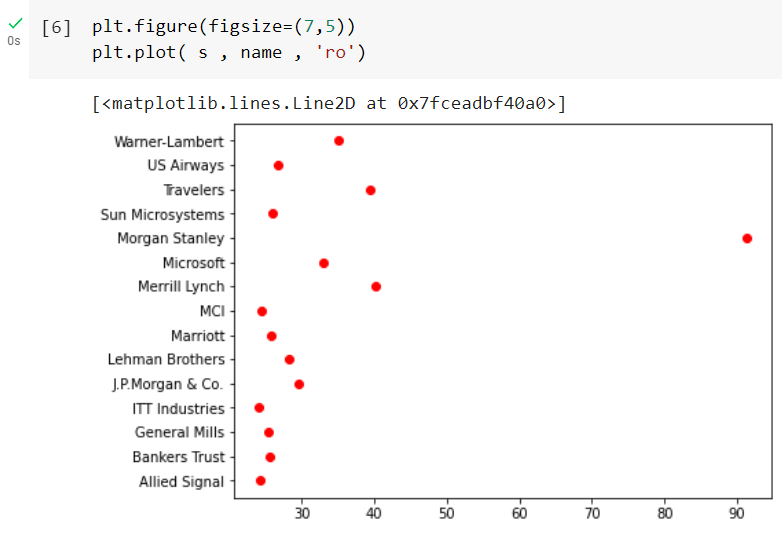
**Topics: Descriptive Statistics and Probability**

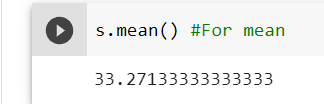
1. Look at the data given below. Plot the data, find the outliers and find out

| **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% |

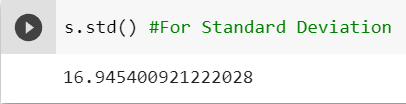
Answer:-



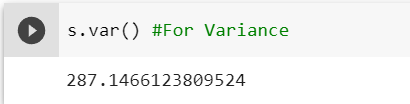
For (Mean)



For (Standard Deviation)



For (Variance)





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

1. What is the interquartile range of this dataset? (please approximate the numbers) In one line, explain what this value implies.

Answer:- Approximately, (First Quantile Range) Q1 = 5

(Third Quantile Range) Q3 = 12

(Second Quartile Range) Median = 7

(Interquartile Range) IQR = Q3 – Q1 = 12 – 5 = 7

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

Answer:- The median is right-skewed and leans to the left; this is not a normal distribution.

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?

Answer:- In such instance, there wouldn't be any outliers on the dataset because the outlier caused the data's positive skewness to decrease, resulting in a normal distribution of the data.



Answer the following three questions based on the histogram above.

1. Where would the mode of this dataset lie?

Answer:- The mode of that kind of data set is between 5 and 10, with an approximate range

of 4 to 8.

1. Comment on the skewness of the dataset.

Answer:- Right-Skewed.

Mean>Median>Mode

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.

Answer:- The median can be easily observed in a box plot, whereas the histogram mode makes it more obvious. They are both right-skewed and have outliers.

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.)

Answer:-

If one in every 200 long-distance phone calls gets misrouted.

Possibility of call misdirection = 1/200.

Probability of not calling Irresponsible = 1-1/200 = 199/200.

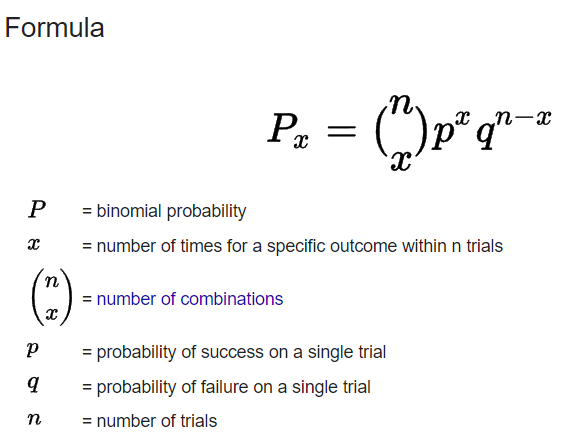
At least one out of every five phone calls that are made is likely to go to the incorrect number.

Number of Calls (n)= 5

p = 1/200

q = 199/200

P(x) = At least one out of every five phone calls tries to contact the erroneous number



P(1) = (5C1) (1/200)^1 (199/200)^5-1

P(1) = 0.0245037

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 |

Answer:-

E(X)=μ=∑xP(x)

= -200

= -100

= 0

= 200

= 600

= 300

Total = 800

E(X2) = Σx2 \* p(x)

= 400000

= 100000

= 200000

=1200000

= 900000

Total = 2800000

1. What is the most likely monetary outcome of the business venture?

Answer:- The business venture's expected financial return is $2000.

In comparison to other amounts, the likelihood for $2000 is the highest at 0.3

1. Is the venture likely to be successful? Explain

Answer:- Exactly, the likelihood that the business will be profitable or make more than zero

p(x>0)+p(x>1000)+p(x>2000)+p(x=3000) = 0.2+0.2+0.3+0.1 = 0.8

This indicates that there are a good 80% possibilities that this business will be profitable.

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

Answer:- The long-term average, Expected value = Sum (X \* P(X)) = 800$,

indicates that returns will typically be positive 800$.

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

Answer:- The distribution's variability defines how effectively the risk associated with an effort of this kind may be quantified. Greater Variance increases the likelihood of risk.

Var (X) = E(X^2) –(E(X))^2

= 2800000 – 800^2

= 2160000