

Generating a life table with XLSTAT-Life

[demoLife.xls](#)

Dataset to generate a life table

An Excel sheet with both the data and results can be downloaded by clicking [here](#).

The data have been obtained in [Lee E.T. (1992). Statistical Methods for Survival Data Analysis, Second Edition, John Wiley & Sons, New York] and represent the evolution of the number of patients with angina pectoris, during a 15 year period (Jan 1,1927 - Dec 31,1941).

Survival time is measured as years from the time of diagnosis. The counts correspond to events (number of patients who died during a time interval) and to withdrawals (number of patients lost to follow up).

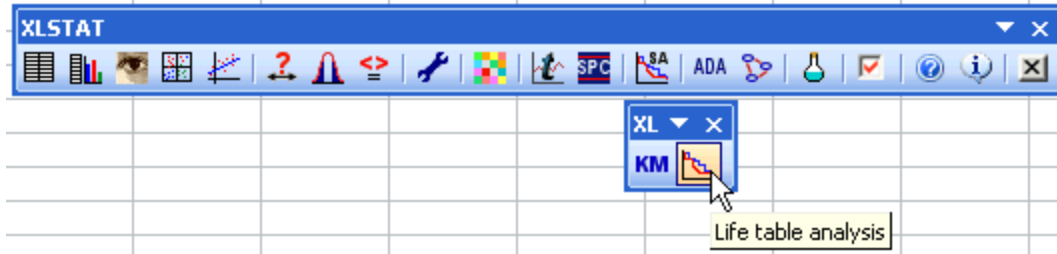
Goal of this tutorial

Our goal is to determine to display the life table, analyse the median residual lifetime (or median survival time), and plot the non parametric estimate of the survival distribution function.

	A	B	C
1	Time	Died	Censored
2	1	456	0
3	2	226	39
4	3	152	22
5	4	171	23
6	5	135	24
7	6	125	107
8	7	83	133
9	8	74	102
10	9	51	68
11	10	42	64
12	11	43	45
13	12	34	53
14	13	18	33
15	14	9	27
16	15	6	23
17	16	0	30

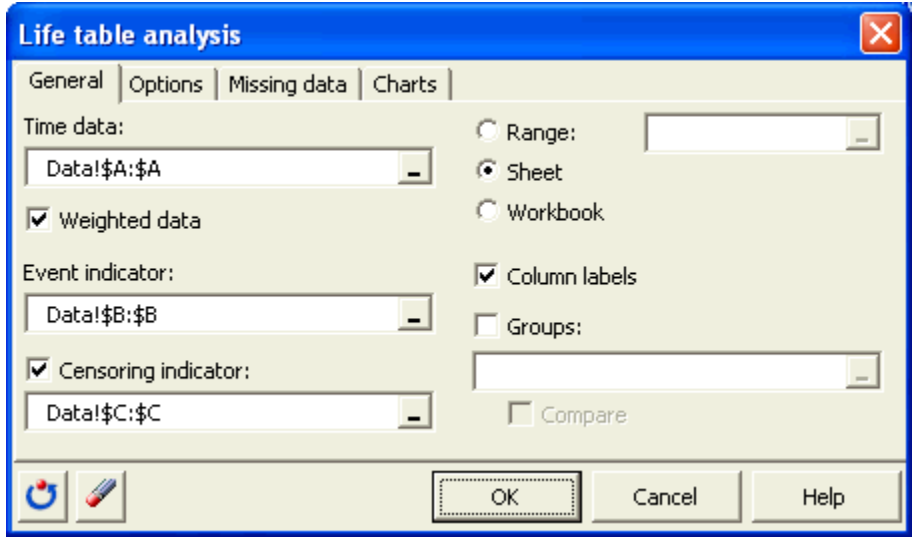
Setting up a life table analysis

After opening XLSTAT, select the **XLSTAT / XLSTAT-Life / Life table analysis** command, or click on the corresponding button of the **XLSTAT-Life** toolbar (see below).

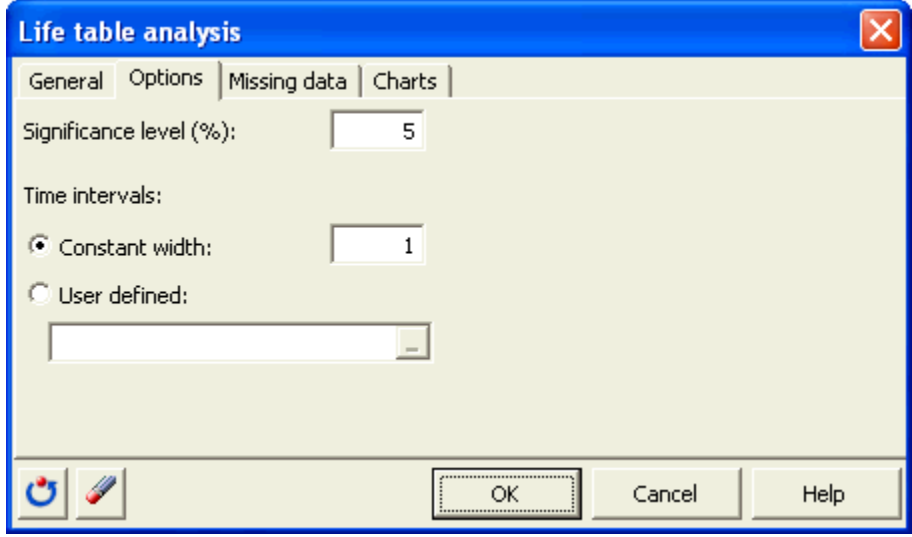


Once you've clicked on the button, the Life table analysis box will appear. Select the data on the Excel sheet. The **Time data** corresponds to interval end times.

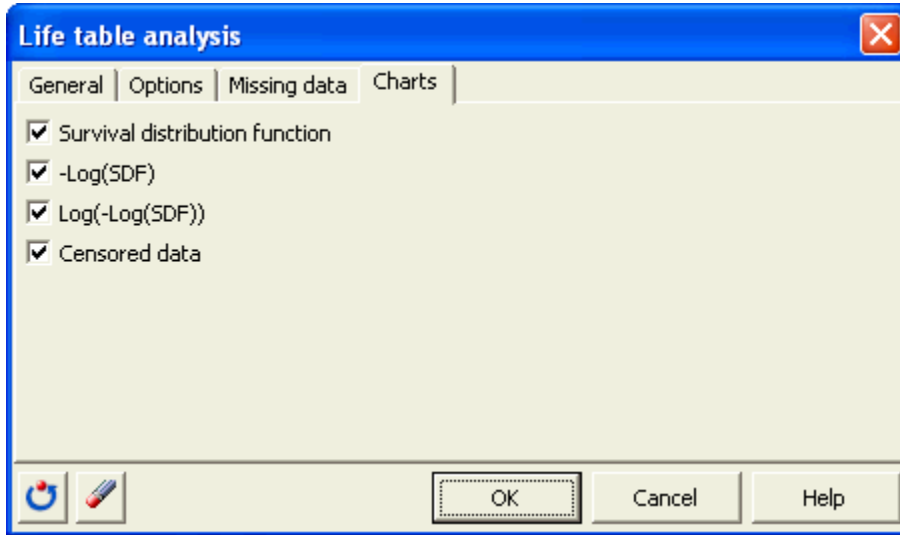
As the data correspond to counts, check the **Weighted data** option, and then select the "Died" data in the **Event indicator** field, and the "Censored" data in the **Censored indicator** field.



The size of the **time intervals** is set to **1**.



The following charts are requested.



The computations begin once you have clicked on **OK**. The results will then be displayed.

Interpreting the results of a life table analysis

The first table displays a summary of the data. The next table corresponds to the "Actuarial table". It contains the results of the life table analysis, including several key indicators such as the median survival time.

Interval	At risk	Failed	Censored	Active at risk	Survival rate	Probability of death	Conditional probability of death	Density of the survival function	Standard error of the survival function	Standard error of the hazard rate	Standard error of the ln survival	Standard error of the median survival lifetime			
[0, 1)	2418	456	0	2418	0,811	0,189	0,008	1,000	0,003	0,189	0,008	0,208	0,010	5,331	0,175
[1, 2)	1962	226	39	1942,5	0,884	0,116	0,007	0,811	0,003	0,094	0,006	0,124	0,008	6,250	0,200
[2, 3)	1697	152	22	1686	0,910	0,090	0,007	0,717	0,009	0,065	0,005	0,094	0,008	6,343	0,236
[3, 4)	1523	171	23	1511,5	0,887	0,113	0,008	0,652	0,010	0,074	0,005	0,120	0,009	6,226	0,236
[4, 5)	1329	135	24	1317	0,897	0,103	0,008	0,579	0,010	0,059	0,005	0,108	0,009	6,219	0,185
[5, 6)	1170	125	107	1116,5	0,888	0,112	0,009	0,519	0,010	0,058	0,005	0,119	0,011	5,908	0,181
[6, 7)	938	83	133	871,5	0,905	0,095	0,010	0,461	0,010	0,044	0,005	0,100	0,011	5,596	0,186
[7, 8)	722	74	102	671	0,890	0,110	0,012	0,417	0,010	0,046	0,005	0,117	0,014	5,167	0,271
[8, 9)	546	51	60	512	0,900	0,100	0,013	0,371	0,011	0,037	0,005	0,105	0,015	4,942	0,276
[9, 10)	427	42	64	395	0,894	0,106	0,016	0,334	0,011	0,036	0,005	0,112	0,017	4,826	0,414
[10, 11)	321	43	45	298,5	0,856	0,144	0,020	0,299	0,011	0,043	0,006	0,155	0,024	4,689	0,418
[11, 12)	233	34	53	206,5	0,836	0,165	0,026	0,256	0,011	0,042	0,007	0,179	0,031		
[12, 13)	146	18	33	129,5	0,861	0,139	0,030	0,214	0,011	0,030	0,007	0,149	0,035		
[13, 14)	95	9	27	81,5	0,890	0,110	0,035	0,184	0,012	0,020	0,007	0,117	0,039		
[14, 15)	59	6	23	47,5	0,874	0,126	0,048	0,164	0,012	0,021	0,008	0,135	0,055		
[15, .)	30	0	30	15	1,000	0,000	0,000	0,143	0,013						

The third table isolates the median survival time and its standard deviation. From these values we can conclude that the median residual lifetime for angina pectories is 5.3 years. In other words, out of 100 patients, 50 would be dead 5.3 years after having contracted the disease.

Median survival lifetime:	
Median	Standard deviation
5,331	0,175

Last, we can visualize several curves, including the the survival distribution function (SDF, or survivor function), and the $-\text{Log}(\text{SDF})$ curve. From the latter, we see that the function is close to an exponential model.

