# Data Science Seminar

Hosted by the Department of Mathematics and Statistics

- Date: Tuesday, December 6, 2022
- Time: 12:00pm – 1:00pm
- Room: Via Zoom
- Speaker: Dr. Alexander Franks (University of California, Santa Barbara)
- Title: Sensitivity to Unobserved Confounding in Studies with Factor-structured Outcomes.

***Abstract***

We propose an approach for assessing sensitivity to unobserved confounding in studies with multiple outcomes. Under a shared confounding assumption, we argue that it is often reasonable to use residual dependence amongst outcomes to infer a proxy distribution for unobserved confounders. We focus on a class of factor models for which we can bind the causal effects for all outcomes conditional on a single sensitivity parameter that represents the fraction of treatment variance explained by unobserved confounders. We further characterize how causal ignorance regions shrink under assumptions about null control outcomes, propose strategies for benchmarking sensitivity parameters, and derive metrics for quantifying the robustness of effect estimates. Finally, we propose a strategy for quantifying uncertainty and describe a practical sensitivity workflow which we demonstrate in both simulations and in a case study using data from the National Health and Nutrition Examination Survey (NHANES).

Biography of the speaker: Dr. Franks is an Assistant Professor in the Department of Statistics and Applied Probability at the University of California, Santa Barbara. His research interests include covariance estimation, sensitivity analysis, and causal inference, missing data and measurement error, high throughput applications in biology (“omics”), Bayesian statistics, and sports.