11.2.A. Grim Reaper Revisited

In Problem 3.5 we reviewed a study suggesting that the Grim Reaper's walking speed was less than 1.36 meters/second because none of the 22 men in the cohort who was able to walk that fast died during the follow-up, which averaged about 5 years. Set aside the problems that this hypothesis clearly was generated from the data and the low prior probability that the Grim Reaper approaches his victims on foot as opposed to, say, driving a (black) sport utility vehicle. If the observed mortality was 0/22, use the shortcut in the chapter to estimate the upper limit of the 95% confidence interval for mortality among men able to walk > 1.36 meters/second at baseline.
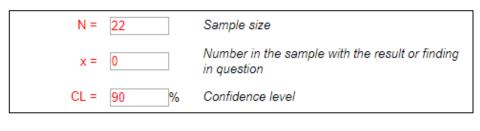
Answer: The shortcut says if there are 0 events in N trials, the upper limit of the 95% CI is 3/N. So in this case the upper limit for the 0/22 observed mortality proportion is 3/22 = 13.6%. You can also get the exact answer (12.7%, a one-sided 95% confidence interval) from Sample-size.net: http://www.sample-size.net/confidence-interval-proportion/

Confidence interval for a proportion

Estimate the proportion with a dichotomous result or finding in a single sample.

This calculator gives both binomial and normal approximation to the proportion.

Instructions: Enter parameters in the red cells. Answers will appear in blue below.

N =	22	Sample size
x =	0	Number in the sample with the result or finding in question
CL =	90 %	Confidence level

Calculate

1. Binomial "exact" calculation:

Proportion of positive results = P = x/N = 0.000
Lower bound = 0.000
Upper bound = 0.127*

* One-sided 95% confidence interval.