University of Foggia

Doctorate in Translational Medicine and Health Systems Management — Cycle XXXVI

Informatics Course (4 Credits)

Year 2022

Experimental design, data analysis, and interpretation of results

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Become familiar with data modeling and analysis in healthcare.
Know how to use data processing tools using the "data mining" approach.

Learning Unit #1 — The statistical approach to data analysis
Data collection and presentation. Summary measures of data. Normal (Gaussian) and skewed distributions. Hypothesis testing. Choice of statistical test. Correlation and regression. Comparison between groups. From univariate analysis to multivariate analysis.

Learning Unit #2 — *Data mining* modeling
Experimental design, data analysis and knowledge extraction according to the conceptual model of *data mining*. Problems, models and algorithms for classification/prediction (supervised and unsupervised) in the case of continuous/discrete/nominal variables. Evaluation of the predictive performance of models.

Learning Unit #3 — Data analysis/modeling tools
The open-source statistical software tool *Jamovi*: general features, download, installation, applications.
The open-source data analysis tool *Orange*: general features, download, installation, configuration. The interactive application interface of Orange: Widgets and Workflow for the implementation of data mining models. Applications of Orange in the health sector.