**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% |

***Ans: The outliers are Morgan Stanley =91.36%***

***Average = 24.23+25.53+25.41+24.14+29.62+28.25+25.81+24.39+40.26+32.95+91.36+25.99+39.42+26.71+35.00=499.07/15=33.27%***



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 =Q3-Q1=12-5=7***

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

***Ans: Right Skewed***

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?

***Ans:The Outlier does not exit***



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

***Ans: mode means most repeated value so I,e 4 & 8***

1. Comment on the skewness of the dataset.

***Ans: Mostly Right 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: Hence Both the plots are separately used to each other ,box Plot we will find outliers & First Quartile range ,Second Quartile ,Third quartile, Min, Max,Range we will find and Histogram used for skewness and mode 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.)

***Ans: Total number of calls =200***

***Each five call one call should be wrong number I,e=1/5=1/200(200 is a population)***

***Probability of call should not be a wrong number =200-1/200=199/200***

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?

***Ans:P(x) =0.3,x=2000***

1. Is the venture likely to be successful? Explain

***Ans: Overall Probability is 1 , Positive Value probability is 0.6 and Negatively value Probabilty is 0.2 , so we can say that the venture is likely to be successful***

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

***Ans: Expected Average value is =-2000\*0.1+-1000\*0.1+0\*0.2+1000\*0.2+2000\*0.3+3000\*0.1=800***

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

***Ans: Good measure nothing but Variance = Probability of getting each value \* Average \* x Value =-2000\*0.1\*800+-1000\*0.1\*800+0\*800\*0+0.2\*1000\*800+0.3\*2000\*800+0.1\*3000\*800=640000***