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Title: Experiential learning with 3D data visualizations in an introductory statistics course

Abstract

A key component of statistics courses is to teach students how to interpret data visualizations. Although many research-based recommendations exist for creating graphs, the technological advances for creating such graphs have outpaced studies that evaluate their effectiveness to the status quo, especially with 3D graphs. Here, we describe a process of integrating an experiment on 3D graphs as a project for students enrolled in an introductory statistics course and gather responses as students reflect on their positions as both experiment participants and reviewers of empirical evidence. A total of 82 students participated in our graphics project and displayed a pattern of not fully grasping research objectives as experiment participants; as students reviewed material from our pilot study of the same design, they tended to gain a clearer understanding about the purpose of the experiment and its role in the realm of data visualizations. The project we presented to students shows promise as an educational tool for helping students gain a more holistic view of statistical research.