**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%** |

|  |  |
| --- | --- |
|  | **Measure X** |
| mean | **33.27%** |
| Std. | **0.1695** |
| Var. | **0.028714661** |

**There is one outlier**

|  |  |  |
| --- | --- | --- |
| **10** | **Morgan Stanley** | **91.36%** |



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> IQR=Q3-Q1=13-5=8**

IQR=8

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

**ANS> This is positive skewed data**

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> so in new box plot there is no outlier**



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Ans> **the mode of data set lies on left side and 5-8 ( Most Frequent Data Sets)**

1. Comment on the skewness of the dataset.

Ans> **it positive skewed data**

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**> By comparing both of them it is clear that the data would be positively skewed. Also, it**

**help us to finding mean, mode value**

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> **Probability of call getting misdirected = 1/200**

**Hence ,**

**probability of call not getting misdirected = 1 –(1/200) = 0.995**

**Number of telephone calls attempted = 5**

**Therefore, probability that at least one in 5 attempted call reaches the wrong number is,**

**=0.0247**

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> $2000 becouse p(x)=0.3 this is maximum probability**

1. Is the venture likely to be successful? Explain

Ans> **Long term average= (-2000\*0.1) +(-1000\*0.1) +(0) +(1000\*0.2) +(2000\*0.3) +(3000\*0.1) = 800$As the long-term average gives positive numbers the Business venture likely to be successful.**

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

**ans> average earning is 800$**

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

**Ans>it is 800$**