

Count regression: models, estimation and selection

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In many situations one is interested in determining the influence of potential explanatory variables on a response, which is a count. In the first part I will introduce some useful count regression models starting with the Poisson regression. One often observed problem is, that the data shows overdispersion with respect to the Poisson distribution. This gives rise to the Negative Binomial regression or the Generalized Poisson regression. These models can be extended to allow additionally spatial heterogeneity or covariate specific overdispersion. In the second part I will discuss model selection criteria such as deviance tests, probability integral transform histograms and scoring methods. Ideas are illustrated by data applications.