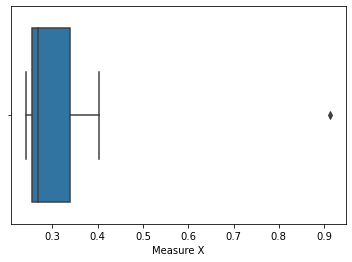
**Topics: Descriptive Statistics and Probability**

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% |



|  |  |  |  |
| --- | --- | --- | --- |
| Outliers | Mean | SD | Variance |
| Min = 0.24240 | 0.332713 | 0.169454 | 0.02871 |
| Max = 0.913600 |  |  |  |



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.

Solution: IQR = Q3-Q1 = 12-5 = 7, Whisker is 0 to 19 and one outlier.

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

Solution: Is positively or 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?

Solution:2.5 would be minimum value than outlier.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Solution: Dataset lies between 4 to 8.

1. Comment on the skewness of the dataset.

Solution: Data is positively skewed or 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.

Solution: Both graphs are contributing in understanding in distribution and check outlier.

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.)

Solution: E = The call is Misdirect

Then the probability of event E is

P(E)=1/200

Therefore

P(Ē) = 1-P(E) = 1-1/200 = 0.995.

Probability of at least 5 calls reaches wrong number

= 1- (0.995)^5 = 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?

Solution: The monetary outcome of business venture is x=2000 with highest probability of 0.3.

1. Is the venture likely to be successful? Explain

Solution: This venture be likely successful because (x=1000)+(x=2000)+(x=3000)=0.2+0.3+0.1=0.6.

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

Solution: =(0.1)(-2000)+(0.1)(-1000)+(0.2)(0)+(0.2)(1000)+(0.3)(2000)+)(0.1)(3000)=800.

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

Solution: Is standard deviation 0.08164966