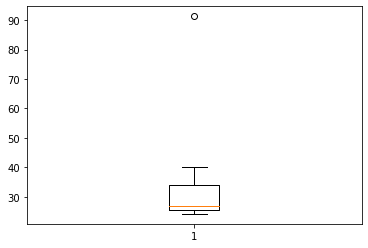
**Topics: Descriptive Statistics and Probability**

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% |

**ANSWER: Here one outlier is present.**



**MEAN**

Measure X 33.271333

**VARIANCE**

Measure X 287.146612

**STANDARD DEVIATION**

Measure X 16.945401

2.



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.

**ANSWER:** **Here the IQR range=12.5-5=7.5(approx.).This is the region where max no.of distributions are concentrated**.

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

**ANSWER:** **Here the skewness is positive since it is right skewed(max distributions are concentrated at the left**).

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?

**ANSWER: Then the outlier present in the boxplot will be 0 and there will be one distribution present in the whisker region.ie between lower extreme and lower quartile.**

3.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

**ANSWER:20**

1. Comment on the skewness of the dataset.

**ANSWER:** **Here the skewness is positive since it id right skewed,max distributions are on the left side**

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.

**ANSWER :Histograms subdivide data into intervals (bins), and use rectangles (usually columns) to show the frequency (count) of observations in each interval and a box plot is a graphical method of displaying variation in a set of data.Both of them can be used to findout the outliers and skewness present in the distribution.The main point is that histograms are better in determining the underlying distribution of the data, box plots allow you to compare multiple data sets better than histograms as they are less detailed and take up less space.**

4.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.)

**ANSWER:** **let the probability of calls getting misdirected P(E)=1/200**

**So,the probability of calls not getting misdirected P()=199/200**

**probability that at least one in five attempted**

**telephone calls reaches the wrong number=1-( the probability that none in five attempted telephone calls reaches the wrong number)=1-(199/200)5**

**=.02475**

5.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?

**ANSWER:2000**

1. Is the venture likely to be successful? Explain

**ANSWER:Yes because the probability of sum of getting profit and neither profit or loss (.8) is greater that of the probability of getting loss(.2)**

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

**ANSWER:** **The long-term average earning of business ventures of this kind, i.e. the expected value(.1\*-2000+.1\*-1000+0\*.2+.2\*1000+2000\*.3+3000\*.1)=800**

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

**ANSWER: Standard deviation is the measure of risk**

**SD=(-2000-800)\*.1+(-1000-800)\*.1+(-800\*.2)+200\*.2+1200\*.3+2200\*.1**

**=-280+-180+-160+40+360+220=0**