

Censored Data: Airplane Components

Probability Plotting

ln(Time)	Time	i	$p = \frac{(i-.5)}{n}$	-ln(1-p)	ln(-ln(1-p))
-1.514	0.22	1	0.038	0.039	-3.239
-0.693	0.50	2	0.115	0.123	-2.099
-0.128	0.88	3	0.192	0.214	-1.544
0.000	1.00	4	0.269	0.314	-1.159
0.278	1.32	5	0.346	0.425	-0.856
0.285	1.33	6	0.423	0.550	-0.598
0.432	1.54	7	0.500	0.693	-0.367
0.565	1.76	8	0.577	0.860	-0.151
0.916	2.50	9	0.654	1.061	0.059
1.099	3.00	10	0.731	1.312	0.272

Use the total number of components, failed and censored, for n.

For an exponential distribution: $F_T(t) = 1 - e^{-\lambda t}$,
the plot of -ln(1-p) versus Time will form a straight line.

The slope of the line is an estimate of the parameter λ .

For a Weibull distribution: $F_T(t) = 1 - e^{-(\lambda t)^\beta}$,
the plot of ln(-ln(1-p)) versus ln(Time) will form a straight line.

The slope of the line is an estimate of the parameter β and the x-intercept is an estimate of $-\ln(\lambda)$.