**PRACTICAL: 14**

*Calculation of Sample Mean and Sample Variances of Continuous data (grouped data).*

**FORMULA USED:**

1. **SAMPLE MEAN:**
2. **SAMPLE VARIANCE :**

**Question:** Calculate the Sample Mean and Variances for the population given below. Select Sample at random:

|  |  |
| --- | --- |
| SURVIVAL TIME | SQUARE OF SURVIVAL TIME |
| 5.00 | 25.00 |
| 2.20 | 4.84 |
| 4.50 | 20.25 |
| 3.40 | 11.56 |
| 1.30 | 1.69 |
| 5.40 | 29.16 |
| 1.20 | 1.44 |
| 3.20 | 10.24 |
| 2.40 | 5.76 |
| 3.70 | 13.69 |
| 4.30 | 18.49 |
| 2.30 | 5.29 |
| 3.40 | 11.56 |
| 1.60 | 2.56 |
| 3.00 | 9.00 |
| 2.00 | 4.00 |
| 4.00 | 16.00 |
| 5.40 | 29.16 |
| 3.30 | 10.89 |
| 4.50 | 20.25 |
| 3.50 | 12.25 |
| 6.30 | 39.69 |
| 2.30 | 5.29 |
| 6.30 | 39.69 |
| 2.40 | 5.76 |
| 5.30 | 28.09 |
| 2.30 | 5.29 |
| 8.90 | 79.21 |
| 3.40 | 11.56 |
| 5.30 | 28.09 |
| 3.20 | 10.24 |
| 3.40 | 11.56 |
| 8.50 | 72.25 |
| 3.60 | 12.96 |
| 1.20 | 1.44 |
| 2.40 | 5.76 |
| 2.90 | 8.41 |
| 4.70 | 22.09 |
| 1.20 | 1.44 |
| 5.60 | 31.36 |
| 2.10 | 4.41 |
| 4.50 | 20.25 |
| 2.70 | 7.29 |
| 7.40 | 54.76 |
| 0.67 | 0.44 |
| 0.75 | 0.56 |
| 5.20 | 27.04 |
| 0.80 | 0.64 |
| 6.40 | 40.96 |
| 4.50 | 20.25 |
| 3.40 | 11.56 |
| 0.67 | 0.44 |
| 4.33 | 18.78 |
| 0.50 | 0.25 |
| 5.30 | 28.09 |
| 0.33 | 0.11 |
| 8.60 | 73.96 |
| 0.43 | 0.18 |
| 6.50 | 42.25 |
| 0.67 | 0.44 |
| 7.60 | 57.76 |
| 4.30 | 18.49 |
| 8.60 | 73.96 |
| 4.60 | 21.16 |
| 1.30 | 1.69 |
| 3.50 | 12.25 |
| 2.50 | 6.25 |
| 5.60 | 31.36 |
| 3.40 | 11.56 |
| 4.50 | 20.25 |
| 2.30 | 5.29 |
| 1.13 | 1.27 |
| 2.00 | 4.00 |
| 2.30 | 5.29 |
| 1.33 | 1.78 |
| 5.30 | 28.09 |
| 5.65 | 31.94 |
| 6.40 | 40.96 |
| 2.30 | 5.29 |
| 6.34 | 40.20 |
| 3.70 | 13.69 |
| 8.40 | 70.56 |
| 2.30 | 5.29 |
| 5.56 | 30.96 |
| 2.40 | 5.76 |
| 1.54 | 2.37 |
| 5.32 | 28.30 |
| 5.44 | 29.61 |
| 1.03 | 1.06 |
| 5.43 | 29.48 |
| 1.20 | 1.44 |
| 1.50 | 2.25 |
| 1.00 | 1.00 |
| 1.40 | 1.96 |
| 6.50 | 42.25 |
| 2.30 | 5.29 |
| 5.43 | 29.48 |

**The Population Mean =3.56 and Standard Deviation=18.88.**

**Answer:** Consider 5 samples each of size 10.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SAMPLE 1 | | SAMPLE 2 | | SAMPLE 3 | | SAMPLE 4 | | SAMPLE 5 | |
| 4.30 | 0.85 | 5.65 | 1.421252 | 3.50 | 1.21 | 3.20 | 0.2209 | 4.50 | 0.7569 |
| 2.30 | 1.17 | 6.40 | 3.767481 | 6.30 | 2.89 | 3.40 | 0.0729 | 2.70 | 0.8649 |
| 3.40 | 0.00 | 2.30 | 4.661281 | 2.30 | 5.29 | 8.50 | 23.3289 | 7.40 | 14.2129 |
| 1.60 | 3.17 | 6.34 | 3.538161 | 6.30 | 2.89 | 3.60 | 0.0049 | 0.67 | 8.781344 |
| 3.00 | 0.14 | 3.70 | 0.576081 | 2.40 | 4.84 | 1.20 | 6.1009 | 0.75 | 8.2944 |
| 2.00 | 1.90 | 8.40 | 15.53148 | 5.30 | 0.49 | 2.40 | 1.6129 | 5.20 | 2.4649 |
| 4.00 | 0.38 | 2.30 | 4.661281 | 2.30 | 5.29 | 2.90 | 0.5929 | 0.80 | 8.0089 |
| 5.40 | 4.08 | 5.56 | 1.221025 | 8.90 | 18.49 | 4.70 | 1.0609 | 6.40 | 7.6729 |
| 3.30 | 0.01 | 2.40 | 4.239481 | 3.40 | 1.44 | 1.20 | 6.1009 | 4.50 | 0.7569 |
| 4.50 | 1.25 | 1.54 | 8.520561 | 5.30 | 0.49 | 5.60 | 3.7249 | 3.40 | 0.0529 |

**CALCULATIONS:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **SAMPLE 1** | **SAMPLE 2** | **SAMPLE 3** | **SAMPLE 4** | **SAMPLE 5** |
| **SAMPLE MEAN:** | 3.38 | 4.459516 | 4.6 | 3.67 | 3.631667 |
| **SAMPLE VARIANCE:** | 1.439556 | 5.348676 | 4.813333 | 4.757889 | 5.762994 |

**INFERENCE:**

1. The Sample Variances and Means are near to the expected values, i.e., 5.97 and 3.56 (these values are estimated from the population variance and mean).