**INDEPENDENT SAMPLE T- TEST**

**PURPOSE:**

The Independent Samples T Test compares the mean scores of two groups on a given variable.

**HYPOTHESES:**   
Null hypothesis H0: The means of the two groups are not significantly different.  
Alternate hypothesis H1: The means of the two groups are significantly different.

**ASSUMPTIONS:**

1. Independent sample t-test assumes that the dependent variable is normally distributed.  
2. Independent sample t-test assumes that the variance of the two groups is the same as the dependent variable.  
3. Independent sample t-test assumes that the two samples are independent of each other.  
4. Samples for independent sample t-test are drawn from the population at random.  
5. In independent sample t-test, all observations must be independent of each other.  
6. In independent sample t-test, dependent variables must be measured on an interval or ratio scale.

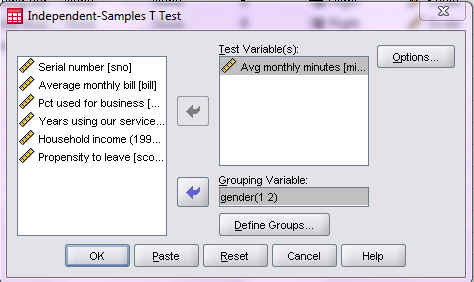
**PROCEDURE:**

STEP 1: Open the database, say AVERAGE MONTHLY MINUTES.

STEP 2: to begin the independent sample t-test

Analyze----> compare means----->independent sample t-test

STEP 3: Independent sample t-test dialogue box appears



STEP 4:

* select average monthly minutes as the test variable
* select gender as the grouping variable
* click define groups
* Type one as the group one value and two as the group two value
* click continue

STEP 5: click ok in the independent-sample T-test dialogue box.

| **Group Statistics** | | | | | |
| --- | --- | --- | --- | --- | --- |
|  | Sex | N | Mean | Std. Deviation | Std. Error Mean |
| Avg monthly minutes | Female | 139 | 1.6077E2 | 51.83109 | 4.39626 |
| Male | 111 | 1.6396E2 | 39.15930 | 3.71684 |

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| **Independent Samples Test** | | | | | | | | | | |
|  | | Levene's Test for Equality of Variances | | | t-test for Equality of Means | | | | | |
| F | Sig. | T | df | Sig.  (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| Avg monthly minutes | Equal variances assumed | 7.022 | .009 | -.536 | 248 | .592 | -3.18239 | 5.93657 | -14.87491 | 8.51012 |
| Equal variances not assumed |  |  | -.553 | 247.285 | .581 | -3.18239 | 5.75690 | -14.52121 | 8.15642 |

Levene's Test for Equality of Variances (Homogenisity) result shows that significant value that is 0.009 which means both groups are homogeneous group so t-test for equal variance not assumed considered.

Here the mean value of average monthly minutes of female is 160.77 and that of male is 163.96.the difference between the two is 3.18 which is insignificant**.** Based on the result generated by SPSS, the significant value is .581 and it is greater than 0.05 so accept null hypothesis. Hence there is no significant difference between the two means i.e. the average monthly minutes spoken by male and female.

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| **Group Statistics** | | | | | |
|  | Gender | N | Mean | Std. Deviation | Std. Error Mean |
| Minutes | Female | 139 | 160.7726 | 51.83109 | 4.39626 |
| Male | 111 | 163.9550 | 39.15930 | 3.71684 |

Employee

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| **Independent Samples Test** | | | | | | | | | | |
|  | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
| F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| Salary | Equal variances assumed | 119.669 | .000 | 10.945 | 472 | .000 | 15409.862 | 1407.906 | 12643.322 | 18176.401 |
| Equal variances not assumed |  |  | 11.688 | 344.262 | .000 | 15409.862 | 1318.401 | 12816.728 | 18002.996 |

Mean Difference

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Group Statistics** | | | | | |
|  | sex | N | Mean | Std. Deviation | Std. Error Mean |
| Salary | Male | 258 | 41441.78 | 19499.214 | 1213.968 |
| Female | 216 | 26031.92 | 7558.021 | 514.258 |

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|  | | Levene's Test for Equality of Variances | |
| F | Sig. |
|
| Salary | Equal variances assumed | 119.669 | .000 |