

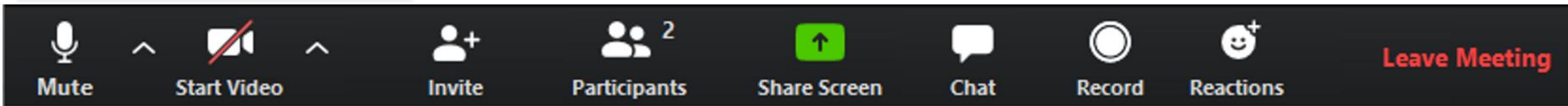
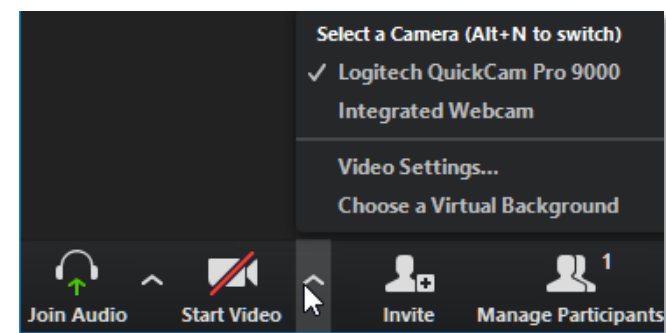
# Integrating R

into your work with RStudio and the tidyverse

Thursday, June 18, 2020

<https://bit.ly.com/2020-06-integratingR>

# Virtual Housekeeping and Your Zoom Controls

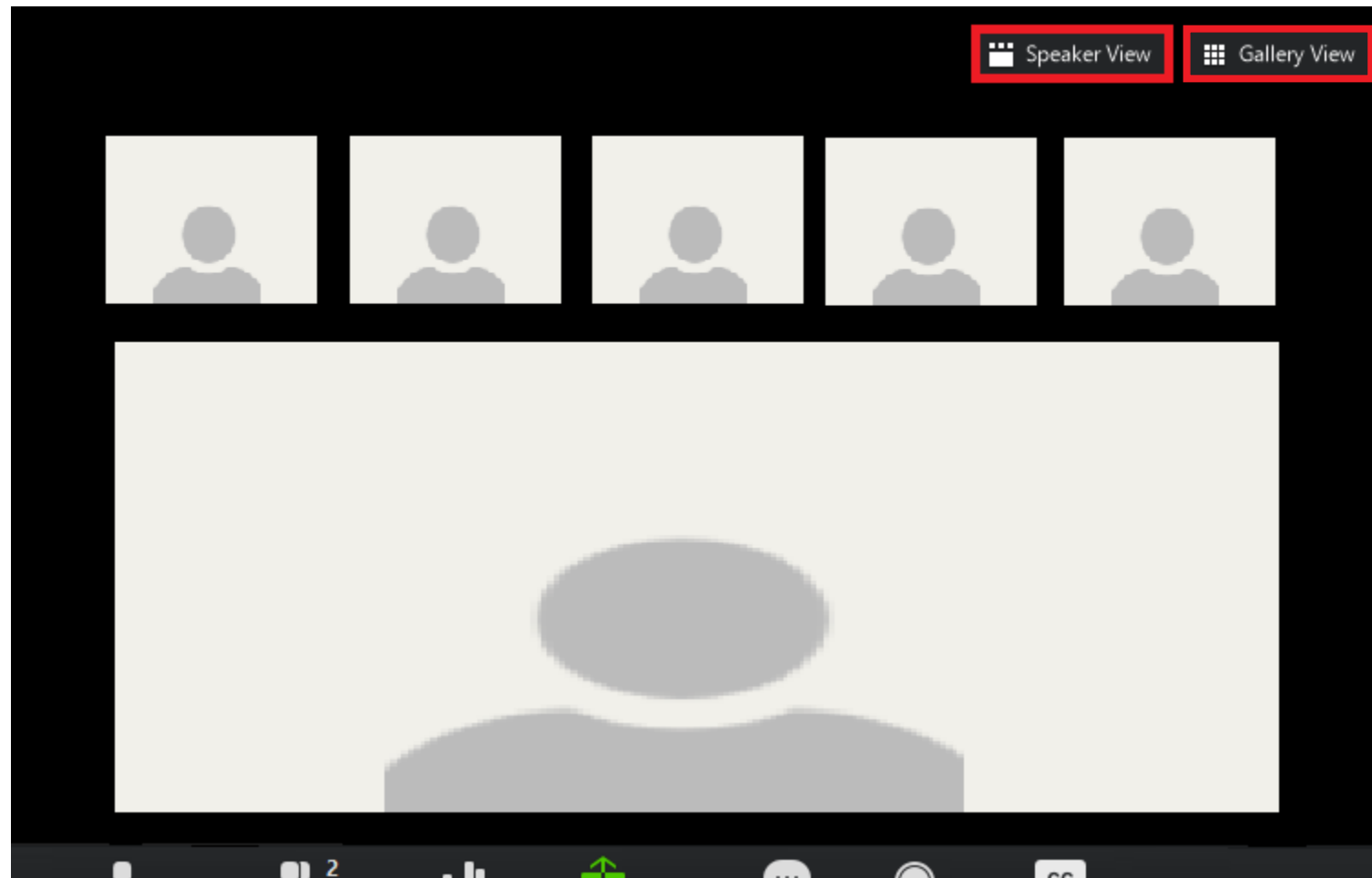
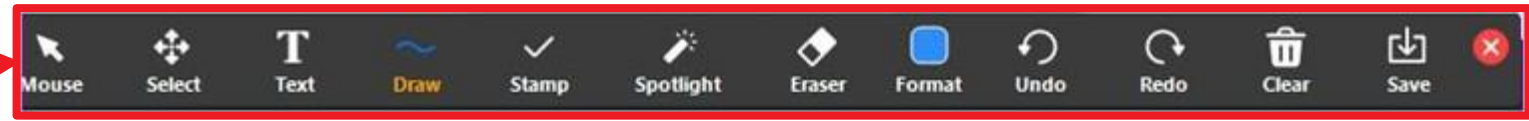
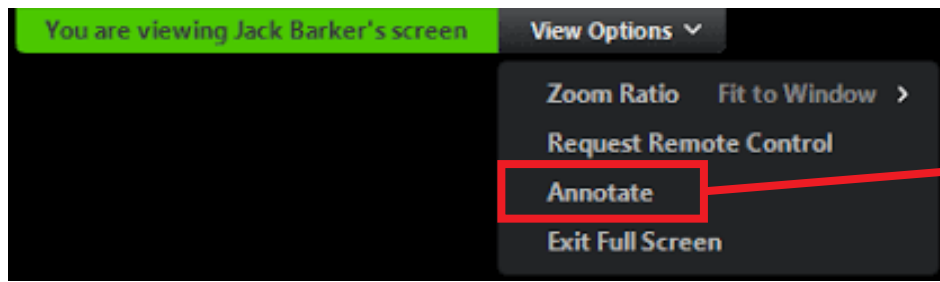


Please leave your **audio muted** while you are not speaking to help prevent background noises.

Click to open the **Participants** box. This will allow you to give nonverbal feedback as well as to raise your hand.

Click to open the **Chat** box. This will allow you to chat with Hosts and Participants.







**Kaitlyn Dietz**

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 swmpkim



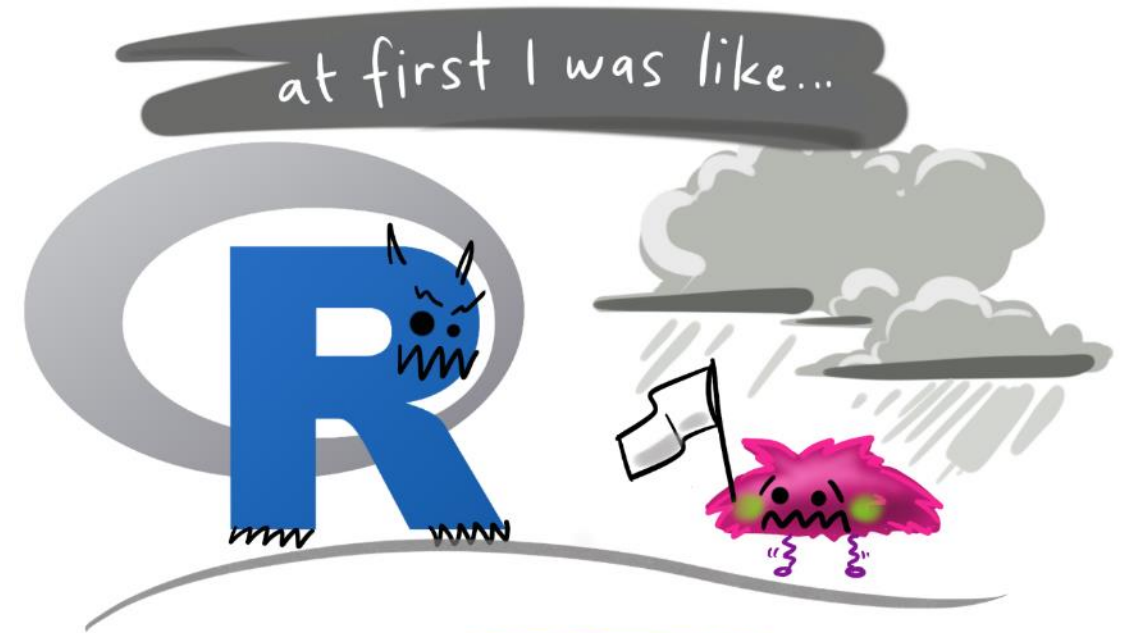
**Shannon Dunnigan**

*Guana Tolomato Matanzas NERR*

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 skdunnigan

# Introduction



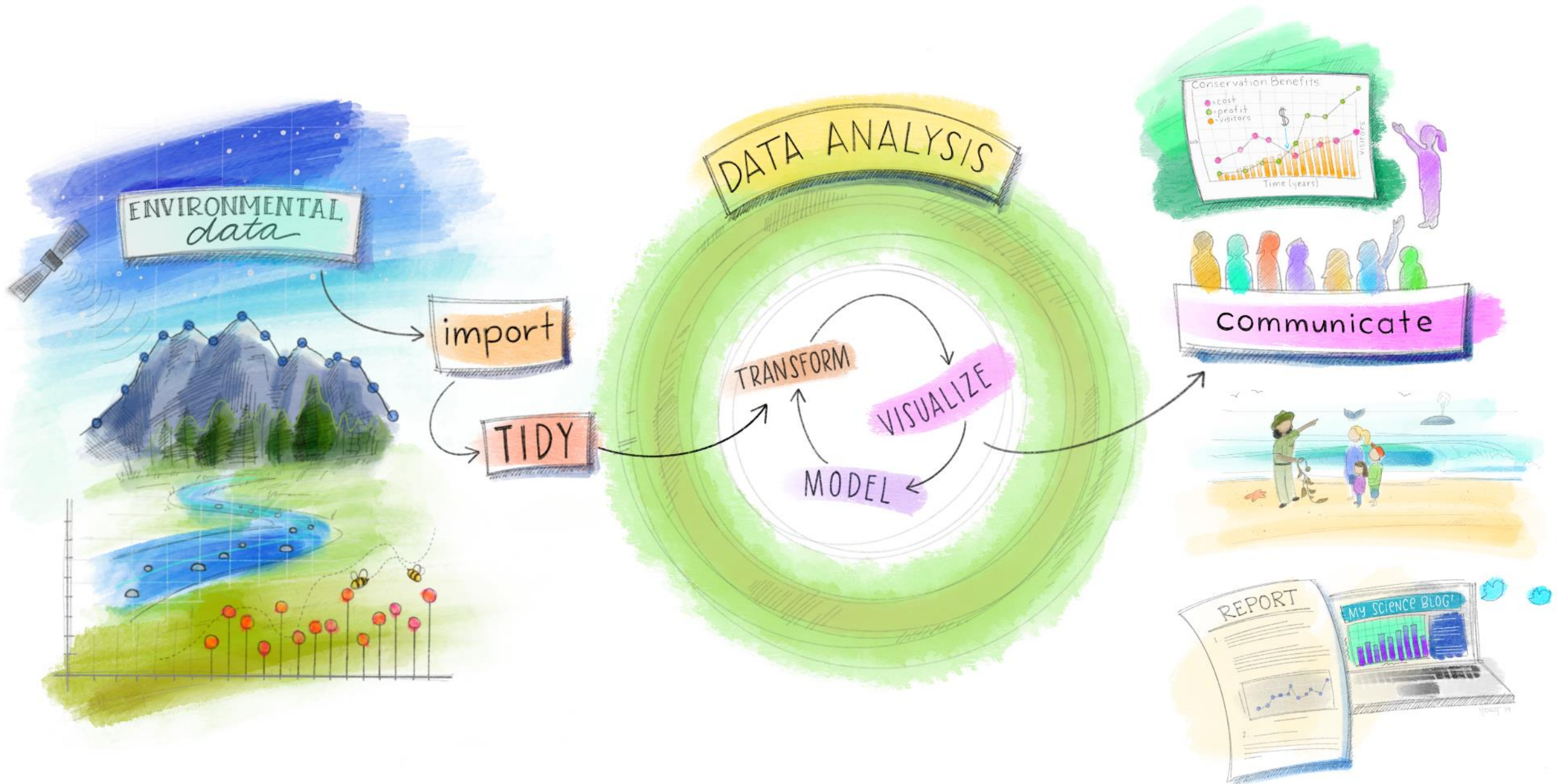
...but now it's like...



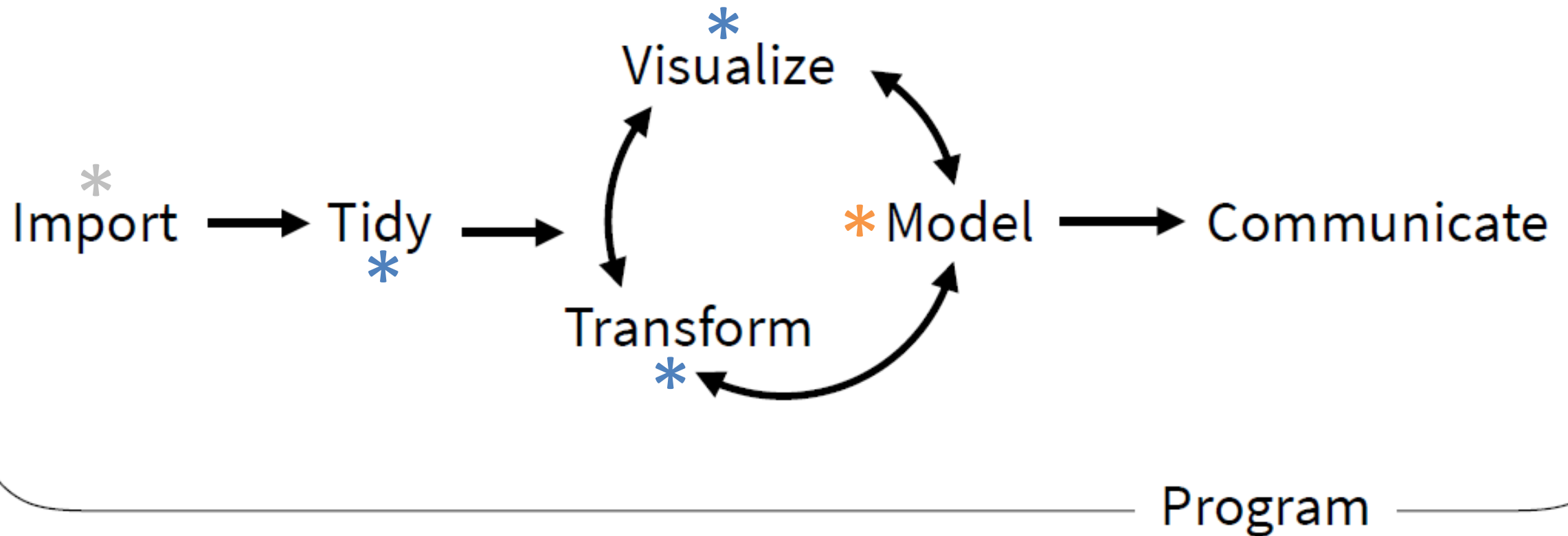
## Agenda:

Week	Day 1	Day 2
Week 1	Welcome, Intros, Objectives	Day 1 recap
	Projects and RStudio	02 - Wrangling Data
	01 - Visualize Data	
Week 2	Welcome, Intros, Objectives	Day 1 recap
	03 - More Wrangling	05 - Functions
	04 - Statistical Outputs	06 - Loops





# (Applied) Data Science





# Workflow Basics

Tips and tricks to making your R work more productive

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2. Use an IDE (integrated development environment), like RStudio
3. Project-oriented workflow
4. Use projects and the ``here`` package

# here: find your PATH!





# Workflow Basics:

Tips and tricks to making your R work more productive

1. Save the source, not the workspace
2. Use an IDE (integrated development environment), like RStudio
3. Project-oriented workflow
4. Use projects and the ``here`` package
5. Use standardized naming conventions

TL;DR - machine and human readable and plays well with default ordering (put something numeric first).

*Left pad other numbers with zeros (to avoid the '10' coming before '01'). Avoid spaces in file names, punctuation, and accented characters.*

# Workflow Basics:

Tips and tricks to making your R work more productive

1. Save the source, not the workspace
2. Use an IDE (integrated development environment), like RStudio
3. Project-oriented workflow
4. Use projects and the ``here`` package
5. Use standardized naming conventions
6. Coding review

`package::function()`

`<-`

Pipes! ``%>%`` from the ``magrittr`` package

# Workflow Basics:

Tips and tricks to making your R work more productive

1. Save the source, not the workspace
2. Use an IDE (integrated development environment), like RStudio
3. Project-oriented workflow
4. Use projects and the `here` package
5. Use standardized naming conventions
6. Coding review
7. Keyboard Shortcuts: there's an RStudio Cheatsheet for that!

## We love:

alt+- :for <-  
ctrl+enter :to run one or more lines  
ctrl+shift+m :for %>%  
ctrl+shift+c :to  
comment/uncomment  
ctrl+i :to indent prettily



# Write Code

Navigate tabs  
Open in new window  
Save  
Find and replace  
Compile as notebook  
Run selected code

Annotations for the editor window:

- File menu:** File, Edit, Code, View, Plots, Session, Build, Debug, Tools, Help
- Toolbar:** Run, Source, Addins, Go to file/function
- Code Editor:**
  - Line 1: `# Good Start...`
  - Line 2: `Cursors of shared users`
  - Line 3: `Re-run previous code`
  - Line 4: `Source with or without Echo`
  - Line 5: `Show file outline`
  - Line 6: `"P0030001"`
  - Line 7: `"P0030002"`
  - Line 8: `"P0030003"`
  - Line 9: `"P0030004"`
  - Line 10: `Multiple cursors/column selection with Alt + mouse drag.`
  - Line 11: `Code diagnostics that appear in the margin. Hover over diagnostic symbols for details.`
  - Line 12: `get_digit <- function() {`
  - Line 13:  `("num" %% (10 ^ n))`
  - Line 14:  `%/% (10 ^ (n - 1))`
  - Line 15: `}}`
  - Line 16: `fo`
  - Line 17:  `for {snippet}`
  - Line 18:  `foo {GlobalEnv}`
  - Line 19:  `force {base}`
  - Line 20:  `}`
  - Line 21: `Jump to function in file`
  - Line 22: `Change file type`
- Console:**
  - `> foo(1)`
  - `[1] 2`
  - `> foo <- function(x) x + 1`
  - `> foo(2)`
  - `> foo(2)`
  - `> foo(1)`

# R Support

Import data with wizard  
History of past commands to run/copy  
Display .RPres slideshows  
**File > New File > R Presentation**

Annotations for the environment and file browser windows:

- Environment Window:**
  - Global Environment:**
    - Load workspace
    - Save workspace
    - Delete all saved objects
    - Search inside environment
    - Choose environment to display from list of parent environments
    - Display objects as list or grid
  - Data:**
    - iris: 150 obs. of 5 variables
  - Values:**
    - a: 1
  - Functions:**
    - foo: function (x)
  - Displays saved objects by type with short description
  - View in data viewer
  - View function source code

- File Browser:**
- Files, Plots, Packages, Help, Viewer
- Buttons: New Folder, Upload, Delete, Rename, More
- Path: Home > IDEcheatsheet
- Buttons: Create folder, Upload file, Delete file, Rename file
- Buttons: Copy..., Move..., Export..., Set As Working Directory, Go To Working Directory
- Change directory
- Path to displayed directory: ..
- File: hello.R
- Size: 19 B
- Date: Apr 13, 2016, 11:17 AM
- A File browser keyed to your working directory. Click on file or directory name to open.



# Documents and Apps

Open Shiny, R Markdown, knitr, Sweave, LaTeX, .Rd files and more in Source Pane

Check spelling   Render output   Choose output format   Choose output location   Insert code chunk

Jump to previous chunk   Jump to next chunk   Run selected lines   Publish to server   Show file outline

Access markdown guide at **Help > Markdown Quick Reference**

Jump to chunk   Set knitr chunk options   Run this and all previous code chunks   Run this code chunk

```
17- ```{r pressure, echo=FALSE}
18- plot(pressure)
19- ```
20-
```

15:1 (Top Level)   R Markdown

# Rmarkdown

TEXT.CODE.OUTPUT.  
(GET IT TOGETHER, PEOPLE.)





"Data comes in many formats, but R prefers just one: tidy data. "

- Garrett Grolmund

A large, faint, light blue watermark of the R logo is visible in the bottom right corner of the slide. It consists of a large 'R' inside a circle.

# Tidy data



A data set is **tidy** iff:

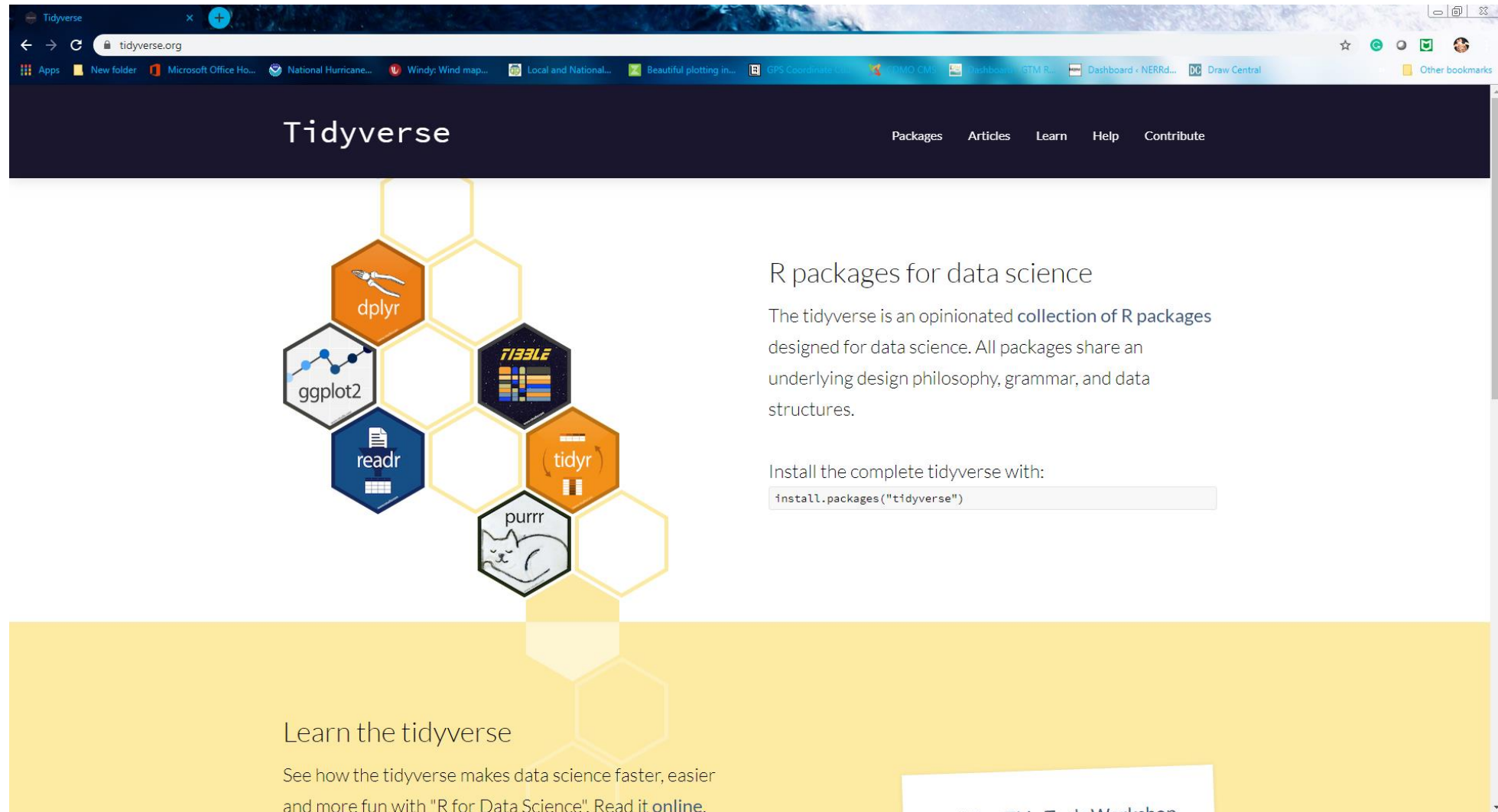
1. Each **variable** is in its own **column**
2. Each **observation** is in its own **row**
3. Each **value** is in its own **cell**

**Also see these papers, in your “other resources” folder:**

Wickham, 2014: *Tidy Data*

Broman and Woo, 2017: *Data Organization in Spreadsheets*

# www.tidyverse.org



The screenshot shows the homepage of tidyverse.org. At the top is a dark blue navigation bar with the 'Tidyverse' logo on the left and links for 'Packages', 'Articles', 'Learn', 'Help', and 'Contribute' on the right. Below the navigation bar, on the left, is a cluster of hexagonal icons representing various R packages: dplyr (orange with a bird), ggplot2 (grey with a network diagram), readr (blue with a document), purrr (grey with a cat), tidyr (orange with a puzzle piece), and tibble (dark blue with a grid). To the right of these icons, the text reads 'R packages for data science' followed by a paragraph: 'The tidyverse is an opinionated collection of R packages designed for data science. All packages share an underlying design philosophy, grammar, and data structures.' Below this, it says 'Install the complete tidyverse with:' followed by a code box containing `install.packages("tidyverse")`. At the bottom, a yellow banner contains the text 'Learn the tidyverse' and 'See how the tidyverse makes data science faster, easier and more fun with "R for Data Science". Read it [online](#).'.

Tidyverse

Packages Articles Learn Help Contribute

R packages for data science

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```
install.packages("tidyverse")
```

Learn the tidyverse

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