**Topics: Descriptive Statistics and Probability**

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

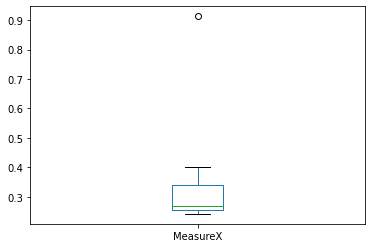
|  |  |
| --- | --- |
| **Name of company** | **Measure X** |
| Allied Signal | 24.23% |
| Bankers Trust | 25.53% |
| General Mills | 25.41% |
| ITT Industries | 24.14% |
| J.P.Morgan & Co. | 29.62% |
| Lehman Brothers | 28.25% |
| Marriott | 25.81% |
| MCI | 24.39% |
| Merrill Lynch | 40.26% |
| Microsoft | 32.95% |
| Morgan Stanley | 91.36% |
| Sun Microsystems | 25.99% |
| Travelers | 39.42% |
| US Airways | 26.71% |
| Warner-Lambert | 35.00% |

Outliers = 0.9136 morgan stanley

Mean = 0.332713

Std = 0.169454

Var = 0.02871





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 is the middle half of the data that lies between the upper(Q3) and lower quartile(Q1).

IQR = Q3-Q1=12-5=7

50% data is lies between IQR

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 = Then there is no outlier is present.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Ans = Between 4 to 10.

1. Comment on the skewness of the dataset.

Ans = Skewness is positive

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 have Outliers at (25) also both are positively Right Skewed.

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 = The Probability of the event E is

P(E)=1/200

Probability of having at least one successful call will be

1-P(X) = 1-1/200

= 199/200=0.967

As every event is independent of other event the probability will be

1-(0.967) ^5

=0.2475 = 2% Chance

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$ have most monetory outcome of business venture.

1. Is the venture likely to be successful? Explain

Ans = Yes venture is successful if x is positive

If x=1000,2000,3000 p(x)=0.6

0.6>0.5 hence venture is successful.

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

Ans = Long term average earning of business venture = E(x)

E(x) = (-2000\*0.1)+(-1000\*0.1)+(0\*0.2)+(1000\*0.2)+(2000 \*0.3)+(3000\*0.1)

= $800

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

Ans = Risk involved in venture

Var= 3500000, Std=1870.83

The venture is at high risk because the std is $1870 with the average return of $800