What to compare	Linear regression Y variable continuous	Poisson Y variable discrete, $Y \geq 0$	Negative Binomial Y variable discrete, $Y \geq 0$	Binomial (Bernoulli) Presence / absence data Proportional data
Nomenclature	ΣSS RSS R^2	Null deviance Residual deviance (Null deviance – residual deviance) / Null deviance exp in % = pseudo"R^2"	Null deviance Residual deviance Same Same	Null deviance Residual deviance Same Same
Model selection Note: Burnham & Anderson (2000)	AIC (forwards & backwards selection) t-tables (v. cont) drop1, test = "F" (for categorical variables) p-values t-statistics and F-statistics from drop1 identical	AIC (forwards and backwards selection) **Z**-statistics drop1, test "chi") p-values t-statistics and Chi-square statistics from drop1 NOT identical Overdispersion: Quasi-Poisson • AIC not defined • t-statistics • drop1, test = "F" • p-values t-statistics and F statistics from drop1 NOT identical	AIC (forwards and backwards selection) **Z**-statistics drop1, test "chi") p-values t-statistics and Chi-square statistics from drop1 NOT identical Check for overdispersion (same way as with Poisson) • NO quasi-NB If there is overdispersion • Zero inflation? • Correlation? • Outliers? • Missing X • Missing interactions • Non-linear effects? .	AIC (forwards and backwards selection) **Z**-statistics drop1, test "chi") p-values t-statistics and Chi-square statistics from drop1 NOT identical NO overdispersion in Bernoulli! For overdispersed binomial: Use quasi-binomial • AIC not defined • t-statistics • drop1, test = "F" p-values t-statistics and F statistics from drop1 NOT identical
Residuals	• Ordinary residual • Standardised residuals • Studentised residuals	• Pearson residuals • Deviance residuals	• Pearson residuals • Deviance residuals	• Pearson residuals • Deviance residuals