```
options ls=78 ps=60;

Data myel;
    infile
"\\mysbfiles.campus.stonybrook.edu\~\teaching\AMS588\chap4_myel.txt"
firstobs=2;
    input dur status trt renal;
run;

proc lifetest data=myel;
time dur*status(0);
strata trt;
run;


proc lifetest data=myel;
time dur*status(0);
strata renal;
test trt;
run;
```

The LIFETEST Procedure

Stratum 1: trt = 1

Product-Limit Survival Estimates

dur		Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.00		1.0000	0	0	0	12
8.00		.	.	.	1	11
8.00		0.8333	0.1667	0.1076	2	10
52.00		0.7500	0.2500	0.1250	3	9
63.00		.	.	.	4	8
63.00		0.5833	0.4167	0.1423	5	7
220.00		0.5000	0.5000	0.1443	6	6
365.00	*	.	.	.	6	5
852.00	*	.	.	.	6	4
1296.00	*	.	.	.	6	3
1328.00	*	.	.	.	6	2
1460.00	*	.	.	.	6	1
1976.00	*	.	.	.	6	0

Note: The marked survival times are censored observations.

Summary Statistics for Time Variable dur

Quartile Estimates

Percent	Point Estimate	95% Confidence Interval Transform	[Lower	Upper)
75	.	LOGLOG	220.00	.
50	.	LOGLOG	8.00	.
25	57.50	LOGLOG	8.00	220.00

Mean	Standard Error
144.50	28.72

Note: The mean survival time and its standard error were underestimated because the largest observation was censored and the estimation was restricted to the largest event time.

The LIFETEST Procedure

Stratum 2: trt = 2

Product-Limit Survival Estimates

dur		Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.00		1.0000	0	0	0	13
13.00		0.9231	0.0769	0.0739	1	12
18.00		0.8462	0.1538	0.1001	2	11
23.00		0.7692	0.2308	0.1169	3	10
70.00		0.6923	0.3077	0.1280	4	9
76.00		0.6154	0.3846	0.1349	5	8
180.00		0.5385	0.4615	0.1383	6	7
195.00		0.4615	0.5385	0.1383	7	6
210.00		0.3846	0.6154	0.1349	8	5
632.00		0.3077	0.6923	0.1280	9	4
700.00		0.2308	0.7692	0.1169	10	3
1296.00		0.1538	0.8462	0.1001	11	2
1990.00	*	.	.	.	11	1
2240.00	*	.	.	.	11	0

Note: The marked survival times are censored observations.

Summary Statistics for Time Variable dur

Quartile Estimates

Percent	Point Estimate	95% Confidence Interval Transform	[Lower	Upper)
75	700.00	LOGLOG	180.00	.
50	195.00	LOGLOG	23.00	700.00
25	70.00	LOGLOG	13.00	195.00

Mean	Standard Error
461.92	146.13

Note: The mean survival time and its standard error were underestimated because the largest observation was censored and the estimation was restricted to the largest event time.

Summary of the Number of Censored and Uncensored Values

Stratum	trt	Total	Failed	Censored	Percent Censored
1	1	12	6	6	50.00
2	2	13	11	2	15.38
Total		25	17	8	32.00

The LIFETEST Procedure

Testing Homogeneity of Survival Curves for dur over Strata

Rank Statistics

trt	Log-Rank	Wilcoxon
1	-2.3376	-18.000
2	2.3376	18.000

Covariance Matrix for the Log-Rank Statistics

trt	1	2
1	4.16301	-4.16301
2	-4.16301	4.16301

Covariance Matrix for the Wilcoxon Statistics

trt	1	2
1	1301.00	-1301.00
2	-1301.00	1301.00

Test of Equality over Strata

Test	Chi-Square	DF	Pr > Chi-Square
Log-Rank	1.3126	1	0.2519
Wilcoxon	0.2490	1	0.6178
-2Log(LR)	1.5240	1	0.2170

The LIFETEST Procedure

Stratum 1: renal = 0

Product-Limit Survival Estimates

dur		Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.00		1.0000	0	0	0	18
8.00		0.9444	0.0556	0.0540	1	17
70.00		0.8889	0.1111	0.0741	2	16
76.00		0.8333	0.1667	0.0878	3	15
180.00		0.7778	0.2222	0.0980	4	14
195.00		0.7222	0.2778	0.1056	5	13
210.00		0.6667	0.3333	0.1111	6	12
220.00		0.6111	0.3889	0.1149	7	11
365.00	*	.	.	.	7	10
632.00		0.5500	0.4500	0.1186	8	9
700.00		0.4889	0.5111	0.1201	9	8
852.00	*	.	.	.	9	7
1296.00		0.4190	0.5810	0.1216	10	6
1296.00	*	.	.	.	10	5
1328.00	*	.	.	.	10	4
1460.00	*	.	.	.	10	3
1976.00	*	.	.	.	10	2
1990.00	*	.	.	.	10	1
2240.00	*	.	.	.	10	0

Note: The marked survival times are censored observations.

Summary Statistics for Time Variable dur

Quartile Estimates

Percent	Point Estimate	95% Confidence Interval Transform	[Lower	Upper)
75	.	LOGLOG	700.00	.
50	700.00	LOGLOG	195.00	.
25	195.00	LOGLOG	8.00	632.00

Mean	Standard Error
768.28	135.81

Note: The mean survival time and its standard error were underestimated because the largest observation was censored and the estimation was restricted to the largest event time.

The LIFETEST Procedure

Stratum 2: renal = 1

Product-Limit Survival Estimates

dur	Survival	Failure	Survival Standard Error	Number Failed	Number Left
0.00	1.0000	0	0	0	7
8.00	0.8571	0.1429	0.1323	1	6
13.00	0.7143	0.2857	0.1707	2	5
18.00	0.5714	0.4286	0.1870	3	4
23.00	0.4286	0.5714	0.1870	4	3
52.00	0.2857	0.7143	0.1707	5	2
63.00	.	.	.	6	1
63.00	0	1.0000	.	7	0

Summary Statistics for Time Variable dur

Quartile Estimates

Percent	Point Estimate	95% Confidence Interval Transform	[Lower	Upper)
75	63.00	LOGLOG	18.00	63.00
50	23.00	LOGLOG	8.00	63.00
25	13.00	LOGLOG	8.00	23.00

Mean	Standard Error
34.29	9.13

Summary of the Number of Censored and Uncensored Values

Stratum	renal	Total	Failed	Censored	Percent Censored
1	0	18	10	8	44.44
2	1	7	7	0	0.00
Total		25	17	8	32.00

The LIFETEST Procedure

Testing Homogeneity of Survival Curves for dur over Strata

Rank Statistics

renal	Log-Rank	Wilcoxon
0	-5.4009	-113.00
1	5.4009	113.00

Covariance Matrix for the Log-Rank Statistics

renal	0	1
0	1.21443	-1.21443
1	-1.21443	1.21443

Covariance Matrix for the Wilcoxon Statistics

renal	0	1
0	611.722	-611.722
1	-611.722	611.722

Test of Equality over Strata

Test	Chi-Square	DF	Pr > Chi-Square
Log-Rank	24.0188	1	<.0001
Wilcoxon	20.8739	1	<.0001
-2Log(LR)	35.4813	1	<.0001

Rank Tests for the Association of dur with Covariates Pooled over Strata

Univariate Chi-Squares for the Wilcoxon Test

Variable	Test Statistic	Standard Error	Chi-Square	Pr > Chi-Square
trt	-2.6352	1.2963	4.1324	0.0421

Covariance Matrix for the Wilcoxon Statistics

Variable	trt
trt	1.68039

Forward Stepwise Sequence of Chi-Squares for the Wilcoxon Test

Variable	DF	Chi-Square	Pr > Chi-Square	Chi-Square Increment	Pr > Increment
trt	1	4.1324	0.0421	4.1324	0.0421

The LIFETEST Procedure

Rank Tests for the Association of dur with Covariates Pooled over Strata

Univariate Chi-Squares for the Log-Rank Test

Variable	Test Statistic	Standard Error	Chi-Square	Pr > Chi-Square
trt	-4.4306	1.8412	5.7908	0.0161

Covariance Matrix for the Log-Rank Statistics

Variable	trt
trt	3.38990

Forward Stepwise Sequence of Chi-Squares for the Log-Rank Test

Variable	DF	Chi-Square	Pr > Chi-Square	Chi-Square Increment	Pr > Increment
trt	1	5.7908	0.0161	5.7908	0.0161