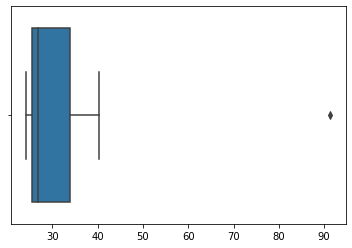
**Topics: Descriptive Statistics and Probability**

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% |

* **Mean () : 33. 2713**
* **Standard Deviation () : 16.9454**
* **Variance () : 287.1466.**





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 = 12-5

= 7.

ii)What can we say about the skewness of this dataset?

Ans: From data set we can say that dataset is Positively or Rightly skewed.

iii) 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 data will not have any outliers.

3.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Ans: The mode of the dataset would lie between bar 3 and bar 4.i.e between 4 to 8 value of Y.

1. Comment on the skewness of the dataset.

Ans: The dataset in 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: They both show outliers at the end of the charts(25).And the both the graphs show the dataset is positively skewed.

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.)

Ans:Let us consider X be the call is misdirected ,

Then the probability of event X must be ,

P(X) = 1/200

Therefore,

According to condition in question at least one in five attempted call reaches to the wrong number,

Prob. = 1 – Probability that no attempted call reaches the wrong number

= 1 - P(X bar)

= 1 – (199/200)\* (199/200)\* (199/200)\* (199/200)\* (199/200)

= 1 – 0.975

= 0.025

* 1. the probability that at least one in five attempted call reaches to the wrong number

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 |

1. What is the most likely monetary outcome of the business venture?

Ans: 2000 ,since probability is highest.

1. Is the venture likely to be successful? Explain

Ans: Venture is successful if X is + ve

Hence if X is 1000 , 2000 or 3000

Probability is  0.2 + 0.3 + 0.1 = 0.6

as 0.6 > 0.5 Hence **venture likely to be successful.**

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

Ans: Therefore the long-term average earning of the Business is $ 800.

|  |  |  |
| --- | --- | --- |
| E(X) | P(X) | E(x)\*P(x) |
| -2000 | 0.1 | -200 |
| -1000 | 0.1 | -100 |
| 0 | 0.2 | 0 |
| 1000 | 0.2 | 200 |
| 2000 | 0.3 | 600 |
| 3000 | 0.1 | 300 |
|  |  | 800 |

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

Ans**:** Risk stems from the possible variability in the expected returns. Therefore, a good measure to evaluate the risk for a venture of this kind would be variance or standard deviation of the variable X.

Standard Deviation = 1870.829

Variance = 3500000

The large value of standard deviation of $1870 is considered along with the average returns of $800 indicates that this venture is highly risky.