**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 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.

* IQ range is from 5 to 12,viscous 0 to 19,and 1 outlier

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

* Positive skew
* Q3-Q2 >Q2-Q1

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?

* It scale the chart



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

* 4 to 8

1. Comment on the skewness of the dataset.

* Positive skew

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.

* We cant differentiate mode in boxplot but we can do that in histogram

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.)

> One in 200 long distance telephone calls id misdirected

Probability of call misdirecting p = 1/200

Probability of call not misdirecting = 1-1/200=199/200

Number of calls = 5

P(x) = nCxpxqn-x

N = 5

P = 1/200

q = 199/200

at least one in five attempted telephone calls reaches the wrong number

1-P(0)

1-nC0p0qn-0

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?

* The most likely monetary outcome of the business venture: x = 2000 with the highest probability 0.3

1. Is the venture likely to be successful? Explain

* The venture is likely to be successful ,because

P(x=1000)+P(x=2000)+P(x=3000) = 0.2+0.3+0.1= 0.6

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

* E(x) = (0.1)(-2000) + (0.1)(-1000) + (0.2)(0) + (0.2)(1000)+(0.3)(2000)+(0.1)(3000) = 800

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

* Is standard deviation = 0.08164