LECTURE WEEK 7
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TMA4275 LIFETIME ANALYSIS

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Pike (1966) cancer data for rats

Row	Y	D
1	143	1
2	164	1
3	188	1
4	188	1
5	190	1
6	192	1
7	206	1
8	209	1
9	213	1
10	216	1
11	220	1
12	227	1
13	230	1
14	234	1
15	246	1
16	265	1
17	304	1
18	216	0
19	244	0

Pike (1966) cancer data for rats: 3-parameter Weibull

Distribution Analysis: C1

Variable: C1

Censoring Information	Count
Uncensored value	17
Right censored value	2

Censoring value: C2 = 0

Estimation Method: Maximum Likelihood

Distribution: 3-Parameter Weibull

Parameter Estimates

Parameter	Estimate	Standard Error	95,0% Normal CI Lower	Upper
Shape	2,71148	1,05876	1,26135	5,82878
Scale	108,383	32,5734	60,1367	195,335
Threshold	122,026	28,6924	65,7898	178,262

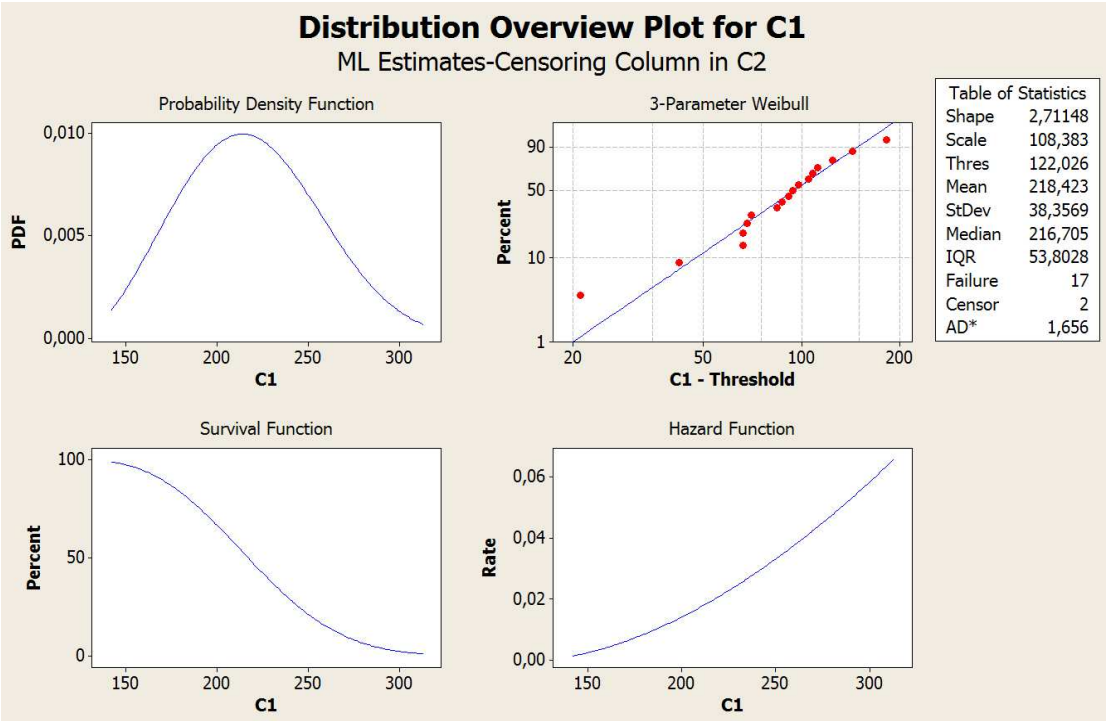
Log-Likelihood = -87,324

Goodness-of-Fit
Anderson-Darling (adjusted) = 1,656

Characteristics of Distribution

	Estimate	Standard Error	95,0% Normal CI Lower	Upper
Mean(MTTF)	218,423	8,99156	201,492	236,777
Standard Deviation	38,3569	6,41597	27,6352	53,2383
Median	216,705	9,89384	198,156	236,991
First Quartile(Q1)	190,481	9,63934	172,495	210,342
Third Quartile(Q3)	244,284	11,0118	223,627	266,849
Interquartile Range(IQR)	53,8028	8,97770	38,7945	74,6172

Pike (1966) cancer data for rats 3-parameter Weibull



Pike 3-parameter Weibull: Profile likelihood for γ

Table 4.4. m.l.e.'s and Profile Relative Likelihood for γ

γ	$\hat{\alpha}(\gamma)$	$\hat{\beta}(\gamma)$	$\ell_p(\gamma)$	$R_p(\gamma)$	$\Lambda(\gamma)$
0	234.3	6.08	−88.233	.403	1.818
60	173.2	4.49	−87.831	.602	1.015
100	131.8	3.38	−87.467	.867	.285
110	121.2	3.08	−87.381	.945	.113
120	110.6	2.78	−87.327	.998	.004
122	108.4	2.71	−87.324	1.000	.000
125	105.2	2.61	−87.330	.994	.012
130	99.7	2.44	−87.382	.944	.115
135	94.0	2.24	−87.542	.804	.436
140	88.0	1.99	−88.064	.477	1.480
142	85.2	1.80	−88.773	.235	2.896
143	81.1	1.00	−91.718	.012	8.846

Loglikelihood for truncated exponential data