Pedagogical considerations for simulation-based inference in a large-enrollment introductory biostatistics course.

Matthew D. Beckman & Kari Lock Morgan
Penn State University

Abstract:

This presentation discusses steps taken to integrate simulation-based inference (SBI) methods into an introductory biostatistics course. An overview of the course structure is provided, as well as pedagogical considerations relevant to SBI in a large enrollment context for undergraduate students in life science majors. Specific topics include use of inquiry-based framework, a complementary approach to SBI and non-SBI methods in order to emphasize conceptual understanding, and strategies for accommodating–perhaps even benefiting from–large enrollment for this type of course. Lastly, the presentation will compare and contrast this course with other approaches to introductory statistics using SBI.

Tentative Outline of Talk:

- (Matt) Description of STAT 250 revamp
  - Question of the day (usually life science)
  - Islands project
- (Matt) Pedagogical considerations
  - SBI
    - building intution
    - tangible machinery
    - revisit key concepts through SBI & non-SBI
  - large enrollment
    - Google Doc in lecture
    - clickers
  - intersection of SBI & large enrollment
    - M&M simulation anyway
    - StatKey in lecture
- (Kari) Compare/Contrast with other approaches (i.e. informal discussant)