

Log-Linear Models for Association and Agreement in Stratified Square Contingency Tables ¹

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Summary

In square contingency tables the agreement between row and column classification is often of primary interest. Using a decomposition of the total association into a symmetrical component describing relative agreement and an asymmetrical part, and then providing separate models for each part yields a variety of models for the expected table. Simple and easily interpretable models are introduced for classifications on nominal and ordinal scales which only restrict the symmetrical association, thus leaving the asymmetrical part and the margins completely arbitrary. Furthermore corresponding models for the asymmetric part of the association are discussed, and it is shown, that for nominal scales only two extreme models with zero or saturated asymmetry are suitable. All models considered here are log-linear models which are applicable under the usual sampling schemes (Poisson or multinomial) and can be fitted using standard software. The models are extended to a set of square tables arising from stratification according to additional observed covariables. The methods are applied to an original data set on the classification of uterine cancer and to two social mobility tables from the literature.

Keywords: Agreement, association, asymmetry, contingency table log-linear models, odds ratio, social mobility, stratification, symmetry, uterine cancer.

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