**Topics: Descriptive Statistics and Probability**

1. Look at the data given below. Plot the data, find the outliers and find out

|  |  |
| --- | --- |
| **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% |

> library(readxl)

> Set\_1Q1 <- read\_excel("E:/Assignments/Basic Statistics\_Level-2/Set+1Q1.xlsx")

> View(Set\_1Q1)

> boxplot(Set\_1Q1$`Measure X`)

> boxplot(Set\_1Q1$`Measure X`)$out

[1] 0.9136

> Sigma<-sd(Set\_1Q1$`Measure X`)

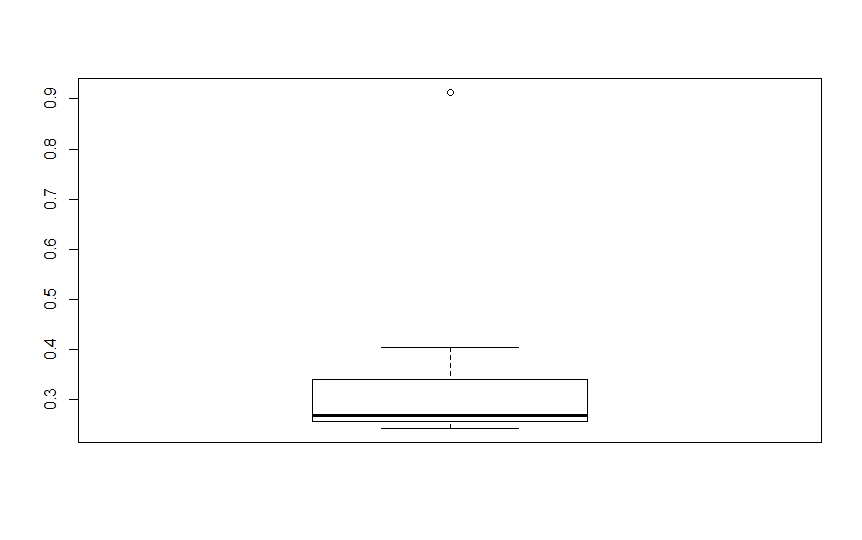
> SigmaSqr<-Sigma^2

> Sigma

[1] 0.169454

> SigmaSqr

[1] 0.02871466





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

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

Ans: IQR – (5-12) = 7

50% of the data lies in this range

1. What can we say about the skewness of this dataset?

Ans: Data has positive skewness.

1. 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: Mean and Median will reduce. Positive skewness will reduce.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Ans: (5+7)/2=6

1. Comment on the skewness of the dataset.

Ans: Data has positive skewness. That tells us that the distribution is skewed towards right. Mean of distribution is more than the Median

1. 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: Inferences:

1) Average of the data set is between– 8 to 11

2) Range of data set is between – 0 to 25

3) Data has positive skewness (long tail is towards right side)

4) Mean > Median

1. 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 Single call getting misdirected = 1/200=0.005

Probability that at least one in five attempted telephone calls reaches the wrong number = 0.005+0.005+0.005+0.005+0.005=0.025

1. 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 |

1. What is the most likely monetary outcome of the business venture?

Ans: (-2000\*0.1) + (-1000\*0.1) + (0\*0.2) + (1000\*0.2) + (2000\*0.3) + (3000\*0.1) = 800

1. Is the venture likely to be successful? Explain

Ans: Yes, as positive profitability is 60% where as negative profitability is 20%.

1. What is the long-term average earning of business ventures of this kind? Explain

Ans: Need help. Couldn’t understand this question properly.

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

Ans: Need help. Couldn’t understand this question properly.

There is 20% risk involved than venture might go into negative profitability.

20% no profit no loss condition.

60% probability that venture might go into positive profitability.