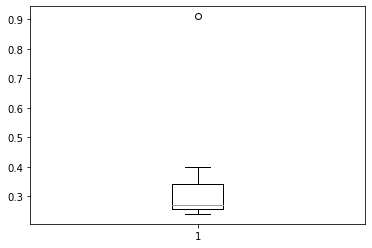
**Topics: Descriptive Statistics and Probability**

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% |



df['x'].mean()

0.332

df['x'].var()

0.028402857142857153

df['x'].std()

0.16853147226217766



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.

Sol) IQR is the range between upper quartile(Q3) and lower quartile(Q1)

IQR=Q3-Q1=12-5=7

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

Sol) Its has positive skewness

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?

Sol) There will be no outlier if the value of 25 is actually 2.5



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Sol) Most of the data lies between 4 to 8

1. Comment on the skewness of the dataset.

Sol) These dataset has positive skewness

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.

Sol) both the plot is positive skewness and both have dataset have outlier of the value 25

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.)

Sol) probability of 1 call misdirected out of 200 calls=p(x)=1/200

Probability of having at least one successful call will be

=1-p(x)=1-(1/200) =0.995

the probability that at least one in five attempted telephone calls reaches the wrong no

= 1-(0.995)5 =0.02475

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?

Sol) $2000 has highest probability

1. Is the venture likely to be successful? Explain

Sol) success =p(x>0)=0.3+0.2+0.1

=0.6, so 60%

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

Sol) (-2000\*0.1)+(-1000\*0.1)+(0\*0.2)+(1000\*0.2)+(2000\*0.3)+(3000\*0.1)=800

$800 is the long-term average earning of business ventures of this kind

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

Sol)Good measures is positively returns (profits ) probability tends to be more than negatively returns (loss) i.e. 60% probability of profits.