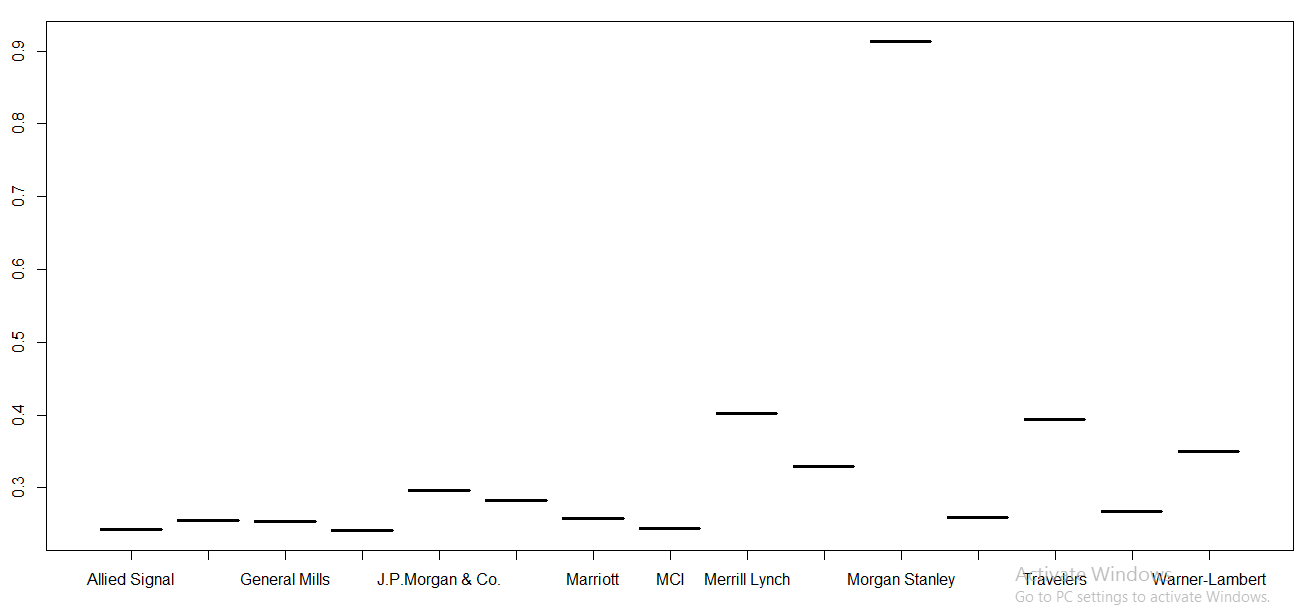
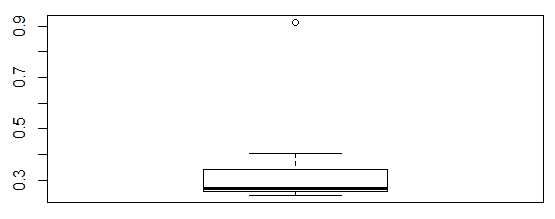
**Topics: Descriptive Statistics and Probability**

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% |





Mean = 0.3327

Sd = 0.1694

Var = 0.0287

Outliers = Morgan Stanley



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.
2. What can we say about the skewness of this dataset?
3. 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 – i) IQR = (12.5 - 5) = 7.5

This value implies that 50% of the data in data set lies between 5 to 12.5

ii) Here data is positively skewed because the upper 25 percentile is having more range than the lower 25 percentile.

iii) The outlier will be removed from the dataset and both mean and median will shift to the left side of the plot.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?
2. Comment on the skewness of the dataset.
3. 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 i) The mode of the dataset will lie before median and mean in between (4-8).

ii) Data is positively skewed

iii) From the boxplot and histrogram we can infer the nature of skewness i.e positively skewed and both having a outlier at 25.

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 – E = having a wrong call

P(E) = 1/200

Probability having at least 1 out of 5 calls as wrong number = 1 – probability having no call as wrong number

P(E) = 1 – (199/200)5

P(E) = 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?
2. Is the venture likely to be successful? Explain
3. What is the long-term average earning of business ventures of this kind? Explain
4. What is the good measure of the risk involved in a venture of this kind? Compute this measure

Ans- i) ∑x\*P(x) = 0.1(-2000) + 0.1(-1000) + 0 + 0.2(1000) + 0.3(2000) + 0.1(3000)

= -200 + (-100) + 200 + 600 + 300

= 800

ii) The standard deviation of the given business is very high (1870), hence it is difficult for the business to be successful from the given data

iii)

iv)