A Brief Introduction to R

James G. MacKinnon

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Although the availability of many free packages is one of R's strengths, and the reason we are using it, they vary greatly in quality of implementation and documentation.

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At the moment, the current version is 4.4.2.

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This has to be done in every session where the package is to be used.

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newframe <- data.frame(hp,hpfit)
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stores the variables `hp` and `hpfit` in a new data frame called `newframe`.

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Some packages seem to like the data to be stored in data frames, but others do not. The `lm` command allows you to specify a data frame using the `data` option

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attach(Auto)
hp <- horsepower
gpm <- 1/mpg
```

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modquad <- lm(gpm ~ hp+I(hp^2))
summary(modquad)
fitquad <- fitted.values(modquad)
newquad <- data.frame(hp, fitquad)
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modcubic <- lm(gpm ~ hp+I(hp^2)+I(hp^3))
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newcubic <- data.frame(hp, fitcubic)
newcubic <- newcubic[order(hp),]
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fitcubic <- fitted.values(modcubic)
newcubic <- data.frame(hp, fitcubic)
newcubic <- newcubic[order(hp),]

plot(newquad,type="l",col="red",lwd=2.5)
lines(newcubic,col="blue",lwd=2.5)
```

```
Call:
lm(formula = gpm ~ hp + I(hp^2) + I(hp^3))
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Coefficients:
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hp          -2.101e-04  2.236e-04  -0.940 0.348012
I(hp^2)      5.908e-06  1.798e-06   3.286 0.001108 **
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Residual standard error: 0.008297 on 388 degrees of freedom
Multiple R-squared:  0.7533,Adjusted R-squared:  0.7514
F-statistic: 394.8 on 3 and 388 DF,  p-value: < 2.2e-16
```

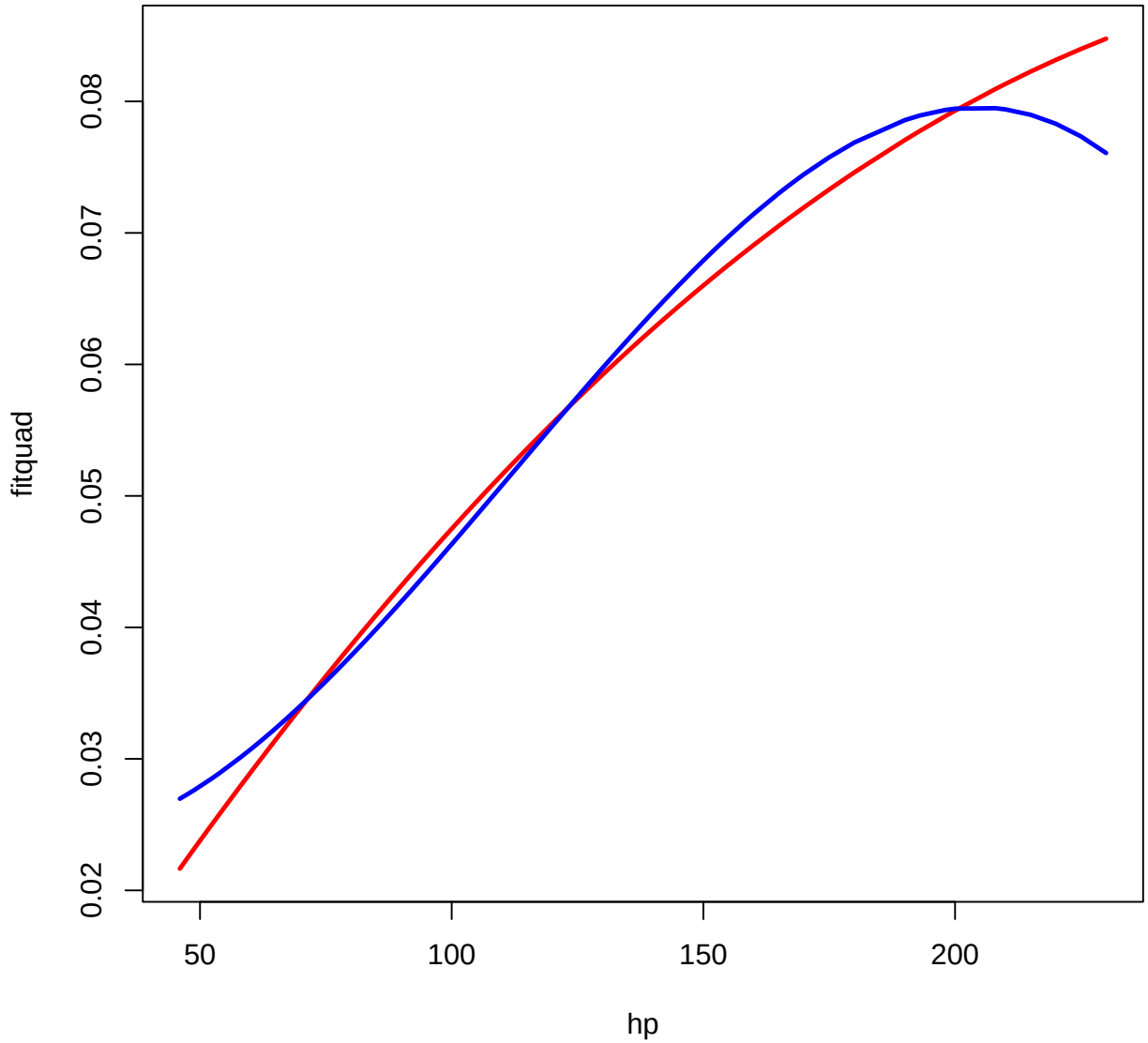
fitquad
0.02
0.03
0.04
0.05
0.06
0.07
0.08
50
100
150
200
hp