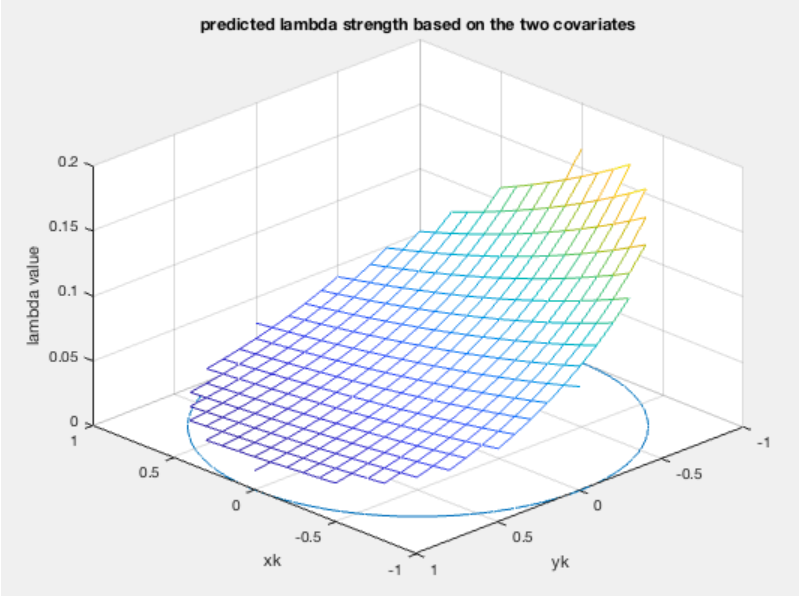
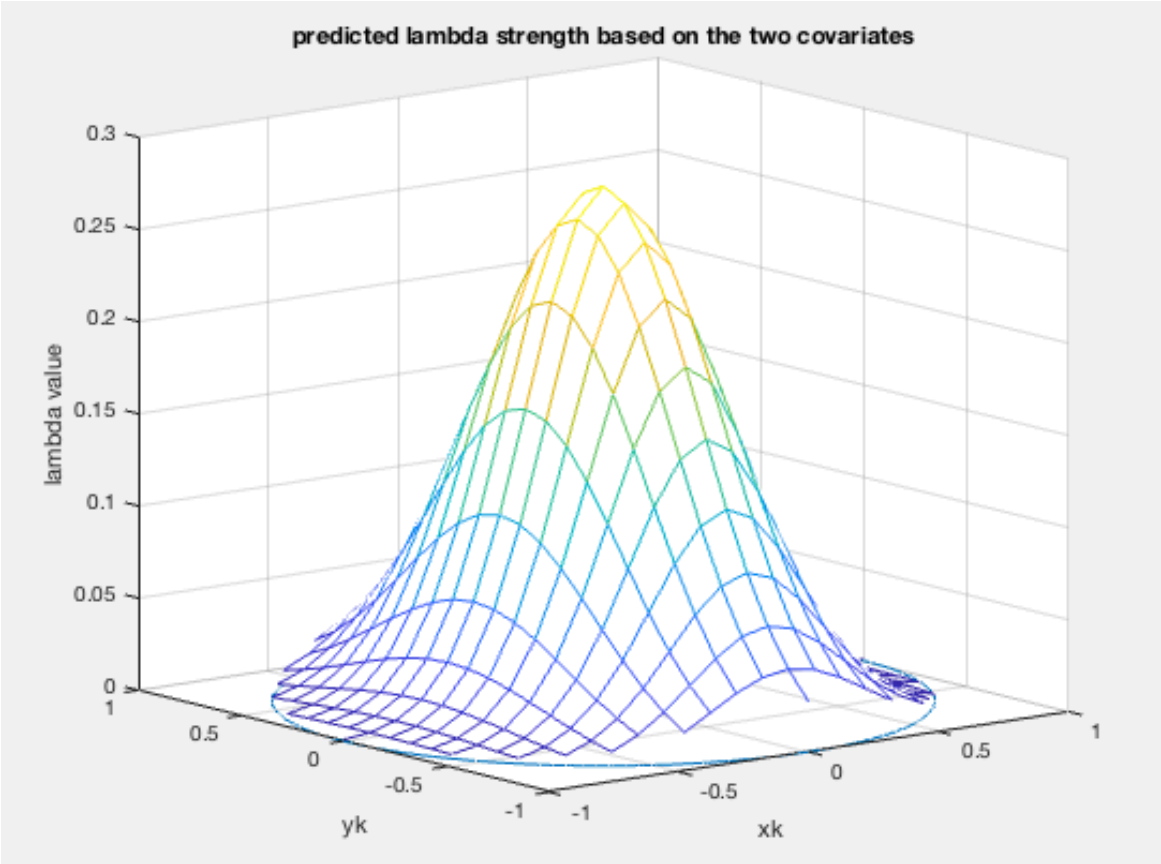
1. Examine the quality of your parameter estimates

Linear Model variables: xN and Yn



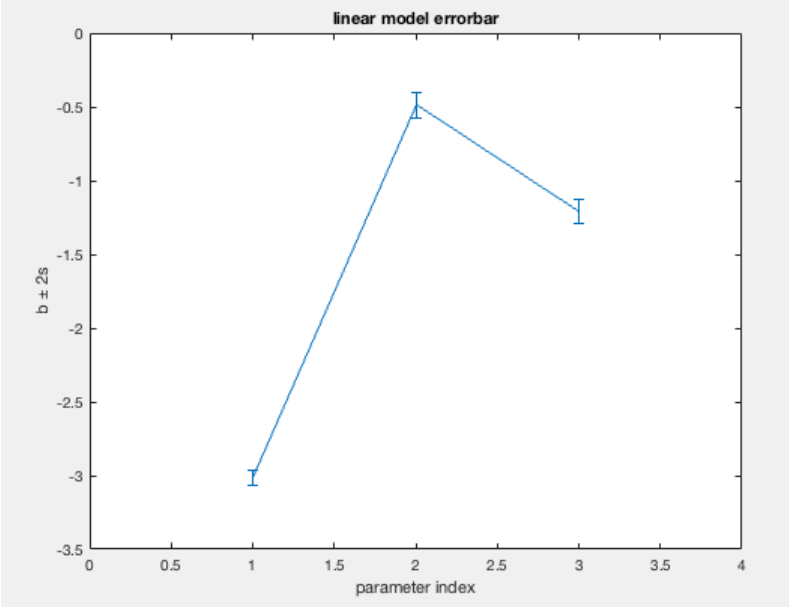
Quadratic Model variables: xN.^2 and yN.^2



Examine the confidence intervals computed for each parameter of two models based on the square root of the inverse of the observed Fisher information (s) given in the variable stats.se. Use errorbar() to plot the parameters b ± 2s, and determine which parameters are statistically different from zero.

linear model:

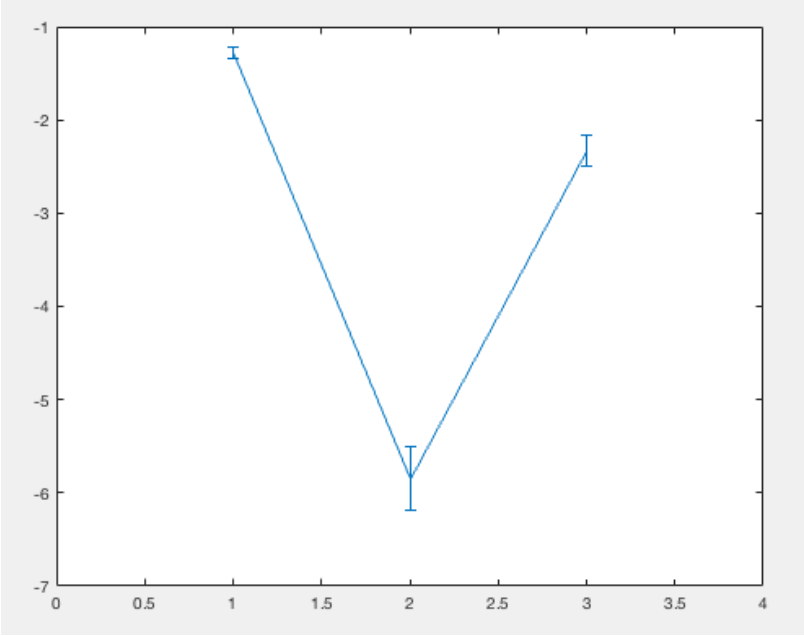
Confidence Interval: [6.3732,4.8876,5.0094]



All of the parameters are statistically different from zero.

Quadratic Model:

CI =[5.6454,2.4257,3.4715]



All of the parameters are statistically different from zero

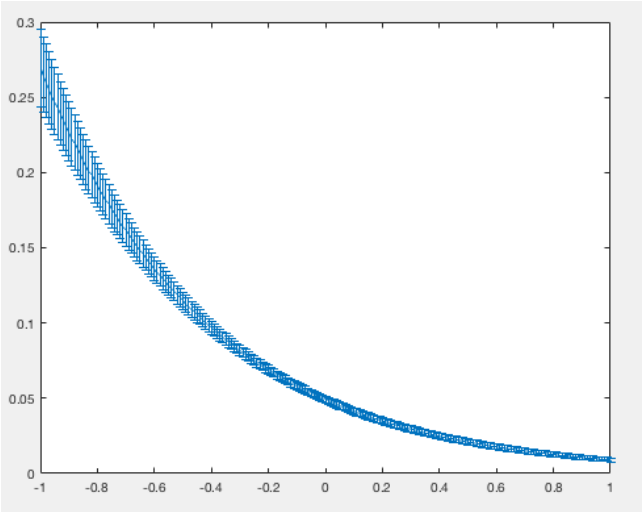
Examine the corresponding p-value assigned to each parameter in stats.p . Which parameters have significant p values?

p value =[0, 2.56091238933908e-259, 2.22866992289111e-174]

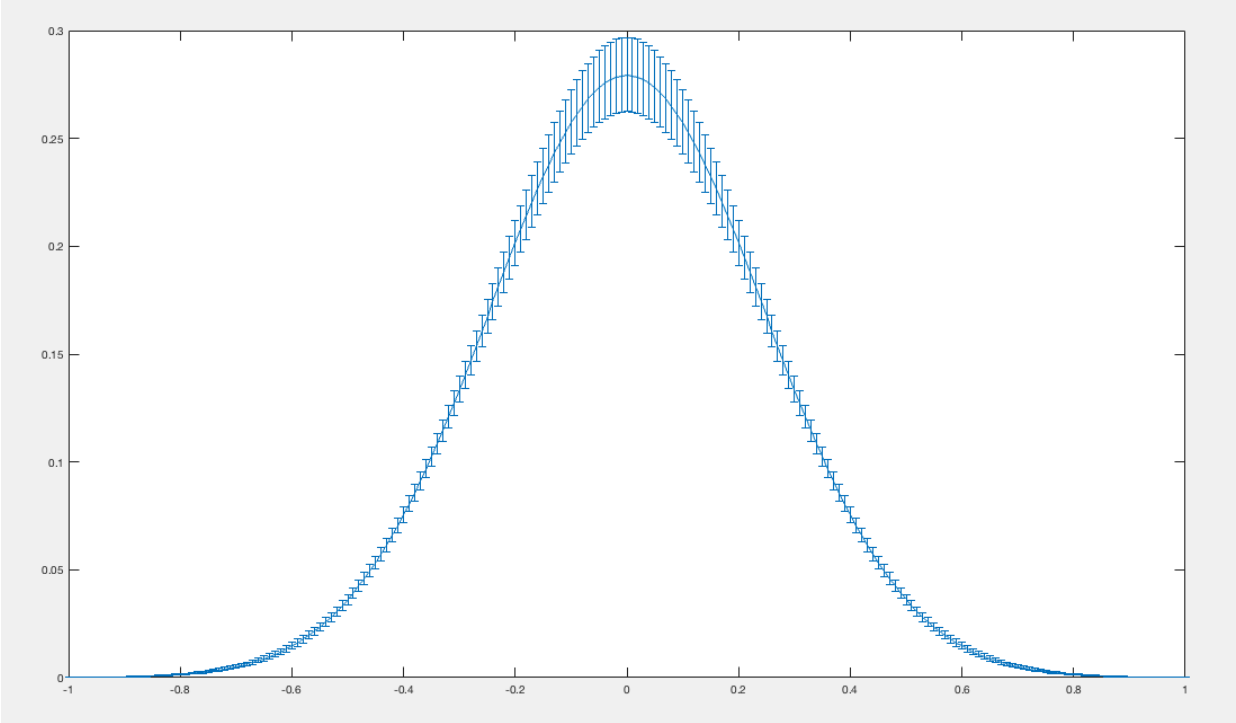
All of the parameters have significant p value since all of them are smaller than 0.05;

2. Construct confidence intervals about your model conditional intensity

Linear model:



Quadratic model:

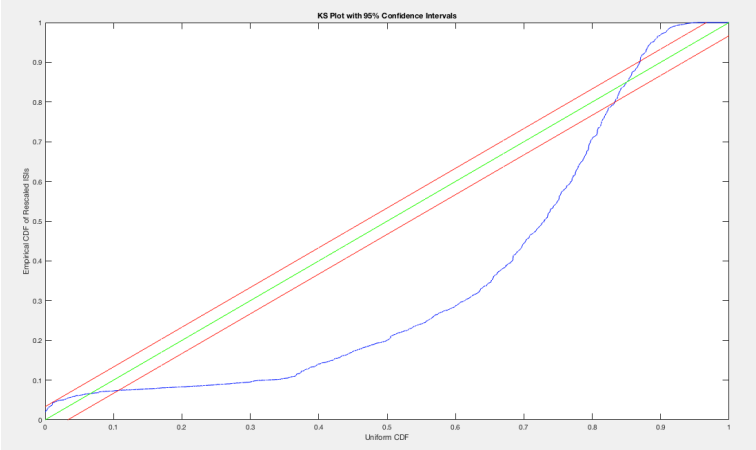


Compare the AIC between your competing models. How can the AIC be improved for say the GLM model quadratic in animal position? How is the AIC of a given model affected by eliminating non statistically significant parameters?

AIC are 1.4902e+04 for both the linear and quadratic model. The reason is that both the linear model and the quadratic model both have the same number of parameters and the deviance value is too large so adding another value wouldn't make a difference. Likewise, the AIC of a given model wouldn't be affected by eliminating non-statistically significant parameters because the deviance value is too large.

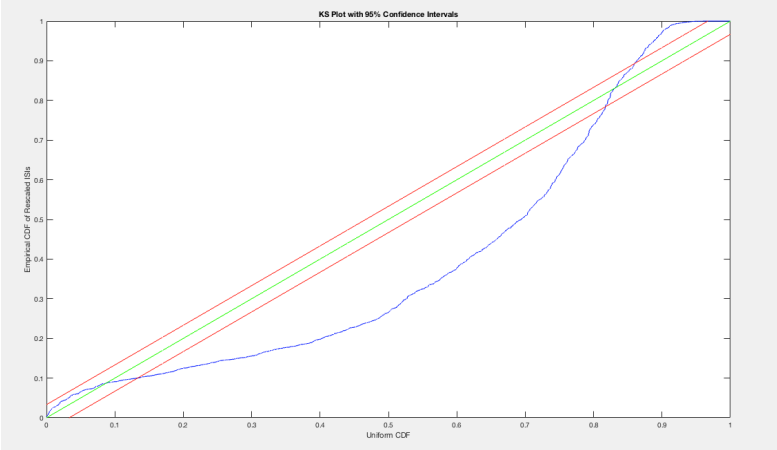
4. Compare the KS statistic between two competing models. Which one does better? Does that model do a good job at explaining all the statistical structure in the data?

Linear



KS = 0.3147

Quadratic



KS = 0.2357

The better model is the quadratic model since the KS value is smaller. While having some fit to the data, the model doesn't show a very strong correlation to the data. Therefore, the model doesn't do a good job at explaining all the statistical structure in the data.