**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% |

**Answe:** Mean = Sum of all observation/total no of observation

= 24.23+25.53+25.41+24.14+29.62+28.25+25.81+24.39+40.26+32.95+91.36+25.99+39.42+26.71+35.00/15

= 33.25

Variance = 268.0035

Standard deviation = 16.370



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.

**Answer : IQR = Q3-Q1 =**12 -5 =7

This range represents spread of 50% data in the Boxplot

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

**Answer :** The skewness of this dataset may Positive skewness because the box shiofted towards lower end

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?

**Answer :** If the value 25 is actually 2.5 the box become shorter and the interquartile range would be more representative of the central 50% of the data.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

**Answer:**The mode of the data set lies between approximately 4 to 7

1. Comment on the skewness of the dataset.

**Answer :** The skewness of the dataset is Right skew because by seeing we can observed that the right tail fatter than left tail

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.

**Answer :** Every box plot and histogram provides the insights into the distribution of a dataset. They help us find out the

Shape of distribution

Central tendency

Spread and Variation

Outlier detection

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.)
2. 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?

**Answer :** The mostly likely monetary outcome of the business venture is

E(x) =summation of x\*p(x)

= (−2000\*0.1)+(−1000\*0.1)+(0\*0.2)+(1000\*0.2)+(2000\*0.3)+(3000\*0.1)

= 800

The Monetary outcome of the business venture is $800

1. Is the venture likely to be successful? Explain

**Answer :** Yes,The venture likely to be successful because it given monetary outcome is $800 it higher than intial investement

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

**Answer:** The expected value represents the average outcome over an extended period. So, based on the provided distribution, the long-term average earning for business ventures of this kind is $800.

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

**Answer :** A good measure of risk in a venture can be captured by the standard deviation

The standard deviation is approximately $824

The risk involved in the venture, indicating the degree of variability or potential fluctuations in the form of returns