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Rethinking how we use software in academic teaching and in industry training

There are typically three approaches to using statistical software in teaching. The first is to teach the statistical topic at hand without any use of software, then show how to apply methods using statistical software. This separation approach follows the idea that instruction should be software neutral. While a statistical topic is broader than a particular method, including ideas and principles, by nature this common teaching approach often focuses narrowly on methods. Multiple examples and simulations are sometimes used to address this problem.

The second approach is to open the software and then teach the meaning of the settings and inputs in the order required by the software. Here the software itself takes the lead, and provides the motivation for learning the topic, again often with a focus on methods.

The third is more innovative: the students use the software tools in active learning exercises to explore the broad statistical topic. The pedagogical aim in this approach is to simultaneously teach the whole topic and the use of the software tools. Examples of this approach are shared and compared to alternatives.

When we use software, the two separate issues of how to use the software and how to employ good statistical practice to solve a real problem are often jumbled in the mind of the student. This additional point is also addressed.

Special/ Invited session

Classification

Mainly application

Keywords

teaching, software, active learning

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