ASSESSING LOCAL INFLUENCE IN CANONICAL CORRELATION ANALYSIS

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Abstract. The first order local influence approach is adopted in this paper to assess the local influence of observations to canonical correlation coefficients, canonical vectors and several relevant test statistics in canonical correlation analysis. This approach can detect different aspects of influence due to different perturbation schemes. In this paper, we consider two different kinds, namely, the additive perturbation scheme and the case-weights perturbation scheme. It is found that, under the additive perturbation scheme, the influence analysis of any canonical correlation coefficient can be simplified to just observing two predicted residuals. To do the influence analysis for canonical vectors, a scale invariant norm is proposed. Furthermore, by choosing proper perturbation scales on different variables, we can compare the different influential effects of perturbations on different variables under the additive perturbation scheme. An example is presented to illustrate the effectiveness of the first order local influence approach.

Key words and phrases: Canonical correlation analysis, local influence, diagnostics, perturbation, tests of independence.