5.2.2. GLMM where the response variable is mortality

If survival of honey bees is the response variable of interest, then each cage should contain a minimum of 30 bees so as to provide a more robust estimate of their survival function. A typical survival analysis then needs to be undertaken on the data, e.g. the non-parametric Kaplan-Meier survival analysis for 'censored' data (so-called right-censored data in which bees are sampled from the cage during the experiment) or the semi-parametric Cox proportional hazards model (Cox model) for analysing effects of two or more 'covariates', or predictor variables such as *N. ceranae* or black queen cell virus (Collett, 2003; Zuur *et al*., 2009; Hendriksma *et al*., 2011). Note: these models do not only allow for random effects, if the design includes random effects then a GLMM (see section 5.2.) could be an alternative (including some function of time is a predictor variable in the GLMM).