Title:

Increasing the power of the Mann-Whitney test in randomised experiments through flexible covariate adjustment

Abstract:
The Mann-Whitney U test is frequently used to evaluate treatment effects in randomised experiments with skewed outcome distributions or small sample sizes. It may lack power, however, because it ignores the auxiliary baseline covariate information that is routinely collected. Wald and score tests in so-called probabilistic index models (PIM) generalise the Mann-Whitney U test to enable adjustment for covariates, but these may lack robustness by demanding correct model specification and do not lend themselves to small sample inference. In this talk I will present two solutions. One follows directly from fitting PIMs. The other follows from using semiparametric efficiency theory. Our extensions of the Mann-Whitney U test increase power by exploiting covariate information in an objective way and which lends itself to permutation inference.