Abstract

Students may need explicit training in informal statistical reasoning in order to design experiments or use formal statistical tests effectively. By using scientific scandals and media misinterpretation, we can explore the need for good experimental design in an informal way. This article describes the use of a paper that reviews the measles mumps rubella vaccine and autism controversy in the UK to illustrate a number of threshold concepts underlying good study design and interpretation of scientific evidence. These include the necessity of sufficient sample size, representative and random sampling, appropriate controls and inferring causation.

Abstract

There is a considerable and rich literature on students' misconceptions in probability. However, less attention has been paid to the development of students' probabilistic thinking in the classroom. This paper offers a sequence, grounded in socio-constructivist perspective for teaching probability.

Abstract

This article is based on classroom application of a problem story constructed by Amos Tversky in the 1970s. His intention was to evaluate human beings' intuitions about statistical inference. The problem was revisited by his colleague, the Nobel Prize winner Daniel Kahneman. The aim of this article is to show how popular science textbooks can serve as a source for rich classroom activity, with a little care in the implementation by teachers. Kahneman describes the problem as 'standard' and answers using a fixed point number. I describe how I have encouraged my students to challenge the certainty of this assertion by identifying ambiguities that are left unexplained in the story. This way, I claim to stimulate individuals to indeed move towards *Thinking, Fast and Slow*, the title of Kahneman's book.

Abstract

This paper presents a comparison of three approaches to the teaching of probability to demonstrate how the truth

table of elementary mathematical logic can be used to teach the calculations of conditional probabilities. Students are typically introduced to the topic of conditional probabilities—especially the ones that involve Bayes' rule—with the help of such traditional approaches as formula use or conversion to natural frequencies. The truth table approach is an alternative method for explaining the concept and calculation procedure of conditional probability and Bayes' rule.

Hold my calls: an activity for introducing the statistical process

Todd Abel - Lisa Poling

Abstract

Working with practicing teachers, this article demonstrates, through the facilitation of a statistical activity, how to introduce and investigate the unique qualities of the statistical process including: formulate a question, collect data, analyze data, and interpret data.