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Dispersed Methods for Handling Dispersed Count Data

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Abstract - While the Poisson distribution is a classical statistical model for count data, it hinges on the constraining equi-dispersion property (i.e. that the mean and variance equal). This assumption, however, does not usually hold for real count data; over-dispersion (i.e. when the variance is greater than the mean) is a more common phenomenon for count data, however data under-dispersion has also been prevalent in various settings. It would be more convenient to work with a distribution that can effectively model data (over- or under-) dispersion because it can offer more flexibility (and, thus, more appropriate inference) in the statistical methodology. This talk introduces the Conway-Maxwell-Poisson distribution along with associated statistical methods motivated by this model to better analyze count data under various scenarios (e.g. distributional theory, generalized linear modeling, control chart theory, and count processes). As time permits, this talk will likewise acquaint the audience with available associated tools for statistical computing.