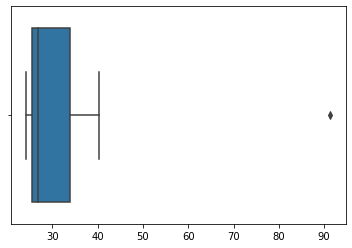
**67Topics: Descriptive Statistics and Probability**

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% |



Outliers = 91%

Mean = 33.271

Standard Deviation = 16.371

Variance = 268.004



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: Q1 = 5 , Q3 = 12 IQR = Q3 – Q1 = 12-5 = 7
2. What can we say about the skewness of this dataset? Answer : Its positive skewness
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? Answer : Median in plot is expected to move right.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie? Answer: the range of the mode lies between 4-8
2. Comment on the skewness of the dataset. Answer: it’s a positive skewness.
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. Answer: they both approximately shows same median.
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.)

Probability of call mismatching = 1/200

Probability of call not mismatching = 199/200

Number of calls = 5

P(r)= NCr(p^r)(q^n-r)

N=5, p = 1/200, q = 199/200

Atleast one in five attempt telephone calls reaches the wrong number = 1-(no calls reaches the wrong number)

= 1-p(0)

P(0)=5C0((1/200)^0)\*((199/200)^5-0) formula : pnr = p!/p-r!\*r!

= 1 – ((199/200)^5)

= 0.02475

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? Answer: monetary outcome is $2000.
2. Is the venture likely to be successful? Explain Answer: Yes, since it has 60% chances to generate positive return
3. What is the long-term average earning of business ventures of this kind? Explain Answer: average = 800
4. What is the good measure of the risk involved in a venture of this kind? Compute this measure

Answer: Variance is a good measure of risk.