

Teaching statement

At the beginning of 2009, I co-founded Open Intro with Dr. Christopher Barr, a venture to develop a free and open source introductory statistics textbook (openintro.org; 1). This project emphasizes my interest and dedication to teaching and has been an important influence on my philosophy in both education and the field of statistics.

For the last 10 years, the internet has made a project such as Open Intro possible. In fact, several groups have made strides in this area, though none has produced a commercial-quality text that is open source (2). Our group includes six individuals – four statistics educators, a design expert, and a strategy expert – to produce a text that is high-quality, aesthetically pleasing, and released in a productive way. I see open source books as an upcoming revolution in education, just as R has made statistics software both more accessible and powerful. As a graduate student with interests in teaching, writing, and open source, it was natural to lay the foundation for Open Intro.

Producing an introductory book has required careful consideration of what defines the field of statistics. Statisticians use data to rigorously and quantitatively understand reality. To make this explicit in the classroom, my goal is two-fold in any statistics course. First, I provide examples of how non-statisticians regularly apply statistical methods using qualitative ideas, and we move to refine those natural approaches into rigorous and quantitative techniques. Secondly, I place data at the center of each topic. Thus, the course is built on the premise that we are examining evidence using natural rules but in a quantitative framework.

In this investigative approach, I believe we should be using modern statistical methods in early coursework. For example, randomization and resampling techniques reflect the nature of data, and they remain mathematically valid under few assumptions. This approach is important for two reasons. First, computation is a significant component of modern statistics. Students who start using a computer for statistics in their first course are learning an important skill. Secondly, inference can be introduced very early in an introductory course due to the elementary nature of randomization and without modeling experience.

Over the next several years, I am interested in teaching introductory and advanced courses. Covering a variety of classes permits me to develop Open Intro, produce R packages for use in application and education (3), and diversify my view of the field. Courses I would especially like to teach include entry-level statistics, probability theory, nonparametric statistics, experimental design, beginning and advanced regression, financial statistics, time series, and spatial statistics.

I am committed to statistics education, both in the classroom and through open source projects. Statistics is a rapidly growing discipline, which prompts new and interesting questions on how we can incorporate this progress into introductory and advanced coursework. I am tremendously excited to take up a position where I can focus on becoming an excellent teacher, growing the Open Intro project, and developing into a leader in statistics education.

- (1) Diez DM and Barr CD. *openintro*. An R package to be released with the Open Intro book, which will include data sets, functions, and tools for students and educators.
- (2) Examples include
<<http://www.massey.ac.nz/~mbjones/Book/>>,
<<http://faculty.vassar.edu/lowry/webtext.html>>,
<<http://cnx.org/content/col110522/latest/>>,
<<http://en.wikibooks.org/wiki/Statistics>>, and
<<http://wiki.stat.ucla.edu/socr/index.php/EBook>>.
- (3) An example of such a package is *stockPortfolio*, which I submitted with Professor Nicolas Christou of UCLA Statistics (2009). It is a package for stock portfolio modeling and management, intended for use in both education and in application.