**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% |

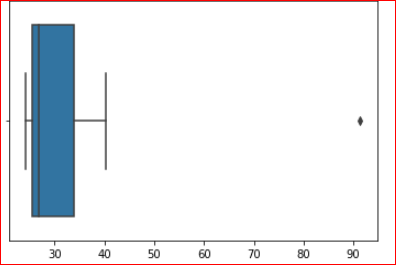
ANS:- MEAN-33.27

STANDARD DEVIATION- 16.94

VARIANCE- 287.14

OUTLIAR- 0.9136

Boxplot for outliars





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

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

ANS:- Right skewed

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:- 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.

1. 

Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

ANS:- it will lie b/w 4 to 8

1. Comment on the skewness of the dataset.

ANS:- Right skewed

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:-its impossible to plot this data set in boxplot,because we can not differentiate modes in boxplot,but we can in histogram.

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 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

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

1. 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.

1. 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

1. 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)