**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% |

µ = 33.2713

𝞼= 287.1466

𝞼2=16.9454



Answer the following three questions based on the box-plot above.

1. What is an inter-quartile range of this dataset? (please approximate the numbers) Explain what this value implies in one line.

IQR= 12-5= 7. This represents the range that contains 50% of the data points.

1. What can we say about the skewness of this dataset? Right skewed
2. If it was found that the data point with the value 25 is actually 2.5, how would the new box-plot be affected?

25 will be not considered as an outlier the boxplot is started from 0 and ends at 20 in the representation.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Mode lies between 4 and 8

1. Comment on the skewness of the dataset. = Right skewed
2. 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.

Boxplot is used to represent the outliers from the data sets.

A histogram is a representation of frequency distribution i.e. mode

We can’t find mode in the box plot but we can do it in the histogram.

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 misdirecting

P= 1/200

Probability of call not misdirecting

1-1/200= 199/200

The probability that no attempted call reaches the wrong number

= 1- (199/200)5

= 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?

Max. P= 0.3 for P (2000). So the most likely outcome is 2000.

1. Is the venture likely to be successful? Explain
2. What is the long-term average earning of business ventures of this kind? Explain.

Weighted average =x\*P(x) =800 this means the average expected earnings over a long period would be 800(including all losses and gains throughout time)

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

P (loss) = P(X= -2000)+P(X= -1000)= 0.2 so the risk associated with this venture is 20%