**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= Mean is 33.27, standard deviation is 16.94 and variance is 287.14,



**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: The inter quartile range is 7

IQR=Q3-Q1

12-5=**7**

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

Ans= Right 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?**

Ans= In that case there would be no Outliers on the given dataset because of the outlier the data had positive skewness it will reduce and the data will normal distributed



**Answer the following three questions based on the histogram above.**

1. **Where would the mode of this dataset lie?**

Ans= The mode of this dataset lie 4-8

1. **Comment on the skewness of the dataset.**

Ans= 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= They both are right skewed and both have outliers the median can be easily visualized in box plot 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.)**

Ans= The probability of reaching one in five attempted calls reaches the wrong number is 0.024

probability of calls getting misdirected =1/200=.005

probability of calls not getting misdirected =199/200=.995

since one in 5 attempts the call reaches the wrong number

5\*(1/200) \* (199/200)

**=0.0248**

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= The most likely monetary outcome of the business venture is 2000$ As for 2000$ the probability is 0.3 which is maximum as compared to others.

1. **Is the venture likely to be successful? Explain**

Ans=Yes, the venture likely to be successfull.0.79 this states that there is a 79%chances for this venture to be making a profit.

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

Ans= long term average earning of business venture is

800(-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: The measure of the risk depends on the variability of the distribution, higher the variance more chances of risk, since the variance is higher the risk is higher

(-2000\*200) +(-1000\*-100) +(0\*0) +(1000\*200) +(6000\*200) +(3000\*300)

= 2800000

= 800\*800= 640000

= 2800000-640000

= 2160000

np. Sqrt (2160000) = 1469.6938456699068