

1144-62-251

Luella Fu* (luella@sfsu.edu), **Wenguang Sun** and **Gareth M. James**. *The Mountain Comes to Muhammad: Dangers from Using Standardized Statistics in Multiple Testing*. Preliminary report.

In multiple testing procedures, two common techniques are to pool information across testing units in order to boost power and to standardize statistics, usually yielding p-values or z-values. We show through analytical and intuitive arguments that for heterogeneous data, it is better not to standardize the data and instead use the original bivariate data. We propose a method, “Heterogeneity Adjusted Test Statistics” (HATS) that produces test statistics which use the original bivariate data. Through theory and simulation, we establish the ability of HATS to improve power while controlling type I error. To provide a concrete idea of how HATS performs versus z- and p-value multiple testing methods, we consider an application to microarray data. (Received August 27, 2018)