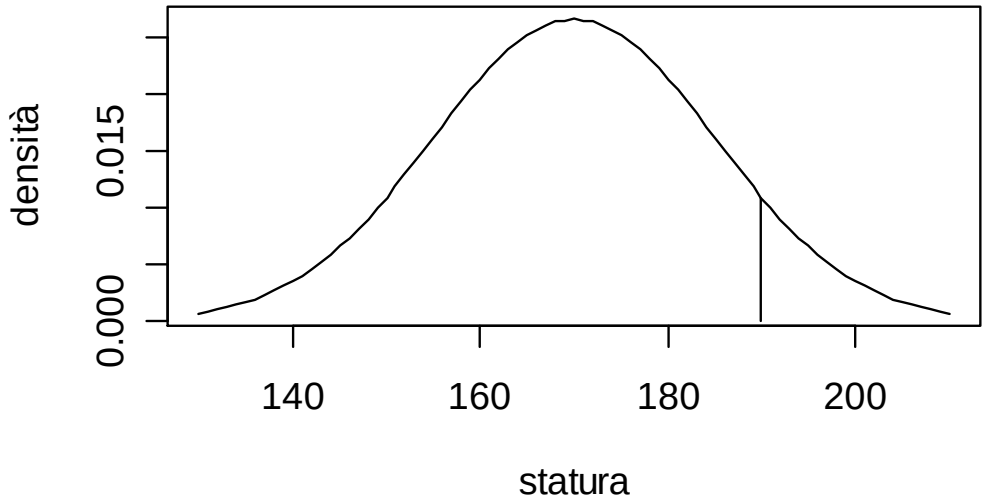
Università degli Studi di Trieste - a.a. 2009-2010

le curve di sopravvivenza

massimo borelli

"events": nessuna difficoltà ..



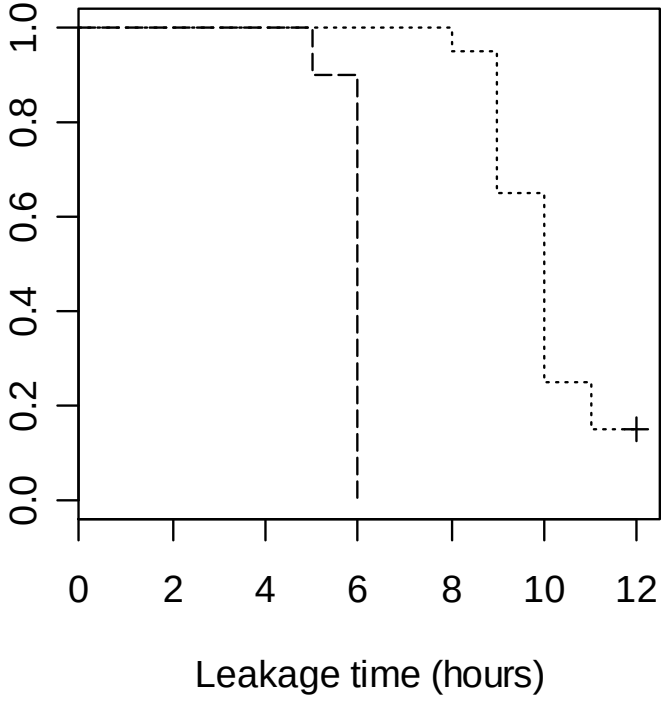
1 - pnorm(190, 170,15)

0.09121122

"time to events": due difficoltà ... la prima: eventi censurati ...

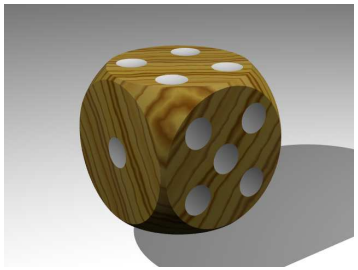
Effect of positive expiratory pressure and type of tracheal cuff on the incidence of aspiration in mechanically ventilated patients in an intensive care unit*

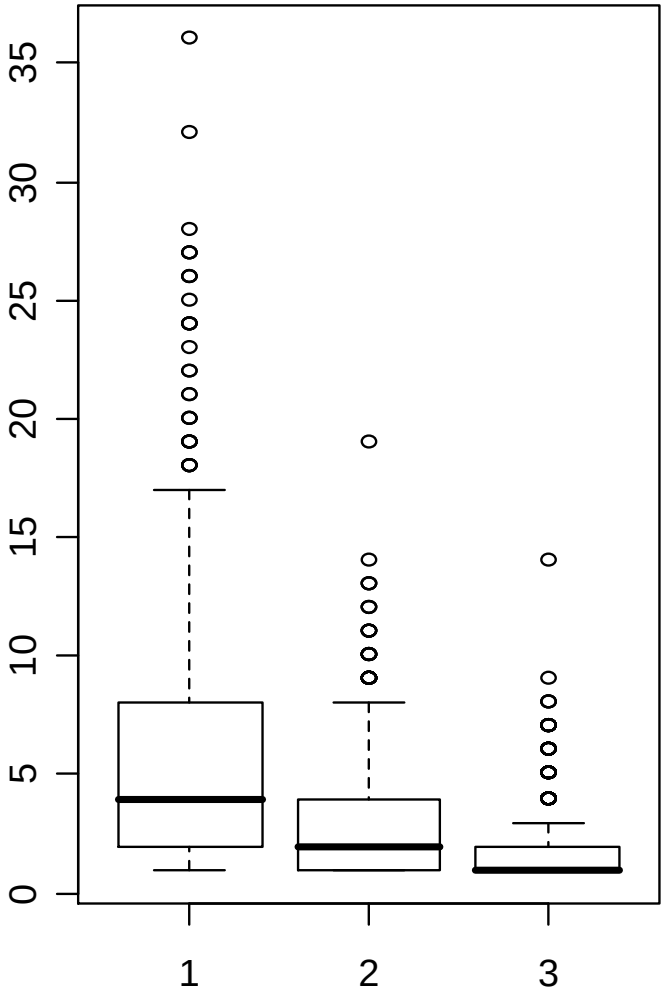
Umberto Lucangelo, MD; Walter A. Zin, MD, PhD; Vittorio Antonaglia, MD; Lara Petrucci, MD; Marino Viviani, MD; Giovanni Buscema, MD; Massimo Borelli; Giorgio Berlot, MD



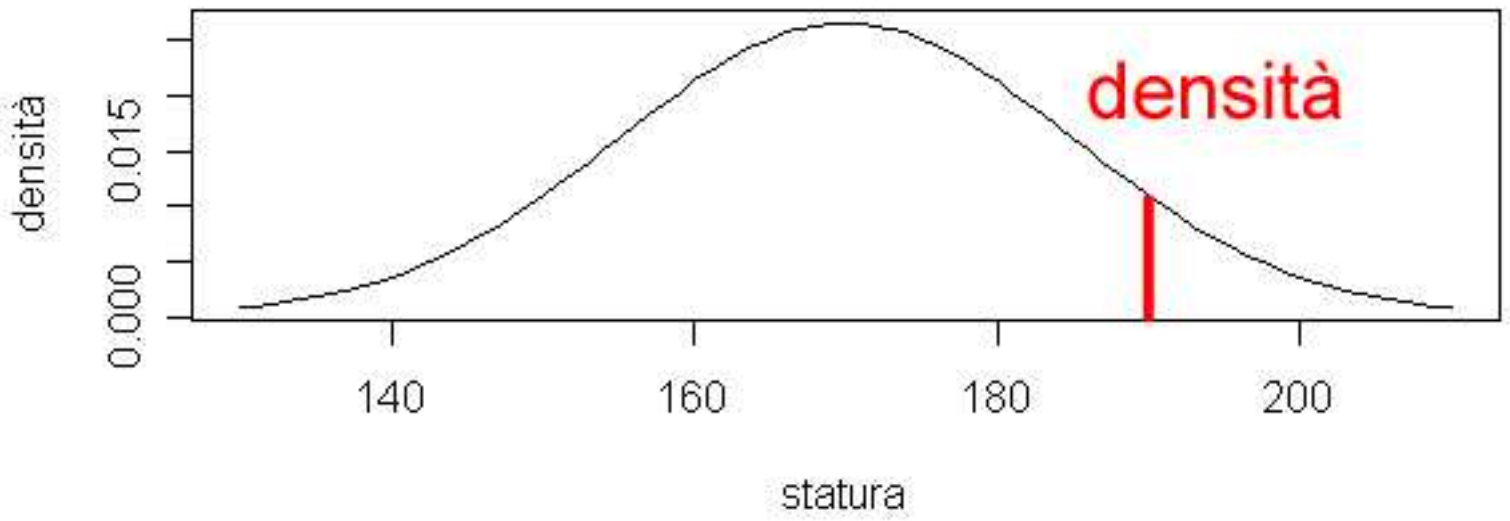
"time to events": due difficoltà
.. la seconda: la varianza "cresce" ..

- tempo di attesa?
  - 1
  - 1 oppure 2
  - 1, 2 oppure 3

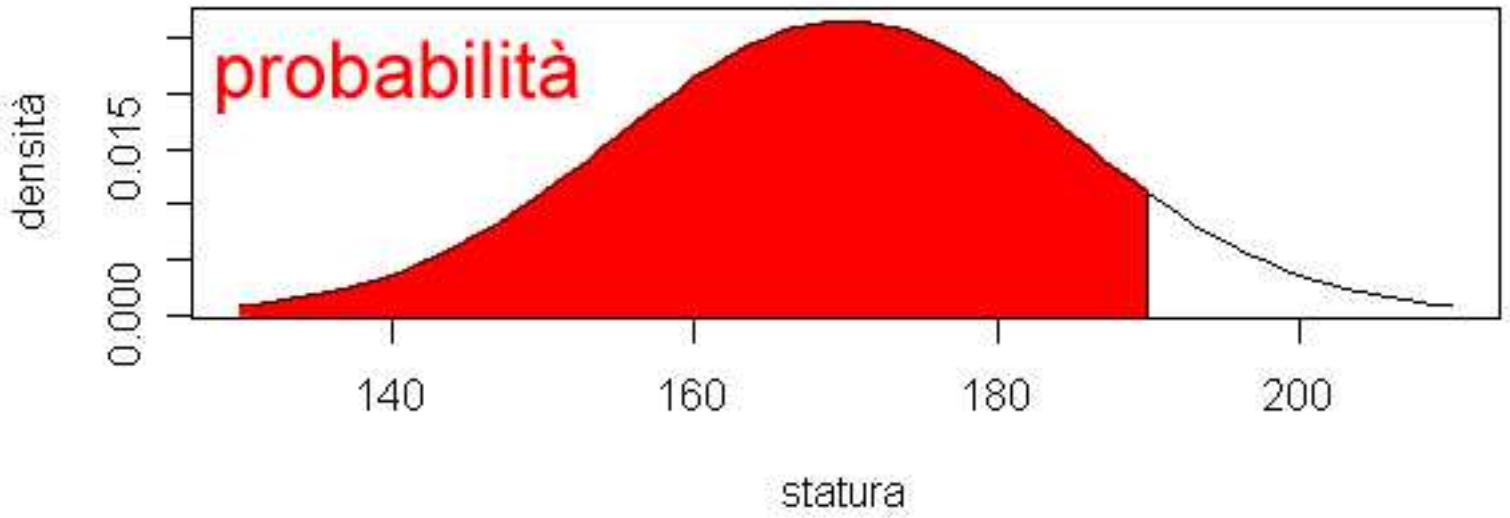




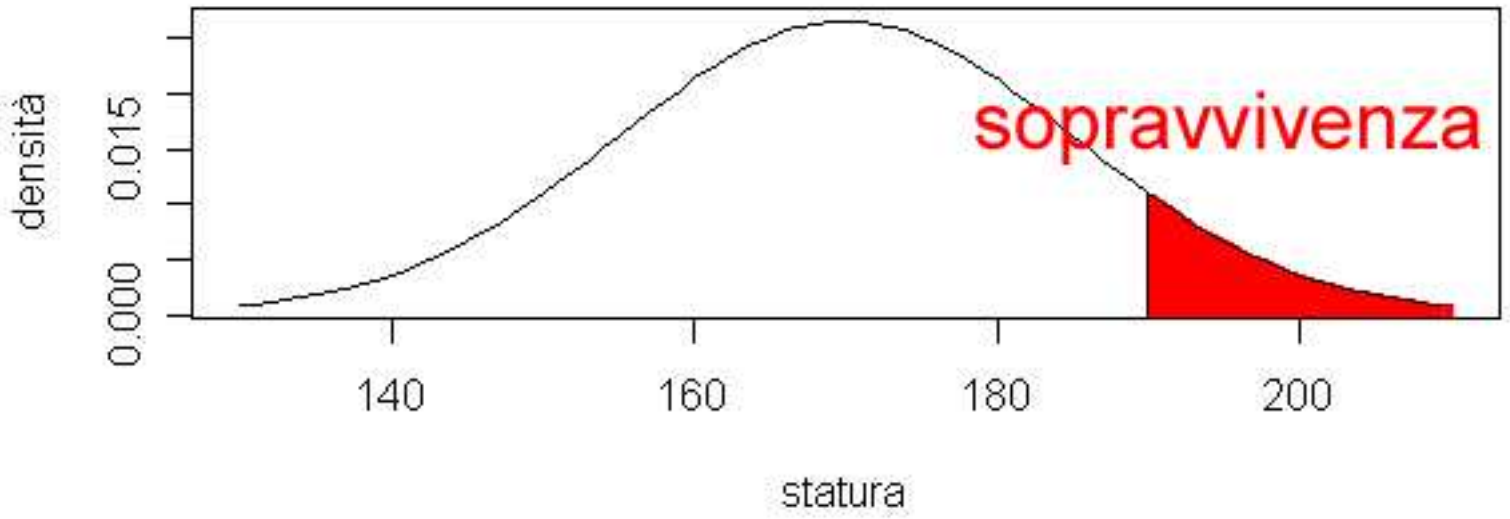
analisi di sopravvivenza: terminologia



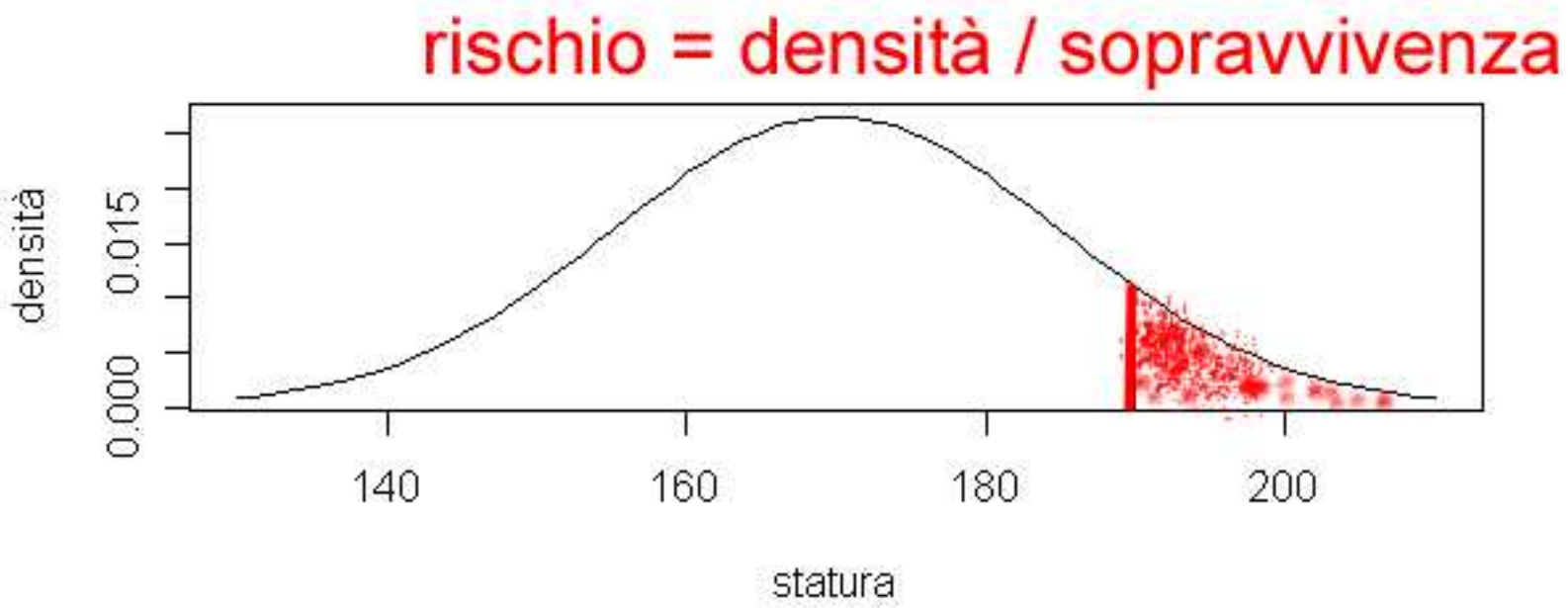
analisi di sopravvivenza: terminologia



analisi di sopravvivenza: terminologia



analisi di sopravvivenza: terminologia



analisi di sopravvivenza

Review

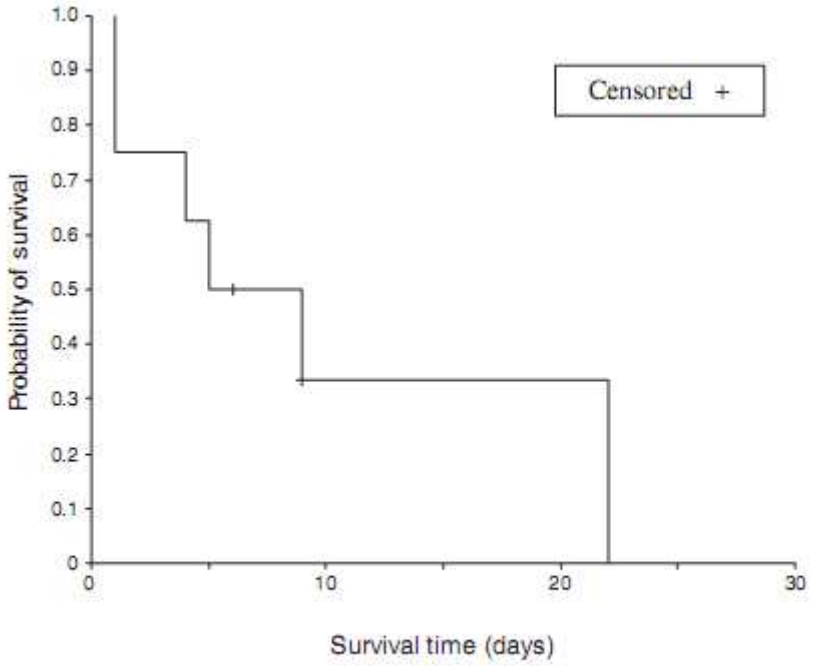
Statistics review 12: Survival analysis

Viv Bewick[1], Liz Cheek[1] and Jonathan Ball[2]

Critical Care 2004, **8**:389-394 (DOI 10.1186/cc2955)

Patient number	Survival time (days)	Outcome	Treatment	Age (years)
1	1	Died	2	75
2	1	Died	2	79
3	4	Died	2	85
4	5	Died	2	76
5	6	Unknown	2	66
6	8	Died	1	75
7	9	Survived	2	72
8	9	Died	2	70
9	12	Died	1	71
10	15	Unknown	1	73
11	22	Died	2	66
12	25	Survived	1	73
13	37	Died	1	68
14	55	Died	1	59
15	72	Survived	1	61

analisi di sopravvivenza



Plot of the survival curve for treatment 2.

Patient number	Survival time (days)	Outcome	Treatment	Age (years)
1	1	Died	2	75
2	1	Died	2	79
3	4	Died	2	85
4	5	Died	2	76
5	6	Unknown	2	66
6	8	Died	1	75
7	9	Survived	2	72
8	9	Died	2	70
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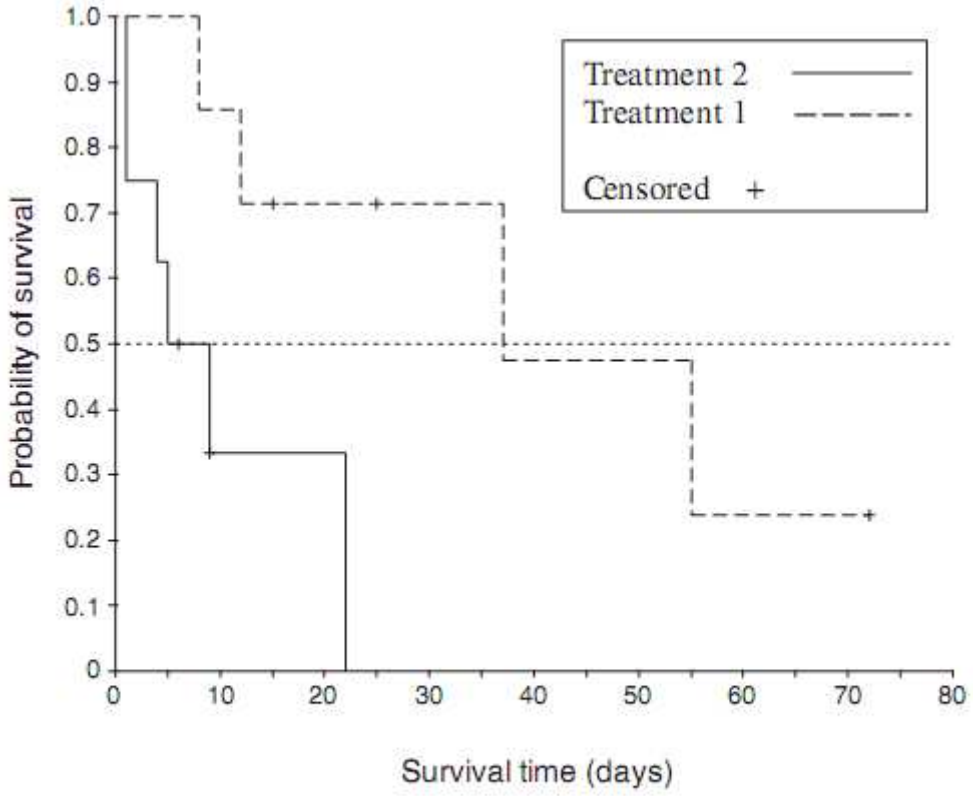
analisi di sopravvivenza



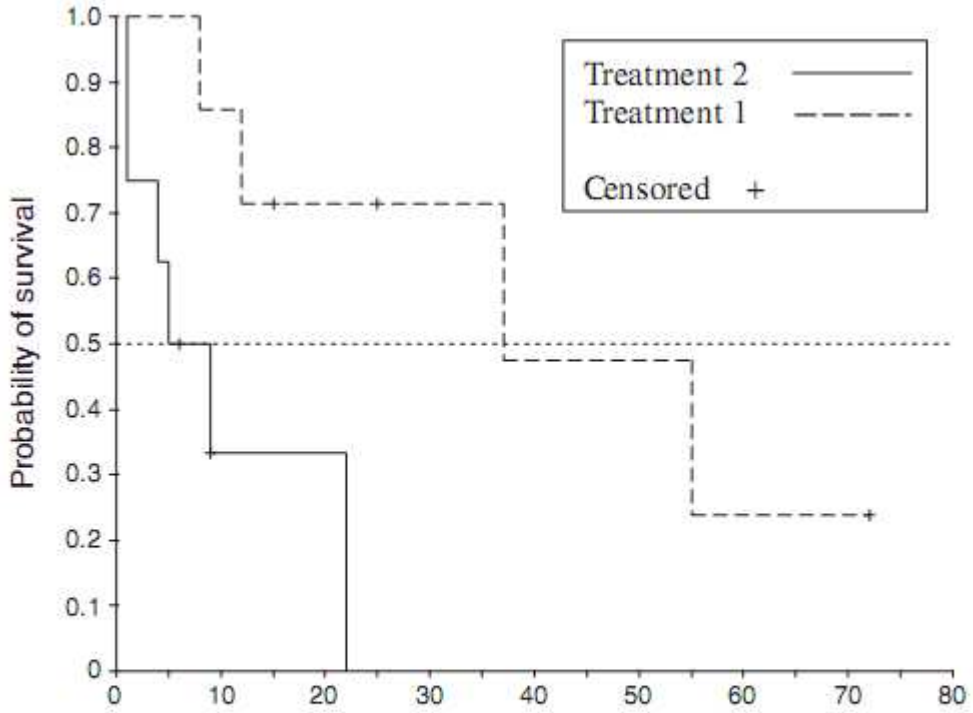
Survival curves for the two treatment groups for the data in Table 1.

analisi di sopravvivenza

The test statistic is calculated as follows:

$$\chi^2(\text{log rank}) = \frac{(O_1 - E_1)^2}{E_1} + \frac{(O_2 - E_2)^2}{E_2}$$

This gives a *P* value of 0.032, which indicates a significant difference between the population survival curves.



Survival curves for the two treatment groups for the data in Table 1.

analisi di sopravvivenza

Cox's proportional hazards model (Cox regression)

The log rank test is used to test whether there is a difference between the survival times of different groups but it does not allow other explanatory variables to be taken into account.

Application of Cox's regression to the example data, using treatment and age as explanatory variables

	Coefficient (b)	Standard error	*P*	e^b	95.0% confidence interval for e^b
Treatment	−1.887	0.973	0.052	0.152	0.022–1.020
Age	0.220	0.085	0.010	1.247	1.054–1.474

Patient number	Survival time (days)	Outcome	Treatment	Age (years)
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