MAST30027: Modern Applied Statistics

Assignment 1, 2015

Due: 1:00pm Friday 14 August (week 3)

This assignment is worth 3 1/3% of your total mark. Fill in a plagiarism declaration form and hand it in together with this assignment.

Fit a binomial regression model to the O-rings data from the Challenger disaster, using a probit link. You must use R but may not use the glm function; I want you to work from first principles.

Your solution should include the following:

1. parameter estimates;
2. 95% CIs for the parameter estimates;
3. a likelihood ratio test for the significance of the temperature coefficient;
4. an estimate of the probability of damage when the temperature equals 31 Fahrenheit (your estimate should come with a 95% CI, as all good estimates do);
5. a plot comparing the fitted probit model to the fitted logit model.

Show your working, that is, the R code you use.