STAT40810 — Stochastic Models

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Week 7

Kaplan-Meier: Standard Errors

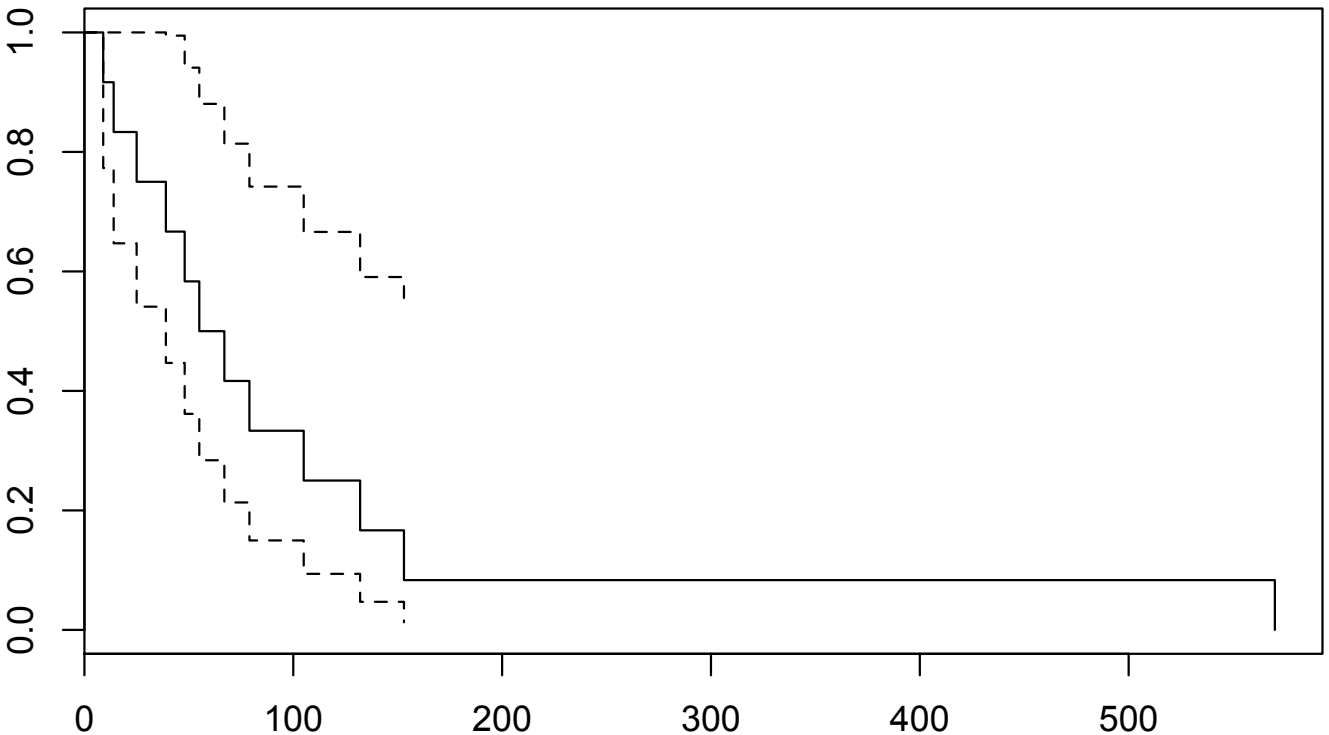
Standard Errors

- We can compute standard errors for a survival curve at any time t, using Greenwood's formula.
- Other approximations of the standard error also exist.
- So, we can find a 95% confidence interval for $S(t)$ quite easily.

Failure Time Example

```
# Read in Failure Times
x <- scan()
79 105  14 153  67  25  39   9  55 132  48 570

#Fit Kaplan-Meier Curve
# Also compute standard errors
library(survival)
fit <- survfit(Surv(x)~1,se=TRUE)

# Plot the Kaplan-Meier Curve with standard errors
plot(fit)
```

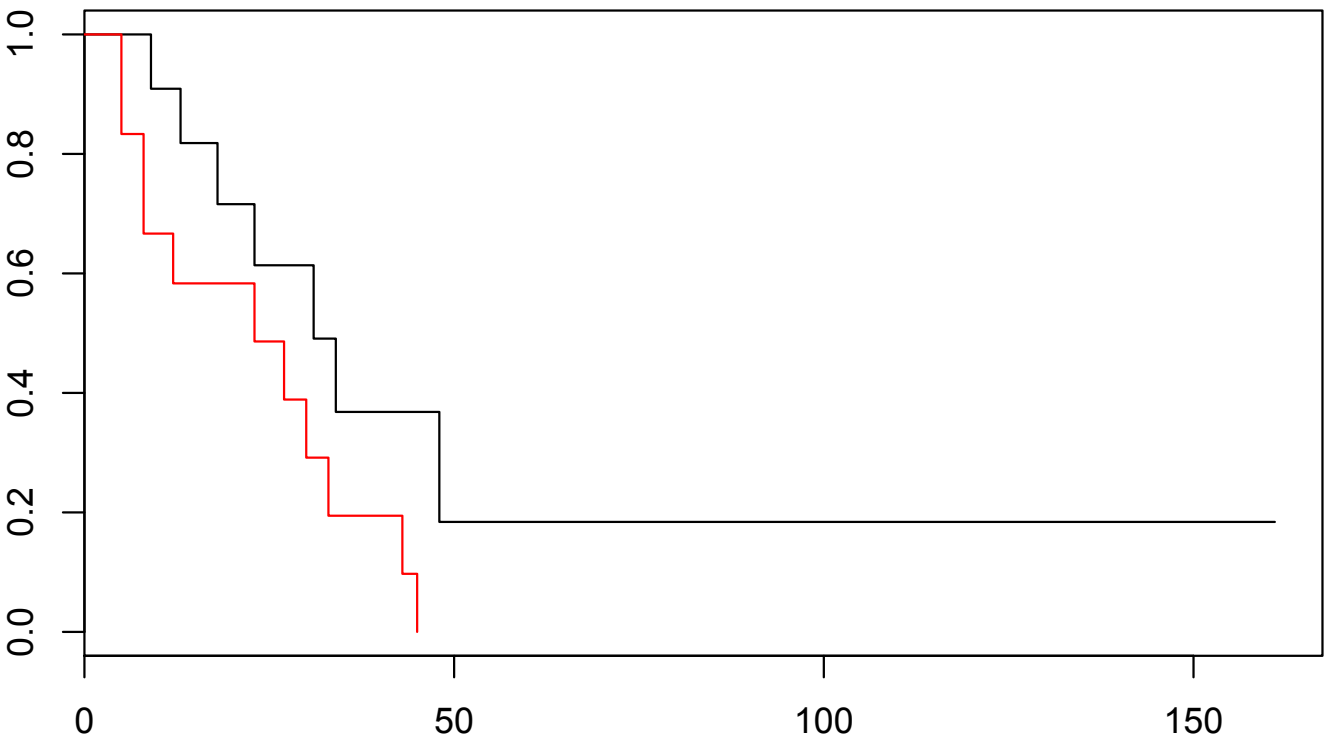
Result



Leukemia Example

```
#Load survival package
library(survival)

#Load leukemia data
data(leukemia)

#Fit the model to the data
fit <- survfit(Surv(time,status)~x,data=leukemia,se=TRUE)
summary(fit)

# Plot the estimated survival curves
plot(fit,conf.int=FALSE,col=1:2)

# Plot with standard errors
plot(fit,conf.int=TRUE,col=1:2)
```

Comparing Survival Curves



Comparing Survival Curves (with SE)