**Likelihood**

Log likelihood negative > want least negative value

For normal distribution > we can minimize sum of squares

Propose probability distribution and try to find likelihood

* Probability mass/density function

Poisson = mean of all the data points

When more data points: compromise so that get highest likelihood (least negative)

LogLikelihood: least negative (values are always negative)

Find parameters that maximize likelihood

**Logistic Regression**

**Group 1:**

Single continuous response for group 1: body mass

No count or binary data.

One or more predictor variable: either continuous or categorical (use dummy variables here)

Deterministic part has to be linear in parameter

Can’t specify a parameter in an exponent, but squared works

Have to multiply parameters

Stochastic part has to be a normal distribution

Non homogeneity not allowed for group 1

Stochastic model is normal distribution

Group 2

Nonlinear Least Squares:

Ricker function

When don’t have linearity in parameters

Non constant and non-normal variance

More common use generalized linear models

Generalized Linear Model

Discrete or continuous responses > alternative form for stochastic model

More flexibility what response has to be and in regards to constant variance and normality if residuals

Still capture linear relationships

If have no homogeneity in variance

Gamma distribution: can have all shapes

Scale and shape parameter

Continuous and continuous would work

Skewed residuals and not constant variance

Continuous response

Presence absence, success or failure type of data

Have non continuous response

Can’t take on intermediate values

Binomial and bernoulli distribution: Success and failures

Fixed number

Probability of success in each trial, has to be equal in each trail

Bernoulli > binary outcome

Observed/not observed > binomial distribution

N =4, P= want to estimate

Linear equation to that:

Modelling log of the odds than at probability itself

Linear relationship btw log of the odds and predictors

75% prob 3:1 odds

Logarithms of large numbers are positive

Of small numbers (less than 1) are negative

Logit function > translate back to probability scale

Instead of model presence/absence directly, do probability of it

Save as Vector graphic > svg and pdf

Png

JPG > Raster

Svg

PDF > Vector