

Visualizing data with R and RStudio

ME 447/547

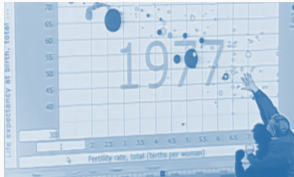
Richard Layton

March 2020

Rose-Hulman Institute of Technology

This week we encounter the three basic themes of the course

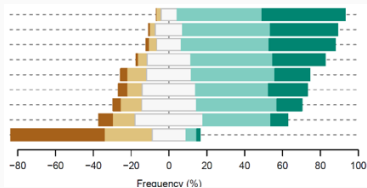
Rhetoric
(Mon)



Means
(T/W)

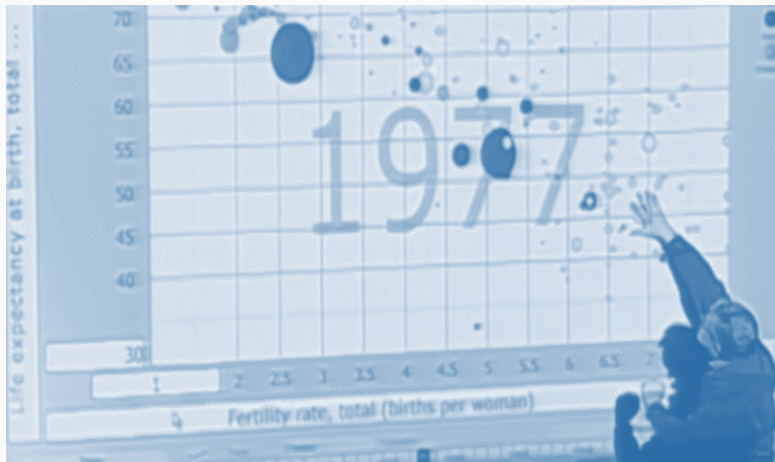


Repertoire
(Thu)



Visual rhetoric

Designers shape information visually for rhetorical ends



Hans Rosling 2006 TED Talk

Consider the argument

How did Hans shape the information visually?

What were his rhetorical goals?

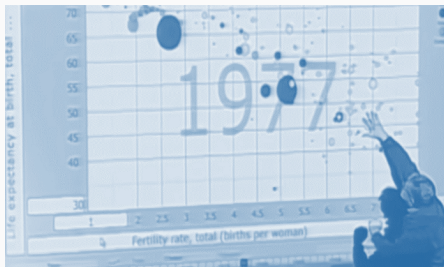
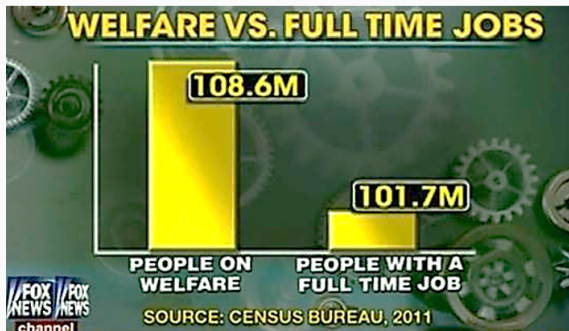


Image: TED2006

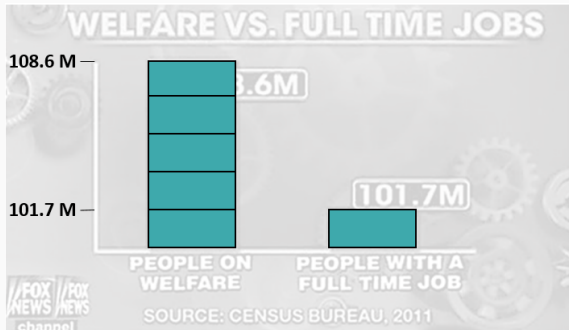
Some designers shape **misinformation** for rhetorical ends

The graph argues what **visual lie**?



The bar chart missing zero is an easy lie to identify

Visually, one group is 5 times as large as the other group.



Quantitative lies can be harder to identify

The argument also contains a **verbal** (or quantitative) **lie**.

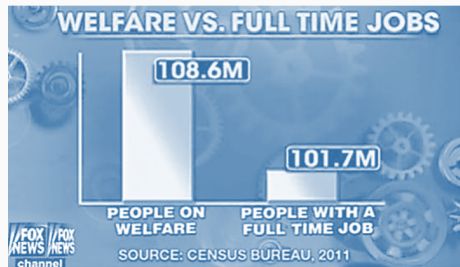
Census data have been manipulated to create a false comparison.



Consider the argument

The author lied visually and quantitatively.

What were his or her rhetorical goals?



Ethical obligations are inherent in graph design



In data visualization, journalism meets engineering — Alberto Cairo

journalism increase knowledge among the public while minimizing harmful side effects


engineering give information a visual shape—model it, sculpt it—effectively and efficiently


(Cairo, 2014)


Syllabus & calendar highlights


The main topics are interleaved throughout the term

calendar


 suggested reading in *R for Data Science* (Wickham and Grolemund, 2017)

 e-copy on Moodle, with permission

 paper reprint, with permission

 blog reading

data
software
visual rhetoric
graph repertoire
portfolio

w	d	agenda & assignments	milestones
1	M	Visual rhetoric [slides] Syllabus highlights (hw) Syllabus (hw) About the course (hw)  Doumont (2009) Designing the graph	
	T	Data structure and graph design [slides] (hw) Complete the data structure worksheets (hw) Install software	
	W lab	Software studio R basics	Software setup co

We'll examine the calendar in a moment.

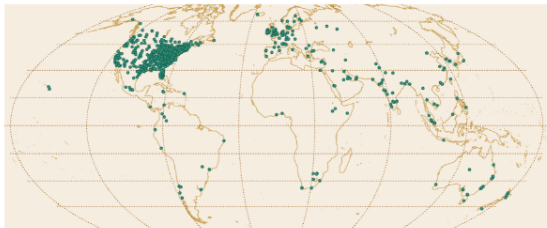
Let's preview some syllabus and calendar highlights online

<https://github.com/graphdr/visualizing-data>

visualizing data

447 / 547 Visualizing Data. An introductory course by Richard Layton at Rose-Hulman Institute of Technology.

Institutions using the CATME system



R. Layton. Data from www.catme.org

Introduction

- [About the course](#)
- [Syllabus](#)
- [License](#)

References

Cairo A (2014) *Ethical infographics*. The Investigative Reporters and Editors Journal, Spring 2014
<http://tinyurl.com/y67ye5fy>