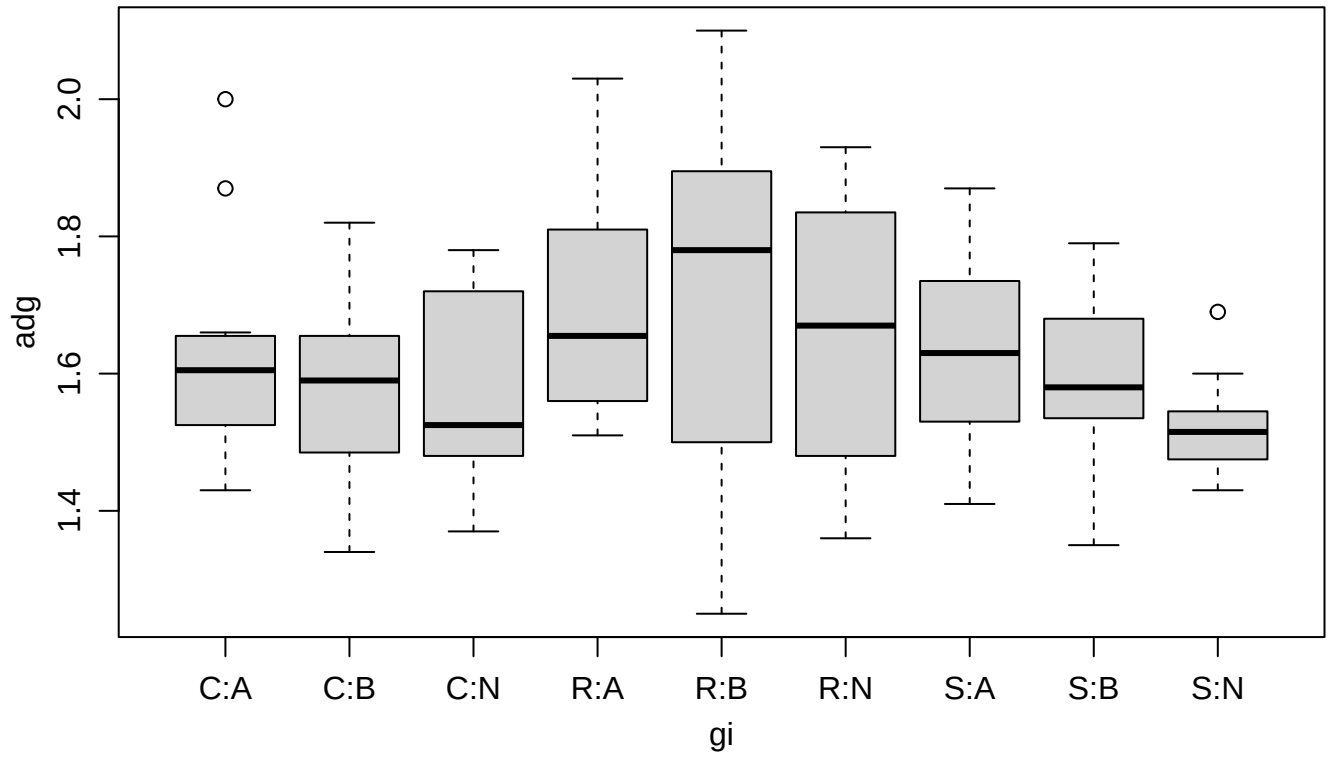
Motivating example for the next couple of weeks: Weight gain in beef calves
Calves are often grazed in outdoor pastures, which can be managed in different ways. Calves can also be implanted with a growth stimulant. This study evaluated 3 different grazing management systems: continuous, rotational, or strip grazing, and 3 different implants: none, type A, and type B. The goal is to understand which grazing system and which implant give the highest average daily weight gain.

The study was done on an experimental farm with 12 pastures. Four were randomly assigned to each grazing system (C, R, S). Each pasture had 9 heifers (female calves) and their mothers. Three heifers in each pasture were randomly assigned to each type of implant (N, A, B). Heifers were weighed at the start of the study and again at 7 months. Average daily gain is the increase in weight divided by the number of days. This is measured for each heifer. There are values for 108 heifers, so no missing data.

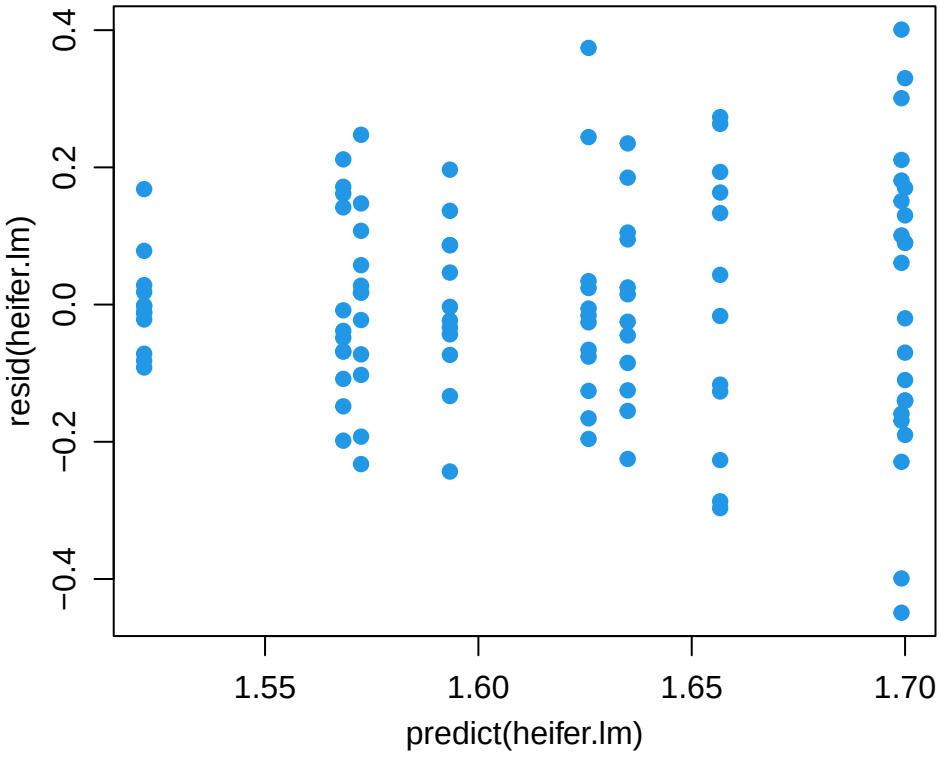
Here is a boxplot of the data:



Here is the ANOVA table for one analysis of the data:

Source	df	MS	p value
grazing	2	0.118	0.016
implant	2	0.046	0.19
g*i	4	0.0066	0.92
error	99	0.0276	

Here is the residual plot:



Log transformation doesn't change this pattern, so we'll stick with untransformed values

My interpretations:
Go ahead with comparisons among grazing type
Conclude no evidence of an effect of implant type

Reactions?