

WEEK 4, 2006
January 26 and 27

TMA4275 LIFETIME ANALYSIS

Bo Lindqvist

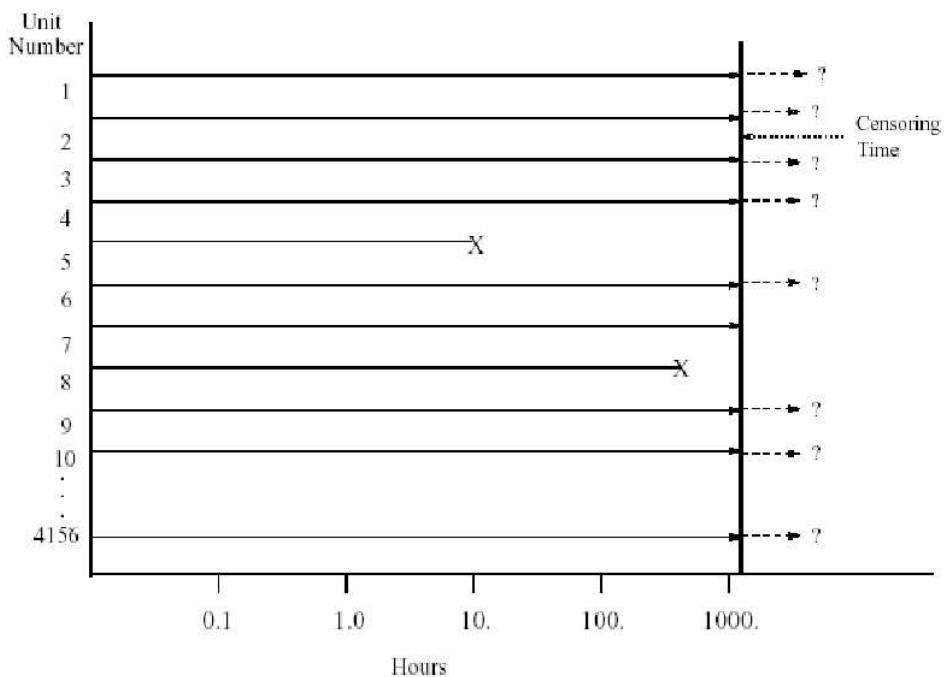
*Department of Mathematical Sciences
NTNU*

bo@math.ntnu.no
<http://www.math.ntnu.no/~bo/>

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EXAMPLE: CENSORING

IC Data Failure Pattern



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Example of Censoring: Leukemia Data

Remission times for 42 children with acute leukemia (free of symptoms).

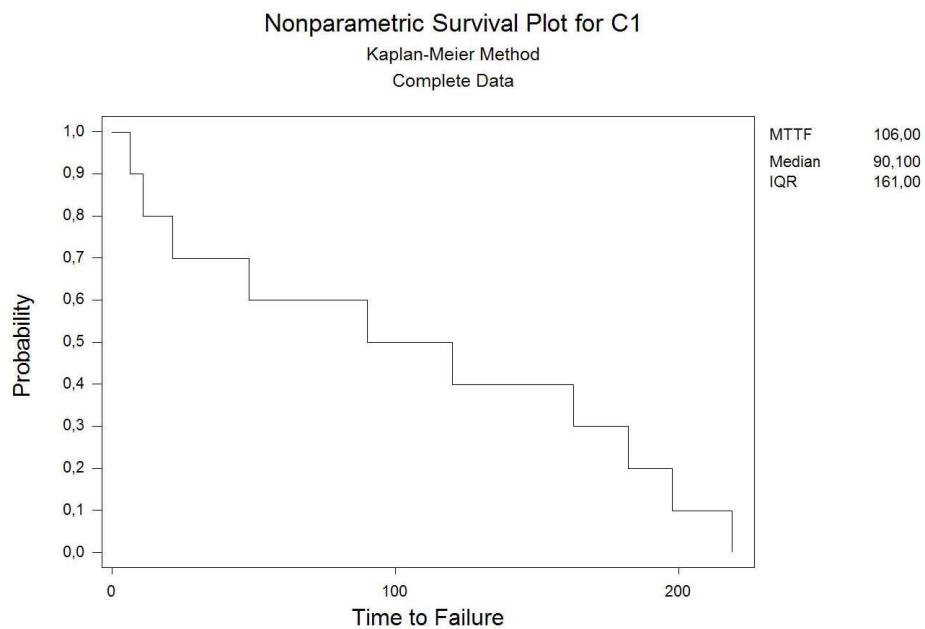
PL=Placebo, MP=6MP treatment, Y=time, C=censoring (0 means censored)

Row	YPL	CPL	YMP	CMP
1	1	1	6	1
2	1	1	6	1
3	2	1	6	1
4	2	1	6	0
5	3	1	7	1
6	4	1	9	0
7	4	1	10	1
8	5	1	10	0
9	5	1	11	0
10	8	1	13	1
11	8	1	16	1
12	8	1	17	0
13	8	1	19	0
14	11	1	20	0
15	11	1	22	1
16	12	1	23	1
17	12	1	25	0
18	15	1	32	0
19	17	1	32	0
20	22	1	34	0
21	23	1	35	0

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KM-PLOT WITH COMPLETE DATA (Example 11.8/9.1)

Data: 6.3, 11.0, 21.5, 48.4, 90.1, 120.2, 163.0, 182.5, 198.0, 219.0



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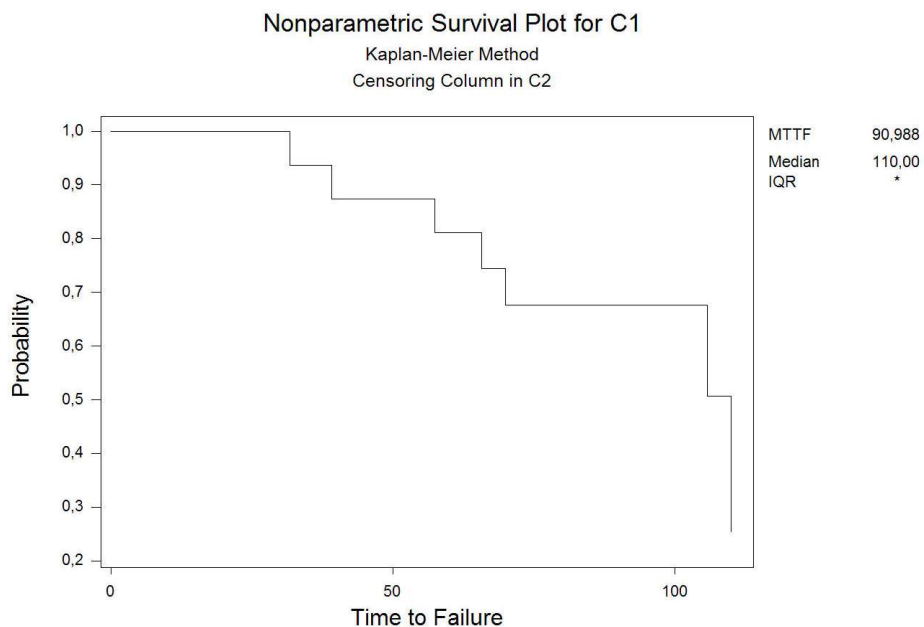
KM-ESTIMATOR WITH CENSORED DATA - Example 11.5/9.3

Row	C1	C2
1	31,7	1
2	39,2	1
3	57,5	1
4	65,0	0
5	65,8	1
6	70,0	1
7	75,0	0
8	75,2	0
9	87,5	0
10	88,3	0
11	94,2	0
12	101,7	0
13	105,8	1
14	109,2	0
15	110,0	1
16	130,0	0

Time	Number at Risk	Number Failed	Survival Probability	Standard Error	95,0% Normal CI Lower	95,0% Normal CI Upper
31,7000	16	1	0,9375	0,0605	0,8189	1,0000
39,2000	15	1	0,8750	0,0827	0,7130	1,0000
57,5000	14	1	0,8125	0,0976	0,6213	1,0000
65,8000	12	1	0,7448	0,1105	0,5283	0,9613
70,0000	11	1	0,6771	0,1194	0,4431	0,9111
105,8000	4	1	0,5078	0,1718	0,1711	0,8445
110,0000	2	1	0,2539	0,1990	0,0000	0,6440

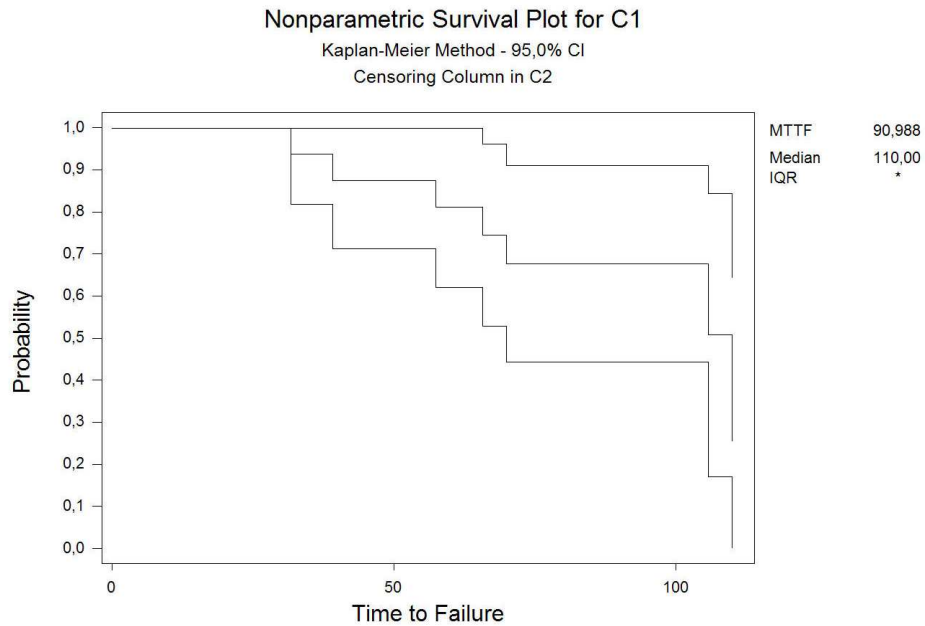
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KM-plot (Example 11.5/9.3)



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KM-plot with confidence limits (Example 11.5/9.3)



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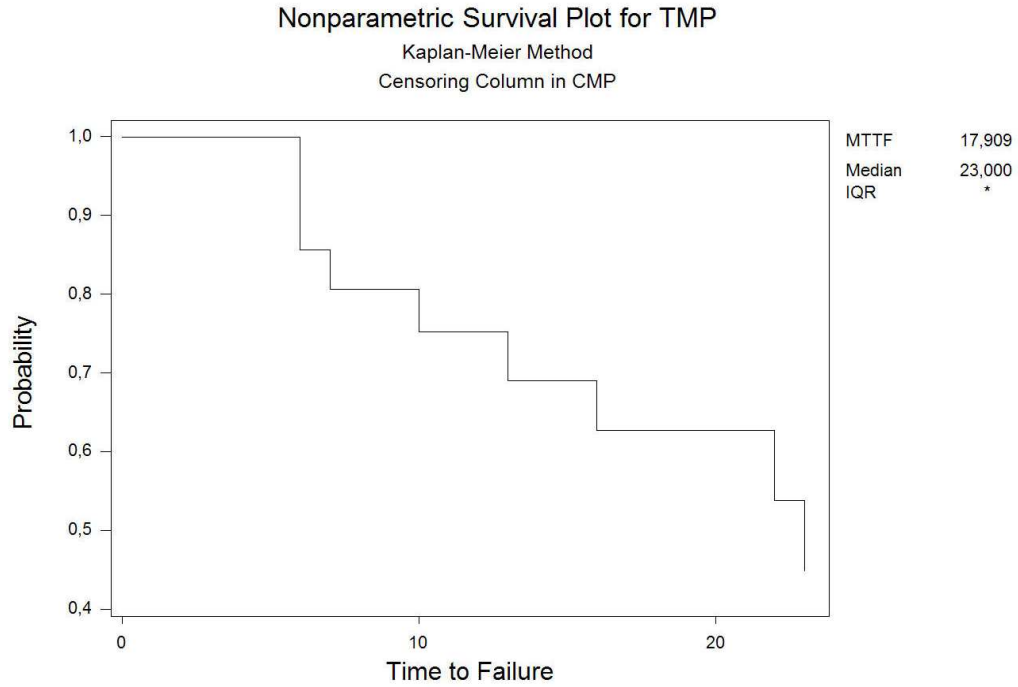
Kaplan-Meier Estimator – Leukemia Data

Treatment group (6MP)

Time	Number at Risk	Number Failed	Survival Probability	Standard Error	95,0% Normal CI Lower	95,0% Normal CI Upper
6,0000	21	3	0,8571	0,0764	0,7075	1,0000
7,0000	17	1	0,8067	0,0869	0,6363	0,9771
10,0000	15	1	0,7529	0,0963	0,5641	0,9418
13,0000	12	1	0,6902	0,1068	0,4808	0,8995
16,0000	11	1	0,6275	0,1141	0,4039	0,8510
22,0000	7	1	0,5378	0,1282	0,2865	0,7891
23,0000	6	1	0,4482	0,1346	0,1844	0,7120

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KM-plot: Leukemia Data (Treatment group)



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NELSON ESTIMATOR Data from Example 11.5/9.3

Row	Time	Numb at risk	1/Numb at risk	Cum Haz Nelson	Survival Nelson
1	31,7	16	0,062500	0,06250	0,939413
2	39,2	15	0,066667	0,12917	0,878827
3	57,5	14	0,071429	0,20060	0,818244
4	65,8	12	0,083333	0,28393	0,752820
5	70,0	11	0,090909	0,37484	0,687401
6	105,8	4	0,250000	0,62484	0,535348
7	110,0	2	0,500000	1,12484	0,324705

Survival KM
0,937500 0,875000 0,812500 0,744792 0,677083 0,507813
0,253906

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Nelson-plot: Example 11.5/9.3.

Nelson Plot

