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Mehdi Razzaghi* (mrazzagh@bloomu.edu), Department of Mathematics, Bloomsburg University, Bloomsburg, PA 17815. *Approximating the Distribution of Combined Dependent P-values from Multiple Experiments.*

Observed significance levels or what is commonly known as p-values are routinely used to summarize the results of hypotheses tests. In many experiments, however, it is necessary to summarize results of multiple tests and combine several p-values to arrive at a single observed significance level for the entire experiment. When these p-values are assumed independent, then the classical approach to combining p-values is rather straight forward. However, when the p-values from multiple tests are not independent, the problem is more complex and no closed form distribution can be derived. For such cases, one approach is to use a shifted chi-square distribution to approximate the distribution. Method of moments has traditionally been utilized to estimate the shift parameter as well as the number of degrees of freedom. Here, we propose a method that does not only rely on matching the first two moments. Rather, our method is based on minimizing the distance between the moment generating functions for a chosen set of moments. An approximation for the moment generating function of the distribution of the combined p-values is derived and is used to determine the parameter estimates. The properties of the estimates are discussed and an example is used to illustrate the methodology. (Received September 15, 2014)