THE UNIVERSITY OF CHICAGO

DEPARTMENT OF SOCIOLOGY

INEQUALITY IN ELITE LABOR MARKETS, WEALTH, AND SOCIAL MOBILITY

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ABSTRACT

This is where the body of your abstract goes, limited to 150 words for a thesis, and 350 words for a dissertation or document. The word count limits apply to the regular Abstract in the thesis and to the separate Special Abstract. Use the same text for both; just adjust the margins and heading. The abstract should summarize your work. The UMI booklet listed in the resources section of the U of A manual provides some writing tips. The abstract for a dissertation or document may be longer than one page; word count is more important than page length in this section.

If you are doing a paper submission, submit one copy of the special abstract, and two extra copies of your title page, in the box with the final copies of your thesis. If you are doing an electronic submission, you can ignore the special abstract.

CHAPTER 1

Introduction - Markdown and LaTeX

This is a piecemeal rendition of the University of Chicago thesis class (`ucthesis`) reworked to be compatible with `Rmarkdown`. The majority of the heavy lifting was already done by colleagues in the Department of Planetary Sciences at the University of Arizona (see the `ucthesis.cls` file for more information). Their work was modified by jvcasill at the University of Arizona, who stored the results in a Github repository and made proper adjustments so that it plays nicely with `knitr`.

I have modified this original version to meet the formatting requirements at the University of Chicago.

1.1 Basic structure

The basic structure of the thesis package has been cleaned up significantly. There are now two folders inside the main directory: **includes** and **sections**. The `includes` folder contains most of the under the hood files that you will generally edit one time to set up the project metadata (i.e. the title, committee members, etc.), but also includes .bib files and figures. The `sections` folder is where the chapters of the dissertation live. Each chapter is its own .Rmd file. You will write you chapters in these files and compile the master document. This folder is home to the other less important (but required) sections (i.e. acknowledgments, dedications, abstracts and appendices).[1] The underlying engine is LaTeX. To generate the dissertation pdf, compile the `master.Rmd` file in your favorite text editor.

[1] All of these files are imported into the final pdf in the `master.Rmd` file via `knitr` or specific commands written for the `uathesis` class.

1.2 Sections

You can use either markdown or LaTeX to create sections in the document (see general markdown syntax for more information). In both cases, cross-referencing figure, tables, sections, chapters, etc. can only be done if a `label{}` is created. For example, this is section 1.2. I generated that number by first labeling the section...

```
# Sections\label{sections}
```

and then by typing...

```
\ref{sections}
```

It is helpful to use this with figures and tables. Like, for Figure 1.1 and Table 2.3 below.

1.2.1 Subsections

You can use hashtags or the `\subsection{}` command to create a subsection.

1.2.1.1 Subsubsections

These have been fixed. You can use `\subsubsection{}` or 3 hashtags.

1.2.1.1.1 Subsubsubsections

If you really need to go this deep, I suggest using the `\paragraph{}` command.

1.3 Math Example

Equations can be rendered beautifully by using the `equation` environment.

$$y = mx + b \tag{1.1}$$

But, old school math works too!

$$y = \beta_0 + \beta_1 + x_1 + \epsilon$$

But putting it inside the `equation` environment will number it (as in the first example), and has the added advantage of centering automatically as well.

$$y = \beta_0 + \beta_1 + x_1 + \epsilon \tag{1.2}$$

1.4 How to cite your references

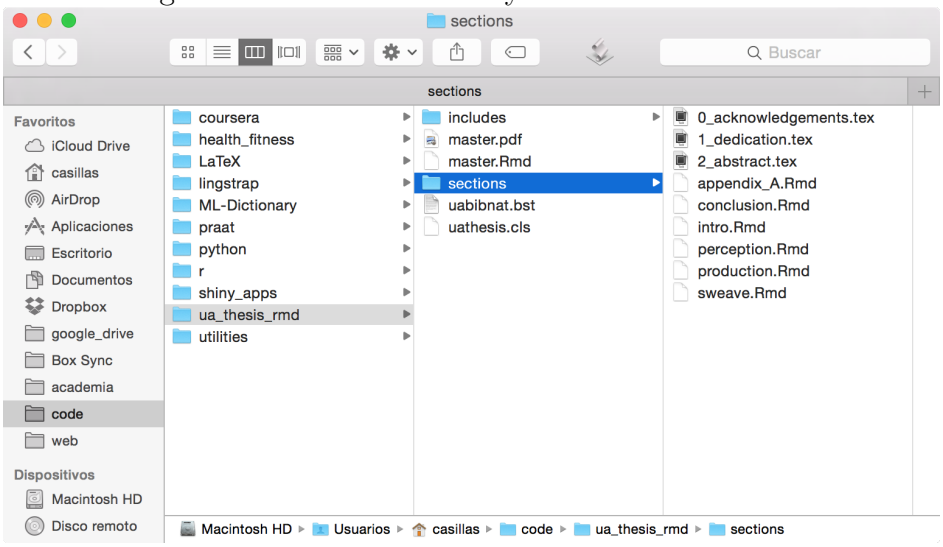
One relevant difference from the previous iteration of this package is that it now uses `Rmarkdown/pandoc` to render citations. This is a work is progress, but for now you can reference by using the standard `[@citekey]` method. For example, citations are cool (Author, Author, and Author 2002, 2015). For inline citations, remove the brackets (i.e. `@articletwo`). As in Author et al. (2015) said many things.

1.5 Graphics

This took a little cajoling, but the figures are now working. They are automatically included in the list of figures and you can use the brackets in the caption to establish a different LOF caption (separate from the one you see below.).

One thing to remember is that when including images the home directory is always that of the `master.Rmd` document. Therefore, it is necessary to establish the path to the img file

Figure 1.1: Here is a screeny of the sections folder.



from there. Here is the code used to produce the above figure:

```
\begin{figure}[h]
    \centering
    \includegraphics[width=.75\textwidth]{./includes/figures/ex.png}
    \caption[Example figure]{Here is a screeny of the sections folder.}
    \label{fig:firstfig}
\end{figure}
```

CHAPTER 2

More LaTeX

2.1 Tables

Tables work the same way as before...

Table 2.1: Another table caption (to appear with the actual table).

Col A	Col B	Col C
1	2	3
4	5	6

They can be rendered in markdown now as well (and can include r code), but I don't recommend this combination (for now)...

Col 1	Col 2	col 3
4	plus	8
equals	12	nice!

On the next page is a sample table, placed on the page by itself. Sometimes tables can be wider than they are tall, and you may need to rotate the table by 90° to make it fit better on a page by itself. To do that you can use the lscape package. To use it, wrap the table commands in a begin and end landscape command and that table will be properly rotated.

Table 2.3: Sample table caption (to appear with the actual table).

Col A	Col B	Col C
1	2	3
4	5	6

Note that the `\caption` command can have a short and a long version inside a table environment, just like inside a figure environment (see 1.5).

2.2 TIPA

You can include IPA characters via the `TIPA` package. Here is an example:

[ʃip]-[ʃɪp] - Looks good.

CHAPTER 3

Using R

3.1 Basic math

Here are some simple math examples

```
24 - 23
```

```
## [1] 1
```

```
2345 * 23
```

```
## [1] 53935
```

3.2 Inline expressions

You can use inline r expressions like 2 plus 2 = 0

3.3 Run models

```
library(xtable); library(dplyr)
mtcars %>%
  glm(vs ~ mpg, data = ., family = "binomial") %>%
  xtable(., type = "latex") %>%
  print(comment = FALSE)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-8.8331	3.1623	-2.79	0.0052
mpg	0.4304	0.1584	2.72	0.0066

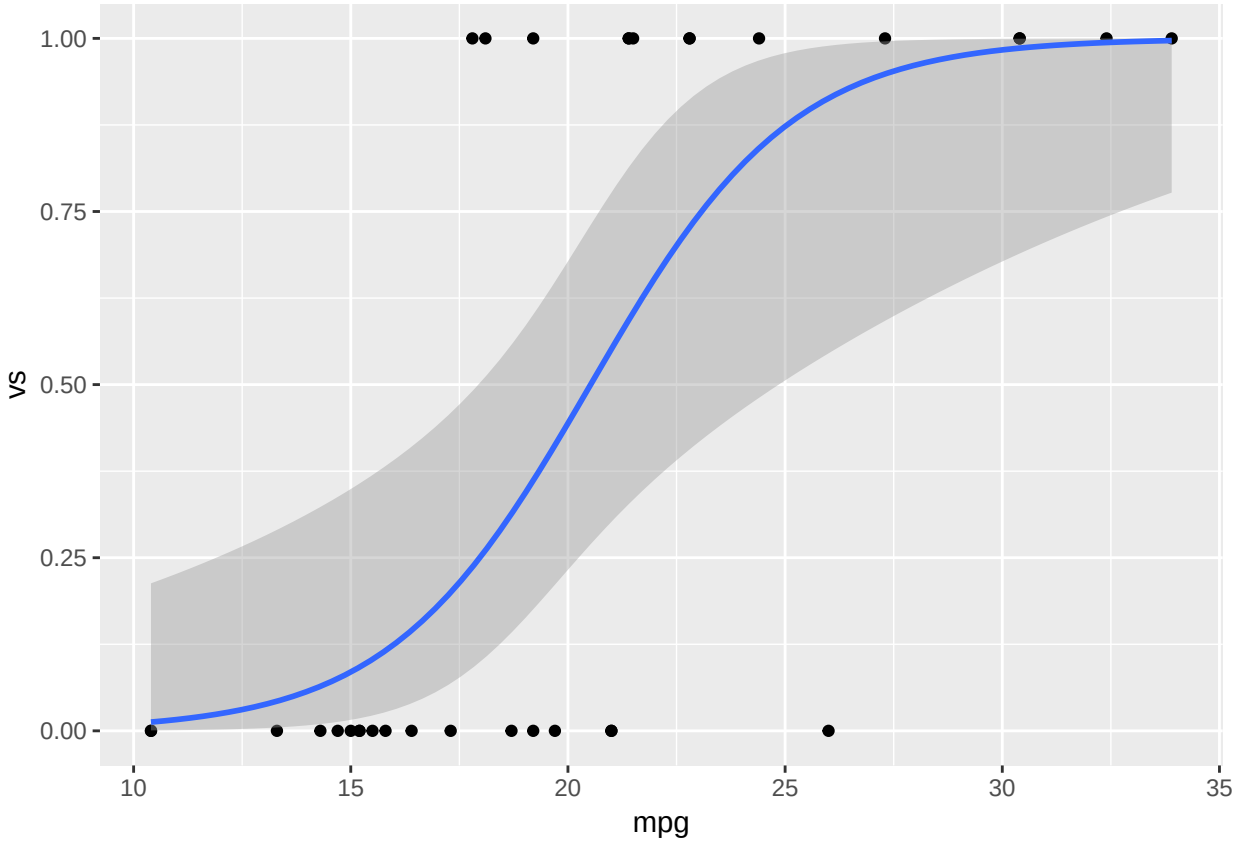
3.4 Plots

And you can generate plots directly from this file as well.

```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.3.2
```

```
ggplot(mtcars, aes(x = mpg, y = vs)) +
geom_point() +
geom_smooth(method = "glm", method.args=list(family="binomial"))
```



CHAPTER 4

Sourcing .R files

4.1 Import scripts

We can use the following command to import an r script:

```
library(knitr)
```

```
## Warning: package 'knitr' was built under R version 3.3.2
```

```
read_chunk('../includes/scripts/test.R')
```

Notice that the `read_chunk()` command takes **this** file as the reference for specifying the path (this is different with regard to inserting graphics).

4.2 Call chunks

We can directly call knitr chunks from the `test.R` script. First let's load the libraries we will need.

```
library(dplyr); library(lingStuff)
```

Now we will generate some data.

```
# Generate data
set.seed(1)
vot = rnorm(20, 15, 5)
vot = sort(vot)
phon = c(0,1,0,0,0,0,0,1,0,1,0,1,0,1,1,1,1,1,1,1)
```

```
df = as.data.frame(cbind(vot, phon))
```

Let's fit a model.

```
# Fit model
glm <- glm(phon ~ vot, data = df, family = "binomial")
```

What is the phoneme boundary?

```
# Get crossover point
crossOver(glm)
```

```
##      vot
## 15.53595
```

It looks like the boundary is at 15.54. Good. Let's plot it to see what it looks like:

```
# Plot regression with crossover point
plot(df$vot, df$phon, xlab = "vot", ylab = "phon",
     pch = 16, col = rgb(0, 0, 204, 102, maxColorValue = 255))
curve(predict(glm, data.frame(vot = x), type = "resp"), add = TRUE)
points(vot, fitted(glm), pch = 20)
abline(v = crossOver(glm), lty = 2, lwd = 0.75)
abline(h = 0.5, v = 0)
```

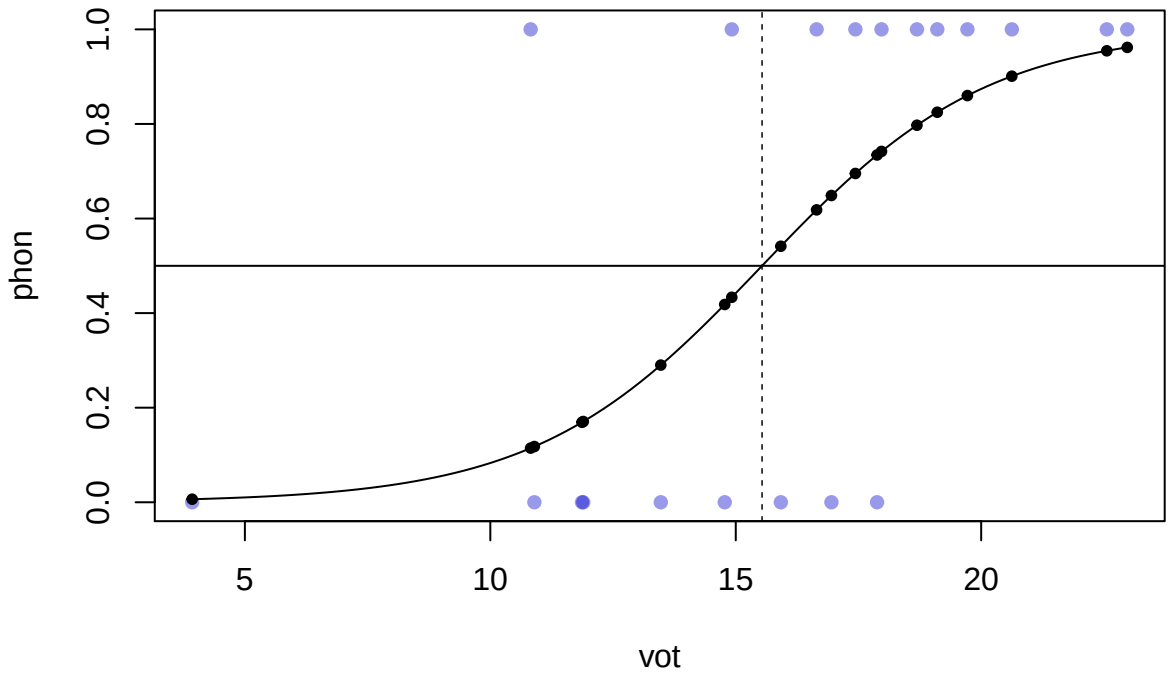


Figure 4.1: This is the caption

APPENDIX A

Sample Appendix

Stuff. . . ..

APPENDIX B

Another Appendix

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

REFERENCES

Author, First, Second Author, and Third Author. 2002. "Random Article About Some Stuff." *Random Journal* 666:1–20.

Author, First, Second Author, and Third Author. 2015. "Some More Random Stuff." *Random Journal* 675:1–20.