Short example of R Markdown

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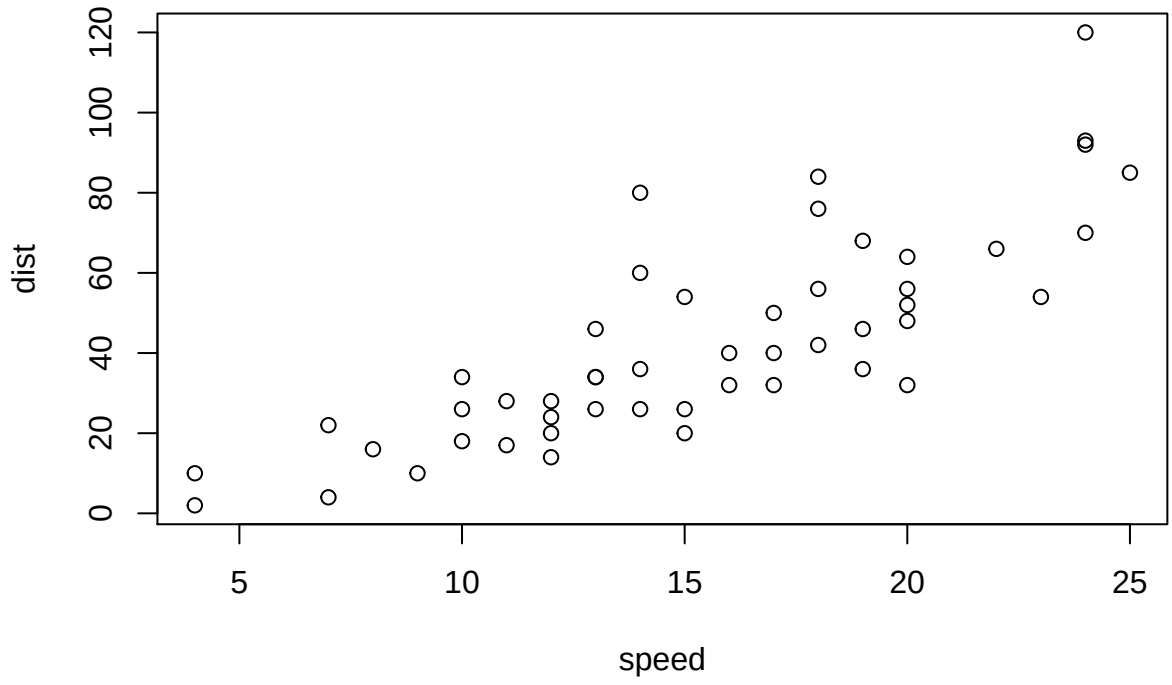
This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
##  1st Qu.:12.0   1st Qu.: 26.00
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.

Loading the data

You can bring in the Stata data directly with the 'foreign' package. You only have to install a package once, but you have to load the library every time.

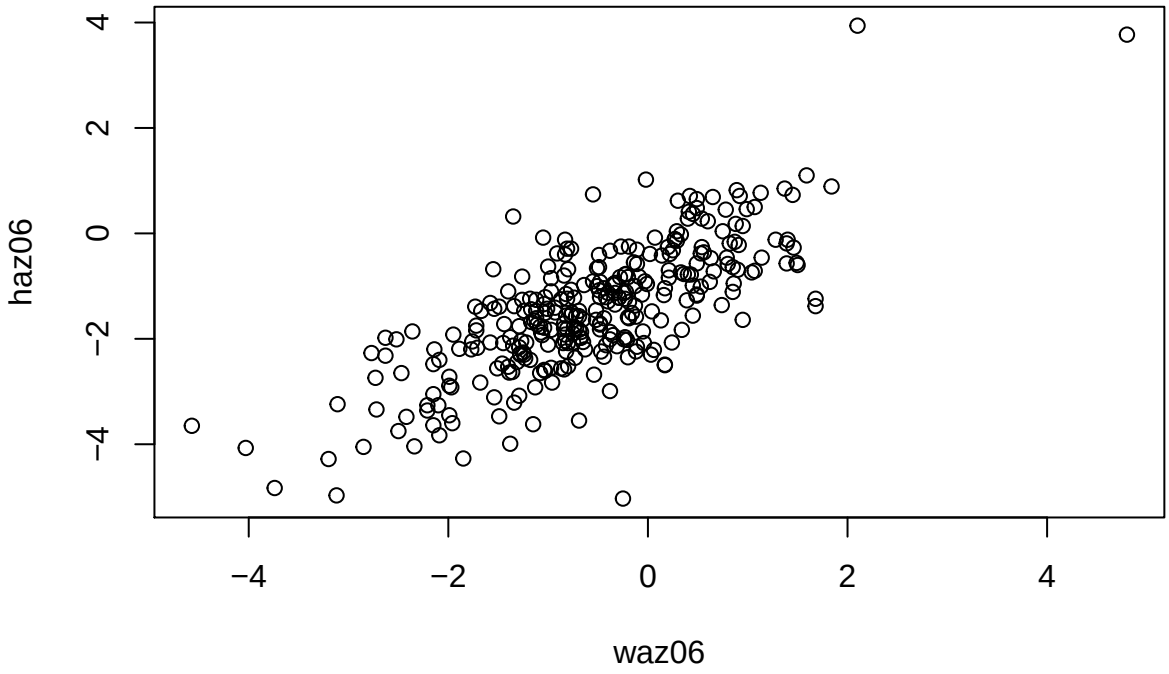
```
## Warning in `levels<-`(`*tmp*`, value = if (nl == nL) as.character(labels)
## else paste0(labels, : duplicated levels in factors are deprecated
```

Running Analysis

I ran some regression analysis. The results are good.

Graphics

Graphics can be easily inlaid. Here, I'll make a map of the number of US military recruits to a 16 year period by county.



Equations

Equations written with LaTeX syntax works, so you can write short reports all in one file.

$$\frac{dN}{dt} = r * N * (1 - \frac{N}{K})$$

Refer to Values

You can refer to values calculated in R by just surrounding "r" and the code with single accent marks. For example, the mean frequency is 0.4822888.

Simple Output

You can just use built in R functionality.

```
summary(model1)
```

```
##
## Call:
## lm(formula = free_chl_yn ~ treatw, data = WASHB)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.37692 -0.37692 -0.01299 -0.01299  0.98701
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.01299    0.02736   0.475    0.635
## treatw       0.36394    0.04044   9.000   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3395 on 282 degrees of freedom
##   (83 observations deleted due to missingness)
## Multiple R-squared:  0.2231, Adjusted R-squared:  0.2204
## F-statistic:    81 on 1 and 282 DF,  p-value: < 2.2e-16
```

```
summary(model3)
```

```
##
## Call:
## lm(formula = free_chl_yn ~ treatw + kiswahili + english, data = WASHB)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.39602 -0.35122 -0.02021  0.00334  0.97979
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.003344   0.052899  -0.063    0.950
## treatw       0.365188   0.040614   8.992   <2e-16 ***
## kiswahili   -0.010624   0.075772  -0.140    0.889
## english      0.034176   0.063663   0.537    0.592
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3405 on 280 degrees of freedom
```

```
##   (83 observations deleted due to missingness)
## Multiple R-squared:  0.2243, Adjusted R-squared:  0.216
## F-statistic: 26.98 on 3 and 280 DF,  p-value: 2.33e-15
```

Fancier Output

R Markdown is mostly for simple stuff. Like I said, mark*down*, not mark*up*. But you can still get really nicely formatted regression output with a couple of R packages, xtable or stargazer. (Very similar to estout or outreg2 in Stata.)

Stargazer has three types of output (text, html, and LaTeX).

```
library(stargazer)
```

```
##
## Please cite as:
##
##  Hlavac, Marek (2014). stargazer: LaTeX code and ASCII text for well-formatted regression and summary
##  R package version 5.1. http://CRAN.R-project.org/package=stargazer
```

```
stargazer(model1, model1, model3, se=list(NULL, robust.se, NULL), type="html", out="outputR.html", titl
```

Made Automatically in R

Dependent variable:

free_chl_yn

default

robust

controls

(1)

(2)

(3)

treatw

0.364***

0.364***

0.365***

(0.040)

(0.043)

(0.041)

kiswahili

-0.011

(0.076)

english

0.034

(0.064)

Constant

0.013

0.013

-0.003

(0.027)

(0.009)

(0.053)

Observations

284

284

284

R2

0.223

0.223

0.224

Adjusted R2

0.220

0.220

0.216

Residual Std. Error

0.340 (df = 282)

0.340 (df = 282)

0.340 (df = 280)

F Statistic

81.002*** (df = 1; 282)

81.002*** (df = 1; 282)

26.982*** (df = 3; 280)

Note:

p<0.1; ***p<0.05;*** p<0.01

TeX->PDF

When we Knit a Markdown as a PDF, it actually makes that PDF using LaTeX. (See here.) So you can use the .tex output option from stargazer and get nice PDF documentation.

```
stargazer(model1, model1, model3, se=list(NULL, robust.se, NULL), title="Made Automatically in R", out=
```

% Table created by stargazer v.5.1 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Wed, Oct 14, 2015 - 3:35:33 PM

Table 1: Made Automatically in R

	Dependent variable:		
	free_chl_yn		
	(1)	(2)	(3)
treatw	0.364***	0.364***	0.365***
	(0.040)	(0.043)	(0.041)
kiswahili			−0.011
			(0.076)
english			0.034
			(0.064)
Constant	0.013	0.013	−0.003
	(0.027)	(0.009)	(0.053)
Observations	284	284	284
R^2	0.223	0.223	0.224
Adjusted R^2	0.220	0.220	0.216
Residual Std. Error	0.340 (df = 282)	0.340 (df = 282)	0.340 (df = 280)
F Statistic	81.002*** (df = 1; 282)	81.002*** (df = 1; 282)	26.982*** (df = 3; 280)
Note:			*p<0.1; **p<0.05; ***p<0.01

Everything All in One Place?

You can do citations. Plots, graphs, and citations, what else do you need for a research paper?

Complicated, time consuming for very long articles.

Maybe try Sweave (direct combo of LaTeX and R).

Send your output to .tex files, include those in your master paper file.