



**Analysis of Eye Tracking Data for Attention to the Roadway During Driving Simulation  
Matthew Simon (COL 2019)  
Advisor: Catherine McDonald**

This summer I have had the opportunity to work under the mentorship of Dr. Catherine C. McDonald, PhD, RN from the University of Pennsylvania School of Nursing and the Center for Injury Research and Prevention (CIRP) of the Children’s Hospital of Philadelphia. The primary study I worked on focused on the use of eye movement data to record the efficacy of a web-based intervention to prevent risky driving in newly licensed teenagers. Teens enrolled in this study came to CIRP to complete a series of “drives” using a driving simulator, and data on their responses to stimuli (e.g. cars stopping suddenly or changing lanes) was collected via an eye tracking system. One group of participants was also randomized to receive distraction events during the drives, such as phone calls or conversational prompts from study team members. After completing a web-based intervention, either an intervention promoting the importance of safe driving or a control intervention, teens returned to CIRP to complete another series of “drives” in the simulator, with all participants receiving distraction events. The simulator and eye tracker data from both visits were collected, processed and analyzed in order to understand the effects that the intervention has on teens’ behavior while driving. Although I was evidently not enrolled in this study, I did have the opportunity to use the driving simulator before starting to gain a more thorough understanding of what to look for while coding our data (pictured).

Because of the unique exposure that this project has afforded me, I now have a much greater understanding of the process of human subjects research. In addition to a proficiency in standardized video coding, a foundation in MATLAB, and a thorough comprehension of REDCap database usage, working at CIRP has also given me an appreciation for the nuanced methods and time-intensive nature of human subjects research that is difficult if not impossible to acquire without experience in the field, especially considering the rigorous (albeit crucial) standards of the Institutional Review Board. CIRP’s augmentation of my educational experience at Penn has become invaluable to me, and I look forward to continuing the work I have started into my sophomore year.