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# Seminar

**MODELLING RATING DATA  
USING A NEW MIXTURE TO  
ACCOUNT FOR THE UNCERTAINTY**

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**Benvenuti**

**Campus S. Caterina**

**Abstract :** [www.stat.unipd.it/fare-ricerca/seminari](http://www.stat.unipd.it/fare-ricerca/seminari)

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# MODELLING RATING DATA USING A NEW MIXTURE TO ACCOUNT FOR THE UNCERTAINTY

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In responding to a rating question, an individual may give an answer according to his/her knowledge (feeling) or to his/her level of indecision (uncertainty) and such behaviour can be analysed through a two-component mixture denoted as CUB models. More specifically, the respondents' score is modelled as a weighted combination of respondents propensity to adhere to a totally uninformative choice (described by a discrete *Uniform* distribution) and/or a meditated choice (formally described by a shifted *Binomial* random variable). The interest for this class of models increases with the introduction of subjects', objects' and contexts' covariates. This extension improves the fitting of models and allows to create the profiles of respondents. Several other extensions and generalizations of basic CUB models have been proposed; some of them are currently in progress. We performed the generalization with *shelter* effect, the analysis of complex sample design or clustering methods, the chance to examine *don't know* responses, *hierarchical* effects, or *non-linear* transition probabilities, among others. This mixture model has been also generalized by introducing a varying uncertainty component and a Beta-Binomial random variable by changing the probability distributions for uncertainty and feeling components, respectively. And it is recently extended to take into account subjective heterogeneity in repeated measurements, zero inflation and response styles.

The R package CUB has been realized for the implementation of the mixture model.

In the talk visualization tools for the effects of variables are proposed and the modelling strategies are evaluated by use of real data sets.