The Nuts and Bolts of Creating a Two-Year Data Science Program

Distilling Essential Statistics in Technical Curriculum

Motivation

- Effective in the fall semester of 2023, the Associate in Science in Data Science Technology program will include coursework which meets two specific FLDOE-directed legislative changes:

  1. Civic Literacy Competency (Senate Bill 1108), which requires students initially entering an FCS institution in 2022-23 and thereafter to complete a course and pass an assessment to demonstrate competency in civic literacy.

  2. Associate in Science General Education (HB 1507), which requires that students entering an A.S. or A.A.S. degree program in the 2022-2023 academic year, and thereafter, must complete at least one identified state core course in each subject area as part of the general education course requirements before a degree is awarded.

- For the A.S. program one course, Introduction to Statistical Programming with R (COP 2073C), will no longer include Elementary Statistics (STA 2023) as a prerequisite. Instead, a statement will be added “Students are strongly recommended to take STA 2023 prior to enrollment in this course.

R Course Statistical Learning Outcomes

- Describe the common mathematical and statistical functions used in R and implement programs which use those functions, including functions related to probability, correlation, linear regression, and confidence intervals.
  - These outcomes are also present to a lesser degree in our Excel and SAS courses.
- Describe the process of hypothesis testing using R and implement a program which demonstrates hypothesis testing.

Teaching Statistics to Non-Statisticians

- On Teaching Statistics to Non-Statisticians (JSM 2013)
- Scott Evans, Ph.D., M.S. Harvard University
  - "Don’t be afraid to deviate from the norm or how the class was taught to you. If you learned it in a math or stat department then it may not best for a non-stat audience."
  - Discuss limitations of p-values and need for confidence intervals
  - Younger generations learn differently than we do: surfers / scanners vs. sit and think

- https://higherlogicdownload.s3.amazonaws.com/AMSTAT/985e96d2-45e9-4950-969e-1bb1b02ac30d/UploadedImages/JSM/JSM2013%20teaching%20biostats.pdf

Teaching Statistics to Non-Statisticians

- On Teaching Statistics to Non-Statisticians (JSM 2013)
- Vincent Lo Re, MD, MSCE UPenn
  - Statistical tests are viewed as “tools”
  - Students learn to use right tools to answer specific questions

  - https://higherlogicdownload.s3.amazonaws.com/AMSTAT/985e96d2-45e9-4950-969e-1bb1b02ac30d/UploadedImages/JSM/JSM2013%20teaching%20biostats.pdf

Teaching Statistics to Non-Statisticians

- On Teaching Statistics to Non-Statisticians (JSM 2013)
- Megan Mocko, Master Lecturer. University of Florida
- Guidelines for Assessment and Instruction in Statistics
    - Emphasize statistical literacy and develop statistical thinking
    - Use real data
    - Stress conceptual understanding, rather than mere knowledge of procedures.
    - Use technology for developing understanding and analyzing data

- https://higherlogicdownload.s3.amazonaws.com/AMSTAT/985e96d2-45e9-4950-969e-1bb1b02ac30d/UploadedImages/JSM/JSM2013%20teaching%20biostats.pdf

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