TU DORTMUND   Winter semester 2022/23
Fakultät Statistik
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Project II
Comparison of multiple distributions

The European Aquatics Championships 2022 took place in Rome and consisted of 75 medal events in the disciplines swimming, open water swimming, artistic swimming, diving, and high diving (`https://www.roma2022.eu/en/`).

The given dataset `SwimmingTimes.csv` contains the results (time in seconds) of the women's 200m semi finals in the 5 categories breaststroke, backstroke, butterfly, freestyle, and medley. The original data are available on `https://roma2022.microplustimingservices.com/indexRoma2022_web.php`.

Tasks:

1. Do the times differ between the five categories? Conduct a global test.

2. Are there pairwise differences between the resulting times? Consider all pairs of categories and conduct two-sample tests. Adjust the test results with the Bonferroni method and one other adjustment method in order to address the multiple testing problem. Interpret the results. Compare the results with and without adjusting for multiple testing.

For both tasks, remember to check that all assumptions hold before applying the respective tests.

Note: Some swimmers participated in two categories. Find a meaningful way to deal with this problem.

Submission

Submission of the report and the corresponding (executable and commented) program code until *Friday, December 9, 2022, 08:30 am*, in Moodle.