IMPLEMENTING STATISTICS FOR ALL

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WHAT WE'LL TALK ABOUT

- Goals of introductory statistics

- Where to house the courses

- Who to teach them

- What flavors to offer

- Structuring the classes

- Supporting the teachers

- Keys to success

GOALS OF INTRODUCTORY STATISTICS

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- Consumers of Statistical Information

- Producers of Statistical Information

- Communicators of Statistical Information

- All leading to good decision-makers in everyday life and in the workplace

WHERE TO HOUSE THE COURSES

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- Statistics department

- Mathematics department with statistician(s) to take the lead

- Math department with mathematicians trained to teach statistics

- Why?
  - Trained in the area
  - Can explain the why as well as the how and be intuitive
  - Best practices – GAISE guidelines
  - More meaningful on a student transcript

WHAT FLAVORS TO OFFER

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- Non-quantitative majors (1 terminal course)
  - History, communications, sports, psychology, education
- Quantitative majors (1 or 2 semester sequence)
  - Physics, chemistry, math, astronomy, etc.
- Business majors (2 course sequence)
- Engineers (2 course calculus-based sequence)

WHO TO TEACH THE COURSE

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- At least one statistician / mathematician with stat ed experience/training
- Statisticians/mathematicians who are willing to follow their lead
- Graduate students
- Adjuncts?
- Visiting professors?

STRUCTURING THE CLASSES

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- May have large groups of students
- Lecture (online/in-class) and recitation/small groups
- If multiple sections: Course coordination is critical
- Why coordination?
  - Most current teachers of statistics aren't trained in statistics
  - Consistency in student experience and outcomes
  - Best practices
  - Ease of workload
  - Happier students and administrators

STRUCTURING THE CLASSES

- What does coordination mean?
  - Same book and lecture notes
  - Same exams, given at the same time
  - Same small group materials and activities
  - Same grading rubrics, exam grading parties
  - Weekly teaching meetings: debrief/plan ahead/notes for next time
  - Coordinator has detailed syllabus and handles special situations
  - Training before teaching: statistical content, pedagogy, policies

SUPPORTING THE TEACHERS

- How to be the best statistics teacher they can be

- Plug into the network

- Use important resources already in place

SUPPORTING THE TEACHERS:
BEING THE BEST TEACHER YOU CAN BE

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- Training in best practices

- Understanding of content, pedagogy, and policies

- Silver-platter approach to materials and assessments

- Feedback from other teachers/coordinator mid-semester

- Weekly meetings: what's said here stays here

- Team teaching works wonders! Saves money too.

SUPPORTING THE TEACHERS: PLUG INTO THE NETWORK

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- <u>American Statistical Association</u>: Section on Statistics Education

- <u>ASA/AMATYC</u>: Joint committee, Special interest group

- <u>ASA/MAA</u> Joint Committee on Undergraduate Statistics Education

- <u>CAUSE:</u> Consortium for the Advancement of Undergraduate Statistics Education – become an institutional member

- <u>USCOTS</u>: United States Conference on Teaching Statistics

- <u>ECOTS</u>: Electronic Conference on Teaching Statistics

SUPPORTING THE TEACHERS: IMPORTANT RESOURCES

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- <u>CAUSEweb</u>: Collection of materials on teaching, webinars, workshops, professional development opportunities, conferences, research, how to make statistics fun

- <u>Journal of Statistics Education</u> (JSE): Free online journal

- <u>Isolated Statisticians Listserve</u>: Jeff Witmer, Oberlin College

- <u>ASA Website</u>: Amstat.org / Education / Undergraduate

KEYS FOR SUCCESS

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- Training
  - Content
  - Pedagogy/best practices
  - Policies

- Coordination
  - Cooperative teaching and communication

- Networking

- Resources – Don't reinvent the wheel

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