Independent t-test

This compares the means of two normal (or approximately normal) populations when independent samples are available from the two populations. The data samples can have unequal numbers of observations (ie. be non-paired). Two results are given: (i) the value of the test statistic, t, when it is assumed that the variances of the two populations are equal, and (ii) the value of the test statistic, t*, which is appropriate when it is not reasonable to assume that the variances are equal.

When the means of the two populations are equal, the t-statistic comes from the t-distribution with (n_1 + n2 - 2) degrees of freedom, but the distribution of the t* statistic is only approximately t with degrees of freedom often less than (n_1 + n2 - 2). In the latter case, t* does not have an exact t-distribution when Ho is true, but the t-distribution does provide a reasonable approximation. The degrees of freedom for this approximation, which is calculated for you, will often be a non-integer number and one should use only the truncated (ie. rounded down) part of the number. The p-values will be calculated for you, although you can also check these by looking up the t-distribution Static Table provided.

The hypotheses are Ho: $\mu_1 = \mu 2$ where μx represents the mean of data population X, and H_1: $\mu_1 \neq \mu 2$ (two-sided) or $\mu_1 > \mu 2$ or $\mu_1 < \mu 2$ (one-sided H_1).

See the Statistics topic for instructions on selecting this test.