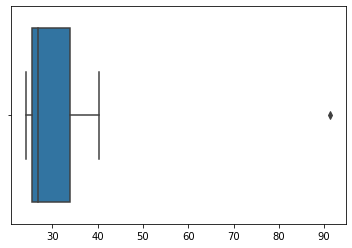
**Topics: Descriptive Statistics and Probability**

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% |



Outliers=91.36%

Mean () =33.271

Variance () =287.146

Std () =16.94



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. IQR=7.5, IQR tells the value at where the data is spread
3. What can we say about the skewness of this dataset?
4. Data is positively skewed
5. If it was found that the data point with the value 25 is actually 2.5, how would the new box-plot be affected?
6. There will not be any out layers, the median value will increase and shift towards right



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?
2. Mode will lie between 5 to 8
3. Comment on the skewness of the dataset.

A) Positively skewed dataset

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) Box plot gives any out layers present in data set or not and how the data is distributed around the median, histogram gives the skewness and exact frequency values

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.)

A) Misdirected call probability p=1/200,

Correct call probability q=199/200

Probability of at least one wrong call is 1- (probability none of wrong calls)

1-(199/200)^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?

A) Most probability value that is 2000

1. Is the venture likely to be successful? Explain

A) Yes, as most of the probabilities are at positive values and average is 800

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

A) Sigma(E(x)\*P(x)) =800

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

A) standard deviation is a good measure to find the risk

E(X) = ∑X\*P(X) =800

E(X²) = ∑X²\*P(X) =2800000

Var (X) = E(X²)-{E(X)}² =2800000-640000=2160000

SD = √Var =root(2160000)=1469.69

SD=1469.69 (high)