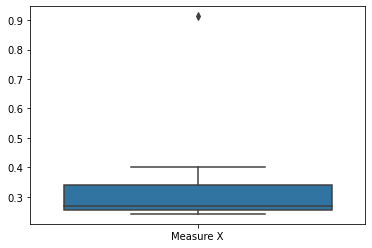
**Topics: Descriptive Statistics and Probability**

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 1) boxplot to find out the outliers



From the above we can figure it that outlier is (Morgan Stanley 0.9136)

Mean = 0.332713

Std = 0.169454

Var = 0.028715



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 = [UQR-LQR]=[12-5] =7 approximate. It indicates that 50% of the given data are in the range from 5 to 12 approximately. Lower quartile is 5 approx, upper quartile is 12 approx and median is 7 approx.

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

Ans : This is positive right skewed, where mean> median

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: If the data point with the value 25 is actually 2.5 than there won’t be outlier and that point lies in lower whisker.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Ans: The mode of the dataset lies Values of “Y” = [4-8]

1. Comment on the skewness of the dataset.

Ans: From the above Histogram we can conclude that its positive right skewed , and mean is

Greater than median

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: From these two plots we can say that both of them having same outliers with value 25 and we can visualize in histogram plot that mode is easier to find than boxplot.

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.)

Ans4) The probability that at least one in five attempted telephone calls reaches the wrong number = prob of getting 1 wrong number out of 200/ prob. of getting 1 wrong calls out of 5

= 0.005/0.2

= 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: The most likely monetary outcome of the business venture: x = 2,000 with the highest probability of 0.3.

1. Is the venture likely to be successful? Explain

Ans: P(x=1000) + P(x=2000) + P(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

Ans: long-term average earning of business ventures of this kind is given as follows

= (-2000)(0.1) + (-1000)(0.1) + (0)(0.2) + (1000)(0.2) + (2000)(0.3) +(3000)(0.1)

= -200 -100 + 0 +200 + 600 + 300

= 800

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

Ans: The good measure of the risk involved in a venture of this kind is standard deviation.

Std of (x) = 1870.828693 and std of p(x)= 0.081650