**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% |

**Mean = 33.27%**

**Vairance = 16.37%**

**Standard Deviation =2.68%**



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. What can we say about the skewness of this dataset?
3. 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.:**

**(i). The inter-quartile range of this data is 7, 50% of the given data lies in this inter-quartile region**

**(ii). Skewness for this dataset is right skewed .** **Which means data points are centered around the left side.**

**(iii). if 25 is 2.5 then it will no longer be an Outlier.**



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?
2. Comment on the skewness of the dataset.
3. 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.:**

**(i) the mode of the above dataset lies between 5 to 7**

**(ii) The dataset is right skewed means that most of data points are in left side of the data set**

(**iii) Both the data set has same outliers and also both Graphs shows that is Right Skewed and also that the most of the data points lies in the range of 5-10.5**

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.)

**Given :**one in 200 long-distance telephone calls is misdirected.

**To find :**probability that at least one in five attempted telephone calls reaches the wrong number

**Ans:**

one in 200 long-distance telephone calls is misdirected

 As stated that one in 200 long Distance Telephone Calls is Misdirected. Probability of 1 in 200 is 0.005 which is 0.5%. one in 5 Attempted Calls reaches wrong number is 0.005\*5 which is 0.025.

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?
2. Is the venture likely to be successful? Explain
3. What is the long-term average earning of business ventures of this kind? Explain
4. What is the good measure of the risk involved in a venture of this kind? Compute this measure

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**To Find :   most likely monetary outcome of the business venture**

**is the venture likely to be successful**

**what is the long-term average earning of business ventures of this kind**

**Ans:**

(i)What is the most likely monetary outcome of the business venture?

**Ans :** Outcome of the business monetary is $2000 with probability of 30%

(ii)Is the venture likely to be successful? Explain

**Ans :** Probability of being loss making is only 20% and 10% is with no profit and 60% with Profit hence this Venture is Most likely to be Successful.

(iii)What is the long-term average earning of business ventures of this kind? Explain

**Ans :** at the start Company was loss making then with last 4 result Company is in profit with Average Earning of Business Venture is $500.

(iv)What is the good measure of the risk involved in a venture of this kind? Compute this measure

**Ans :** As can be seen from Distribution that there’s20% probability that venture will be loss making and 20% with No profit at all and there’s 60% probability that Venture will be in profit. Measure of Risk is 40% which (20% in loss and 20% with no Profit at all)