Open Resources for Teaching Statistics

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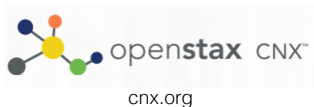UMass-Amherst Probability and Statistics Seminar Series

Defining Open

Broadly...

- Open access: "Free and unrestricted online availability" (Budapest Open Access Initiative)
- Open access versus open source

In academia...

- Computing: free to use and/or modify
- Research: free to read and/or publish in
- Teaching: free to use and/or modify

Open Access for Education: a crowded field

oercommons.org

cnx.org

openintro.org

edx.org

ocwconsortium.org

Open Access for Education: a governmental priority

Nov 2013: senate bill introduced

- Senators Durbin, Franken introduce the Affordable College Textbook Act
- Goal: "To expand the use of open textbooks in order to achieve savings for students."

January 2014: new NIH funding opportunity

- NIH FOA "Open Educational Resources for Biomedical Big Data (R25)"
- Designed to support "Curriculum or Methods Development of innovative open educational resources that enhance the ability of the workforce to use and analyze biomedical Big Data."

The Open Access Movement in Statistics

Research: statisticians as arbiters of Science

- The importance of reproducibility
- Reproducible research often hinges on open access

Teaching: open-access stats textbooks

- OpenIntro, by David Diez, Christopher Barr, Mine Çetinkaya-Rundel
- Introduction to Statistical Thought, by Michael Lavine
- Collaborative Statistics, by Barbara Illowsky, Susan Dean
- ... and more listed on OpenIntro.org

FOAS Foundation for Open Access Statistics

Philosophy The mission of FOAS is to promote free software, open access publishing, and reproducible research in statistics. We understand free software to be as defined by the Free Software Foundation: possible to run for any purpose, available in source code form, and free to modify and/or redistribute. Open access forums for papers are, for us, defined as those that allow free access to all readers with an internet connection, and that invite contributions from authors without requiring the payment of fees. – FOAStat.org
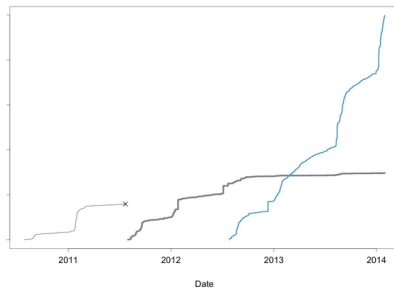
What is OpenIntro?

The basics

- ▸ founded in 2009 by David Diez and Chris Barr
- ▸ goal: create a free and open-source introductory textbook
- ▸ textbook, labs in R, slides, videos, course management

The future of OpenIntro

- ▸ Expand usage of OI Stats
- ▸ Broaden to Algebra, Calculus...

Date

openintro.org

Website tour: openintro.org

Consequences of OpenIntro being Open

Benefits

- No barriers to access (financial, geographic)
- Many eyes for errata, rapid revision
- Easy to keep timely
- Flexible source that can be modified for student's needs

Challenges

- Requires a different business model
- Adoption decision is made by professors, not students

What is statsTeachR.org?

The basics

- a new, open-access, online repository with modular lesson plans
- materials targeted at undergraduates and graduates
- topics: stats, biostats, statistical computing with R

Modules

- each curricular "module" focuses on teaching a particular statistical subject or concept
- can be browsed à la carte

statsTeachR.org

Website tour: statsTeachR.org

statsTeachR enables collaborative curriculum development

Some ongoing experiments for building curriculum

- graduate students are creating modules as final projects in core Biostat classes at UMass
- co-development of materials for similar classes (UMass-Amherst and Columbia Univ)

For discussion . . .

...the problem with open source textbooks, software, videos and other materials is that they ultimately declare to students, to administrators and to the public that faculty intellectual creations have no market value, and hence, are worthless. When all information wants to be free, who will employ information producers, be it be lecturers, expositors, musicians, architects, poets?

Discussion Questions

- where does the time/money/person-hours come from to generate these resources?
- how to incentivize these kinds of contributions appropriately?
- how to control quality of resources?