

Advanced Statistical Computing using R

BCADA2221

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Summer 2022

0.1 SAMPLING AND SAMPLING DISTRIBUTIONS

Principles of Sampling, Sampling methods, Sampling Distributions: mean, difference and proportions

0.2 ESTIMATION AND CONFIDENCE INTERVALS

Point Estimation, properties and drawback, Confidence Interval Estimation of population mean and proportions

0.3 HYPOTHESIS TESTING

General Procedure, Errors in Hypothesis Testing, testing related to parametric test like Z test, t –test, non-parametric statistics: advantages and limitations, the Chi-Square Distribution, applications of Chi-Square Test Statistic, Mann Whitney U-Test

0.4 MULTIPLE REGRESSION ANALYSIS

Assumptions, the basics, testing the accuracy of models, robust regression: bootstrapping, reporting the regression results, regression with categorical data, dummy coding

0.5 ANALYSIS OF VARIANCE

One Way and Two-Way Classification, assumptions, logic of F Ratio, post hoc procedures and violations of test assumptions - Case Study related to the above discussed topics using R