

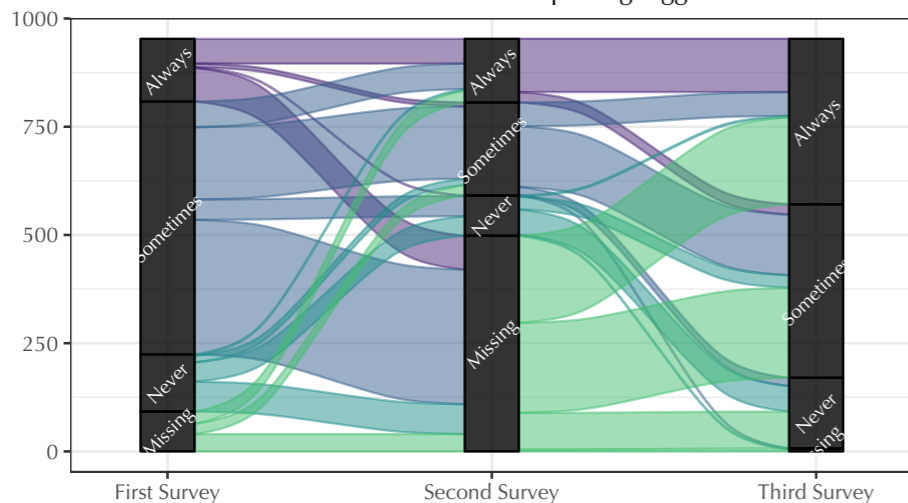
Prof. Amanda Luby

J21 STAT41: Statistical Graphics & Data Visualization



Influenza Vaccine Practices across Time

Source: RAND American Life Panel via R package 'ggalluvial'



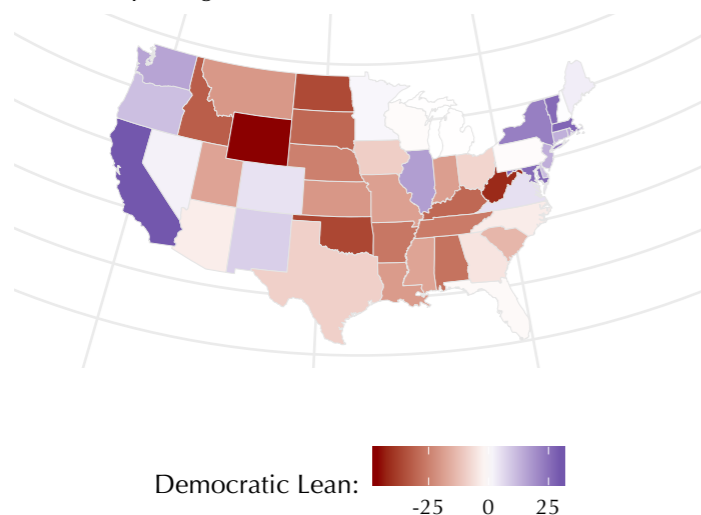
A sample of graphs you'll make!



Course Description

2016 U.S. Presidential Election by State

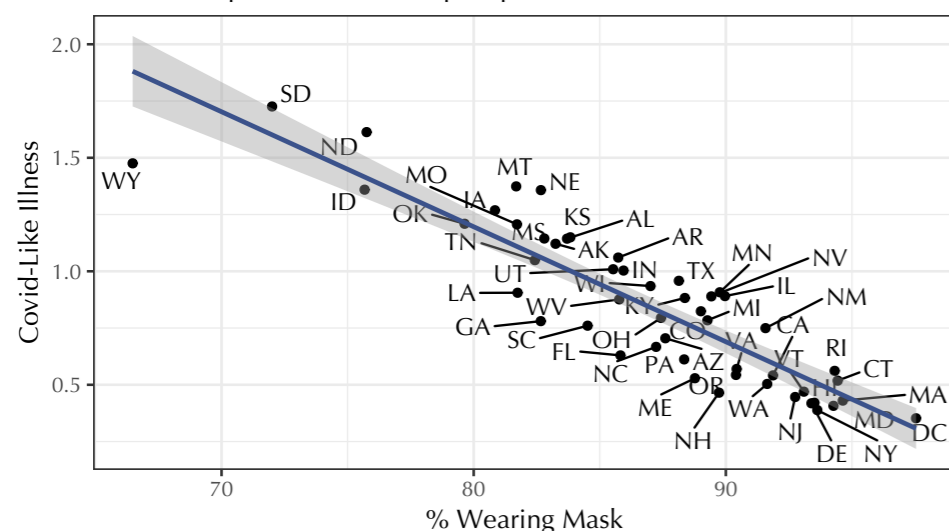
Source: R package 'socviz'



Graphical displays of information can improve our understanding of both data and statistical models. Data Visualization has become a key component in decision-making about everything from the COVID-19 pandemic to sports analytics to climate change. While these visualizations can help synthesize complex phenomena into a single graph, we have also been inundated with maps, charts, and diagrams that often present conflicting conclusions. Drawing heavily from contemporary examples including the COVID-19 pandemic and 2020 election results, this course will cover common forms of data visualization and their uses and misuses.

Mask Practices and COVID prevalence

Source: Delphi Research Group (Sept - Nov 2020)



In this course, you will learn how to create, critique, and present graphics in a concise and statistically sound way. Topics include: common data types and visualizations in R using the ggplot2 package; incorporating statistical concepts such as transformations, smoothing, and uncertainty into visualizations; interactive graphics; and non-traditional types of data such as time series, maps, networks, or text.

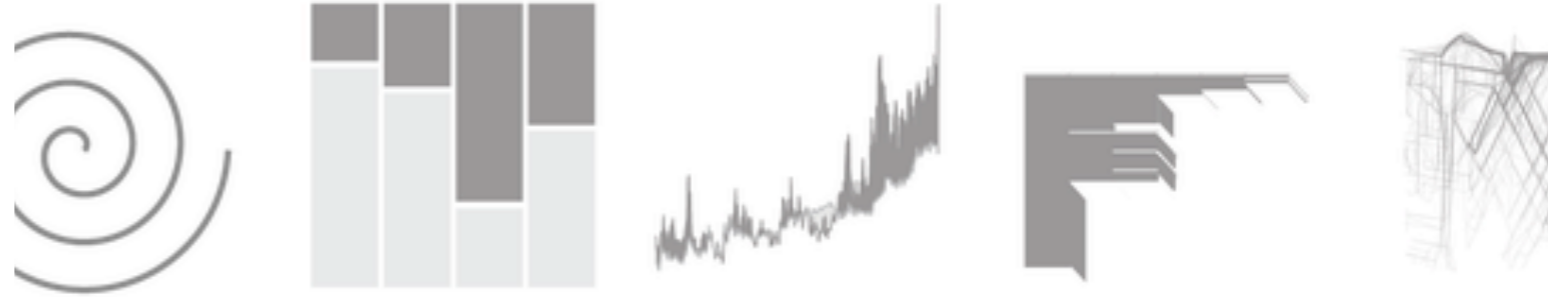
You will leave the course having built a portfolio of static and interactive visualizations, statistical writing, and presentations. This is a project-based course, and you are encouraged to bring additional ideas for datasets and research questions.



Discussion
 11a-12p ET Monday-Thursday
 Synchronous (attendance expected)



Data Visualization Lab in R
 1p-2p ET Monday-Thursday
 Synchronous or Asynchronous



3 Weekly Mini-Projects
 1 Final Project



Build a portfolio
 Creativity encouraged



Final Grades

Tentative grading scheme — subject to change

Labs

Released each afternoon M-Th
Due each week on Sunday evening
(May take longer than the 1 hour lab block)
Graded on completion: satisfactory or needs improvement

Weekly Mini-Projects

Released each Monday
Due each week on Sunday
Work on it throughout the week
Graded as: excellent, satisfactory, or needs improvement

Final Project

Choose a topic that matters to you!
“Milestones” due each week on Sunday
Final presentation/demo on last day of J-term
Final paper due on last day of J-term

A

>90% Satisfactory Labs
Excellent Mini + Final Projects

B

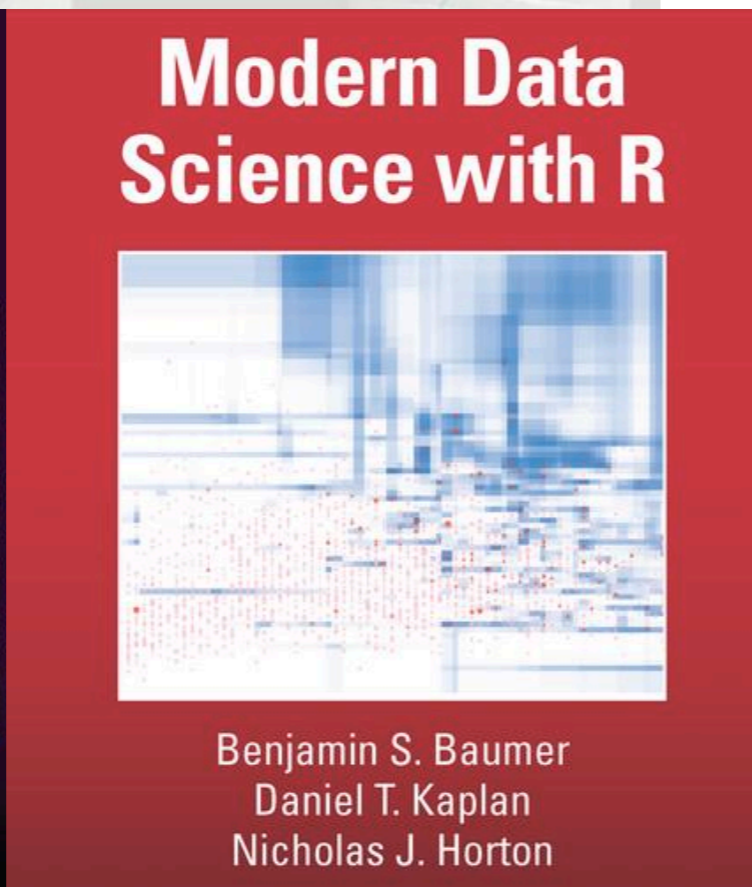
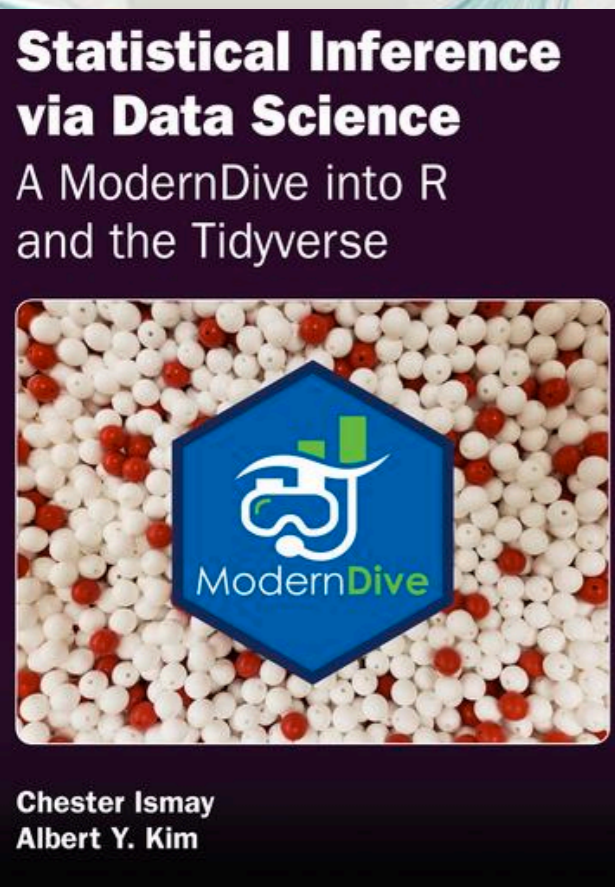
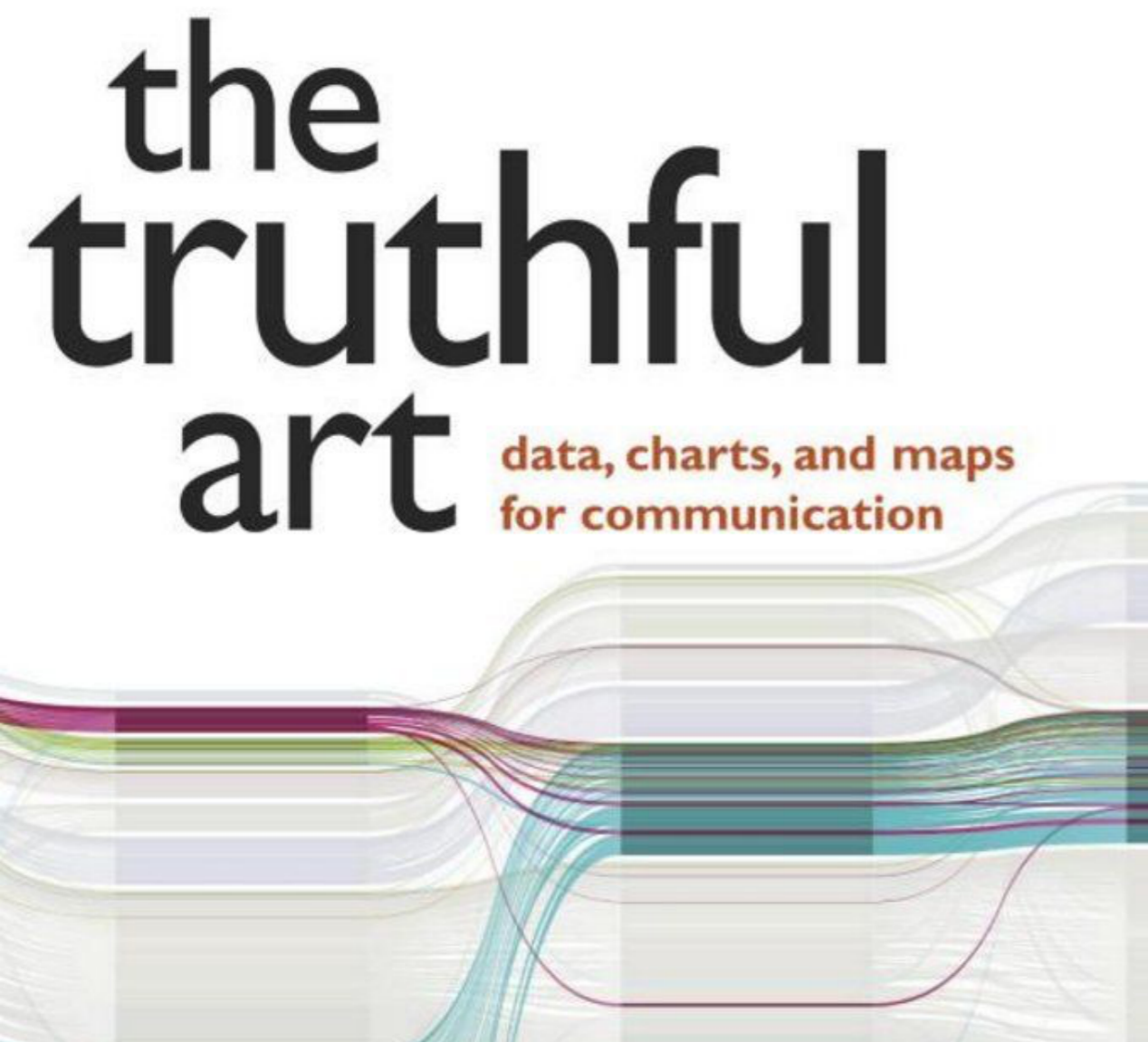
>80% Satisfactory Labs
Some combination of Satisfactory and Excellent Mini +
Final Projects

C

>70% Satisfactory Labs
Satisfactory Mini + Final Projects

D

>60% Satisfactory Labs
No more than 1 “Needs Improvement” project



Readings Drawn From:

All readings will be freely available online
You do **not** need to purchase any texts

DATA VISUALIZATION

A PRACTICAL INTRODUCTION

KIERAN HEALY

A series of five dot plots of varying heights and colors (red, yellow, green, teal, blue) on a white background with horizontal grid lines. The plots are arranged from left to right, with the first being the tallest and the last being the shortest. Each plot consists of a vertical column of dots of the same color, with the number of dots decreasing from top to bottom.

Tentative Calendar

Week 1: The Basics

Mon	Overview + Meet the Toolkit	
Tues	The Grammar of Graphics	
Wed	Mapmaking	
Thur	Customized Design	
Sun		Project 1 Due Final Project Milestone: Topic + Data

Week 2: Incorporating Models

Mon	Linear Models	
Tues	Non-linear Models	
Wed	Time	
Thur	Uncertainty	
Sun		Project 2 Due Final Project Milestone: Intro + EDA

Week 3: Dynamic Graphics

Mon	Intro to Dynamic Graphics	
Tues	Interactivity	
Wed	Animation	
Thur	Scrollytelling	
Sun		Project 3 Due Final Project Milestone: Rough Draft

Week 4: Misc Topics

Mon	Text	
Tues	TBD	
Wed	WORK DAY	
Thur	Final Project Demos	
Sun		Final Papers Due