Previously
More Data Wrangling
Reading & Writing Data
Plotting and Graphics with R
Statistical Tests & Distributions
Next Lecture

R TUTORIAL - VTT (Lecture 2)

Oguzhan (Ouz) Gencoglu
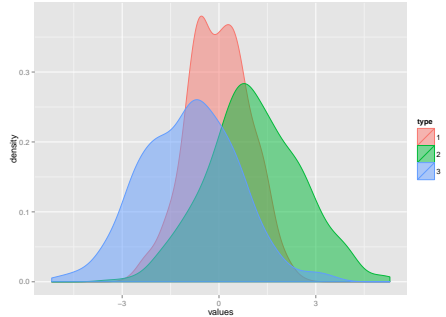
VTT Technical Research Center of Finland

3 May 2016

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Outline

1. **Previously**

2. **More Data Wrangling**

3. **Reading & Writing Data**

4. **Plotting and Graphics with R**
   - Base Plotting System
   - Lattice Plotting System
   - Grammar of Graphics (ggplot2) Plotting System
   - External Packages
   - Graphing Roadmap

5. **Statistical Tests & Distributions**
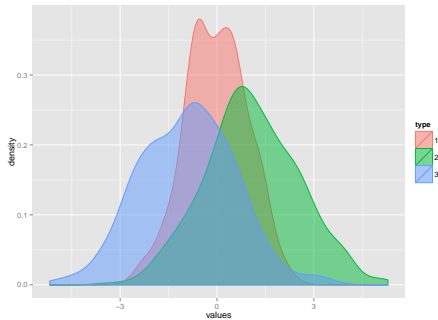
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What was covered?

- Introduction to R - What? Why? How?

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What was covered?

- Introduction to R - What? Why? How?
- Practical issues

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What was covered?

- Introduction to R - What? Why? How?

- Practical issues

- Frequently used functions

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What was covered?

- Introduction to R - What? Why? How?
- Practical issues
- Frequently used functions
- R paradigm - data frames, exploratory analysis etc.

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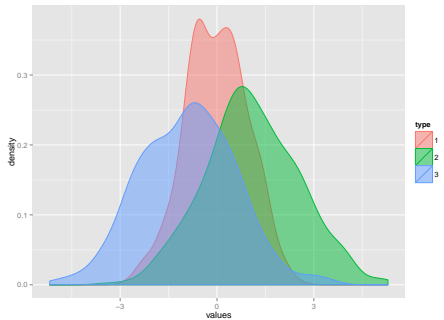
plyr, dplyr, apply's

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apply_functions.R, more_data_wrangling.R

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Reading & Writing Data

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read_and_write_data.R

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Base Plotting System

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base_introduction.R, base_exploratory.R, maps_example.R

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Idea: High-level graphing function followed by low-level modifying
functions + default parameters

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Base Plotting System

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base_introduction.R, base_exploratory.R, maps_example.R

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<u>Idea:</u> High-level graphing function followed by low-level modifying
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Most common high-level ones: *plot, hist, barplot, boxplot, curve*

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base_introduction.R, base_exploratory.R, maps_example.R
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<u>Idea:</u> High-level graphing function followed by low-level modifying
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Most common high-level ones: *plot, hist, barplot, boxplot, curve*
Most common low-level ones: *lines, text, axis, points, title, mtext*

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base_introduction.R, base_exploratory.R, maps_example.R

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<u>Idea:</u> High-level graphing function followed by low-level modifying functions + default parameters

Most common high-level ones: *plot, hist, barplot, boxplot, curve*
Most common low-level ones: *lines, text, axis, points, title, mtext*
Global graphics parameters: *par()*

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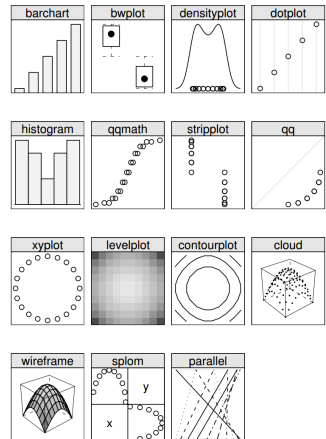External Packages
Graphing Roadmap

Lattice

Useful for *trellis graphs*, i.e., graphs
that display a variable or the relation-
ship between variables, conditioned
on one or more other variables.

formula argument: **y ~ x | p * r**
where
y and x are primary variables
p and r are conditioning variables

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Lattice

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Lattice Introductory Example

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lattice_introduction.R, lattice_example.R

Plot Fiji earthquakes, i.e., plot latitude vs. longitude conditioned on depth and magnitude.
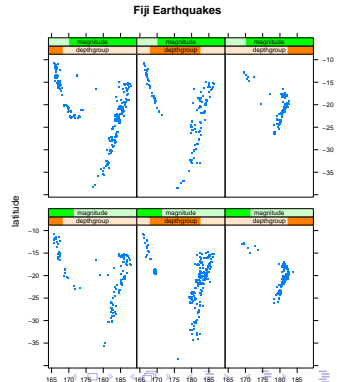
Fiji Earthquakes

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Grammar of Graphics (ggplot2)

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ggplot2_introduction.R

Plot galaxy clusters info with error intervals.

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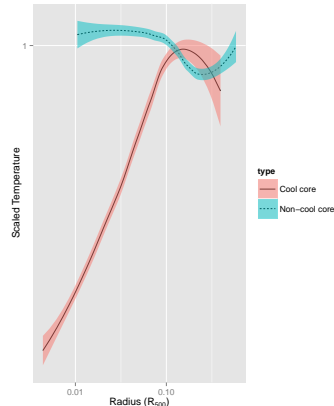
Grammar of Graphics (ggplot2)

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ggplot2_example.R

Several simple plot examples on
the same dataset.
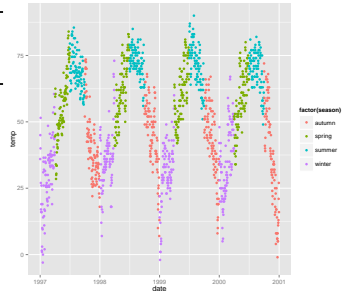
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External Packages

Package: *arcdiagram*
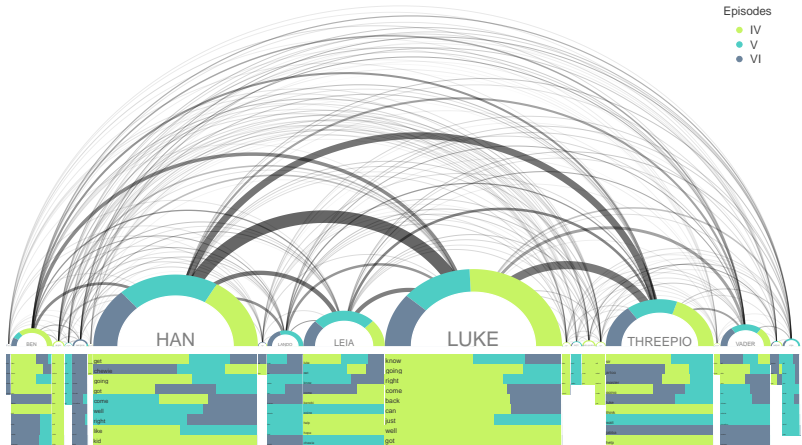
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External Packages
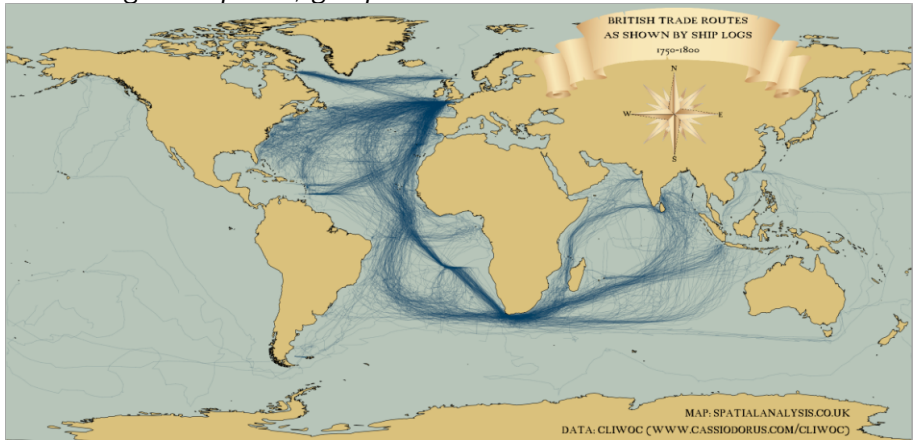
Packages: *maptools, geosphere*

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Packages: *googleVis*

Calendar Heat Map of MSFT Adjusted Close

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Packages: *rCharts*

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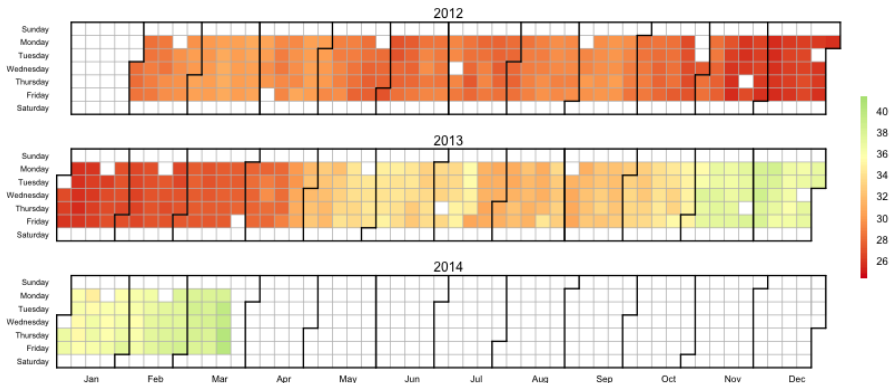**External Packages**
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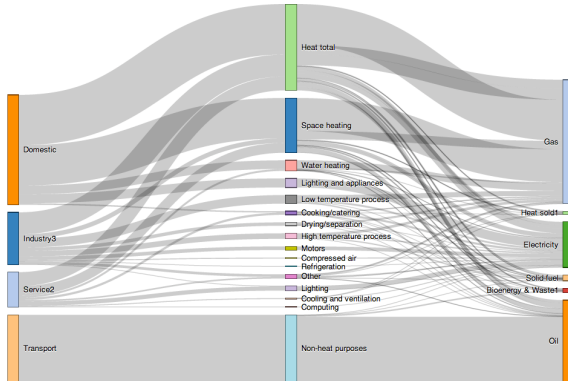
External Packages

Packages: *rCharts*

Measles
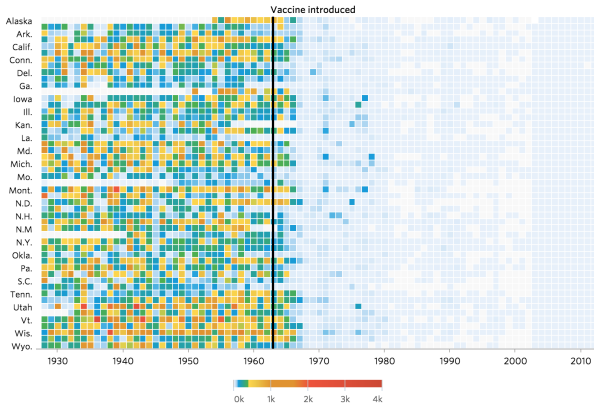
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Graphing Roadmap

Task	Graphing Tool
Exploratory Analysis	base
Simple 2D Plots	base
Quick Plotting	base
Trellis Graphs	lattice
Formal Plotting	ggplot2
Beautiful (?) Plots	ggplot2
Unconventional Plots	external packages

Graphing Roadmap

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Statistical Tests & Distributions

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statistics_and_distributions.R

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Markdown & Reporting
Digital Signal Processing
Machine Learning