

Self-Evaluation Problems

Class 5

Answer Key

Below find times to “drug failure” (as determined by a treating psychiatrist) for 25 patients in a study comparing a new treatment for schizophrenia to a standard treatment

Trt group	Times (wks)
Standard	3, 5+, 6, 8, 8, 9, 13, 15+, 16, 16, 17, 18
New	4, 6, 9, 9, 10+, 11, 12, 13+, 14+, 16, 17, 18, 20

+ denotes a censored observation

- Determine the number of events and total person-weeks of follow-up for each of the two treatments:

Treatment		Overall Event Rate
Standard	Events= 10	10/134 = 0.075 events per person-week
	Person-weeks= 3 + 5 + 6 + 8 + 8 + 9 + 13 + 15 + 16 + 16 + 17 + 18 = 134	
New	Events=10	10/159 = 0.063 events per person-week
	Person-weeks= 4 + 6 + 9 + 9 + 10 + 11 + 12 + 13 + 14 + 16 + 17 + 18 + 20 = 159	

2. Construct the Kaplan-Meier survival curves by treatment:

Standard Treatment					New Treatment				
Event t- Time (t_i)	No. at Risk (n_i)	No. of Events (y_i)	$\frac{(n_i - y_i)}{n_i} =$ $\hat{P}_j = 1 - \frac{y_j}{n_j}$	$\hat{S}(t_j) =$ $\hat{S}(t_{j-1}) \times \hat{P}_j$	Event -Time (t_i)	No. at Risk (n_i)	No. of Events (y_i)	$\frac{(n_i - y_i)}{n_i} =$ $\hat{P}_j = 1 - \frac{y_j}{n_j}$	$\hat{S}(t_j) =$ $\hat{S}(t_{j-1}) \times \hat{P}_j$
0	12	0	1	1.000	0	13	0	1	1.000
3	12	1	1- 1/12=0.917	0.917	4	13	1	1- 1/13=0.923	0.923
6	10	1	0.900	0.825	6	12	1	0.917	0.846
8	9	2	0.778	0.642	9	11	2	0.818	0.692
9	7	1	0.857	0.550	11	8	1	0.875	0.606
13	6	1	0.833	0.458	12	7	1	0.857	0.519
16	4	2	0.500	0.229	16	4	1	0.750	0.389
17	2	1	0.500	0.115	17	3	1	0.667	0.260
18	1	1	0	0	18	2	1	0.500	0.130
					20	1	1	0	0

3. What is the approximate probability of remaining on the new treatment more than 10 weeks?

$$\hat{S}(10) = .69 \quad \text{K-M Estimate}$$

4. Plot the survival curves for each treatment group on the axes below.

