**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% |

**Ans**: Answer in python Spyder

A screen shot of a computer

Description automatically generated with medium confidence

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.**

**Ans:** IQR = 12-5=7.

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

**Ans:**  Positive or left 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?**

**Ans:** Q1 will move towards left and the data don’t have outliers.

3.

**Answer the following three questions based on the histogram above.**

1. **Where would the mode of this dataset lie?**

**Ans:** 4 to 8

1. **Comment on the skewness of the dataset.**

**Ans**: 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.**

**Ans:** Both will give the information about the data but in the histogram additionally we will get mode.

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:** Answer in python Spyder

A screenshot of a computer program

Description automatically generated with low confidence

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?**

**Ans:** P(x) is high (0.3) for 2000 then most likely monetary outcome is 2000

1. **Is the venture likely to be successful? Explain**

**Ans:** Yes, because sum of possible Returns probability is more than 0.5.

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

**Ans:** Avg Earnings = Σ(x\*P(x)) = 800

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

**Ans:** Answer in python Spyder

A screenshot of a computer code

Description automatically generated with low confidence