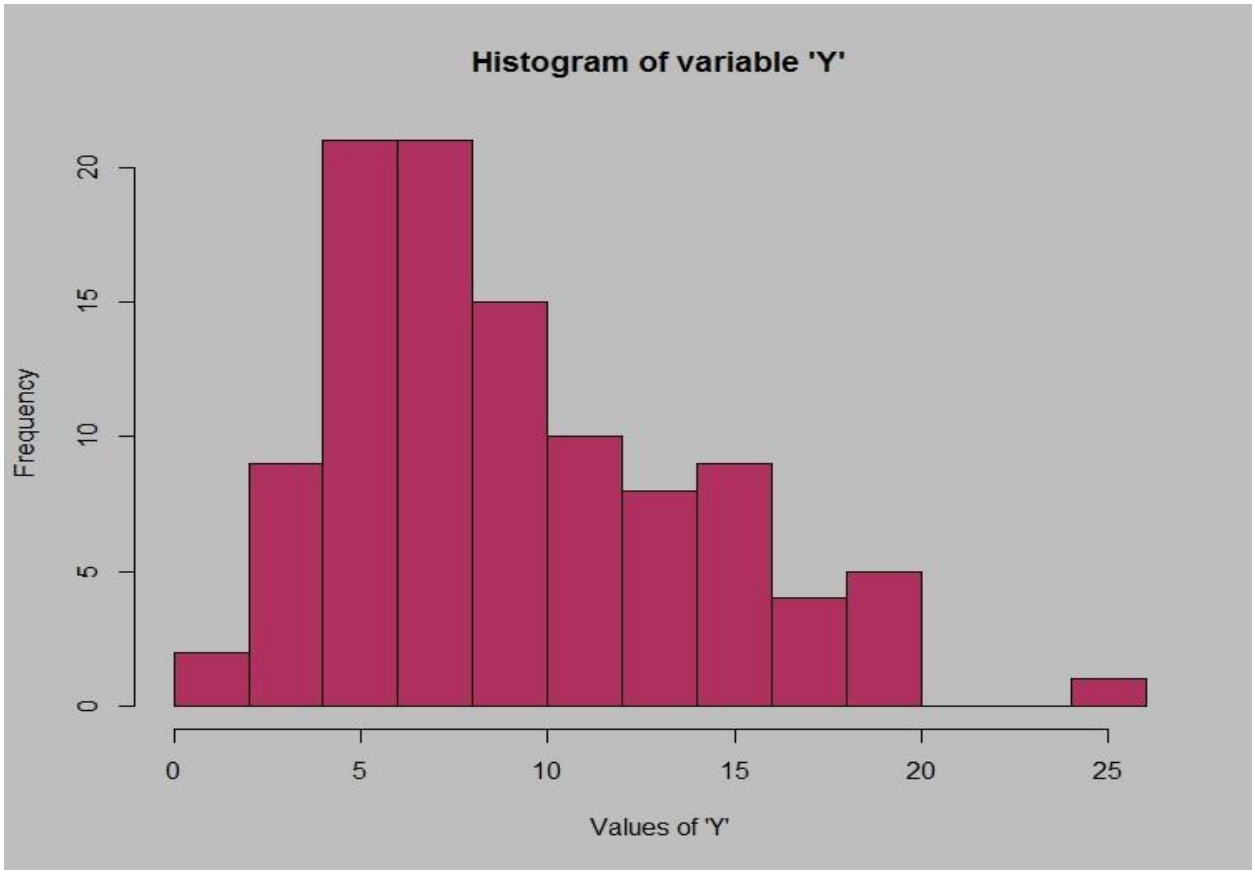
ANS :- Inter quartile range of this boxplot is 5 to 12, hence 12-5 = 7.

(ii) What can we say about the skewness of this dataset?

ANS :- Right skewed

(iii) If it was found that the data point with the value 25 is actually 2.5, how would the new box-plot be affected?

ANS:- It will not affect, because 2.5 will not be considered as an outliar

3. 

Answer the following three questions based on the histogram above.

(i) Where would the mode of this dataset lie?
Ans:- it will lie between 4 to 8

(ii) Comment on the skewness of the dataset.
Ans:- Right skewed

(iii) Suppose that the above histogram and the box-plot in question 2 are plotted for the same dataset. Explain how these graphs complement each other in providing information about any dataset.
ANS:-it is not possible to plot this data set in boxplot, because we can differentiate modes in histogram but cannot differentiate modes in boxplot

4. AT&T was running commercials in 1990 aimed at luring back customers who had switched to one of the other long-distance phone service providers. One such commercial shows a businessman trying to reach Phoenix and mistakenly getting Fiji, where a half-naked native on a beach responds incomprehensibly in Polynesian. When asked about this advertisement, AT&T admitted that the portrayed incident did not actually take place but added that this was an enactment of something that "could happen." Suppose that one in 200 long-distance telephone calls is misdirected. What is the probability that at least one in five attempted telephone calls reaches the wrong number? (Assume independence of attempts.)

ANS:- probability of call misdirecting p = 1/200

Probability of call not Misdirecting = 1 - 1/200 = 199/200

Number of Calls = 5

N = 5, P=1/200 , Q=199/200 , 1 - none of the call reaches the wrong number= 1 - (199/200)= 0.02475

5. Returns on a certain business venture, to the nearest $1,000, are known to follow the following probability distribution

x	P(x)
-2,000	0.1
-1,000	0.1
0	0.2
1000	0.2
2000	0.3
3000	0.1

(i) What is the most likely monetary outcome of the business venture?

ANS:- Maximum value we could see to bring monetary outcome is P=0.3,X=(2000).

(ii) Is the venture likely to be successful? Explain

ANS:- Most probably it will be successful

P(x)-0.2 + 0.3 + 0.1 = 0.6=60% chances of getting success.

(iii) What is the long-term average earning of business ventures of this kind? Explain

ANS:- = (0.1)(−2,000) + (0.1)(−1,000) + (0.2)(0) + (0.2)(1,000) + (0.3)(1,000) +

(0.1)(3,000)=800

(iv) What is the good measure of the risk involved in a venture of this kind? Compute this measure.

ANS:- P (x)=(-2000)

+ = 0.2 there could be 20% risk .

P(x)=(-1000)