

STATISTICS EDUCATION SUMMIT 2012 – HIGHLIGHTS

We would like to start by thanking all faculty who attended the Statistics Education Summit on February 3, 2012. We had faculty from Psychology & Neuroscience, Physics, Mathematics, Evolutionary Anthropology, Engineering, Public Policy as well as Deans, representatives from Academic Advising, Center for Instructional Technology, and Libraries who joined in the conversation.

The meeting started with Dalene Stangl introducing the two new Professors of the Practice in the Department of Statistical Science, Mine Çetinkaya-Rundel and Kari Lock Morgan, as part of an initiative to re-design the introductory statistics curriculum, implement modern teaching techniques and maintain instruction quality and consistency. We discussed why we think undergraduate introductory statistics courses are important, how we teach these courses conceptually through active learning, how and why we focus on conceptual understanding, and how we incorporate analysis of real data from a variety of disciplines. The slides from this short presentation are posted at <http://stat.duke.edu/mc301/ses/edsummit2012>.

Next we heard from a group of students from Political Science, Russian, Physics, Psychology & Neuroscience, Chemistry, Public Policy, and Philosophy who shared their own perspectives on the introductory statistics courses that they have recently taken. The overall message from the students was that they found the courses very interesting and highly applicable in their own fields as well as finding them valuable for being an educated citizen. The students especially enjoyed the data analysis projects they completed in these courses. Although they were not viewed as easy courses, students recognized how statistics helped them in their other courses, honors theses, independent research projects, interpreting articles in the media, and boosting their academic resumes.

The presentations led to interesting and fruitful discussions. A few key topics were raised, summarized below:

- *Discipline-specific vs. interdisciplinary courses:* We believe that students should be taking their introductory statistics courses early in their undergraduate career and exposing them to research questions and data sets from a variety of disciplines can help them shape their academic interests and decide on a major. We also believe that interdisciplinary statistics courses help students to communicate and collaborate across disciplines.
- *Placement exam:* The placement exam that is currently being used for placing students into Sta 10, 101, and 102 seems to be making life difficult for students as well as faculty in other disciplines and academic advisors. This feedback is very useful for us to hear as the goal of the placement exam was to help minimize the variability in the quantitative literacy of students within each course so that students are placed with peers at similar quantitative literacy levels. Based on the feedback that we have heard, we are discussing alternative ideas that would allow us to drop the placement exam without harming the student experience for students who struggle with math.
- *Guiding incoming undergraduate students:* Academic advisors expressed that it is not clear which students should be directed to which introductory statistics course. This issue has become even more difficult to tackle as the number of introductory statistics courses

offered by various departments around campus has increased. Clarifying the content and target audience of each course and coordination among departments should help resolve this issue. A current list of courses and their descriptions, scope, and target audience can be found at <http://stat.duke.edu/undergraduate-program/undergraduate-courses>.

- *Students writing honors theses:* Our recommendation to students wishing to write honors theses that use statistical techniques is to take Sta 101 followed by Sta 121. This course combo is designed to provide them with the foundations of many statistical techniques as well as give them a thorough understanding of statistical inference and modeling.
- *Number of service students:* Department of Statistical Science has about 1,000 service students per year, which means 2/3 of all new students take statistics.

Based on these conversations we plan to reconsider the placement exam and re-format our three non-calculus based introductory statistics courses such that we meet the needs of all levels of students, regardless of their background and preparation. We are currently working out the details for how we will implement this, and hope to have it in place for Fall 2012. We will send out another update with further details in the next few weeks.

Thank you all for your interest and feedback, feel free to contact us with any additional questions or comments.

Best,

Mine Çetinkaya-Rundel, Kari Lock Morgan, Dalene Stangl