[BoldFont=latinmodern-math.otf]

University of Western Sydney
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2019 FINAL EXAM

SUBMISSION PAPER FOR FINAL EXAMINATION

Introduction to Data Science

BSc(Math)

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Abstract

Yart provides an RMarkdown template for rendering TeX based PDFs. It provides a format suitable for academic settings. The typical RMarkdown variables may be used. In additiion, some variabels useful for academic reports have been added such as name of referee, due date, course title, field of study, addres of author, and logo, and a few more maybe. In addition, paper format (eg., paper size, margins) may be adjusted; the babel language set of Latex is supported. Those variables are defined in the yaml header of the yart document. Adjust those variables to your need. Note that citations, figure/ table referencing is possible due to the underlying pandoc magic. This template is not much more than setting some of the variables provided by rmarkdown (pandoc, knitr, latex, and more), credit is due to the original authors. Please reade the rmarkdown documentation for detailled information on how to use rmarkdown and how to change settings.

List of Tables

List of Figures

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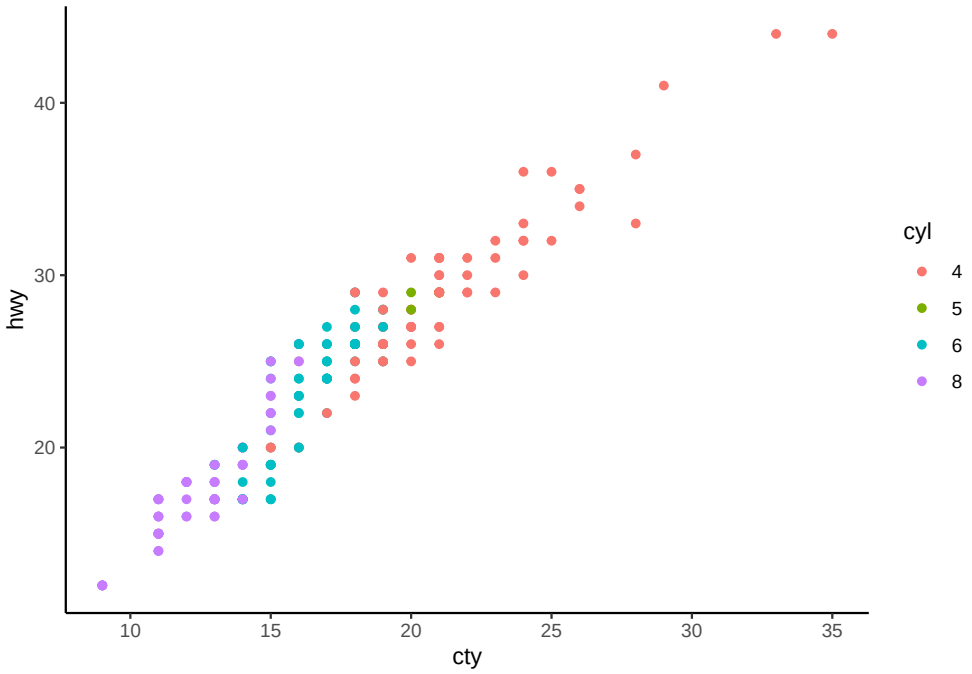
My Section Header 1

```
library(tidyverse)
```

```
#  -- Attaching packages ---------------------------------------------------
#  v ggplot2 3.2.1           v purrr   0.3.2
#  v tibble  2.1.3           v dplyr   0.8.3
#  v tidyr   0.8.99.9000     v stringr 1.4.0
#  v readr   1.3.1           v forcats 0.4.0
#  -- Conflicts ------------------------------------------------------------
#  x dplyr::filter() masks stats::filter()
#  x dplyr::lag()    masks stats::lag()
```

```
mpg$cyl <- factor(mpg$cyl)
ggplot(mpg, aes(x = cty, y = hwy, col = cyl)) +
  geom_point() +
  theme_classic()
```



Please see the documentation of RMarkdown for more details on how to write RMarkdown documents.

Download a testlogo from here: https://raw.githubusercontent.com/sebastiansauer/yart/master/docs/logo.png and uncomment the respective line in the header.

For finetuning of design options, please check the tex template. There you will find some variables such as `$classoption$`. Those variables may be addressed in the yaml header of the yart file.

My Section Header 2

"Lorem ipsum" dolor sit amet, consectetur adipiscing elit. Proin mollis dolor vitae tristique eleifend. Quisque non ipsum sit amet velit malesuada consectetur. Praesent vel facilisis leo. Sed facilisis varius orci, ut aliquam lorem

malesuada in. Morbi nec purus at nisi fringilla varius non ut dui. Pellentesque bibendum sapien velit. Nulla purus justo, congue eget enim a, elementum sollicitudin eros. Cras porta augue ligula, vel adipiscing odio ullamcorper eu. In tincidunt nisi sit amet tincidunt tincidunt. Maecenas elementum neque eget dolor egestas fringilla:

> Nullam eget dapibus quam, sit amet sagittis magna. Nam tincidunt, orci ac imperdiet ultricies, neque metus ultrices quam, id gravida augue lacus ac leo.

Vestibulum id sodales lectus, sed scelerisque quam. Nullam auctor mi et feugiat commodo. Duis interdum imperdiet nulla, vitae bibendum eros placerat non. Cras ornare, risus in faucibus malesuada, libero sem fringilla quam, ut luctus enim sapien eget dolor.

- Aufzählungen (nummeriert oder nicht) sind möglich.
- Sonderzeichen werden unterstützt: äüSS.
- LaTeXwird unterstützt.
- Und damit auch "schöne" Formeln: $e^{ln(e)} = e$ (stimmt das?).
- Ein Überblick zur **Markdown-Syntax** findet sich hier.
- Ein paar Gimmicks: H_2O, This ~~is deleted text.~~, feas*ible*, not feas*able*, lang—ganz lang.
- Use `\ts` as a shorthand for `\thinspace` to get "z. B." instead of "z. B." (thin space between the two letters)
- Footnotes are supported[1].

[1] FuSSnoten sind bei Pandoc eine Art von Links.

- Zitationen sind möglich, im beliebigen Format, z.B. APA6. Das Format wird über die Variable `cls` definiert (im Kopfteil oben). Die entsprechende Datei muss im gleichen Ordner liegen wie diese Rmd-Datei. Die Datei mit den bibliographischen Informationen wird über die Variable `bibliography` angegeben. Auch diese Datei muss sich im gleichen Ordner befinden wie diese Rmd-Datei.
- Besonders schön ist es, dass man R direkt einbinden kann über knitr. Hier findet sich eine gute Anleitung.

We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study.

R-Code

So bindet man R-Code ein:

```
x <- c(1,2,3)
mean(x)
```

```
#  [1] 2
```

Citation

Put the file with the references in the same folder as the rmd-file. Uncomment/insert a line in the yaml header such as `bibliography: bib.bib`, where `bib.bib` is the name of your bib-file. Similarly, if you want to format the citation in a certain style, put the respective csl-file in the same folder as this document and uncomment/insert this line in the yaml header: `csl: apa6.csl`, where `apa6.csl` is the style file.

Use this format for citation: `[\@bibtexkey]`. Put all the bibliography data in one bibliography file.

Don't forget to cite software and data. R and R packages can be cited in the following way:

```
citation()
citation("rmarkdown")
```

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Tabellen

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So erstellt man "von Hand" eine Tabelle in Markdown:

Right	Left	Center	Default

```
-------     ------ ----------   -------
     12      12        12             12
    123      123       123           123
      1      1          1              1

Table: Table caption
```

Das ist das Ergebnis:

Table 1: Table caption

Right	Left	Center	Default
12	12	12	12
123	123	123	123
1	1	1	1

There are comfortable and powerful R packages available for rendering markdown tables such as Huxtable, or xtable, and other.

Table with R package `xtable`; note that this package needs to be installed to run this example.

```
data(mtcars)


library(xtable)
print.xtable(
  xtable(head(daten),
```

```
        label="tab:daten",
        caption="Datenstruktur für eine within-Analyse"),
  comment=FALSE)
```

Figures

Use knit to insert images. Figures can be referenced, too.

```
knitr::include_graphics("/docs/picture2.png")
```

References

[If some literature is cited, it appears here]