

**Title** Number of consumers necessary for survival analysis estimations based on each consumer evaluating a single sample

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### **Abstract**

The objective of the present work was to use simulation studies to estimate the number of consumers necessary to obtain valid estimations from survival analysis calculations where each consumer evaluates a single sample. Based on previous studies a Weibull model was assumed for the lifetime distribution with a shape parameter  $\sigma$  between 0.17 and 0.71. Simulations were calculated supposing shelf-life values in the middle range of an adimensional time scale. Graphs to estimate  $N$  under different scenarios are presented. Considering the average  $\sigma$ , an alpha value (Type I error) of 5%, a beta value (Type II error) of 20%, the shelf-life to be in the middle of the studied time range and a difference between the true shelf-life and the estimated shelf-life of 0.5 on a 0–6 time scale, gave an  $N$  value of 300 consumers for this particular set of parameters. As 6 time values were considered this means 50 consumers for each one of the storage times. In the present study time was taken as the reference variable, however the same calculations and conclusions are valid for other variables of interest, such as concentration or temperature, that replace the time variable in survival analysis calculations.