

APPLICATION OF MIXED POISSON PROCESSES TO CANCER DATA

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The accurate prediction of incidence and mortality data is important for public health planning. We consider three different models of mortality data: a Poisson regression model fit using a standard GLM approach; a mixed Poisson model fit using a GLMM; and a state space model incorporating a Poisson observation equation and a state equation used to model a time varying mean. The state space model is fit using resampling methods. In particular, we utilize the bootstrap filter and sequential importance sampling. Collectively, these resampling methods have become known as particle filters. The methodology will be discussed briefly, with a focus on the projection of future mortality rates, and the methods will be applied to some Japanese cancer data.