Applied Survival Analysis - January 2016

Lab 1: Empirical Survival Estimate

Consider the following data from the Ohio State University Bone Marrow Transplant Unit on the time to death or relapse (in months) after bone marrow transplant for 12 patients with non-Hodgkin's lymphoma. For the purposes of this exercise, assume that there are no censored event times.

$$1,\ 2,\ 2,\ 2,\ 3,\ 5,\ 6,\ 7,\ 8,\ 16,\ 17,\ 34.$$

(a) Using the above data, calculate the empirical estimate of the survival function, $\hat{S}(t^+)$, by hand. Summarize your calculations in a table containing the survival times, the number of deaths at each time point, and $\hat{S}(t^+)$. Use your own `R` code to verify your calculations.

(b) Use the `survfit` function to verify your results.

(c) Use the `plot` function to produce a graph of the estimated survival function.

(d) Show how the estimated standard error is calculated for $t = 6^+$.

(e) Identify the estimated median survival.