permute: A Python Package for Randomization Inference

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Abstract. *Software packages for randomization inference are few and far between. This forces researchers either to rely on specialized stand-alone programs or to use classical statistical tests, which may require implausible assumptions about their data-generating process. As Python gains popularity as a language for carrying out data analysis from start to finish, the absence of a package for randomization inference presents a severe limit to users' statistical capabilities. We present* `permute`*, the first (to our knowledge) comprehensive Python package for randomization inference. We illustrate the program's capabilities with three examples:*

- *a randomized experiment comparing the student evaluations of teaching for male and female instructors (MacNell et al., 2014)*
- *a study of the association between salt consumption and mortality at the level of nations*
- *an assessment of inter-rater reliability for a series of labels assigned by multiple raters to video footage of children on the autism spectrum*

We discuss future plans for `permute` *and the role of software development in Statistics.*

Keywords. *Software; Permutation tests; Python; Two-sample problem; Inter-rater reliability*

References

MacNell, L. and Driscoll, A. and Hunt, A. N. (2014). What's in a Name: Exposing Gender Bias in Student Ratings of Teaching. *Innovative Higher Education*, 1–13.