Winter Institute in Data Science

Ryan T. Moore

2025-12-15

Intros: Ryan T. Moore & Jeff Gill

Goals

Skills

Examples

Installations and Plan

Welcome!

Intros: Ryan T. Moore & Jeff Gill

- Political methodologist
  (Dept of Government, SPA)

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- Assoc Director, Center for Data Science
  (AU, SPA)

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- (Recently...) Methods Fellow
  (Office of Evaluation Sciences, US GSA)

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Data Science

Particular intersection of

- Statistical practice
- Computational tools
- Substantive knowledge

- Stats: prediction (vs. explanation), algorithms (vs. models)

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- Computing: addressing problems with data *per se* (size, tidy-ness, un/structure, replicability)

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- Substance: social science

Harvard Business Review

Data | Data Scientist: The Sexiest Job of the 21st Century

Data Scientist: The Sexiest Job of the 21st Century

by Thomas H. Davenport and D.J. Patil

From the October 2012 Issue

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Applied quantitative social science increasingly looks like *data science*

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- Do original research using data sci methods. Contribute methods, substance, both.

Skills

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  - modeling, Bayes, AI

Examples

What is a data science task?

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social <- read_csv("http://j.mp/2Et71U0")
filter(social, (hhsize > 1) & (primary2004 == 0))
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```

```
## # A tibble: 161,275 x 6
##    sex    yearofbirth primary2004 messages   primary200
##    <chr>        <dbl>       <dbl> <chr>           <dbl>
##  1 male          1941           0 Civic Duty          0
##  2 female        1947           0 Civic Duty          0
##  3 male          1951           0 Hawthorne           1
##  4 female        1950           0 Hawthorne           1
##  5 female        1982           0 Hawthorne           1
##  6 male          1981           0 Control             0
##  7 female        1959           0 Control             1
##  8 male          1956           0 Control             1
##  9 female        1968           0 Control             0
## 10 male          1967           0 Control             0
## # ... with 161,265 more rows
```

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```
parse_date("15 enero 2000",
           locale = locale("es"),
           format = "%d %B %Y")
```

```
## [1] "2000-01-15"
```

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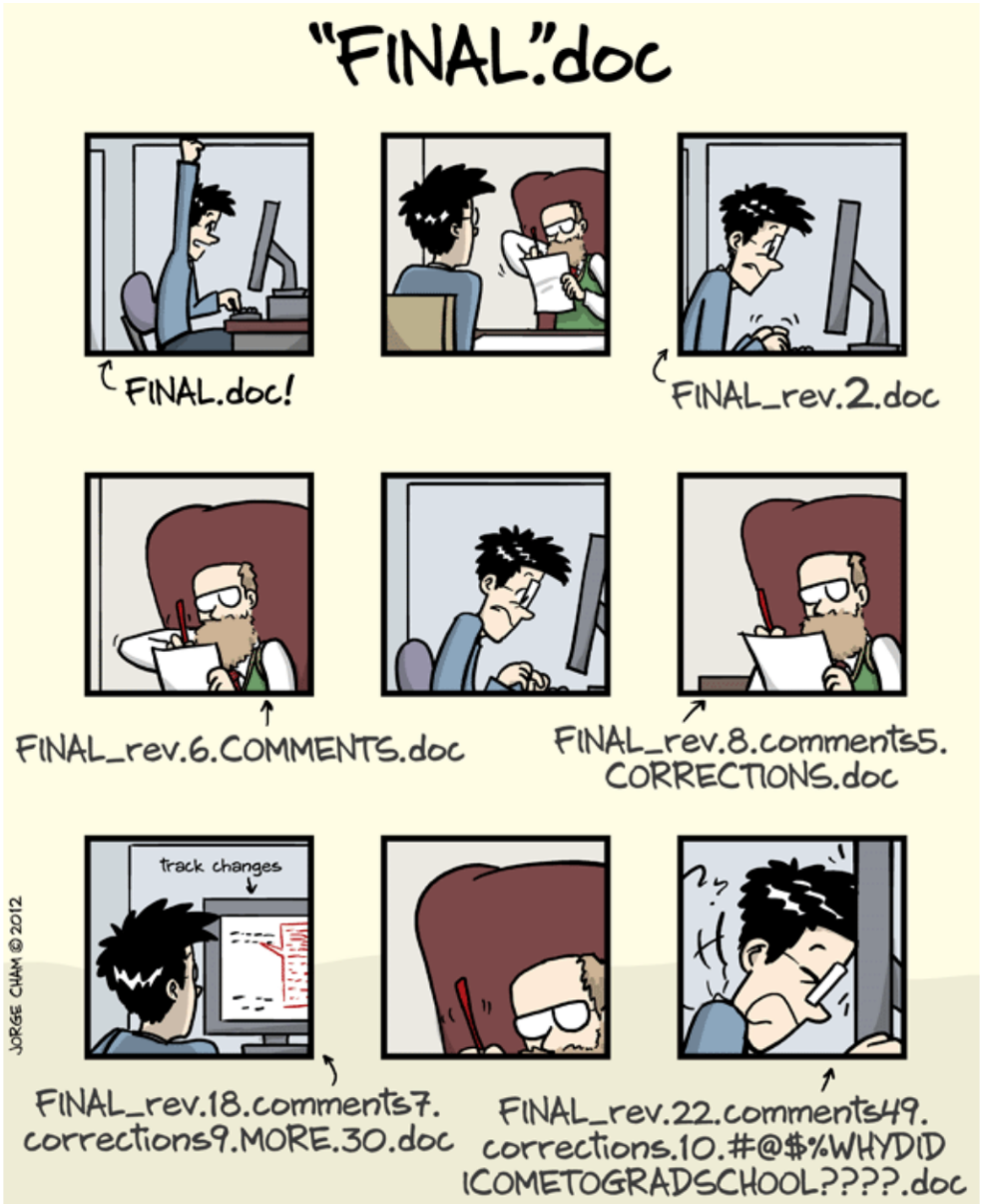

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git add paper.tex
git commit paper.tex
git push
```

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- How do we compare models/prediction strategies?

Course GitHub page:

https://github.com/ryantmoore/winter-inst-2026

(syllabus tour)

Installations and Plan

Plan

Today

- Now → 10:00: Installations
- 10:00-12:00: R/tidyverse
- 13:00-14:00: LaTeX, Quarto, RMarkdown
- 14:30-16:00: Data wrangling, EDA
- 16:30-17:00: Final projects

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January 10: Final presentations, team work, project completion 15:00

Assignment	Weight	Due date
Final presentation	20%	10 January
Final project	50%	10 January
Final peer evaluation	10%	10 January
Participation	10%	daily
Attendance	10%	daily

Table 1: Course Assessment Summary

Installations

- R (4.5.2):
  https://cran.r-project.org
- RStudio (Desktop):
  https://posit.co/download/rstudio-desktop/
- Python (includes IDLE):
  https://www.python.org/downloads/
- (Positron?):
  https://positron.posit.co/install.html
- Anaconda: (can skip registration)
  https://www.anaconda.com/download/
- Tour RStudio!