

Connecting Statistics Curriculum to Students' Curiosity

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Outline

- Problem and Proposed Pilot Program
- Iterative Improvement
- Results
 - Student Survey
 - Impact on Grades
- Lessons Learned
- Play at home game: Jamboard and/or Handout



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Problem and Proposed Pilot Program

- STAT 230 is a required second-year introductory course in Probability
 - Taken by all Math students (including Computer Science), typically 500+ class
 - Relevance was not apparent to CS students
 - CS students significantly under-performed
- Proposed Solution: Create CS-focused section
 - Different lectures, more CS content
 - Same tests, quizzes, exams
 - Hope tailored course will improve performance



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Think About Your Course

- When you have trouble reaching some of your students
- Is the course...
 - Required, elective, or a mix?
 - Restricted to students in certain programs or open?
 - Relevant to the students' programs? Their careers? Their personal interests?
 - Related to their other courses, past or future?



Iterative Improvement

- Rather than making giant sweeping changes at once, gradually added components

Step 1

- CS examples
- CS-flavoured questions
- Game of the Week (SWAG)
- R workshop

Step 2

- Restricted enrolment lifted
- More examples
- Add to course notes

Step 3

- Machine Learning Idea of the Week (MLIW)
- Stats in sci-fi
- Ethical use of data



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Online Adaptations (unexpected Step 4)

- Assigned all CS students to one instructor for individual questions
- “Thought question” polls on Piazza discussion board
- Weekly livestreams on Twitch for SWAG, MLIW and advanced R code
 - Recorded and posted on course website and freely as [YouTube playlist](#)
- Computational assignments to combine theory and R coding
 - Incorporating COVID testing, D&D, GameStop stock fiasco



Think About Your Course

- How can you gradually make additions to your course?
- Write down...
 - One change you can make in your course right away
 - One change you can think about making in the future



Inspiration for Ideas

- Partner and Friends in CS
- Research on CS/Stat education
- Self-education (ML course, Wikipedia)
- What's in the news
- Memes/reddit
- Popular books, games, movies
- Students themselves!
- Colleagues with expertise in the area
- Students' hobbies (ask!)



Think About Your Course

- Who or what can you use for inspiration?
- Write down...
 - One person you can go to for ideas
 - One resource you can consult for ideas



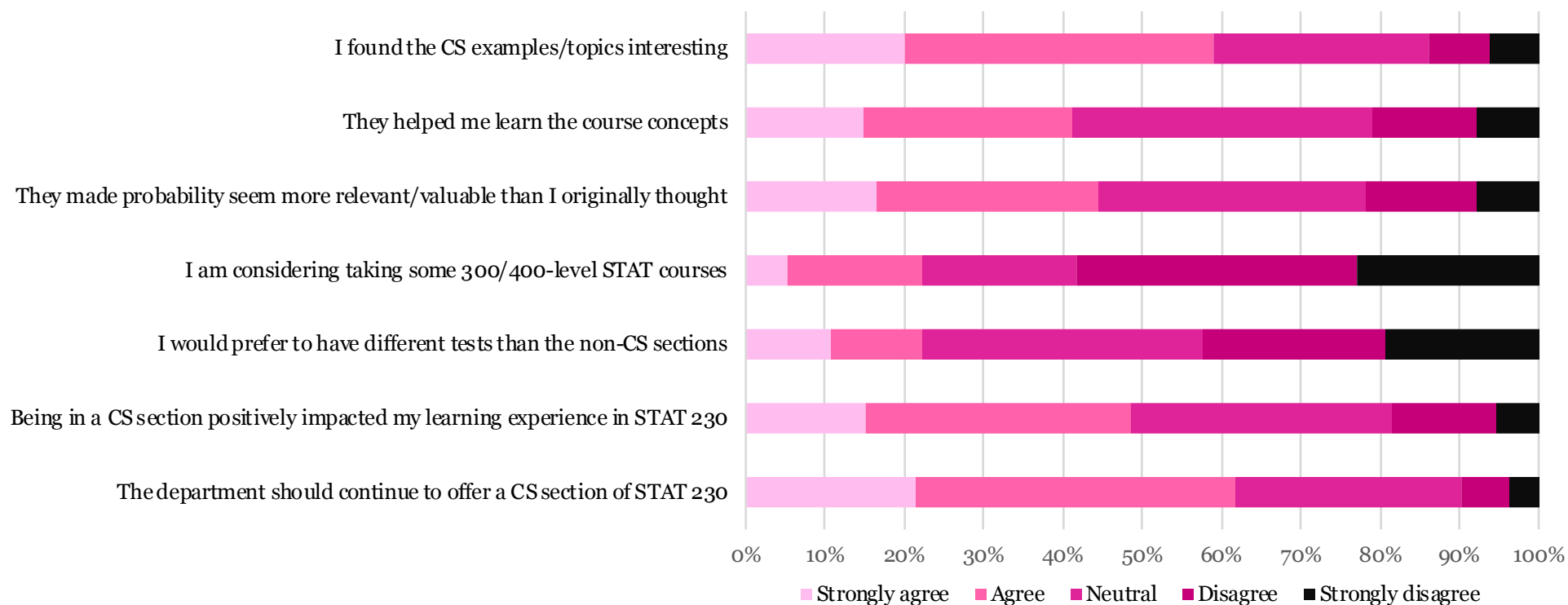
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Results – Student Survey, Qualitative

- Survey of students after first two terms of CS section pilot
 - “I liked that there was some kind of **connection** with how stats would be **useful** to me later on.”
 - “It lets me know people are trying to **cater** courses to one's degree. That amount of **consideration** is hard to come by.”
 - “[I liked] the **recognition** that CS students have different **priorities**.”
 - “I like how I was **surrounded** by people who were also in CS. I also found it **easier to grasp** some of the concepts.”
- Respondents also had lots of great suggestions!



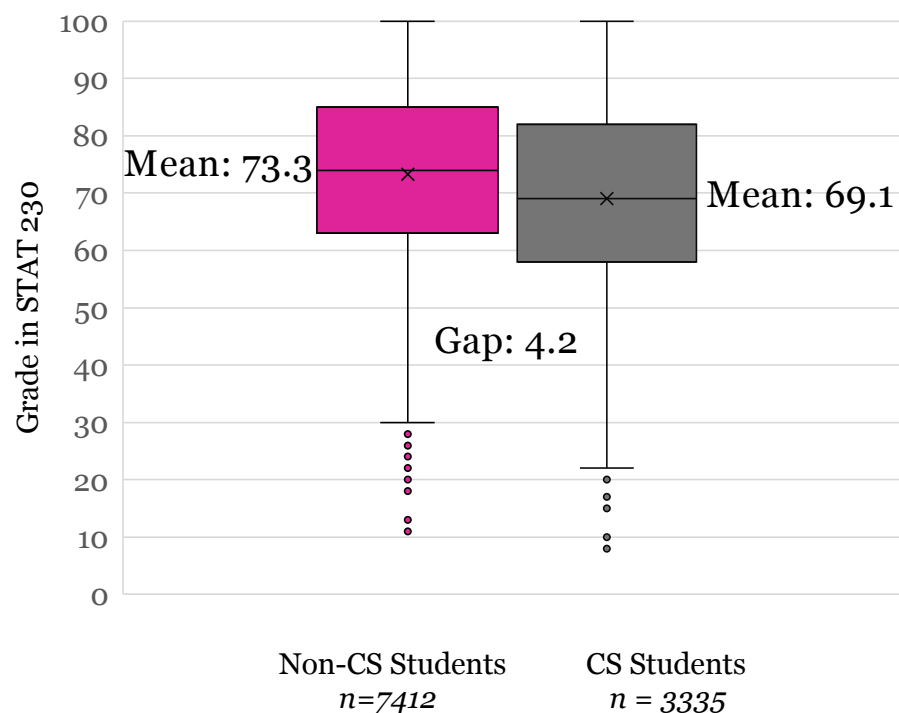
Results – Student Survey, Quantitative



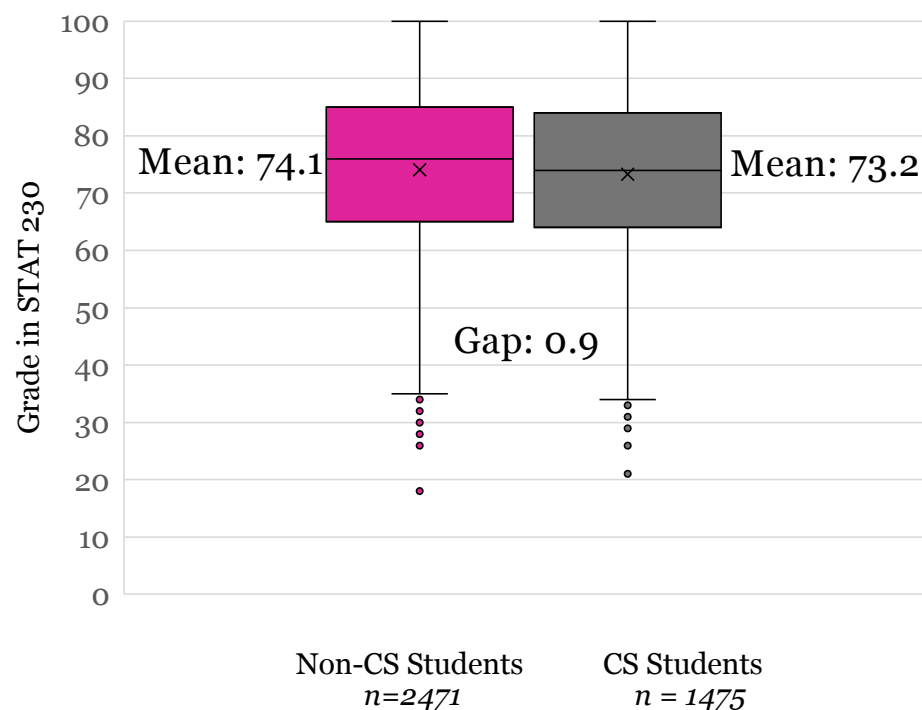
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Results – Impact on Student Grades

Terms with NO CS section



Terms WITH a CS section



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Think About Your Course

- How will you know it is working?
- Write down...
 - One goal you have
 - One idea for measuring the success of your changes



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Lessons Learned

- Start small and iteratively improve
- Get feedback and suggestions from students
- Incorporate new material into course so all future students benefit
- Use and share digital assets created for online learning



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