



## Zero-Modified Models for Count Data

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In this work, I present a family of distributions for count data, the so called Zero-Modified Power Series (ZMPS), which is an extension of the Power Series family of distributions for which support starts at zero. This extension allows the new zero-modified distribution appropriately accommodate zero-inflated or zero-deflated data. Power Series distributions included in the ZMPS family are: Poisson, Generalized Poisson, Geometric, Binomial, Negative Binomial and Generalized Negative Binomial. In addition, we introduce the ZMPS regression models and propose a Bayesian approach considering information matrix priori. The proposed ZMPS family of distributions and its regression version can accommodate sets of count data without any previous knowledge about the characteristic of zero-inflation (-deflation) present in the dataset. Two real datasets corresponding to leptospirosis notifications in cities of Bahia State at Brazil were analyzed. A sensitivity study to detect influential cases that can change the results is performed based on the Kullback-Leibler divergence.

**Keywords:** Zero-Inflated Data; Zero-Deflated Data; Power Series Distribution; Regression Model.