

# Testing homogeneity of proportions from sparse binomial data with a large number of groups

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**Abstract** In this paper, we consider testing the homogeneity for proportions in independent binomial distributions, especially when data are sparse for large number of groups. We provide broad aspects of our proposed tests such as theoretical studies, simulations and real data application. We present the asymptotic null distributions and asymptotic powers for our proposed tests and compare their performance with existing tests. Our simulation studies show that none of tests dominate the others; however, our proposed test and a few tests are expected to control given sizes and obtain significant powers. We also present a real example regarding safety concerns associated with Avandia (rosiglitazone) in Nissen and Wolski (New Engl J Med 356:2457–2471, 2007).

**Keywords** Asymptotic distribution · Homogeneity of proportions · Sparse data

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