**Topics: Descriptive Statistics and Probability**

* 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:-> P <- c(24.23,25.53,25.41,24.14,29.62,28.25,25.81,24.39,40.26,32.95,91.36,25.99,39.42,26.71,35.00)

> mean(P)

[1] 33.27133

> var(P)

[1] 287.1466

> sd(P)

[1] 16.9454

>



Answer the following three questions based on the box-plot above.

* What is inter-quartile range of this dataset? (please approximate the numbers) In one line, explain what this value implies.
* What can we say about the skewness of this dataset?
* Ans: Positive Skewness
* 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: The new Box plot will not have outliers.



Answer the following three questions based on the histogram above.

* Where would the mode of this dataset lie?
* Ans:Mode Of This Dataset Lie On 9 Or 21
* Comment on the skewness of the dataset.

Ans: Positive Skewness

* 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 Plots give idea about skewness of the data.
* Similarly histogram provides the frequency of datapoints, which fails to provide by box plot.
* Box plot provides outliers ,which fails to provide by histogram.
* 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:-Let us define an event

E: The call is misdirected

then probability of the event E is

P(E)=1/200

THEREFORE

p(E bar)=1-P(E)=1-1/200=199/200

Probability that at least one in 5 attempted call reaches the wrong number

1 - Probability that no attempted call reaches the wrong number

= 1-(199/200)5=7920399001/2005=0.025

* 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 |

* What is the most likely monetary outcome of the business venture?

ANS:-2000

* Is the venture likely to be successful? Explain

ANS:-YES ,there are 60% chances of getting a positive return and 20% chances of negative returns .

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

ANS:Long term returns = ((-2000\*1)+ (-1000\*1)+ (1000\*2)+ (2000\*3)+ (3000\*1) / 6) = 8000/6 = 1333

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

ANS:-Good measure is, Positive returns (profits) probability tends to be more than negative returns (loss). i.e. 60% probability of profits and 20% probability of loss