

Winter Institute in Data Science

Ryan T. Moore

2024-01-03

Goals

Skills

Examples

Jeff Gill, Director, Center for Data Science

Installations

Welcome!

- ▶ Political methodologist in Dept of Government in SPA

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

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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...and salaries are high ...

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- ▶ Gain exposure to machine learning and other modern statistical data science methods and computing tools
- ▶ Do original research using data sci methods.
Contribute methods, substance, both.

Skills

► Data analysis

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 - ▶ text as data, NLP

Examples

What is a data science task?

“Keep only non-voters who might be subject to interference”

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“Keep only non-voters who might be subject to interference”

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

What is a data science task?

“Keep only non-voters who might be subject to interference”

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social <- read_csv("http://j.mp/2Et71U0")  
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```

```
## # A tibble: 161,275 x 6
```

```
##      sex      yearofbirth primary2004 messages      primary2006
```

```
##      <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
```

```
## #> #> 161,275 rows x 6 columns
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```
parse_date("15 enero 2000",  
           locale = locale("es"),  
           format = "%d %B %Y")
```

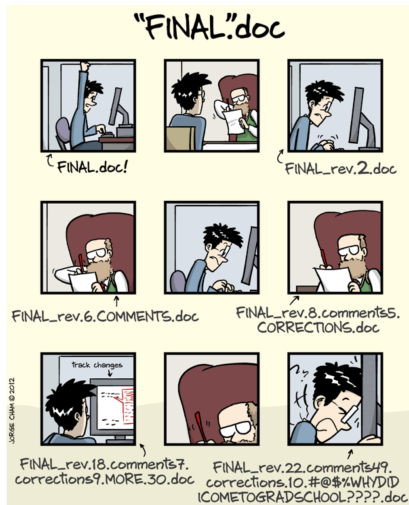
```
## [1] "2000-01-15"
```

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```
git add paper.tex
```

```
git commit paper.tex
```

```
git push
```

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- ▶ How can we fairly estimate probability defendant will appear?
- ▶ Are intersections with new patterns less prone to traffic accidents?
- ▶ How do we compare models/prediction strategies?

Course GitHub page:

<https://github.com/ryantmoore/winter-inst-2024>

(syllabus tour)

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Installations

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- ▶ R:
<https://cran.r-project.org>
- ▶ RStudio (Desktop):
<https://posit.co/download/rstudio-desktop/>
- ▶ Python (includes IDLE):
<https://www.python.org/downloads/>
- ▶ (Anaconda:)
<https://www.anaconda.com/download/>