**Unit 8 - Hypothesis Testing**

**Exercise 8.4**

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| --- | --- | --- |
| t-Test: Paired Two Sample for Means | |  |
|  |  |  |
|  | *Agent1* | *Agent2* |
| Mean | 8.25 | 8.683333333 |
| Variance | 1.059090909 | 1.077878788 |
| Observations | 12 | 12 |
| Pearson Correlation | 0.901055812 |  |
| Hypothesized Mean Difference | 0 |  |
| df | 11 |  |
| t Stat | -3.263938591 |  |
| P(T<=t) one-tail | 0.003772997 |  |
| t Critical one-tail | 1.795884819 |  |
| P(T<=t) two-tail | 0.007545995 |  |
| t Critical two-tail | 2.20098516 |  |
|  |  |  |
| Difference in Means | -0.433333333 |  |
|  |  |  |

The mean for Agent 1 is 8.25 and the mean for Agent 2 is 8.68. The variance for Agent 1 and Agent 2 is 1.06 and 1.08, respectively. The difference in Means is 0.43.

**Exercise 8.5**

If a one-tailed test had been conducted to determine the effectiveness of Agent 1, the conclusion would be misleading. Involving Agent 2 in the comparison of Means and Variances leads to accurate conclusions on agent effectiveness.

**Exercise 8.6**

|  |  |  |
| --- | --- | --- |
| F-Test Two-Sample for Variances | |  |
|  |  |  |
|  | *Variable 1* | *Variable 2* |
| Mean | 51.404 | 46.158 |
| Variance | 179.1265143 | 246.6359551 |
| Observations | 50 | 50 |
| df | 49 | 49 |
| F | 0.726278998 |  |
| P(F<=f) one-tail | 0.133213161 |  |
| F Critical one-tail | 0.622165468 |  |
|  |  |  |

The population mean income for male is higher than female. The mean for men is 51.404 and mean for women is 46.158. The variance for men is 179.126 and that of women is 246.635. The assumption underpinning the validity of the analysis is that Variable 1 is male and Variable 2 is female. The findings can be validated by doing more analysis using different Excel software.