

APPENDIX 02 - Fortran 77 (F77) Programs

The following Fortran 77 programs were used for this project. They were all on the UNIX Norsks.

Distributions of failure time

Programs 1-4 calculate the survivor functions, pdfs, hazard functions and integrated hazards for the Weibull distribution :-

- Program 1 : Uncensored case
- Program 2 : Constant censoring
- Program 3 : Realistic case (I)
- Program 4 : Realistic case (II)

Log likelihood

Programs 5-8 provide the estimates of kappa and rho in the Weibull distribution :-

- Program 5 : Uncensored case
- Program 6 : Constant censoring
- Program 7 : Realistic case (I)
- Program 8 : Realistic case (II)

Non-parametric methods

Programs 9-12 estimate the product limit estimator :-

- Program 9 : Uncensored case
- Program 10 : Constant censoring
- Program 11 : Realistic case (I)
- Program 12 : Realistic case (II)

Tests

Programs 13-16 are used to compare the product limit estimator with the survivor function with its estimated parameters. A goodness of fit test (Kolmogorov-Smirnov) will be used. The table (5% level only) is taken from Murdoch and Barnes, 1986.

- Program 13 : Uncensored case
- Program 14 : Constant censoring
- Program 15 : Realistic case (I)
- Program 16 : Realistic case (II)

Programs 17-20 are used to test for exponentiality, using the likelihood ratio test.

- Program 17 : Uncensored case
- Program 18 : Constant censoring
- Program 19 : Realistic case (I)
- Program 20 : Realistic case (II)

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Accelerated life models

Programs 21 and 22 demonstrate the accelerated life models with respect to the survivor functions, PDFs, Hazard functions and integrated hazards :-

- Program 21 : Uncensored case
- Program 22 : Constant censoring

Program 23 demonstrates the accelerated life model with respect to the product limit estimator :-

- Program 23 : Realistic case I

Program 24 provides estimates of κ , b_0 and b_1 in the Weibull distribution for the uncensored case.

NOTES

All F77 programs in this appendix use the function URAND which generates random numbers between 0 and 1. It is taken from Problem Solving with Fortran 77, Brian D. Hahn, 'The listing of URAND', Pages 142-143, 1987

The UNIX Norsks represent numbers in the form .AE+B, where A is between 0000000 and 9999999 and B is between 00 and 99 this represents $A \cdot 10^{B-1}$, eg .3841000E+01 represents $3.841 \cdot 10^0$ or 3.841.