**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% |

🡪Answer= set\_1\_Descriptive\_Stat.ipynb



Answer the following three questions based on the box-plot above.

1. What is inter-quartile range of this dataset?

🡪12-5=7(Q3-Q1=Q2)

(please approximate the numbers) In one line, explain what this value implies.

🡪50% data is lie within 5-12 range

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

🡪Right skew

+ve skew

tail is towards right side of the curve

no normal distribution

mean >median>mode

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?=it will shift to normal distribution



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

🡪4-8

1. Comment on the skewness of the dataset.

🡪Right skew

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.

🡪a) both have outliers

b) histogram easily find mode and boxplot easily shows median

c) both are right skew

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?

**ANS:- 2000 and p(x):- 0.3**

1. Is the venture likely to be successful? Explain

**ANS:- Venture:- 1000,2000,3000**

**P(x):- 0.2+0.3+0.1=0.6**

**0.6>alpha value 0.5**

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

E(x):- ∑ X.P(X)

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

**ANS:- 800**

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

Risk involved in a venture

Var (X) = E(X²)  - { E(X) }²

=   2800000 -   800²

= **2160000**  ( Quite High)

SD = √Var  ≈ **$ 1470**

As **Variability is Quite high**  hence **Risk is high**