**Topic: Descriptive Statistics and Probability**

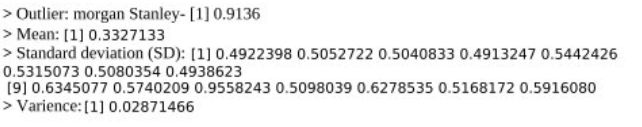
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**ASSIGNMENT 2**

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:**

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**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.**
2. **What can we say about the skewness of this dataset?**
3. **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:**

**What is inter-quartile range of this dataset? (please approximate the numbers) In one line, explain what this value implies.**

IQR =Q3-Q1

Q1=5

Q3=12

IQR=12-5

=7

**IQR=7**

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

Above Boxplot shows most of data on the left side.

Long tail on the Right side,So it is 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?**

It does not show the minimum or maxmimum value.Instead it represents as (1.5\*IQR)

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

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

ANSWER:

In above histogram 6 has highest peak. So mode lies on 6.

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

ANSWER:

Most of data lies on left side. So,it is 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.**

ANSWER:

In box plot the outliers shows the data is normally distributed

Whereas in histogram it shows clearly the data is normally distributed between datasets.

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:

one in 200 long-distance telephone calls is 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  -  none of the call reaches the wrong number

= 1   -  ⁵C₀(1/200)⁰(199/200)⁵⁻⁰

= 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?**

ANSWER:

Equal to 2,000 with the highest probability(0.3)

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

ANSWER:

Yes, because 0.2 + 0.3 + 0.1 = 0.6, the venture is likely to be successful.

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

ANSWER:

=(0.1)(−2,000) + (0.1)(−1,000) + (0.2)(0) + (0.2)(1,000) + (0.3)(1,000) + (0.1)(3,000)

= 800

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

ANSWER:

2000\*0.1-1000\*0.1=-300

So,20% risk involved in the data