Assignment 12
Solutions

1. (a)

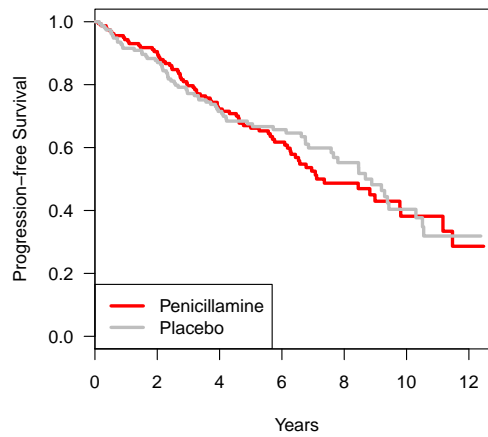| Therapy	Time	Death/Transplant	$n(t)$	$\hat{S}(T)$
	$\ldots$			
Penicillamine	799	Yes	139	.873
Penicillamine	824	Yes	138	.867
Penicillamine	839	No	137	.867
Penicillamine	877	Yes	136	.860
Penicillamine	901	Yes	135	.854
Penicillamine	904	Yes	134	.848
	$\ldots$			

(b)

	Death/Transplant	
	Yes	No
Penicillamine	0	136
Placebo	1	127

(c) Answers for (i) and (ii) can be obtained via:

```
Data <- read.delim("http://myweb.uiowa.edu/pbreheny/data/cirrhosis.txt")
require(survival)
S <- with(Data, Surv(Time,Status!=0))
Group <- Data$Group
survdiff(S~Group)
fit <- survfit(S~Group)
plot(fit,mark.time=FALSE, col=c("red","gray"), lwd=3,
     xlab="Years", ylab="Progression-free Survival", las=1)
legend("bottomleft",levels(Group), lwd=3, col=c("red","gray"))
```

(i) The Log-Rank test yields $p = 0.73$.

(ii)

(iii) Yes, both the analysis above and the literature review indicate that there is no difference in survival for patients on penicillamine and those on placebo.

(d) (i) Approximately 65% for both.

(ii) About 7 years for the penicillamine group and 8.5 years for the placebo group.

(e) (i) wider, because more subjects have been censored by 9 years as compared to 1 year.

(f) (iii) narrower, because fewer patients will have been censored before the 25th percentile than the 50th percentile (the median).