

Testing for Informativeness in Analytic Inference from Complex Survey Data

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We review tests for informativeness of the design in analytic inference using data from a complex survey. Design informativeness occurs if a model correctly specified for the population does not hold in the sample. We generalize existing methods through a likelihood ratio test that compares the design-based fit of the expanded model to the model-based fit. We derive the asymptotic distribution of the test statistic, which is a linear combination of independent chi-square random variables. The coefficients in the linear combination are eigenvalues of a matrix that can be consistently estimated from the data. We also consider a bootstrap version, and evaluate the tests via simulation and application to real data. Empirical results show that the new test complements existing methodology, providing good power against interesting alternatives.

Key Words: Bootstrap, likelihood ratio test, superpopulation, weighted estimation