**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 – 33.271**

**Standard deviation –16.370**

**Variance – 268.00**

**Outlier - Morgan Stanley**



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. **7 is the IQR and the value implies that middle quartile lies between 5 and 12. And one outlier present, viscous from 0 – 19.**
2. What can we say about the skewness of this dataset? **Right skewed**
   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? **unable to answer**



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie? **Mode lies in 5**
2. Comment on the skewness of the dataset. **Right or positive skewed.**
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. **Both histogram and boxplot has outlier at 25 and peak or most observations at 5, also right skewed.**
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.)

**Calls misdirected P(E) = 1/200**

**P(E) = 1-P(E) = 1-1/200 = 199/200**

**5 attempted calls reaches wrong number,**

**And probability that no attempted calls reaches the wrong no = 1**

**= 1- (199/200)5**

**= 7920399001/(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 |

-200,-100,0,200,600,300

1. What is the most likely monetary outcome of the business venture? **Most likely is x = 2000, high P(x) = 0.3.**
2. Is the venture likely to be successful? Explain, **x = 1000 + x = 2000 + x = 3000 = 0.2 + 0.3 + 0.1 = 0.6**
3. What is the long-term average earning of business ventures of this kind? Explain
4. **=( 0.1)(-2000) + (0.1) (-1000) + (0.2)(0) + (0.2) (1000) + (0.3)(2000) + (0.1)(3000) = $ 800**
5. What is the good measure of the risk involved in a venture of this kind? Compute this measure. **unable to answer**