Teaching Statement

Jesse Wheeler

I am interested in teaching a wide variety of statistical courses and believe in the profound impact a dedicated instructor can have on a student's academic journey. As an undergraduate, I was inspired by a very skilled instructor who positively influenced my opinion on statistics, and I aim to pay this forward in my own teaching. My primary interests include courses that align closely with my teaching experience and research, such as time series analysis, statistical computing, data science, and applied statistics at both undergraduate and graduate levels. I am also eager to teach other statistics courses as needed, bringing the same level of enthusiasm and commitment to fostering a deep understanding of statistical principles among my students.

Throughout my academic career I have seen many differing approaches to teaching, from both the perspective of a student and from the perspective of an instructor. These experiences have all shaped my teaching philosophy in differing ways, yet all have reaffirmed the importance of the teaching duty of an academic. Effective instructors have the potential to completely transform a student's life for the better, as several professors did for me when I was a student. As such, developing skills of an effective instructor is a responsibility I take very seriously.

Effective teaching extends far beyond presenting raw material to students. As an educator, I believe that students learn most effectively when they can connect theoretical ideas to real-world problems. An effective way to do this is to find recent published articles that are related to course topics to use as motivating examples or discussion points. By presenting historic backgrounds and the motivations behind certain concepts, I can enrich students' learning experiences and help them grasp the broader significance of the subject matter.

Statistical methodology and theory can often appear abstract and challenging, especially for students whose primary discipline is not statistics. Example-based learning can make abstract concepts more relatable. For instance, I use specific datasets to illustrate the relevance and application of the topics I teach, demonstrating both the necessity of particular theories or methodologies and their practical use. Student-led projects further bridge the gap between theory and practice; well-designed projects and assignments encourage students to engage with the material in a more meaningful way, promoting critical thinking and practical application of course concepts. Through project-based learning, students can delve deeper into subjects, collaborate with peers, and develop essential skills for their future careers.

In my teaching experience, I have observed that well-crafted homework assignments significantly enhance learning outcomes without causing undue stress. For instance, I taught a lab course for the same undergraduate statistics class over two semesters, each under the supervision of different faculty members. One professor assigned lengthy and technically challenging homework each week, operating under the assumption that students would benefit from independently grappling with difficult problems. In contrast, the other instructor designed guided homework assignments that introduced complex concepts in a gradual and educational manner. The students who received thoughtfully crafted assignments experienced less stress throughout the semester and demonstrated a deeper understanding of the course materials by its end. This comparison has reinforced my belief in the importance of designing assignments that both challenge and support students, fostering an engaging and productive learning environment.

My willingness to adapt my teaching approach extends to embracing and integrating new teaching methods and technologies. One such example is my utilization of the R package `learnr`. I have incorporated this tool into the labs of an undergraduate course on statistical computing at the University of Michigan. `learnr` converts any R Markdown file into an interactive tutorial, fostering a learning environment that encourages individual exploration of course topics. This method allows students to engage deeply with the material, with the added benefit of receiving targeted hints and

support from the instructor when needed. Although I find `learnr` to be a valuable tool, my primary strength lies in my commitment to continuously learn and adopt new classroom technologies and teaching strategies that will benefit student learning.

Generative AI is another emerging technology that offers both opportunities and challenges in teaching statistics. These tools are transforming how students engage with and understand complex concepts, thereby requiring instructors to adapt accordingly. Rather than treating AI as a hindrance to education, it is important to teach students how to use these tools responsibly and effectively in both research and learning contexts. In the master's level time series analysis course I instructed at the University of Michigan, students were allowed to use ChatGPT provided that they could demonstrate their engagement beyond simply copying answers. They were required to explain their learning process and how they applied their knowledge, thereby encouraging active and thoughtful interaction with the material. While AI tools can be beneficial, it is crucial for educators to evolve their teaching methods so that students can leverage new technology to enhance their learning experience rather than be hindered by it.

For a precise description of my teaching experiences, please refer to the teaching section of my CV: jeswheel.github.io/texDocs/cv.pdf.