AN EXAMINATION OF COMPUTER VERSUS TACTILE SIMULATIONS FOR TEACHING SAMPLING DISTRIBUTIONS IN INTRODUCTORY STATISTICS

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Sampling distributions are a notoriously difficult topic for students in post-secondary introductory statistics courses. Much of the literature suggests utilizing computer simulation methods (CSMs) and, despite few empirical studies, incorporating hands-on simulation activities prior to CSMs as a pedagogical tool in teaching sampling distributions. In our pseudo-experiment performed at a large research university, we randomly assigned discussion sections to sequences of sampling distribution activities either using CSMs preceded by hands-on simulation activities, or CSMs alone. We found moderate evidence of a positive effect of hands-on simulations on exam scores. However, the analysis of the sampling distribution-specific exam questions, which vary in type (e.g., multiple choice or free response) across exams, requires the development of a new statistical methodology for longitudinal data of differing response distributions.

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