**Topics: Descriptive Statistics and Probability**

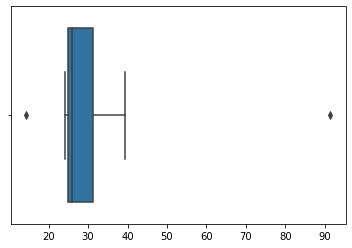
1. Look at the data given below. Plot the data, find the outliers and find out

|  |  |
| --- | --- |
| **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% |

µ = 33.27%

= 0.169454

= 0.028715



Yes There is a outlier present in the data set.



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.
2. What can we say about the skewness of this dataset?
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?
4. Upper quartile = 12

Lower quartile = 5

Inter quartile range = Upper quartile - Lower quartile

= 12 - 5

= 7

In the above box plot we observed that inter quartile range is same as mean.

1. form the above box plot we observed that it is right skewed median towords the left side

it is not normal disrtibution.

1. The box plot has no outlier in the given data set because of the outlier the data had positive skewness it will reduced and the data will be normal distributed.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?
2. Comment on the skewness of the dataset.
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.

1. Mode of above dataset is lie between 5 to 10 and approximately betwwen 4 to 8.
2. Form the above Histogram it is right skewed.

Mean > Median > Mode

1. They both are right skewed and both have outliers .The median can be easily visualized

In boxplot where as in histogram .Mode is more visible.

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.)

If one in 200 long distance telephone calls are getting misdirected .

The probability of call misdirecting = 1/200

The probability of call not misdirecting = 1 – 1/200 = 199 / 200

The probability for at least one in five attempted telephone call reaches

The wrong number of calls

Number of calls = 5n = 5p = 1/200q =199/200

P(X) = At least one in 5 attempted telephone calls reaches the wrong number

P(X) = (nCx)(p^x)(q^n-x)

P(1) = (5C1)(1/200)^1(199/200)^5-1

P(1) = 0.0245037

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?
2. Is the venture likely to be successful? Explain
3. What is the long-term average earning of business ventures of this kind? Explain
4. What is the good measure of the risk involved in a venture of this kind? Compute this measure
5. The most likely monetary outcome of the business venture is 2000$ as it has

Maximum probability 0.3

1. Probability of success = 0.6(0.2 + 0.3 +0.1)

So 60 % chance that the venture would be successful

1. = [(-2000 \* 0.1) + (-1000 \* 0.1) + (0 \* 0.20) + (1000 \*0.2) + (2000 \* 0.3) + (3000 \* 0.1)]

= 800 $

1. A good measure is evaluate the risk would be variance and standard deviation

Of the variable x

Var = 3500000

Sd = 1870.3838

The large of standard deviation of 1870$ is consider along with the average return

Of 800 $ indicates that these venture is highly risky.