

Statistical Methods for Market Research, 2023-2024

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Class 2: t-test vs Welch vs Mann-Whitney

Lab work "Power analysis for t-test vs Welch test vs Mann-Whitney test"

We are to compare t-test, Welch and Mann-Whitney tests against each other in terms of Power. Additionally, we will consider sequential procedure of applying Levene's test for equality of variances before choosing between t-test vs Welch as well.

We will consider two samples of normally distributed variables of sizes $n_x = 38$ and $n_y = 22$ with $\sigma_x = 1.11$ and $\sigma_y = 1.84$.

Significance level is set at 5%

Task 1

Compare nominal Type I Error rates for the considered procedures.

Task 2

Compare nominal Power for the considered procedures.

Task 3

Will the result change if smaller sample will actually have a smaller variance?

Task 4

Will the result change if sample size will increase 10 times?