

## Seminário

Grupo de Probabilidades e Estatística

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Sala Sousa Pinto

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### Integrating R, LaTeX, and Moodle for Sustainable Digital Assessments in Statistics with R/exams

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#### Abstract

Online tests are an integral part of modern education systems, and their use has increased significantly due to the constraints of the pandemic. Written tests for summative and formative assessment have been implemented on learning management system platforms, among which Moodle stands out. While the advantages of administering online tests are clear, some inherent challenges in this process are also immediately recognizable: the need to generate and manage a sufficient number of questions that allow for individual variations. R/exams is a software package integrated into the R project that helps teachers efficiently respond to these challenges. The questions generated this way can be easily reused, either in the classic written test format administered in the classroom or in a file that is directly exported to a question bank in online learning management systems like Moodle. Additionally, the questions can be randomized, including simulated values, text elements, graphics, or even datasets. This work aims to present an overview of the potential of the R/exams package, illustrating the advantages of its use with some experiences related to the teaching of mathematics and statistics. In particular, it shows the relevance of being able to generate a large number of random questions for Moodle, which allows for the administration of frequent formative or summative assessment tests and enables intensified autonomous study. A final and important aspect to consider is that the modular design of the questions, combined with the open-source nature of the software, facilitates collaborative work among teachers. The authors intend to promote this possibility of collaborative work, aiming to create a global and community-based platform for sharing resources for conducting statistics exams.

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