

# Influential Years Analysis

## Validation of the Jul-Sep landings base models

To evaluate the base model for the Jul-Sep landings using only prior catch as covariates, GAM and linear models with Jul-Sep and Oct-Mar in the prior season and two seasons prior as covariates were fit to the 1984-2015 landings. The models were fit leaving one year out (year shown on the x-axis). The far right shows the fit to all years.

In Figure 1D, the  $\Delta AIC$  values are the AIC minus the AIC of the best model (model with lowest AIC). Models with  $\Delta AIC$  with 0.5 are similar and “best”. Models within 2 of the best models are competitive. Models with  $\Delta AIC$  greater than 2 are uncompetitive.

The Figure 1D shows that with an year left out the set of models that is best was always GAM with Oct-Mar and Jul-Sep landings in the prior season, GAM with Oct-Mar landings in the prior season, or a linear model with Oct-Mar landings in the prior season. There were cases where deleting a year removed one of these three from the ‘best’ category, but they were still in the ‘competitive category’.

Because the covariate tests indicated that 1986 and 1994 are very influential for the environmental covariates, this year was removed. The Leave-one-out base model selection tests were therefore repeated with 1994 removed. Thus these tests have 1994 and one other year removed. With 1994 only removed, a linear model with Oct-Mar landings in the prior season was the only ‘best’ model for all but 3 years and for 2 of those 3, it was still within  $\Delta AIC$  of 2 of the best model and the year where  $\Delta AIC > 2$  was 2.71.

## Validation of the Oct-Mar landings base models

The Figure 3D shows that for Oct-Mar landings the best model was always GAM with Oct-Mar in the prior season and Jul-Sep landings two seasons prior. Again 1986 and 1994 were deleted and the leave-one-out analysis was repeated. The Figure 4D shows the best model is still always GAM with Oct-Mar in the prior season and Jul-Sep landings two seasons prior.



Figure 1D. Delta AIC for the Jul-Sep landings base models with one year deleted. Deleted year is shown on the x-axis.

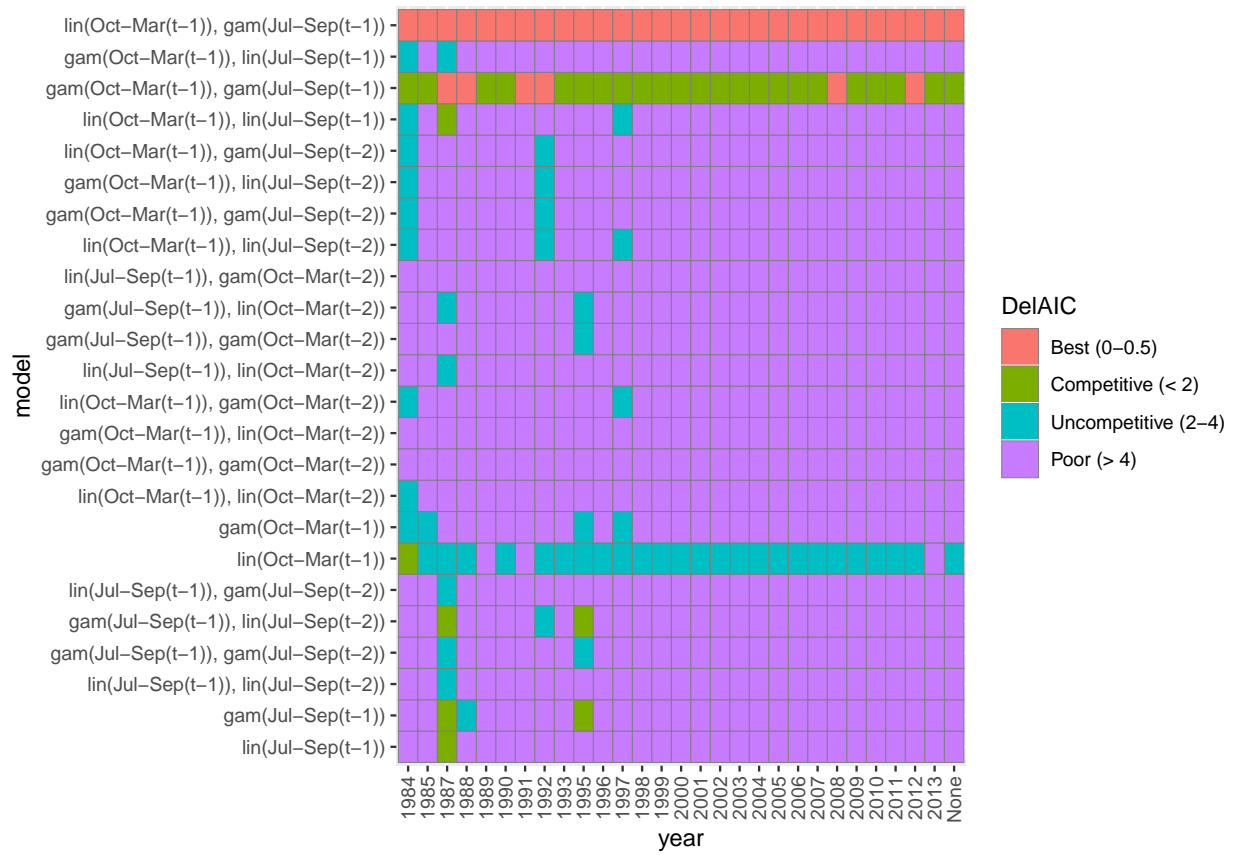


Figure 2D. Delta AIC for the Jul-Sep landings base models with 1986 and 1994 and one other year deleted. Deleted year is shown on the x-axis.

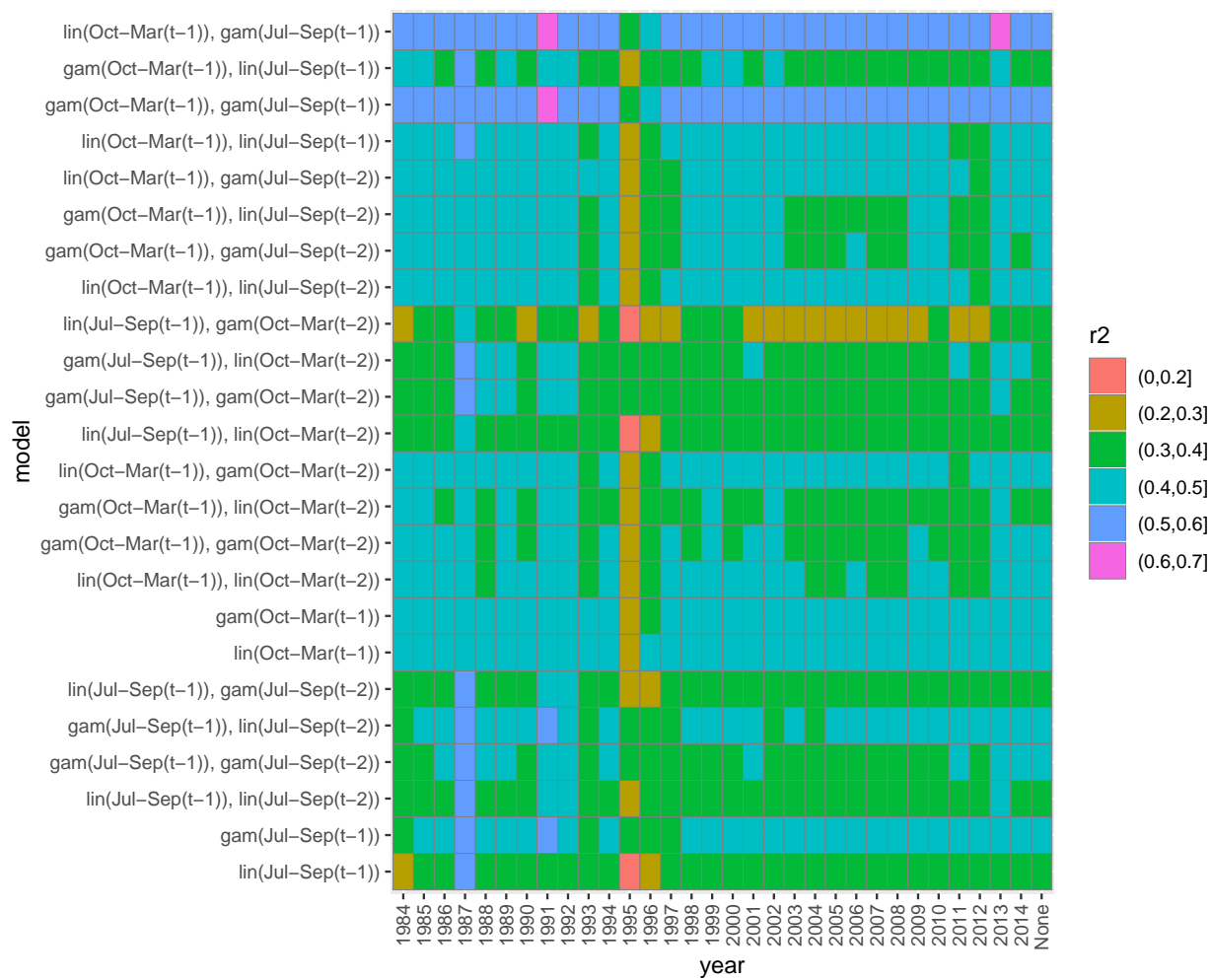


Figure 3D. R-squared for the Jul-Sep landings base models with 1986 and 1994 and one additional year deleted. Deleted year is shown on the x-axis.



Figure 3D. Delta AIC for the Oct-Mar landings base models with one year deleted. Deleted year is shown on the x-axis.



Figure 4D. Delta AIC for the Oct-Mar landings base models with 1986 and 1994 and one additional year deleted. Deleted year is shown on the x-axis.

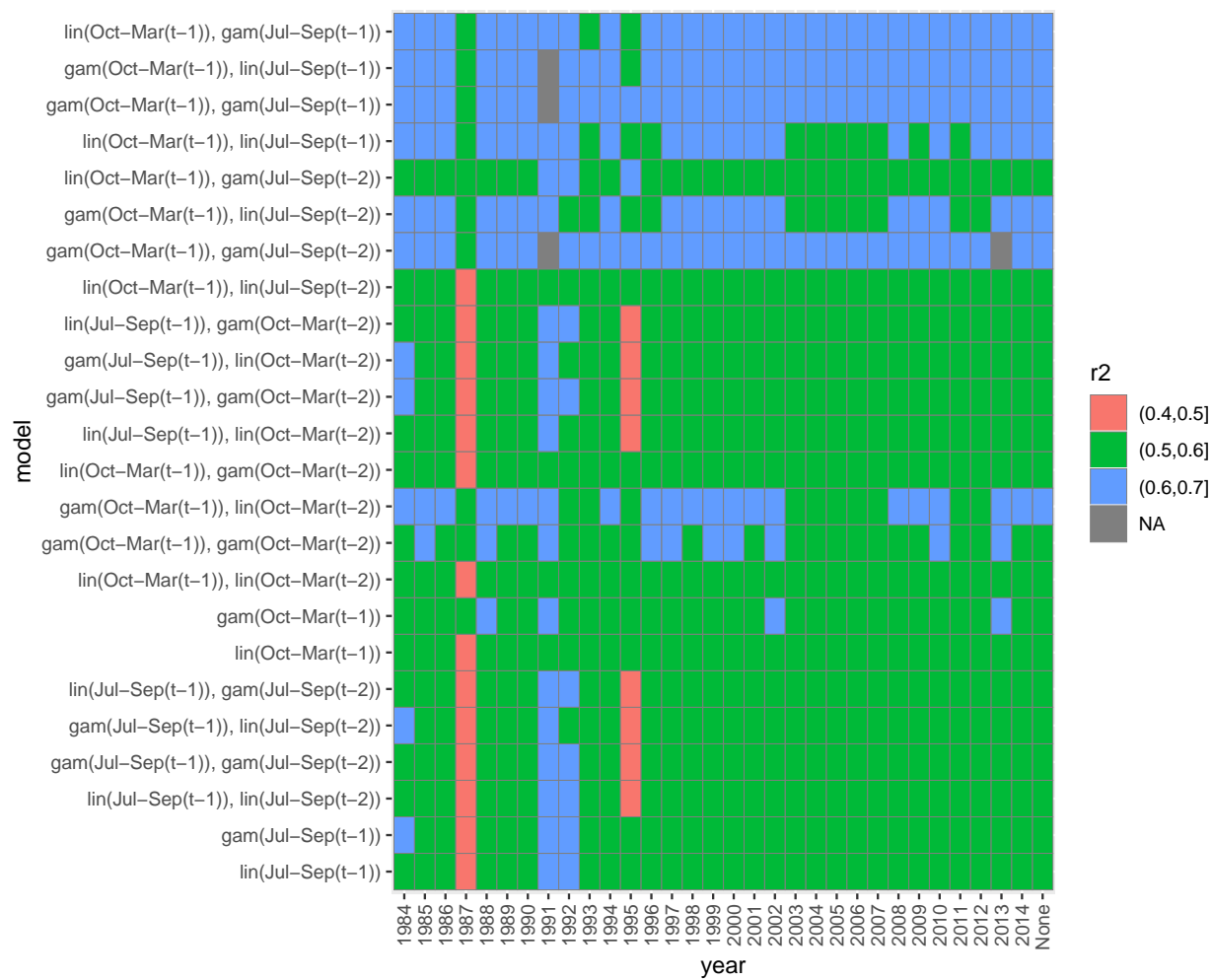


Figure 5D. R-squared for the Oct-Mar landings base models with 1986 and 1994 and one additional year deleted. Deleted year is shown on the x-axis.