How to Use LaTex and R to Write a Paper

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1 Figures

First we define a figure hook:

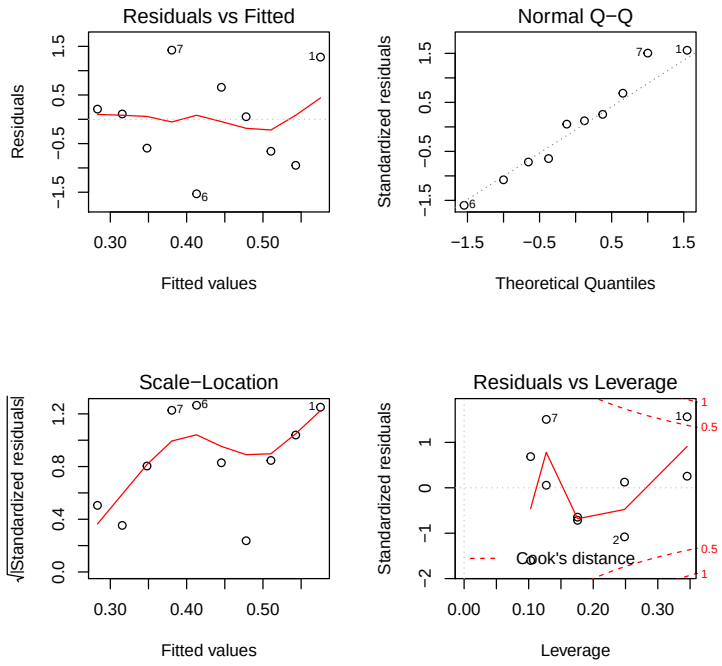
```
> options(SweaveHooks = list(fig = function() par(mfrow=c(2,2))))
```

Then we setup variable definitions without actually evaluating them

```
> x <- 1:10
> y <- rnorm(x)
```

Then we put the pieces together:

```
> x <- 1:10
> y <- rnorm(x)
> lm1 <- lm(y~x)
> summary(lm1)

Call:
lm(formula = y ~ x)

Residuals:
     Min       1Q   Median       3Q      Max
-1.53264 -0.64160  0.08118  0.54559  1.42240

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.60783    0.69081   0.880    0.405
x           -0.03247    0.11133  -0.292    0.778

Residual standard error: 1.011 on 8 degrees of freedom
Multiple R-squared:  0.01052,        Adjusted R-squared:  -0.1132
F-statistic: 0.08504 on 1 and 8 DF,  p-value: 0.778

> plot(lm1)
```



2 Text

Thsi is a section.

3 More Figures

4 The Cats Data

Consider the `cats` regression example from Venables & Ripley (1997). The data frame contains measurements of heart and body weight of 144 cats (47 female, 97 male). A linear regression model of heart weight by sex and gender can be fitted in R using the command

```
> lm1 = lm(Hwt~Bwt*Sex, data=cats)
> lm1

Call:
lm(formula = Hwt ~ Bwt * Sex, data = cats)

Coefficients:
```

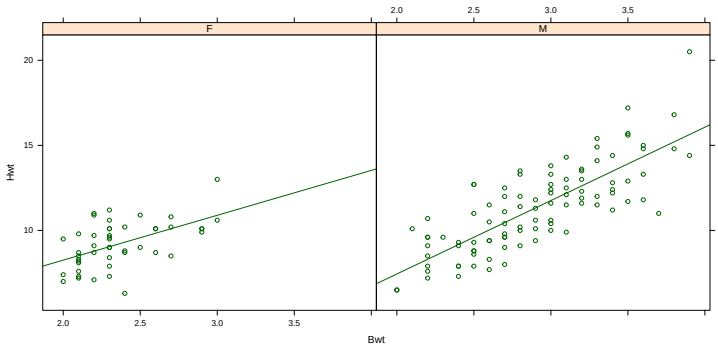


Figure 1: The cats data from package MASS.

```
(Intercept)         Bwt        SexM     Bwt:SexM
      2.981       2.636      -4.165       1.676
```

Tests for significance of the coefficients are shown in Table 1, a scatter plot including the regression lines is shown in Figure 1.

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	2.9813	1.8428	1.62	0.1080
Bwt	2.6364	0.7759	3.40	0.0009
SexM	-4.1654	2.0618	-2.02	0.0453
Bwt:SexM	1.6763	0.8373	2.00	0.0472

Table 1: Linear regression model for cats data.