

HSE and University of London Double Degree Programme in Data Science and Business Analytics

Statistical Methods for Market Research, 2023-2024

Home assignment 2.

Goal: Conduct the research using A/B testing + additional model based on data of your choice. You can work in groups of 2-3 persons. Write the report which will cover the following points. You should provide the code and the data used for the analysis. Code is not graded.

Task:

I. Intro (5 points)

- Clearly state economic or market research problem AND working hypotheses (3 points)
- Literature review, background or business context (2 points)

II. Implement all steps of A/B testing (10 points, 2 points each)

- Data validation
- Choice of metrics: null hypothesis, methodology
- Three variants of data preprocessing: Outlier detection, Variance reduction, Pre-experiment bias

- P-value calculation

- Power analysis/sample size calculation

III. Integration of multivariate statistical techniques with A/B. Choose one method of the following (10 points total):

- CFA (e.g. determine latent factors and compare subgroups based on the derived factors)
- DA (e.g. conduct A/B/n testing first, then explain group differences based on LDA)
- Cluster analysis (e.g. determine clusters in data, explain why clusters have formed, conduct A/B/n testing to check the differences with regard to variable of interest)

Deadlines:

26.02 – Divide into groups and select datasets. Datasets should not repeat across groups.

15.03 – Sending the report PDFs to classroom