GRAD 778: Reproducible Research

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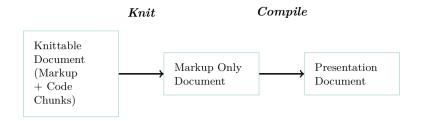
USING knitr

What knitr Does

- knitr ties together your presentation of results with the creation of those results
- Choose a mark-up code. We focus on LATEXin this workshop (an alternative is Markdown)
- Write document with mark-up code, with R chunks embedded in mark-up code.
- knitr converts R chunks to mark-up language (this would be tedious without knitr)
- We can then compile final mark-up code using appropriate compiler

Knit

Compile

Knittable
Document
(Markup
+ Code
Chunks)

→

Markup Only
Document

→

Presentation
Document

knitr LaTeX Example

Paper.Rnw → *Paper.tex* → *Paper.pdf*

knitr/rmarkdown Markdown Example

Website.Rmd → *Website.md* → *Website.html*

Left panel (LaTeX source code):

```latex
\documentclass{article}


\title{My First \texttt{knitr} Document}
\author{Jane Doe}
\date{September 2019}

\begin{document}

\maketitle

\section{Introduction}
Hello world!

\section{Methods}
\subsection{Equation 1}
<<chunk1, echo=TRUE,eval=TRUE>>=
library(knitr)
(output=2+2)
@

\section{Results}
\subsection{Equation 1}
The answer to Equation 1 is \Sexpr{output}


\end{document}
```

Right panel (rendered output):

My First `knitr` Document

Jane Doe

September 2019

1 Introduction

Hello world!

2 Methods

2.1 Equation 1

```r
library(knitr)
(output=2+2)
```

```
## [1] 4
```

3 Results

3.1 Equation 1

The answer to Equation 1 is 4

Options

Chunk options and package options

2017-02-03

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knitr: elegant, flexible, and fast dynamic report generation with R

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Second `knitr` document

Exercise 2

Create an interactive knitr **document that:**

- includes the analysis MainAnalysis.R within the .Rnw document,
- replaces all static values (e.g., parameter estimates, figure and table numbers) with dynamic values from the incorporated analysis,
- permits you to change the data in the analysis (i.e., remove Alaska), and automatically updates the parameter values.