**PLS 801. Lab2**
**September 7, 2017**

<div align="center">Introduction to `RStudio` & `knitr`</div>

1. **RStudio**

   - Download `RStudio` https://www.rstudio.com/

   - What is `RStudio`? It is a free and open-source integrated development environment (IDE) for `R`. You can read more here: https://en.wikipedia.org/wiki/RStudio.

   - You should watch a short tutorial about `R` and `RStudio` (you can skip how to install it if you already have it): https://www.youtube.com/watch?v=lVKMsaWju8w.

   - You can change the pane layout: View→ Panes → Pane Layout

2. `knitr`

   - `knitr` is an engine for *dynamic* report generation with `R`.

   - `knitr` is an `R` package that allows us to integrate `R` code into LaTeX, HTML, and Markdown.

     - So you can write equations using LaTeX, for instance.
     - HTML is the standard markup language for creating websites and web applications (we won't be using it, but sometimes it is useful to create reports in HTML).
     - Markdown is a lightweight markup language with plain text formatting syntax. It is very simple and you can find a "cheatsheet" in Piazza's Lab Resources (also here https://www.rstudio.com/wp-content/uploads/2016/03/rmarkdown-cheatsheet-2.0.pdf). Because we are using Markdown for `R`, it is sometimes called RMarkdown. You should read the information here: http://rmarkdown.rstudio.com/

   - To install "knitr" package, open `R` and do the following:

     ```
     install.packages("rmarkdown")
     install.packages("knitr")
     ```

   - To start a Markdown file in `RStudio` do the following:

     - Open `RStudio`
     - Go to File → New File → R Markdown
     - Include the title of your project (e.g. PLS 801. Lab 2), your name, and date. You can also select the format of your output. It can be a PDF file or an HTML file. For homework submission, we prefer PDF because it is easier to print or annotate.
     - To compile the file, click on the `knitr` icon.
     - To include an `R` chunk, click the green icon with a "c" inside. The chunk allows you to write code inside. You can run the code by clicking the play icon inside the chunk. You should name the chunks but you cannot repeat names within the same file. You can find chunks in a file by there name on the index. Names must be informative.

For example:

```
```{r My First Chunk}      #To display R code and the output
 3+1
```

```{r, Addition eval=FALSE}  # To display R code but not the output
 3+1
```

```{r, Adding 3 and 1 echo=FALSE} # To display the output without the R cod
 3+1
```
```

3. Markdown tips:

- Any text you write in will appear as it is
- You can also use *italic* **bold**
- Put double spaces to break the lines
- For headers, use #, ##, ### etc.
- To make a quote, begin with >
- To create a table, use | to separate columns and − to create lines between rows