CS&SS 569 Visualizing Data and Models
Lab 2: Intro to \LaTeX\ with R Markdown and Overleaf

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Department of Political Science, UW

2023-01-13
Agenda

1. Logistics
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2. R Markdown and HW1
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2. R Markdown and HW1
3. \LaTeX\ and Overleaf
Homework Submission

- Use Canvas not email
Problem 1: Attach files (PDF/picture), and offer your critique and remedy
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Problem 2: Read data and reproduce the plot
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Problem 2: Read data and reproduce the plot

*Do not spend more than two hours*
R Markdown

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- $\LaTeX$ code is supported
To compile a R Markdown document to PDF, you need to install \LaTeX.
R Markdown and TinyTeX

▶ To compile a R Markdown document to PDF, you need to install LaTeX
  ▶ If you haven’t installed any previous \LaTeX\ distribution, I recommend TinyTeX
R Markdown and TinyTeX

“TinyTeX is a lightweight, portable, cross-platform, and easy-to-maintain LaTeX distribution”:

```
install.packages('tinytex')
tinytex::install_tinytex()
```
R Markdown in practices: two examples

- lab2_RMarkdownSample.Rmd: cover most of the basic functionalities in R Markdown; good for future reference
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- lab2_RMarkdownSample.Rmd: cover most of the basic functionalities in R Markdown; good for future reference
- CSSS569HW1Start.Rmd: a template to get started with HW 1
Break
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- Modern extensions of the TEX engines include pdfTeX, XeTeX, LuaTeX, etc.
Intro to \TeX{} and \LaTeX{}

\LaTeX{} is a document preparation system, or a macro package, built on top of the \TeX{} engine, with features:
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LaTeX is a *document preparation system, or a macro package*, built on top of the TeX engine, with features:

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- Typesetting of complex mathematical formulas
- Advanced typesetting of mathematics with AMS-LaTeX
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- See more [here](#)
Intro to \TeX{} and \LaTeX{}

- Popular implementations, or distributions, of \TeX{}/\LaTeX{}
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  - MiKTeX for Windows: [https://miktex.org](https://miktex.org)
Intro to TEX and \LaTeX

- \LaTeX vs. other word processors (e.g. Microsoft Word)
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  \begin{itemize}
  \item Microsoft Word/Power Point
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    \item WYSIWYG: What You See Is What You Get
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\LaTeX
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  \item You provide "\LaTeX\ commands" to specify the layout, structure, and details of the document:
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Latex vs. other word processors (e.g. Microsoft Word)

Microsoft Word/PowerPoint

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LaTeX

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  - \texttt{\textbackslash command[optional parameter]{parameter}}
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  - **\LaTeX{}**
    - You provide “\LaTeX{} commands” to specify the layout, structure, and details of the document:
      - \command[optional parameter]{parameter}
      - And *typeset* the document using the \TeX{} engine and compile the output
The input for \LaTeX is a plain text file (.tex)
Intro to TeX and \LaTeX

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Intro to \LaTeX{} with Overleaf

▶ All the above sound pretty complicated...
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    - Integrated with Git for version control
Before we dive in, useful resources

- The Not So Short Introduction to LaTeX (Oetiker et al., 2018)
- "Learn LaTeX in 139 pages / minutes"
- 'Overleaf' documentation
- Contains intro to basic LaTeX, Overleaf, and many practical guides
- LaTeX at StackExchange
- General: Mathematics and Tables and TikZ
- Beamer Theme: here
- Bibliography: natbib, doi2bib, text2bib
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