

Geometric Process Models for series of events

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Abstract

Non-homogeneous Poisson (NHPP) process is widely used to model a series of events with trend. A more direct approach is to model the data with a geometric process (GP), proposed by Lam (1988). A stochastic process $\{X_i\}$ is a GP if there exists a positive real number a called the ratio such that $\{a^{i-1}X_i\}$ generates a renewal process with a mean μ and a variance σ^2 . In this research, we extend the GP model to different data types, different functional forms for the mean μ and ratio a and different inference methodologies. The models are demonstrated by data sets of positive, Poisson counts and binary outcomes.

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