The University of Chicago
Department of Statistics

First Year PhD Presentation

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Correlation and Large-scale Simultaneous Significance Testing

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ABSTRACT

Large-scale hypothesis testing problems, with hundreds or thousands of test statistics z_i to consider at once, have become familiar in current practice. The cases we considered were typically of familiar form, each perhaps a simple two-sample comparison, but with their test statistics z_i correlated in some unknown fashion. Correlation among z-values might considerably widen or narrow the effective null distribution. In my presentation, we concern the effect of correlation on multiple testing procedures. Computational and theoretical methods for assessing the size and effect of correlation are discussed. Applications of popular analysis method, such as false discovery rates (FDRs), do not require independence of z-value, but their accuracy can be compromised in high-scale testing. We also discuss the consequences of correlation effects on FDRs. My presentation is based on the papers written by Bradley Efron.

Information about building access for persons with disabilities may be obtained in advance by calling Sandra Romero at 773.702-0541 or by email (sandra@galton.uchicago.edu).