The application of the number of IBNR claims for Erlang (n) interarrival times

David Landriault¹, Ya Fang Wang² and Gordon E. Willmot³

¹University of Waterloo, Waterloo, Canada; dlandriault@uwaterloo.ca
²University of Manitoba, Winnipeg, Canada; wangyafang2004@yahoo.ca
³University of Waterloo, Waterloo, Canada; gewillmo@uwaterloo.ca

The IBNR claims are a key issue for insurance firms or risk businesses to determine the reserve. For Poisson or mixed Poisson processes, the distribution of the number of IBNR claims is well known and governed by nonhomogeneous Poisson processes. Here we generalize Poisson process to a renewal process, especially Erlang (n) renewal processes. Homogeneous differential equations are derived for the probability generating function of the number of IBNR claims. For Applications, we compare differences between classical risk model and Erlang (n) renewal risk model. This work gives insurers more flexible choice to fit their risk models. This research work also leads to some results for the number of busy servers with infinity servers.