**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.



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. Inter quartile range is approximate 7 and indicate 50% data varies by 7 units.

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

Ans. Skewness of this dataset is close to zero , so we can say that there is no skewness in this data. This data is symmetrical.

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. The new data set would be same as value of 25, no changes will be there.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Ans. The mode would be lie between 5-10.

1. Comment on the skewness of the dataset.

Ans. The skewness of this data 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. By looking at both histogram ang boxplot the data right skewed and majority of the observation falling between 5 and 20

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 one in five attempts – 0.9751

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. Its 2000 with 0.3 probability.

1. Is the venture likely to be successful? Explain

Ans. A return 2000 has the highest probability 0.3 indicating high chance of positive outcome.

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

Ans. The long term average could be sum of all possible outcome .

(−2000⋅0.1)+(−1000⋅0.1)+(0⋅0.2)+(1000⋅0.2)+(2000⋅0.3)+(3000⋅0.1)

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

Ans. Compute this to find the standard deviation, which gives a measure of the risk involved in the venture.