**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 In the given data is Morgan Stanley

Measure X Mean = 33.271333

Measure X Variance = 268.0035

Measure X Standard Deviation = 16.945401



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.= **IQR = Q3-Q1=12-5=7,data points are distributed between 0-19**
2. What can we say about the skewness of this dataset? = **Positively Skewed or Right-skewed**
3. If it was found that the data point with the value 25 is actually 2.5, how would the new box-plot be affected? **= mean of all data points are changing**



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie? **= either 9 or 20**
2. Comment on the skewness of the dataset. **= positively skewed**
3. 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. **= both have positive skewness**
4. 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.) **= Suppose that one in 200 long-distance telephone calls is misdirected so probability will be = 1/200.**
5. 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 |
|  |  |

E(X) =Sum X.P(X) | E(X^2) =X^2P(X)

Sum of X = 3000

(X)           P(x)      E(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

      Total                           800

1. What is the most likely monetary outcome of the business venture? most likely monetary outcome of the business venture  is 2000  $
2. Is the venture likely to be successful? Explain-venture is  likely to be successful as Expected value is positive   = 800 $

What is the long-term average earning of business ventures of this kind? Explain-long-term average earning of business ventures  = 800 $

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