**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=0.309

σ=0.163

σ^2=0.0268



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.

* The inter-quartile range of this dataset (5,14).

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

* We can say that most of data are skewed in left hand side that’s called positive 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?

* The new box-plot will not be affected too much.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

* The mode of this data set lies between (4-10).

1. Comment on the skewness of the dataset.

* The skewness of the data set is positive skewness.

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.

* The histogram helpsus to find that,where the most of data lies.we can easly find the mode of any data set through histogram.the box-plot help us to find the outliers.in box plot we can easly see the outliers.

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.)

* The probability of a wrong number P(WN) is 1/200 = 0.005

The probability of the call not being a wrong number P(W/N) is 1-P(WN)= 1-0.005= 0.995

Therefore, the probability of at least 1 out of 5 being a wrong number is

1-Probability that all 5 are not wrong numbers

= 1-(1-P(WN))^5

= 1-(0.995)^5

= 1-0.975

=0.025

=2.5%

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?

* The most likely monetary outcome is 2000.

1. Is the venture likely to be successful? Explain

* Yes the venture can be successful because the probability of losses is less than the probability of profit.

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

* The long-term average is (0-2000).losses are available here but the amount is less.

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