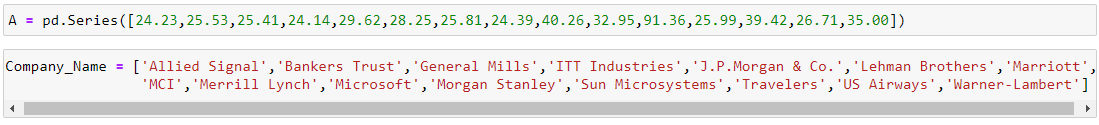
**Topics: Descriptive Statistics and Probability**

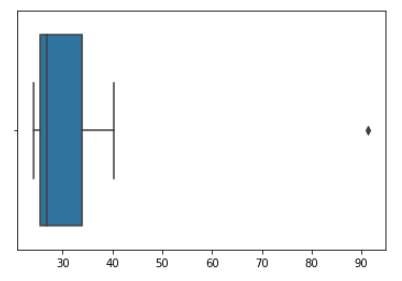
1. Look at the data given below. Plot the data, find the outliers and find out

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

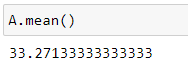
Ans:



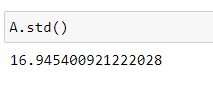
PLOTING THE DATA:



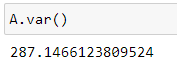
MEAN():



STANDARD DEVIATION():



VARIANCE( ):





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 = Q3 – Q1 = 12 – 5 = 7, IQR Represents middle 50% of data.

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

Ans: The data is 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: The new boxplot can be no outliers in it.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Ans: Between bins 4 – 6 and 6 – 8.

1. Comment on the skewness of the dataset.

Ans: The data is 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: Both plots gives idea about skewness of the dataset which is right skewed.

From above box plot and histogram we can confirm an outlier at 25 in Y value.

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: X = The call is misdirected

then probability of the event X is

P(X)= 1/200

Therefore,

Probability that at least one in 5 attempted call reaches the wrong number

= 1 - Probability that no attempted call reaches the wrong number

= 1 – P (X bar)

= 1 – (199/200) \* (199/200) \* (199/200) \* (199/200) \* (199/200)

= 1 - (199/200)^5

= 0.025

Probability that at least one in 5 attempted call reaches the wrong number = 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

1. Is the venture likely to be successful? Explain

Ans: Yes, there are 60% chances of getting a positive return and 20% chances of getting

Negative returns.

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

Ans: Long term returns = [(-2000\*1)+(-1000\*1)+(0\*2)+(1000\*2)+(2000\*3)+(3000\*1)] = 800

Therefore long-term average earning of business ventures of this type would be around

$800.

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

Ans:

Risk stems from the possible variability in the expected returns. Therefore a good measure to evaluate the risk for a venture of this kind would be variance or standard deviation of the variable X.

Standard Deviation = 1870.829

Varience = 3500000

The large value of standard deviation of $1870 is considered along with the average returns of $800 indicates that this venture is highly risky.