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%

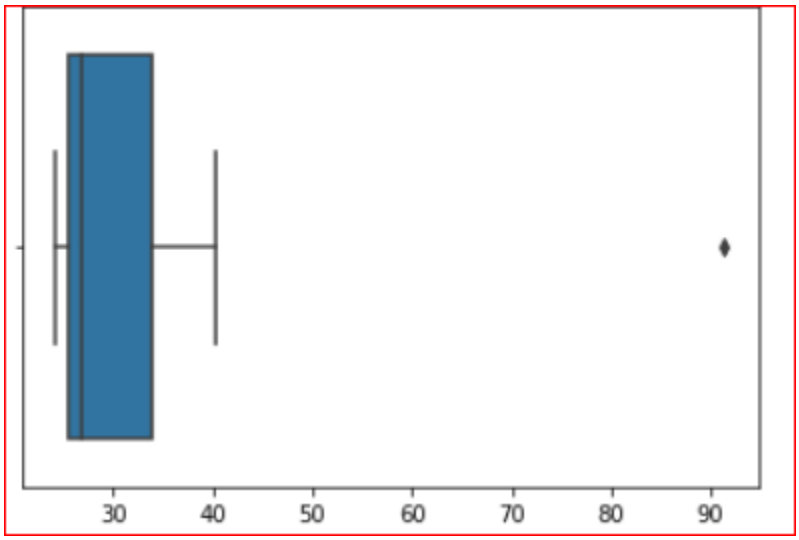
ANS:- MEAN-33.27

STANDARD DEVIATION- 16.94

VARIANCE- 287.14

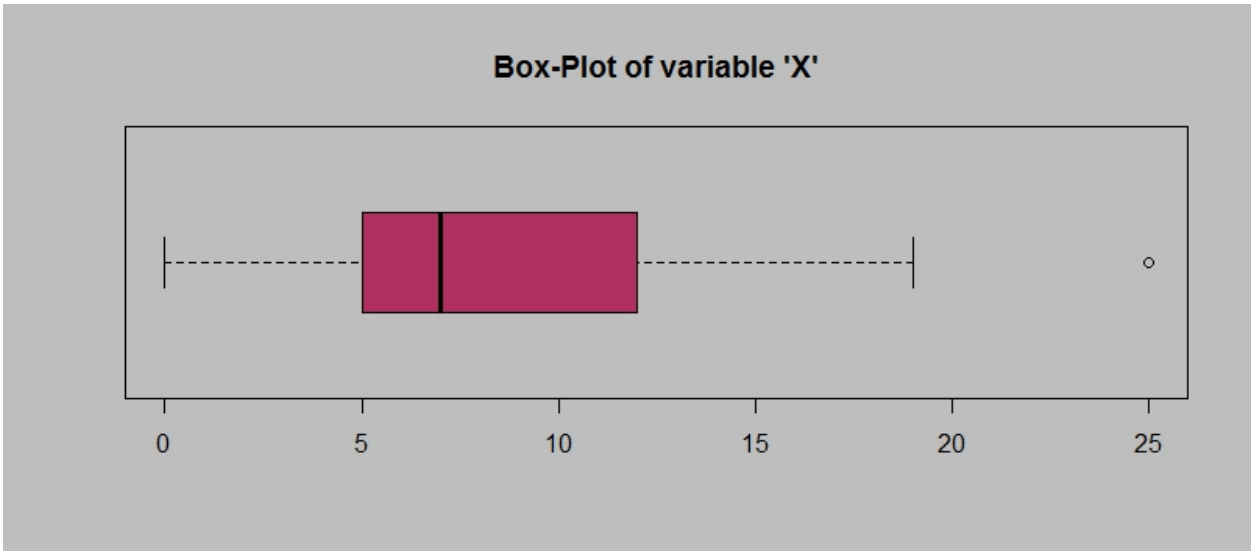
OUTLIAR- 0.9136

Boxplot for outliars



Questions 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.

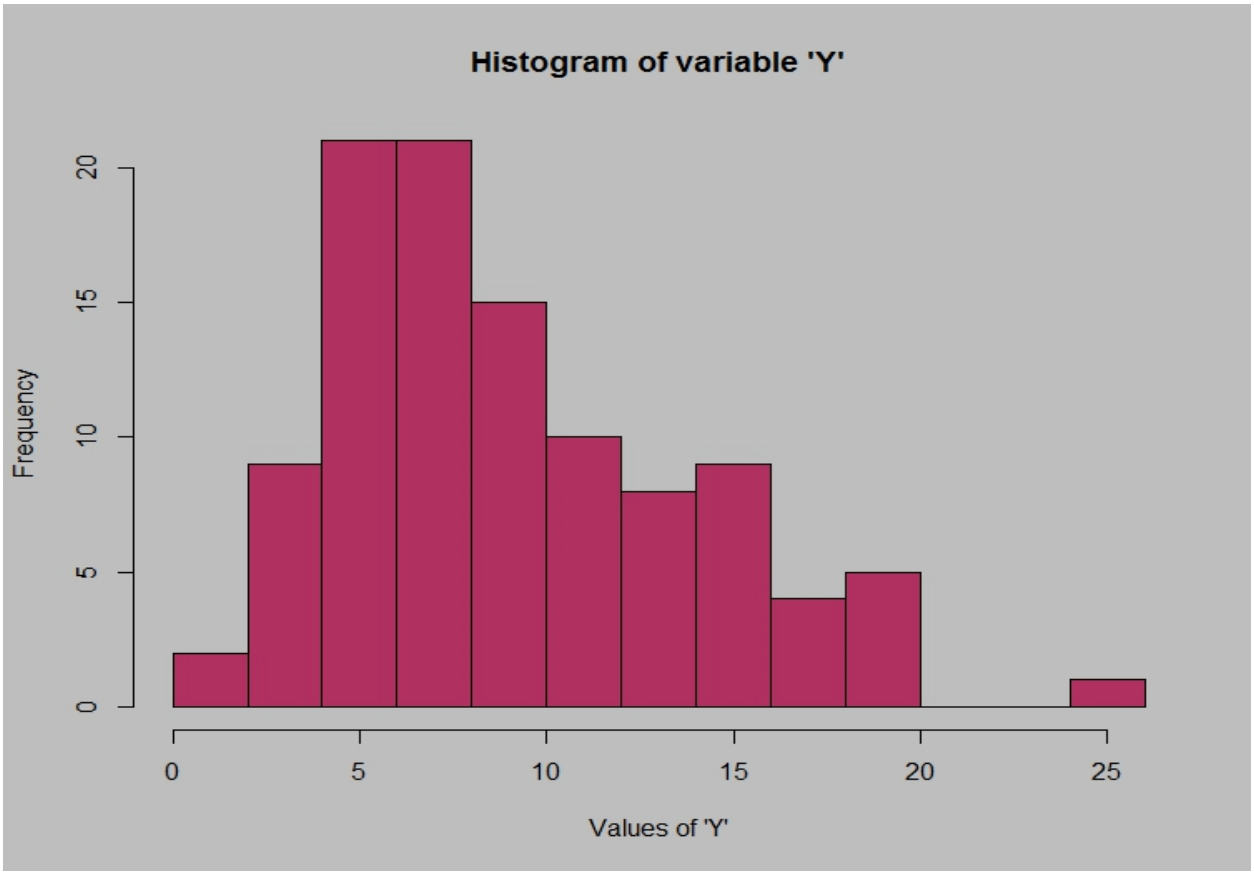
ANS:- Inter quartile range of this boxplot is 5 to 12, i.e. 12-5 = 7.

(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 as such, because 2.5 will not be considered as an outliar & we could see in the box plot which is starting from 0 to 19&range 5-12.

3. 

Answer the following three questions based on the histogram above.

(i) Where would the mode of this dataset lie?
ANS:- it will lie b/w 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:-its impossible to plot this data set in boxplot,because we can not differentiate modes in boxplot,but we can in histogram.

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

$= 1 - (199/200)^5$

= 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)