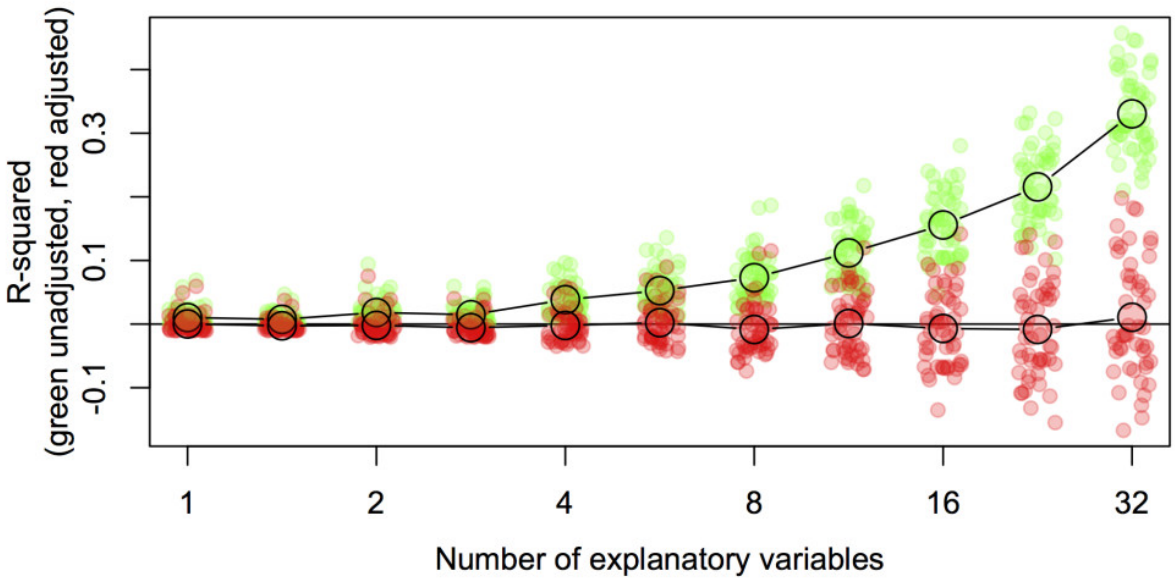
R4All :: Getting started with R

An Introduction for Biologists :: Book & Courses

Adjusted r-squared demo

Just a little demo of what happens if you don't or do adjust your r-squared.
Here's the bottom line:




```
rm(list=ls())

## Why adjust your r-squared?
## Below is a simple demo of the difference between unadjusted and adjusted r-

## Lets do some multiple regression, with different numbers of explanator vari
## with completely random data
numb.expl.vars <- rep(2^seq(0, 5, 0.5), each=50)

## Number of observations
n <- 100

## The response variable
y <- rnorm(n)

## Function to return the unadjusted and adjusted r-squared
get.r2 <- function(ne) {
    x <- as.data.frame(matrix(rnorm(n*ne), n, ne))
    m1 <- lm(y ~ ., x)
    result <- c(summary(m1)$r.squared, summary(m1)$adj.r.squared)
    result
}
```

```
23
24  ## use lapply to run the function over the number of explanatory variables vec
25  rez <- do.call(rbind, lapply(numb.expl.vars, function(x) get.r2(x)))
26  ## get the mean r-squared and adjusted r-squared per number of expl varbs
27  means <- aggregate(rez, list(numb.expl.vars=numb.expl.vars), mean)
28
29  ## plot the data
30  matplot(log2(numb.expl.vars), rez, type="n", ann=F, axes=F)
31  box()
32  abline(h=0)
33  matpoints(jitter(log2(numb.expl.vars)), rez, pch=19, col=c("#11ff1144", "#ff11
34  mtext(1, line=2.5, text="Number of explanatory variables")
35  mtext(2, line=2, text="R-squared\n(green unadjusted, red adjusted)")
36  axis(1, at=0:5, labels=2^(0:5))
37  axis(2)
38  matpoints(log2(means[,1]), means[,2:3], pch=21, bg=c("#11ff1144", "#ff111144")
39
40  ## So the unadjusted r-squared increases with the number of explanatory variab
41  ## even when they are totally random.
42  ## Whereas the adjusted remains 0.
43
44  ## for fun, calculate the adjusted r-squared manually
45  adj.rsquared <- 1 - (1-rez[,1])*(n-1)/(n-numb.expl.vars-1)
46  sum(abs(adj.rsquared-rez[,2])>1e-10) ## should be zero
```

This entry was posted in Uncategorized on October 12, 2013 [http://www.r4all.org/adjusted-r-squared-demo/] .