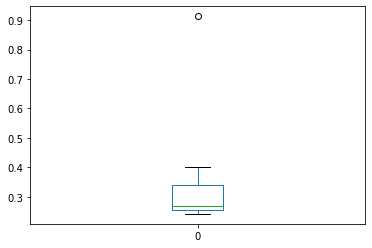
**Topics: Descriptive Statistics and Probability**

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:**

Plot:



## Outliers:

The outlier is morgan Stanley data point which has the measure of 91.36%

Description:

=0.028715

2.



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,most of the data lies in the INTERQUARTILE RANGE,which has the range of 5 to 7, hence the difference is 7

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

**Ans:**

The data is positively 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:**

There will be no outlier and the box in the plots moves a little left which makes the data yet more positively skewed.

3.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

**ANS:**

The mode lies between 4 to 8 which has the midpoint of 5 and 7.

1. Comment on the skewness of the dataset.

**ANS:**

The data is positively 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:**

1)both the plot shows they are positively skewed.

2)Both the plots helps to detect outliers easily.

3)we get to know median from both the plots.

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:

=1 - Probability =1/200=199/200

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

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

1-(199/200)^5

7920399001/200^5

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?
2. Is the venture likely to be successful? Explain
3. What is the long-term average earning of business ventures of this kind? Explain
4. What is the good measure of the risk involved in a venture of this kind? Compute this measure

**ANS:**

1)The probability is more for getting profit of $2000,so the outcome is supposed to be positive.

2)Yes, the probability that the venture will make more than 0 or a profit p(x>0)+p(x>1000)+p(x>2000)+p(x=3000) = 0.2+0.2+0.3+0.1 = 0.8 this states that there is a good 80% chances for this venture to be making a profit

3) To find the expected value (μ) multiply each value of the variable by its probability and add the products.

So the answer is $800

4) The good measure of the risk involved in a venture of this kind depends on the Variability in the distribution. Higher Variance means more chances of risk

Var(x)=E(x^2)-(E(x))^2 = 2800000 – 800^2 = 2160000