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Development of a software tool with case studies for learning statistical data analyses

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Project and problem-based learning is becoming increasingly important in teaching. In statistics courses in particular, it is important not only to impart statistical knowledge, but also to keep an eye on the entire process of data analysis. This can best be achieved with case studies or data analysis projects. In the IPPOLIS project, we are developing a software learning tool that allows students to experience a data analysis process from the definition of the question to be answered, through the description and analysis of the data, to the appropriate presentation of the results. The tool supports students from a wide range of disciplines in learning statistical data analysis. The project is part of the federal and state funding initiative “Artificial Intelligence in Higher Education”, which aims to improve higher education by supporting teaching activities and learning processes based on artificial intelligence.

We present details of the development of the new teaching software tool as an R Shiny application. The tool contains a collection of case studies at different levels, each time starting with a request from a user in medicine or business. Each time a student starts a case study, the tool automatically generates a new data set. The focus is then on the student selecting appropriate measures and graphs to describe the data. At higher learning levels, it is also necessary to perform e.g. a linear or logistic regression to answer the questions posed. Students carry out all steps of the data analysis process and produce a report at the end. A future goal is to support the assessment of student performance by using background data from the tool as well as results from the text mining of the report.

Type of presentation

Talk

Classification

Mainly application

Keywords

Teaching tool, statistical case studies, R shiny application

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