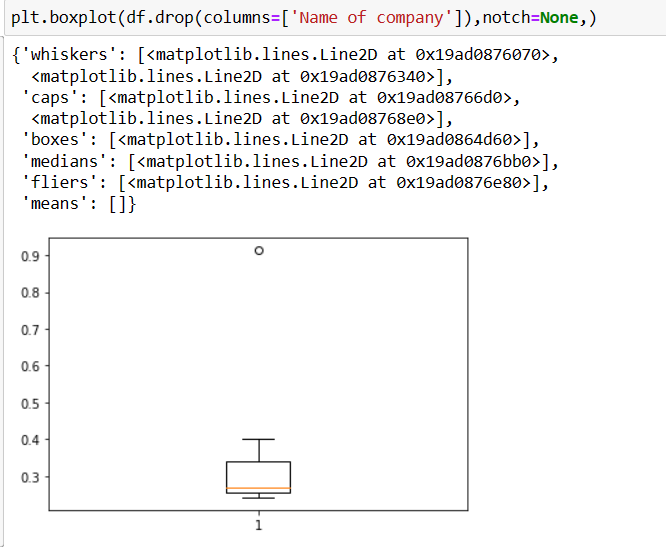
**Topics: Descriptive Statistics and Probability**

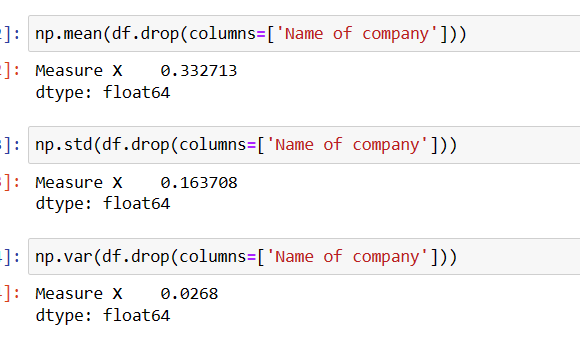
1. Look at the data given below. Plot the data, find the outliers and find out

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



Box plot to identify outlier

Mean,SD,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: Suppose Q1= 5 , Q3 =12.5

IQR = Q3-Q1

= 12.5 – 5 =7.5

7.5 is spread of middle half of distribution

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

Ans: It is positive 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: Outlier would be shifted or there may not be outlier



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Ans: 5

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: Both of graphs give information about outliers, skewness of dataset.

Histogram done the grouping of data and gives its occurring frequency . Boxplot plots the points distributes them into 5 parts to understand the data.

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:

P = Probability of one call misleading = 1/200, q= probability of remaining call = 199/200

Number of calls = 5

one in five attempted telephone calls reaches the wrong number=

1-\*(1/200)^0\*(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) | X\*P(x) |
| -2,000 | 0.1 | -200 |
| -1,000 | 0.1 | -100 |
| 0 | 0.2 | 0 |
| 1000 | 0.2 | 200 |
| 2000 | 0.3 | 600 |
| 3000 | 0.1 | 300 |

∑= 800

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

Ans: 2000

1. Is the venture likely to be successful? Explain

Ans: P(x>0) is 0.6 which is 60% so that venture would be successful

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

Ans: Long term average earning of business is $800

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

Ans: P(x<0) is 0.2 that is 20% .so risk involved in venture is 20%