

## CO6 - Estatística Longitudinal e Sobrevivência

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### **Survival Models Induced by Zero-Modified Power Series Discrete Frailty: Application with a Melanoma Dataset**

Vera Tomazella<sup>1</sup>; Katy C. Molina<sup>2</sup>

Survival models with a frailty term are presented as an extension of Cox's proportional hazard model, in which a random effect is introduced in the hazard function in a multiplicative form with the aim of modeling the unobserved heterogeneity in the population. Candidates for the frailty distribution are assumed to be continuous and non-negative. However, this assumption may not be true in some situations. In this paper, we consider a discretely-distributed frailty model that allows units with zero frailty, that is, it can be interpreted as having long-term survivors. We propose a new discrete frailty-induced survival model with a Zero-Modified Power Series family, which can be zero-inflated or zero-deflated depending on the parameter value. Parameter estimation was obtained using the maximum likelihood method, and the performance of the proposed models was performed by Monte Carlo simulation studies. Finally, the applicability of the proposed models was illustrated with a real melanoma cancer dataset.

**Palavras-chave:** Discrete Frailty Models; Long-term Model; Zero-Modified Power Series Distributions; Zero Frailty; Melanoma.

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<sup>1</sup>DEs-UFSCar-São Carlos-SP – veratomazella@gmail.com

<sup>2</sup>PIPGes/UFSCar-USP, São Carlos-SP – rocio.cm@usp.br