MAST30027: Modern Applied Statistics

Week 3 Lab

1. The dataset `discoveries` lists the number of great scientific discoveries for the years 1860 to 1959, as chosen by "The World Almanac and Book of Facts", 1975 Edition. Has the discovery rate remained constant over time?

   To answer this question, fit a poisson regression model with a log link, and use the deviance to compare a null model with models including the year and year squared as predictors.

2. The `ships` dataset from the `MASS` package gives the number of damage incidents and aggregate months of service for different types of ships broken down by year of construction and period of operation. Load the dataset using the commands `library(MASS)` then `data(ships)`.

   Develop a model for the rate of incidents (i.e. a poisson regression model with log link), describing the effect of the important predictors.

3. The `infert` dataset from the `survival` package presents data from a study of infertility after spontaneous and induced abortion. Using a logistic regression model, analyse and report on the factors related to infertility based on this data. (Don't use the factor stratum, as it is confounded with the other predictors.)