Teaching at a Distance in Interesting Times

Thomas E. Love, Ph.D.

CWRU MPH Retreat – 2020-07-08

Thomas.Love@case.edu

github.com/THOMASELOVE/MPHRetreat2020

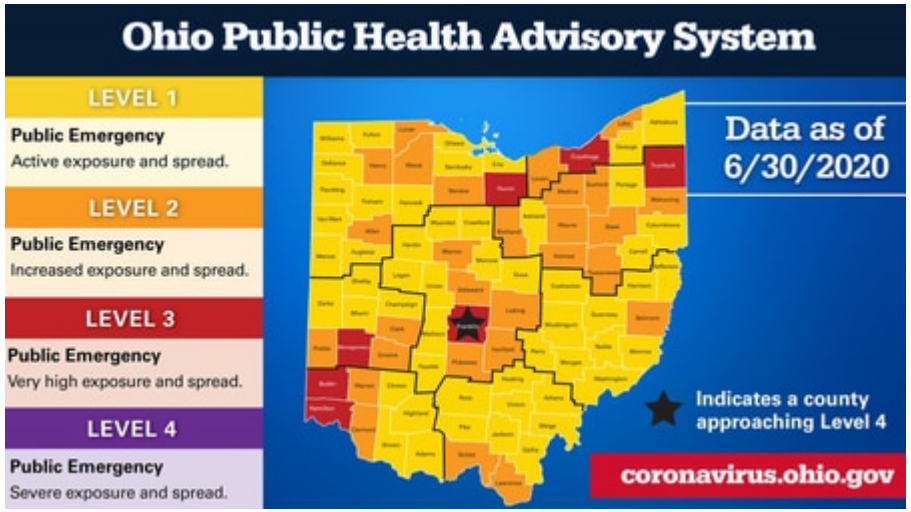
Teaching at a Distance in Interesting Times

- Why are these interesting times?
- My experiences teaching at CWRU and where I was on 2020-03-01.
- Immediate Reactions (2020-03-12 and the next week or so)
- Longer-Term Changes (rest of semester) and what the students said
- What about the Fall?

Why are these interesting times?

Cuyahoga County declares racism a public health crisis

Updated Jul 07, 2020; Posted Jul 07, 2020



Trump Sets Date To End WHO Membership Over Its Handling Of Virus

July 7, 2020 · 6:14 PM ET

PIEN HUANG

Harvard and MIT sue ICE over new visa guidelines for international students

github.com/THOMASELOVE/MPHRetreat2020

COPSS Statement on Fisher Lectureship and Award (released on June 23, 2020)

The Committee of Presidents of Statistical Societies (COPSS) is retiring the R.A. Fisher Award and Lecture, effective immediately. Dr. Kathryn Roeder, the announced recipient of this award for 2020, will receive the COPSS Distinguished Achievement Award and Lectureship, to be presented during the COPSS Awards and Address Session at the Joint Statistical Meetings that will take place virtually on Wednesday, August 5, 2020.

We take this action to advance a more just, equitable, diverse, and inclusive statistical community. It represents an important first step in a more comprehensive commitment to future diversity and inclusion across the generations in the statistics profession. We acknowledge that not all statisticians will agree with this action. The path of equity and inclusion stimulates diverse perspectives on substance, pace and content of an issue, and consensus can sometimes be impracticable. We emphasize our shared commitments to move forward to ensure a fair and equitable society and profession by starting with these steps:

- Request the 2020 JSM Program Committee to create a COPSS special invited session with experts exploring Fisher's role, and the role of statistics more broadly, in eugenics from diverse perspectives and how these different lenses perceive this history in our 2020 society. The session would be archived for public viewing on the COPSS website.
- Convene a diverse committee of experts and members of our societies to create guidelines for naming/renaming COPSS awards and to suggest action-oriented strategies to increase and commit to diversity, equity and inclusion in our profession.
- Create a public repository of discussion and teaching material on diversity and inclusion as well as on the history of statistics with respect to eugenics. This repository will be available to teachers and researchers to raise awareness and to promote a more welcoming, respectful and stimulating environment for all our members.

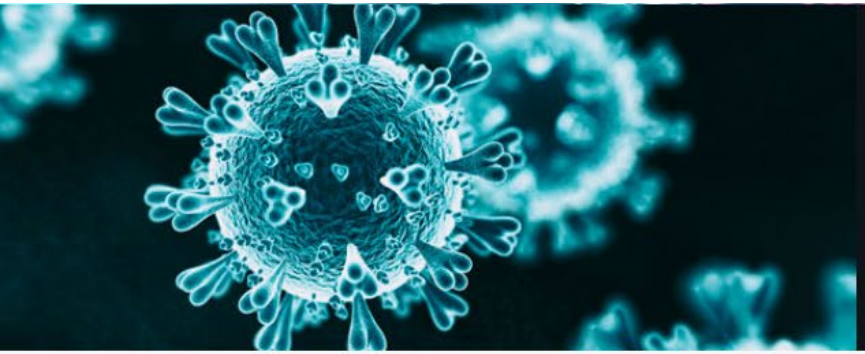
COPSS leadership acknowledges the differing passions and viewpoints on this matter and appreciates that everyone involved seeks positive outcomes for our respective societies and our profession. We recognize Fisher's fundamental contributions in establishing statistics as a scientific discipline. We heard the voices of those who argued for further deliberation before finalizing a decision. We have confidence that we will all work together to achieve our common goal of a fair, just, and equitable society and profession.

A Multimillion-Dollar Startup Hid A Sexual Harassment Incident By Its CEO — Then A Community of Outsiders Dragged It Into the Light

"Sexual misconduct happens everywhere. But DataCamp was dealing with a community with abnormally high standards and support for each other."

github.com/THOMASELOVE/MPHRetreat2020

Why are these interesting times?



Coronavirus Updates

Case Western Reserve provides regular updates about COVID-19 (novel coronavirus) and efforts to ensure the health of our campus community.

Read the latest ➤

Race and Justice

As an institution of higher learning, Case Western Reserve has responsibility to work to eradicate systemic racism and improve our campus climate.

View our recent statements and resources ➤

Our Commitment to Welcoming All

Get updates on immigration developments, find resources for international students and faculty, and learn about our global reach.

Learn about our international presence ➤

github.com/THOMASELOVE/MPHRetreat2020

Why are these interesting times?

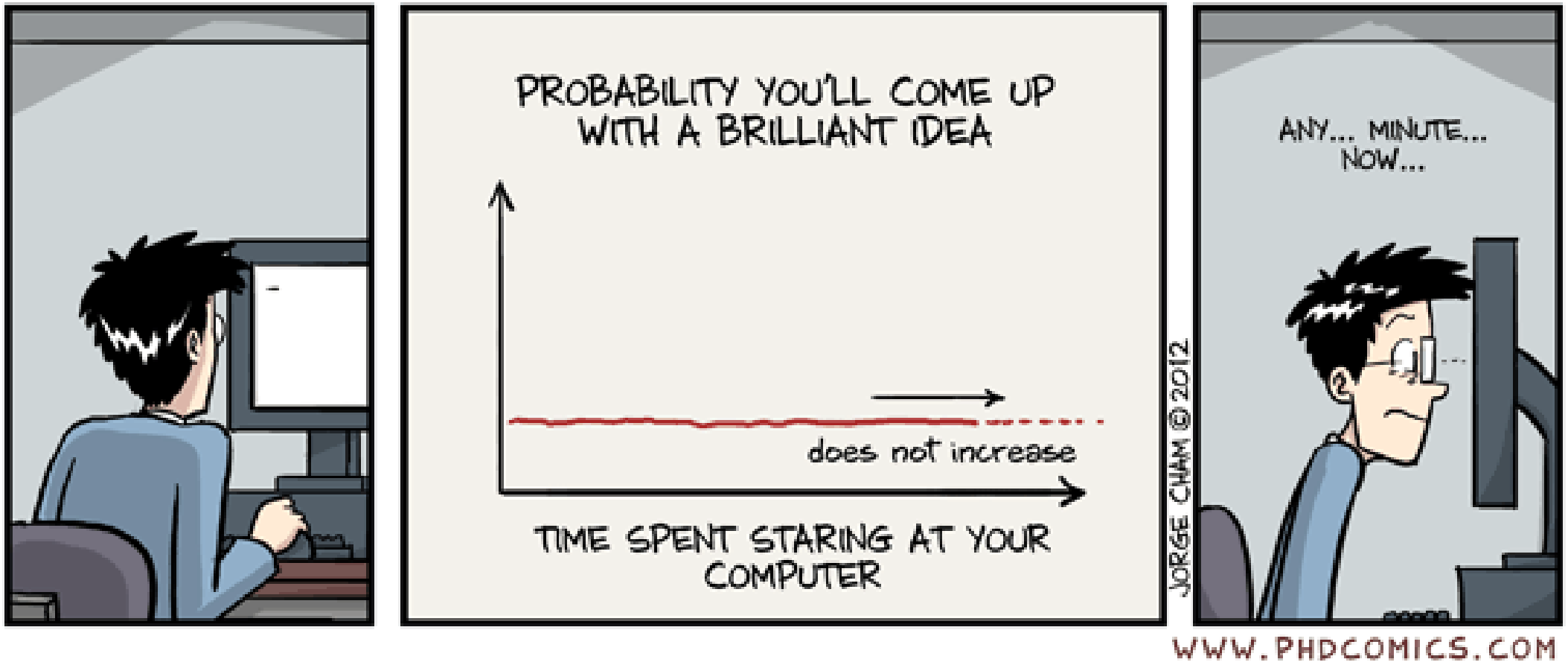
Research Shows Students Falling Months Behind During Virus Disruptions

The abrupt switch to remote learning wiped out academic gains for many students in America, and widened racial and economic gaps. Catching up in the fall won't be easy.

Cornell says in-person learning is best for public health

github.com/THOMASELOVE/MPHRetreat2020

Piled Higher and Deeper *by Jorge Cham* **www.phdcomics.com**



title: "Staring contest" - originally published 3/14/2012

Expectations: Challenge or Opportunity?

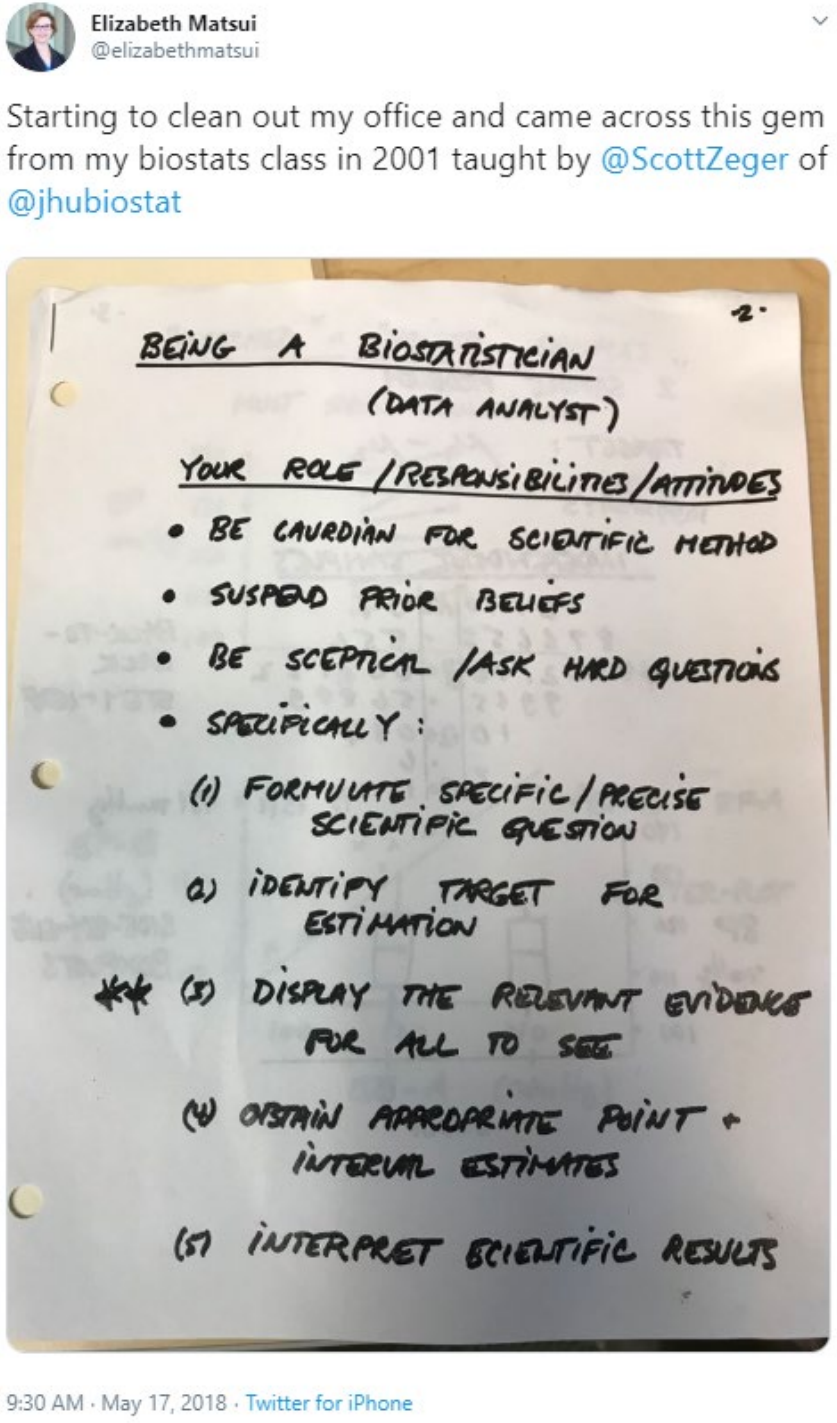
- Teaching at a distance will not be as effective or efficient as what you've done in the past.
- You (and your students) are going to get frustrated
- Teaching at a distance is demanding, hectic and stressful
- Seeing how engaged our students are is harder
- The technology is not foolproof
- "The new normal" is not a comforting thought
- Remote learning: "quick, ad hoc low-fidelity mitigation strategy"

Embracing variation is both more necessary and harder now

Teaching at CWRU

- "Write the final exam first."
- What are the fundamental things I'm trying to get the students to have in mind?
  - Principles that are intellectually interesting and functionally valuable
- My Classes
  - Intro 431-432 Course (2 semesters, ~75 students)
  - Observational Studies (Spring, ~ 20 students)
- MPH/ MS / PhD /K trainees / Staff / BS

github.com/THOMASELOVE/MPHRetreat2020



What I Used to Teach in Intro Courses
(and think I was doing well…)

- Statistical Methods for Biological/Clinical/Medical Research
  - And as many different methods as I could cover in the available time…
- Null hypothesis significance testing is here to stay.
  - Learn how to present your p value so it looks like what everyone else does
  - Think about "statistically detectable" rather than "statistically significant"
  - Don't accept a null hypothesis, just retain it.
- Use point and interval estimates in the way that I do
- Power is basically a hurdle to overcome in a grant application
- Use Bayesian approaches / simulation / hierarchical models when they seem appropriate or for “non-standard” designs
  - But look elsewhere for people to teach/do that stuff

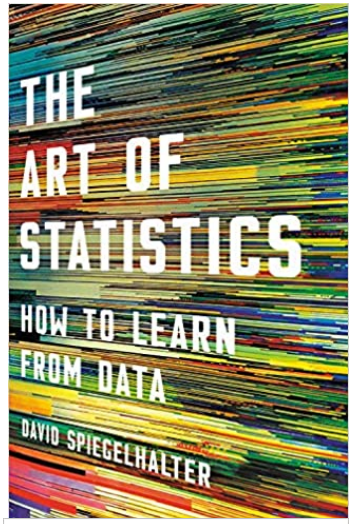
What I Think I've (re-)Learned from Better Health Partnership

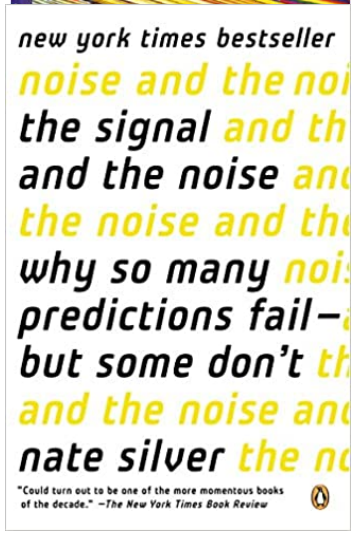
- Understanding the subject from outside of my expertise - **explaining your science to audiences you never interact with** - understanding more than just the jargon of my field
- Visualization is most of the analytic job (scatterplots/dashboards/maps)
- Importance of transparency
- Importance of reproducibility
- Maintaining a reporting system
- Dealing with "political" considerations
- Helping a student figure out what they can do now to feel/be useful while producing meaningful end-products

github.com/THOMASELOVE/MPHRetreat2020

What I Aim For Now

- Statistical Thinking, Data Science and Communication
  - Building **replicable** research projects with open source tools
- Teaching as an Experience Creation activity.
  - Learners **have to generate things on their own**.
- Students should make lots of little mistakes…
  - What is the question you are trying to answer with this design?
  - When stuck in a design, I think about how to get better data.
  - When stuck in an analysis, I try to turn a table into a graph. (J. Bryan)
- Which method is far less important than finding better data
  - The biggest mistake we make regularly is throwing away useful data.
  - "If the research question is important, the result is important. Whatever it is." (P. Wakim)





https://github.com/THOMASELOVE/rethink for details and sources

github.com/THOMASELOVE/MPHRetreat2020

2019-431

Welcome! PQHS 431 is the first part of a two-semester sequence (PQHS 431-432) taught by Professor Thomas Love in the Department of Population and Quantitative Health Sciences at Case Western Reserve University. Everything that Professor Love will provide to help you with the course will appear on this website.

The class will be held on Tuesdays and Thursdays from 1:00 - 2:15 PM in Room E321-323 of the Robbins Building at the CWRU School of Medicine, starting on 2019-08-27.

Contact Us

- If you have questions before our first class on **2019-08-27**, email Professor Love at `Thomas dot Love at case dot edu`.
- Starting 2019-08-27, contact Professor Love (and the Teaching Assistants) by emailing **431-help at case dot edu**.

Key Links

- The Course Syllabus
  - This includes details on Professor Love and the teaching assistants, software, the course texts, and more.
- The Course Calendar is the final word for all deadlines, and provides links for all deliverables and class sessions.
- Professor Love's Course Notes
  - This is the main textbook, and provides a series of examples of using R to work through issues that will likely come up in the course. Its current title is "Data Science for Biological, Medical and Health Research"
- Slides and other materials for each class will also be provided, with links to presentation materials and READMEs for each class session to be found in the Course Calendar.
  - Each class session begins with a review of that day's README, which contains links to Professor Love's slides, data sets we'll use in class, interesting tidbits from the news, and the internet, responses to student surveys,

github.com/THOMASELOVE/MPHRetreat2020

PQHS 431 Syllabus - Fall 2019

Thomas E. Love, Ph.D.

Version: 2019-09-18 06:49:41

Critical Information

This is the Fall 2019 syllabus for PQHS / CRSP / MPHP 431: Statistical Methods in Biological & Medical Sciences, Section 1 (with Professor Thomas Love).

Course Home Page

The course home page, with everything you'll need, is at https://github.com/THOMASELOVE/2019-431.

Working with This Document

1. This document is broken down into multiple sections. Use the table of contents at left to navigate.
2. At the top of the document, you'll see icons which you can click to
    - search the document,
    - change the size, font or color scheme of the page, and

Course Calendar for Fall 2019 - PQHS 431

All classes take place in room E321-323 of the Wood Building at the School of Medicine, from 1:00 to 2:15 PM.

- TA office hours are posted at the bottom of the calendar, as is the list of books we are reading.

Calendar of Upcoming Events

Links	Date	Description
README 26	2019-12-05	Final Class meeting.
--	2019-12-05	Quiz 3 available at 5 PM.
Projects 1	2019-12-09	First Day of Project Presentations in Wood WG82-J.
Projects 2	2019-12-10	Second Day of Project Presentations in Wood WG82-J.
Project Task 6	2019-12-11	Project Portfolio for Study A **and** for Study B due at 2 PM.
QUIZ 3	2019-12-12	Quiz 3 is due at Noon.
Projects 3	2019-12-12	Final Day of Project Presentations in Wood WG82-J.
Regrade?	2019-12-12	Submit Regrade Request Form form by Noon (optional).

What Has Already Happened

github.com/THOMASELOVE/MPHRetreat2020

Links	Date	Description
README 01	2019-08-27	Class begins. Demonstrations, Logistics, Guessing Ages.

Data Science for Biological, Medical and Health Research: Notes for PQHS 431

Thomas E. Love, Ph.D.

Version: 2019-11-20 22:58:53

Introduction

These Notes provide a series of examples using R to work through issues that are likely to come up in PQHS/CRSP/MPHP 431.

While these Notes share some of the features of a textbook, they are neither comprehensive nor completely original. The main purpose is to give 431 students a set of common materials on which to draw during the course. In class, we will sometimes:

- reiterate points made in this document,
- amplify what is here,
- simplify the presentation of things done here,
- use new examples to show some of the same techniques,
- refer to issues not mentioned in this document,

Branch: master ▾ 2019-431 / CLASSES / CLASS01 /

github.com/THOMASELOVE/MPHRetreat2020

 THOMASELOVE committed 18dbbfb on Sep 3, 2019

..

431_class-01-slides_2019.Rmd	Class 01 Slides posted
431_class-01-slides_2019.pdf	Class 01 Slides posted
README.md	Update README.md

README.md

431 Fall 2019 Class 01: 2019-08-27

Today's Slides

- Class 1 slides are available in PDF format, as well as in R Markdown if you want to see how I built them.
- **NEW!** An audio recording of Class 1 was posted to http://bit.ly/431-2019-audio on 2019-08-27.

Today's Announcements

Welcome to PQHS / CRSP / MPHP 431!

- Get help at any time by emailing **431-help at case dot edu**.
- The main web site for this course is https://github.com/THOMASELOVE/2019-431.
- You can do this!

What I most enjoy doing (probably) isn't especially effective.

- Students like my courses, and that's great, but many of the comments quoted describe how *much* the courses cover.
- Most students don't learn all that well from watching me do things
- More learn more by making mistakes in non-critical situations (R. Duke)
- Encourage students to think about problems systematically? (J. Hardin):
  - What did you do?
  - Why did you do it?
  - What is the next step?
  - What do I still not understand?

2020-03-01

Five Things That I Think Work
(at least for My Current Students)

1. READMEs at the start of each class
   - Slides/Code/Announcements/Things In The News/One Last Thing
   - Remove some pain points in the introduction to Github repositories
2. Teaching Assistants and 431-help/500-help
   - Mix of compensated folks and volunteers each year
   - Grading is tough - the right answer is a poor indicator of understanding.
   - Development of answer sketches and rubrics for homework
   - 24/7 help, but make them ask good questions / reproducible examples
3. Minute Papers (electronically, with multiple feedback layers)
   - 3 questions I ask every time + something fun/current/course-specific

github.com/THOMASELOVE/MPHRetreat2020

Minute Paper after Class 1 (432 – Spring 2020)

What, if anything, concerns you about this class?

1. **Finding fascinating data for the projects.**
2. **That**
3. **That**
4. **It's n**
5. **I'm n**
6. **Time**
   a
7. **The f**
   got a
8. **Taki**

Suggested Data Sources

Three **especially appealing** options for Project 2 that I'd really like to see people use more are:

1. The Health and Retirement Study
2. The General Social Survey
3. The many many public use data sets available at ICSPR

Other sources that students have often used in the past include:

4. National Center on Health Statistics including NHANES
5. Behavioral Risk Factor Surveillance System
6. 500 Cities
7. County Health Rankings

https://github.com/THOMASELOVE/2020-432 (project 2 instructions)

github.com/THOMASELOVE/MPHRetreat2020

2020-03-01

Five Things That I Think Work
(at least for My Current Students)

4. At least two detailed examples for everything
   - One in-class with discussion and demonstration
   - One out-of-class (asking questions / building code)
   - Supplemented by regular, low-stakes homework

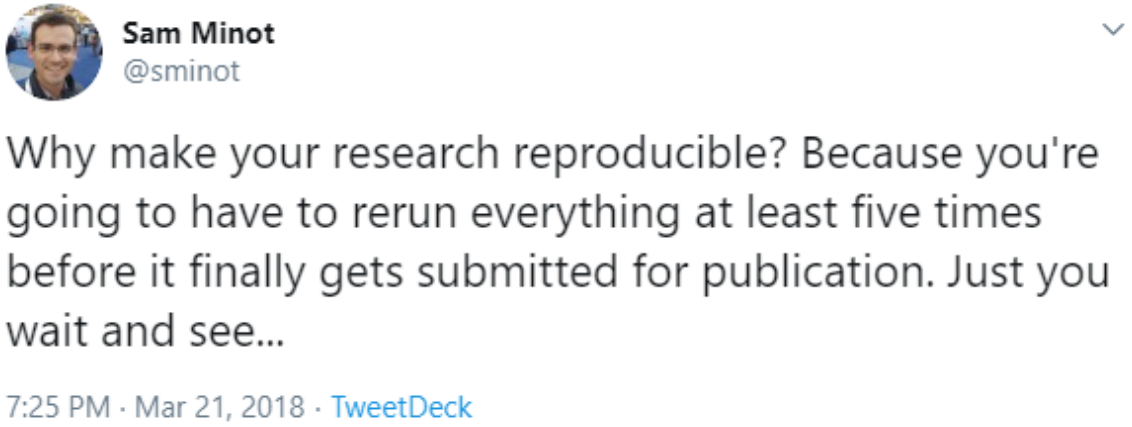
5. Projects as the culminating event
   - Proposal – Update – Final stages
   - Establish the research questions, build a soup-to-nuts proposal, find then ingest data, do the analyses, present the results
   - 1 on 1 Portfolio presentations + Midway peer sessions
   - “Research Team meetings”, Posters, Slides, .Rmd + HTML
   - Templates as “training wheels” (R. Duke)

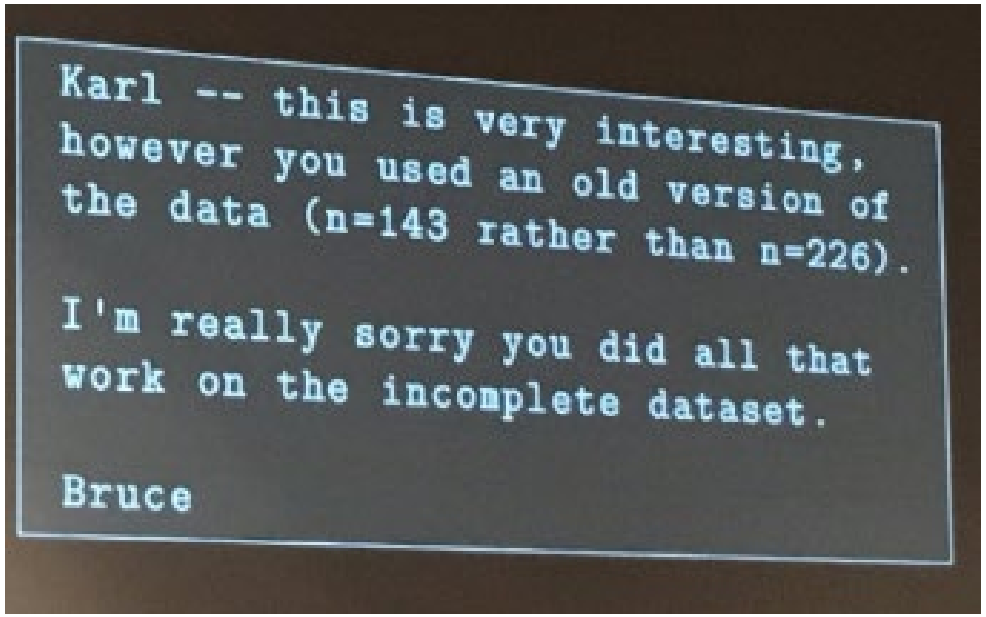
github.com/THOMASELOVE/MPHRetreat2020

Ten Simple Rules for Effective Statistical Practice

Robert E. Kass, Brian S. Caffo, Marie Davidian, Xiao-Li Meng, Bin Yu, Nancy Reid

10. Make Your Analysis Reproducible





Your closest collaborator is you, six months ago, but you don't answer emails.

(Paul Wilson, via Karl Broman)

PLOS Computational Biology 2016 12(6): e1004961 (Ten Simple Rules)

Steps towards Reproducible Research (Karl Broman)

github.com/THOMASELOVE/MPHRetreat2020

Miguel Hernán @_MiguelHernan · Apr 28, 2017

Simple way for editors to improve science: If your journal still uses "statistical significance" in 2017, retire your statistical consultant

Practices that reduce scientific inference to mechanical "bright-line" rules (such as "$p < 0.05$") for justifying scientific claims or conclusions can lead to erroneous beliefs and poor decision making.

American Statistical Association, 2016

But many journals do present findings as "statistically significant" or "not statistically significant".

- How can an editor work with statistical consultants who ignore the ASA without publicly justifying their views?
- Would the editor work with a cardiology consultant who ignores the American Heart Association without providing any justification?

The Times in Print For March 12, 2020

The Front Page

DOUG MILLS/THE NEW YORK TIMES

U.S. to Suspend Most Travel From Europe as World Scrambles to Fight Pandemic

President Trump addressed the nation from the Oval Office on Wednesday night.

March 12, 2020 · By PETER BAKER

FROM LEFT: VINCENT KESSLER/REUTERS; POOL PHOTO BY ALBERTO PIZZOLI; OMER MESSINGER/ EPA, VIA SHUTTERSTOCK

NEWS ANALYSIS

A Fumbled Global Response to the Virus in a Leadership Void

While world leaders are at last speaking out about the gravity of the pandemic, their voices are less a choir than a cacophony, with the United States absent from its traditional conductor role.

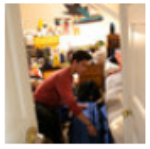
March 12, 2020 · By MARK LANDLER

Dow Ends 11-Year Bull Market as Coronavirus Defies Economic Remedies

Stocks plunged anew as the outbreak was officially declared a pandemic and policies to address its impact proved lacking or ineffective.

March 12, 2020 · By BEN CASSELMAN

'An Eviction Notice': Chaos After Colleges Tell Students to Stay Away



One after the other, like dominoes, colleges announced that because of coronavirus fears, they were suspending classes and asking students to pack up and go.

March 12, 2020 · By ANEMONA HARTOCOLLIS

github.com/THOMASELOVE/MPHRetreat2020

2020-03-12

What's Happening with Dr. Love's Courses?

We will get through this situation, but the challenge will be substantial. Please try to be kind to me, to the teaching assistants, and to each other. We'll need to start there.

I don't know what we're going to do about a lot of things. I am going to use all the time I can spare to think about what is best to do going forward. I will then post something detailed (separate for 432 and for 500) by Monday 2020-03-16 at 5 PM, and send an email out to all affected folks telling you where you can find that material.

If you haven't done so already, please fill out the Google Form at http://bit.ly/love-2020-covid-form-1 and please feel free to edit your responses if things have changed as we move forward.

github.com/THOMASELOVE/MPHRetreat2020

EIGHT ESSENTIAL PRIORITIES

Here is what I view as my essential priorities right now in planning for what will happen going forward, assuming for now that it is possible that I will not be in the same physical space with any of you again during the Spring semester.

1. Students need meaningful access to substantial opportunities to connect virtually with TAs and Dr. Love to help them build useful things.
2. Students and TAs need as clear an understanding as I can provide of (what will happen next / what the plan for the rest of the term is) by Monday at 5 PM.
3. I need to deliver useful material in the remainder of the 432 and 500 classes, and I want this to be of a similar scope and scale to what I'd hoped to do initially.
4. The material I deliver needs to be available to students during the regular class times and also outside of that regular class time, in the form of video recordings of my voice and the screen of my computer.
    - While Zoom is likely to be a key part of the plan, we also need to be able to make things happen should Zoom be problematic.
5. All of the usual things I provide to students via Github, etc. need to be maintained and expanded upon as much as possible.
6. Students need to feel at the end of the course that they have had a good opportunity to demonstrate their learning to me, and I need to feel as comfortable as possible with assigning them grades.

github.com/THOMASELOVE/MPHRetreat2020

EIGHT ESSENTIAL PRIORITIES

7. Teaching assistants need to have opportunities to contribute to the learning of the students in the classes in a meaningful way, including but also beyond responding on 431-help or 500-help.
8. Students in 432 also want me to review their Project 1 work and get them feedback on it as soon as I can, and students in 500 have similar expectations about their work.

Those are the things that I am working on. What that means is that I'm trying very hard not to address anything that doesn't fit into those 8 priorities. If you have something to suggest that you don't think is covered here, let me know via email.

- I am planning as if it will not be possible for us to come together as a class in person again this semester. I have no particular insight as to whether that will be true or not, and I don't think anyone really knows for sure yet.
- I have only minimal prior experience with distance learning. I am going to make mistakes. I am working hard to learn from others' experiences now.
- Whatever decisions we make I expect will work better for some students than others, and some sort of compromises will be required. I will be as flexible as I can be.

github.com/THOMASELOVE/MPHRetreat2020

Google Doc and Email, Slide 1

Plan for PQHS/CRSP/MPHP 432 for the rest of 2020

Thomas E. Love, Ph.D. - Updated 2020-03-18

I reserve the right to make additional changes between now and noon Thursday 2020-03-19, at which point I'll stop updating this document.

The main points are:

- that we'll be meeting (for class and office hours) via Zoom
  - Information to get registered for the class sessions is in your email.
- TA office hours will also be run through Zoom
  - Information on connecting to TA office hours is also in your email.
- we now have fewer deliverables for the rest of the term than I'd planned
- Project 2 is shrinking in scope, substantially, to match our new reality
- The grading scheme has changed, to help me be more flexible and to clarify for students what the new expectations are
- Project 1 grading has taken a back seat to other things for now
- Some things are already changed on Github, others are not yet.

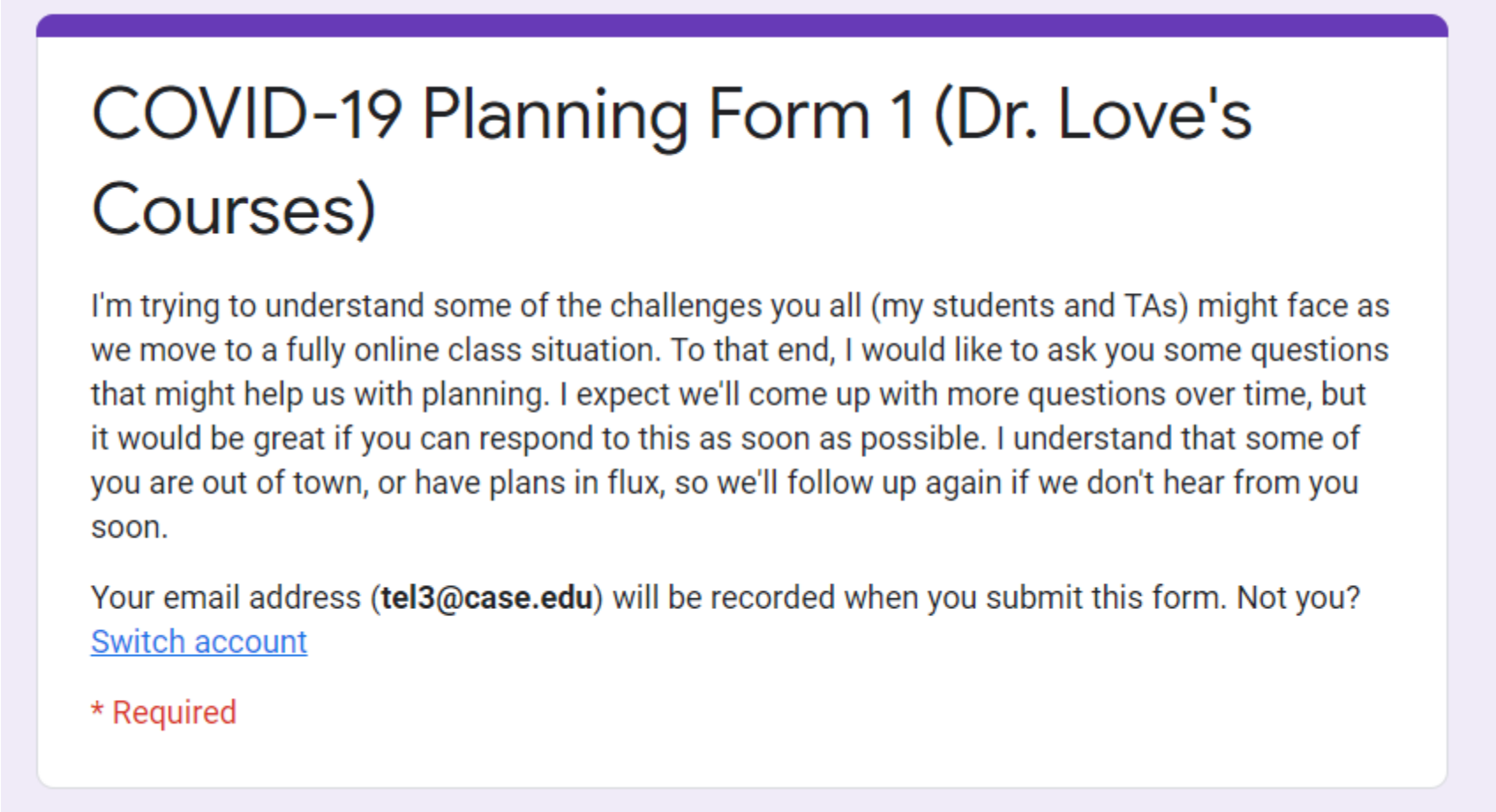
github.com/THOMASELOVE/MPHRetreat2020

Google Doc and Email, Slide 2

The thing we need you to do now (or at least before Thursday's class) is to make sure you've installed Zoom on your computer or tablet (a smartphone can be used, but it will be a much tougher experience on your end) so that you can join us going forward. Be sure that you have a Zoom account associated with your CWRU ID and that you have successfully registered for the class meetings using the link I sent to your email.

Table of Contents

github.com/THOMASELOVE/MPHRetreat2020



http://bit.ly/love-2020-covid-form-1

github.com/THOMASELOVE/MPHRetreat2020

Responding to Your Questions on the COVID-19 form I sent out a few days ago.

- First, thank you all for submitting the form. In preparing this note, I tried to address as many of those questions/comments as I could.
- Once I've settled on everything that is still up in the air, I will get back to you individually or collectively with a response to any residual questions.
- For now...
    1. I understand that some of you will have difficulty with internet connectivity. We're going to have to try to work something out. Let me know if you have specific concerns.
    2. I understand that most of you will have other priorities that may affect your ability to move forward in this course in the way you'd prefer. I am trying to develop a grading structure that will be appropriately flexible for me to take these things into account, as well as clearer for you.
    3. Nothing about the course will be more efficient or more effective (at least for everyone) than it would have been, but there's no point worrying about that right now. We **will** have technical problems. It **will** be irritating, at the least. Please be patient with us.
    4. If you have a problem you want to share with the TAs and myself, email 431-help. If it's more personal, then email me directly.

github.com/THOMASELOVE/MPHRetreat2020

How Has the Course Changed, besides Remote Delivery?

1. I've updated the Course Calendar.
    - The next two items are the Minute Paper after Class 15 (by tomorrow at noon) and Homework 4 for 2020-03-25.
    - Submission of Minute Papers is now optional. It can only help you, and us, to do them. Dr. Love will craft a response at some point after the "deadline."
2. I've added detailed Hints for Homework 4, revised 2020-03-21 and relaxed the deadline for Homework 4 to 2020-03-25.
    - If you want to request a regrade on Homeworks 1-4, the form is now available through 2020-04-24.
3. Complete Project 2 instructions are now available, as is the Proposal Google Form that's due April 1.
    - The other three deliverables for Project 2 are now due on 2020-05-04.
    - The document is long, so this may not be obvious, but in fact I've scaled back the requirements quite a bit, and provided more guidance than I'd originally planned. I've also changed the grading structure for this project.
4. Quiz 2 has been pushed back so that you'll receive it 2020-04-03 and it's due on 2020-04-20.
    - I've provided some information about what will be involved in Quiz 2.
    - There will not be a Quiz 3.
5. Homework 5 is now optional, and due 2020-05-04 if you want to do it. I hope you will enjoy it.
6. Homework 6 is also optional, and also due 2020-05-04 if you want to do it. I hope you will enjoy it.
7. I have also revised the plan for determining course grades, and discuss the new approach here.

github.com/THOMASELOVE/MPHRetreat2020

On Grading

- The plans for grading the course have changed. Details here.
- **No one's grade will be worse than it would have been under the old system.**
- Minute Papers for the rest of the term are optional, but we'd really appreciate it if you did them. I'll give deadlines so that I have a time after which I know I can create a feedback page without having to continually review the form.

Revised Grading Plan for PQHS/CRSP/MPHP 432 in Fall 2020

Last Updated by Thomas E. Love 2020-03-31

What if I can't finish something that's coming up?

Expect the grading in the second half of the course to improve your grade, assuming you can do work. If you can't do the work, for whatever reason, it won't hurt you, although we would like you to let us know (an email to 431-help will always be sufficient) if you are unable to turn in one of the required remaining deliverables.

The general policy is that if your performance in the second part of the course (starting with Class 15) on any of the four elements (Homework, Project, Quiz or Class Participation) causes your score on that element to decline from what it was at the Midterm, then we'll ignore that performance and award you the score on that element from your Midterm grade.

Revised Grading Plan for PQHS/CRSP/MPHP 432 in Fall 2020

Last Updated by Thomas E. Love 2020-03-31

Thanks to COVID-19, or life in general, some of you will not be able to complete one or both of Project 2 and Quiz 2 on time. I would strongly prefer that you do something to finish out the semester, even if you find yourself in an impossibly difficult situation as things move forward. If you cannot turn one or both of those items in on time, let Dr. Love know, as soon as you can, and he'll pass along the emergency alternate assignments he has created.

There are separate alternative assignments (each is capped at 60 minutes of your time) for Project 2 and Quiz 2. Just let Dr. Love know which one you need, or if you need both, as the need arises. Each of the alternate assignments will be due at noon on 2020-05-04, and can be done by you as early as tomorrow, as each requires only material we've discussed before April.

github.com/THOMASELOVE/MPHRetreat2020

Revised Grading Plan for PQHS/CRSP/MPHP 432 in Fall 2020

Last Updated by Thomas E. Love 2020-03-31

Completing the (now optional) Minute Papers and the now optional Homeworks 5 and 6, attending TA office hours if you have questions, sending your comments or questions or helpful things you've found on the internet or amusing pictures of your cats to 431-help, all of that is welcome, and all of those things can only help your grade.

Most importantly…

We are all in this together, the TAs and I are here to help you, and we'll help in any way we can. All we ask is that if we send you a question via email, please try to respond as soon as you can so we know you're OK, or as OK as you can be in these circumstances.

Thanks,

TEL

github.com/THOMASELOVE/MPHRetreat2020

432 Spring 2020 Class 25: 2020-04-23

Today's Materials

Information on connecting to class and to TA office hours via Zoom was emailed 2020-03-17. For details, visit this link.

PDF of Slides	.Rmd of Slides	Notes during Class	Need Help?
Class 25 Slides	Class 25 RMD	Google Doc	Email **431-help at case dot edu** or attend TA office hours

- The Zoom recording for Class 25 including post-class Q and A is here.
    - A separate recording of JUST the COVID-19 stuff (not included in the recording above) is here.
- The Google Doc of Notes During Class is a white board for communication with Dr. Love and the rest of us (and for Dr. Love to remind himself of things) during class, especially if you cannot connect to the Zoom Chat.
- The COVID-19 Resources page will remain available through May, although I don't promise to update it again after today.
- Things I Won't Get To This Semester

Today's Agenda

1. Announcements and Project Reminders
2. Slides for Class 25
3. Other Stuff I want to tell you about
4. New COVID-19 resources (if time permits)

github.com/THOMASELOVE/MPHRetreat2020

Important Project 2 Notes

What is the Objective in Project 2?

There are three main components of the Project, all due 2020-05-04 at noon.

- The objective of the Main Document is for you to produce something that will be of as much use to you as possible two years from now when you're trying to remember what you did. It's like the Portfolio from Project 1, not the Poster. Do not show sanity checks or false starts, but present and describe every part of the data science process that you used to get to the place where you wound up.
- The objective of the Video Presentation is to ask and answer your research question in a convincing way using your data in a very short time period.
- The objective of the End-of-Term Form question about your conclusions is to get you to summarize your study in 50 or so very well-chosen words.

432 Homework 5

Note that this homework is **completely optional**.

If you choose to do it, it must be received on Canvas by the deadline specified on the Course Calendar.

What are we doing?

Your main job is to select a data source from either the Tidy Tuesday collection, or from one of the many available sources of information related to the COVID-19 pandemic, or from any other completely available public source that you can provide access to, and to either:

Option A. Create an attractively formatted HTML document (developed using R Markdown) to pull in the data a source on the web, and then present some key element of that data in the form of an effective visualization, accompanied by the results of an appropriate statistical model (which need not be a model using regression,) or

Option B. Build an attractive and effective animated visualization using `gganimate`, or some other package for animating a visualization, or

Option C. Build an attractive and effective Shiny app to permit the user to explore some interesting data.

Regardless of the approach you take, there are five things to include in your submission, which you will make to Canvas.

1. A code document, or a working link to the code document
2. A viewable document (which could be an animated movie or gif or a working Shiny app), or a working link to the viewable document, likely through RPubs, but perhaps instead your own web site (see Homework 6) or through Shinyapps.io if it's a Shiny app.
3. The data or a working link to the data
4. The discussion
5. The summary

github.com/THOMASELOVE/MPHRetreat2020

https://github.com/THOMASELOVE/2020-432/blob/master/covid19resources.md

Data and Resources related to COVID-19

Posted since our final 432 class on 2020-04-23

- Where The Latest COVID-19 Models Think We're Headed — And Why They Disagree from Ryan Best and Jay Boice at FiveThirty Eight, posted 2020-05-01.
- The Math of Reopening: Looking into Ohio's COVID-19 Testing and Mortality Numbers by Loren Anthes, posted 2020-05-01.
- What the Proponents of "Natural" Herd Immunity Don't Say by Carl T. Bergstrom and Natalie Dean on the opinion page of the *New York Times*, posted 2020-05-01.
- What Happens Next? COVID-19 Futures, Explained with Playable Simulations, by Marcel Salathé (epidemiologist) and Nicky Case (art/code) posted 2020-05-01.
- 10 Tips for Making Sense of COVID-19 Models for Decision-Making from Elizabeth Stuart, Daniel Polsky, Mary Kathryn Grabowski and David Peters, posted 2020-04-27.
- How Coronavirus Charts Can Mislead Us from Vox on YouTube, posted 2020-04-28.
- A New Approach to Getting Real-Time Coronavirus Stats by Andrew Gelman, at Slate 2020-04-27
    - The COVIDcast Project at Carnegie Mellon University, discussed in Andrew's piece.
- De-dichotimization of diagnostic testing for increased confidence on discourse.datamethods.org
- One Chart Isn't Going To Tell You When The Pandemic Peaked at FiveThirtyEight (2020-04-23) by Laura Bronner.
- New York coronavirus antibody study: Why I had nothing to say to the press on this one by Andrew Gelman (2020-04-23).

432 Homework 6

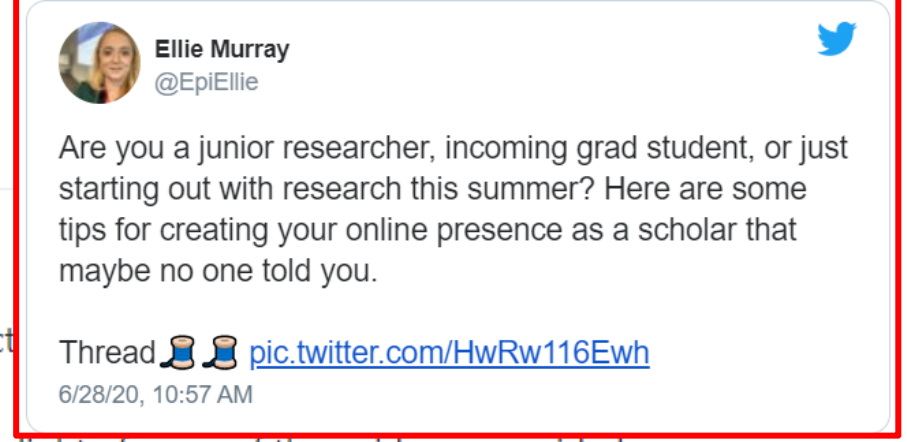
Note that this homework is **completely optional**.

- If you wish to do it, it needs to be completed (by sending an Dr. Love via email with the subject
Love by the deadline specified on the Course Calendar.
- If you already have a web presence that is working well for you, you are welcome to revise it in light of some of the guidance provided here, but this is really designed for people who have no current presence online.
- If you are a student in the MS or PhD program in PQHS, I would hope you will take advantage of this opportunity.
- **NEW!** If you want to see some examples of the work fellow CWRU folks were able to do with these tools, here you go.

What are we doing?

Your task is to build a web presence for yourself on the Internet using R Markdown, and specifically a tool called blogdown. The model we're going for is this one from Wyatt Bensken (who is a second year PhD student in Epidemiology & Biostatistics and took this course last year.) Ideally, you would include as part of your projects your Project 1 (and perhaps also your Project 2) from this class.

- I'd hoped to have Wyatt come and visit the class, but of course that's not possible now, so he posted a YouTube video for you describing his motivation for doing the work.
- Wyatt wrote a blog post describing his approach to building his site which is a strong starting point.
  - Here's Dan Quintana's 2018 YouTube video on "How to make a personal academic website for free using R and the blogdown package" which is certainly worth a look. Dan's 2019 tutorial is one of Wyatt's key references.
- Another good source is blogdown: Creating Websites with R Markdown which describes a lot of available options.



github.com/THOMASELOVE/MPHRetreat2020

Joseph Hnath

Master of Public Health Student

Case Western Reserve University

Biography

Joseph Hnath is an MPH student at Case Western Reserve University

Interests

- Health Policy Natural Experiments
- Cost Effectiveness of Standards of Care
- Using Managed Care to Address Health Disparities

Education

- MPH - Population Health Research and Health Policy & Management, 2020
  Case Western Reserve University
- BA in Chemical Biology, Cognitive Science, and Economics, 2019
  Case Western Reserve University

https://josephhnath.netlify.app/

What about the Fall?

What about the Fall?

- 75+ students in the 431 course, so it will be remote only
  - My opinion: plan for remote only whether we (students) like it or not
  - More intensive opportunities to interact with me as well as TAs
  - My usual class survey to be supplemented with Zoom videos, etc.
  - How do I do intensive projects with 75+ instead of 50 students?
- I'm working at getting better at **technical** niceties of Zoom, etc.
  - And I'm upgrading my own **website** (Github), **mic, lighting**, **zoom background**
  - Looking at additional technology tools to improve Canvas experience (Piazza?)
- **Windows** and **Mac** people need help and they need it early <u>from you</u>
- Lots of things have changed in the past year in terms of interesting relevant work (ASA Statements on p values, rising availability of Bayesian tools in R for modeling, intense interest in COVID-19 visualizations and in the upcoming US elections)

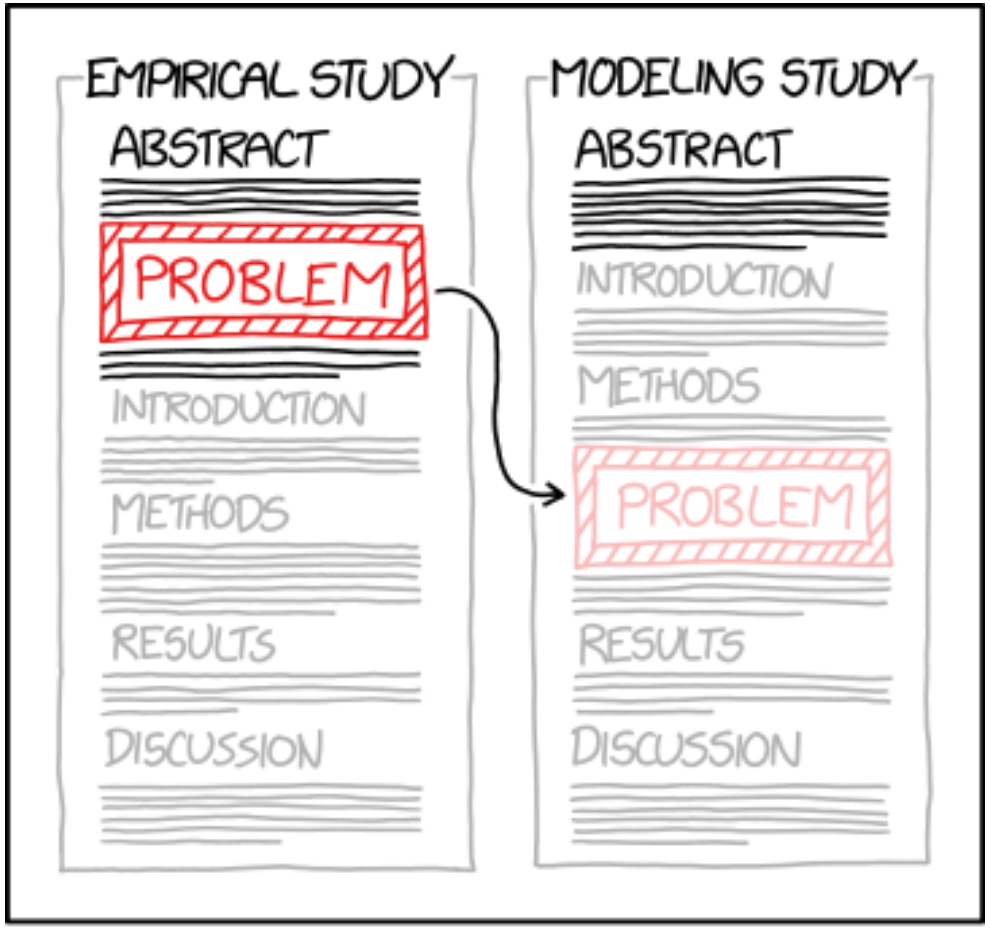
What about the Fall?

- What can students/TAs do in the summer to feel more prepared?
  - What can I do to reduce anxiety and increase certainty in diverse students?
- How do we identify / help students at a distance who are struggling?
- How can I get to know enough about these students and their concerns in the early stages of the course? How will they connect to other students?
- How can I help students learn about the (checkered) history of my field?
- How do I keep people interested in learning with data?
- Improving my assignments first, then focusing on changes to content
  - Multiple delivery schemes for the students to turn in work
  - Old assignments to be made public, since they are already
  - Drop more than you add – this is a less efficient way to present new ideas
  - This is a great time to try new ways to engage students but **only** if you can react to their feedback and have tools in place to receive it

What is important to me, going forward…

- Build programs: educate the next generation of health data scientists
  - Learn to do data science / think / design / program / communicate clearly.
- Use data more deeply to improve my teaching of data science.
  - Reduce further my reliance on high-stakes infrequent assessment.
  - Causal methods as a more meaningful part of intro curricula.
- Get more connected to people doing this work elsewhere.
  - Mentoring other educators, rather than just helping to write curricula.
  - Get back to statistics education research. (eCOTS 2020: *Engaging everyone*)
- Focus on working with useful health data and on interventions / ideas that can be shared with the world.
  - Build on the preliminary work we've done on non-medical health determinants, and on driving change through collective action.
- Get more opportunities to learn from what I'm trying to do.
  - Work with smart people from whom I can get excited about new things.

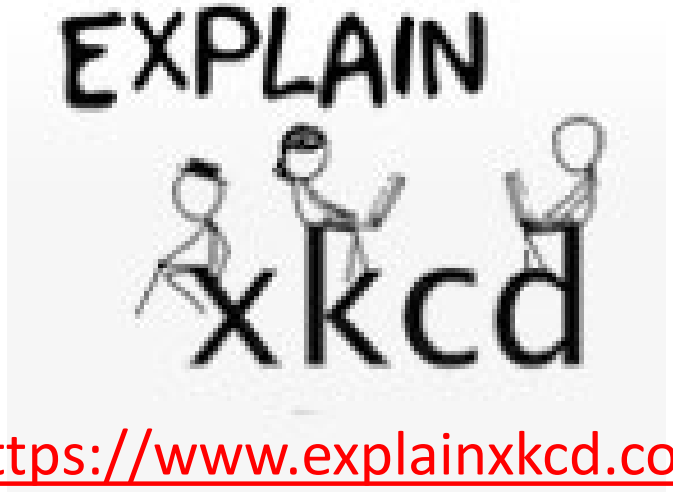
github.com/THOMASELOVE/MPHRetreat2020



A MATHEMATICAL MODEL IS A POWERFUL TOOL FOR TAKING HARD PROBLEMS AND MOVING THEM TO THE METHODS SECTION.

https://xkcd.com/2323/

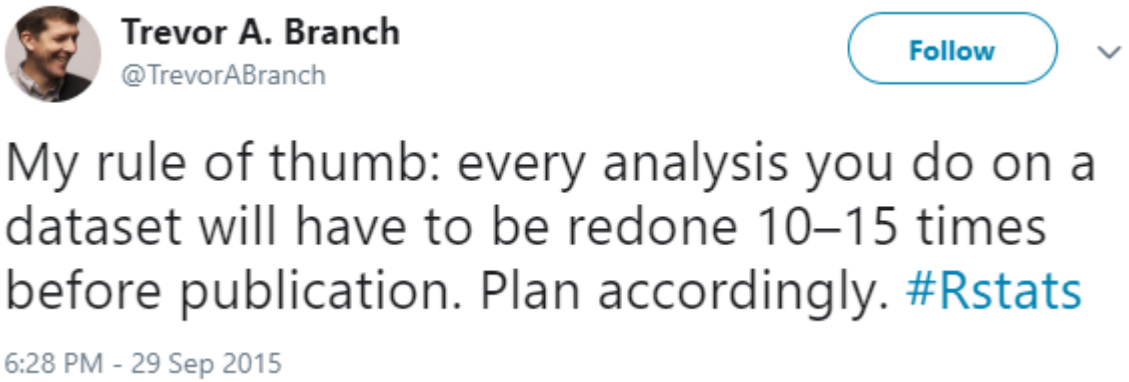
Title text: You've got questions, we've got assumptions.



https://www.explainxkcd.com

Thanks for listening…

github.com/THOMASELOVE/MPHRetreat2020



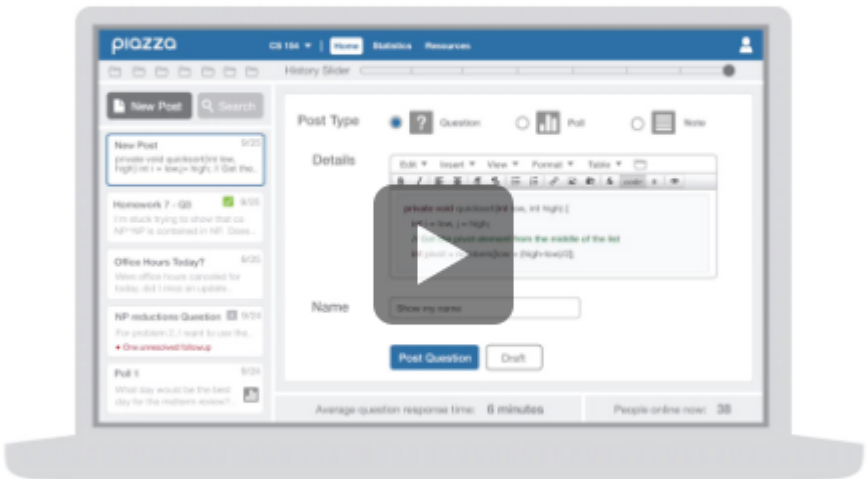
piazza

Product | In Professors' Words | Support | About Us | Piazza Talent

Sign Up | Login

The incredibly easy, completely free Q&A platform

Save time and help students learn using the power of community



- Wiki style format enables collaboration in a single space
- Features LaTeX editor, highlighted syntax and code blocking
- Questions and posts needing immediate action are highlighted
- Instructors endorse answers to keep the class on track
- Anonymous posting encourages every student to participate
- Highly customizable online polls
- Integrates with every major LMS

Students Get Started

Professors and TAs Get Started

View a Real Class

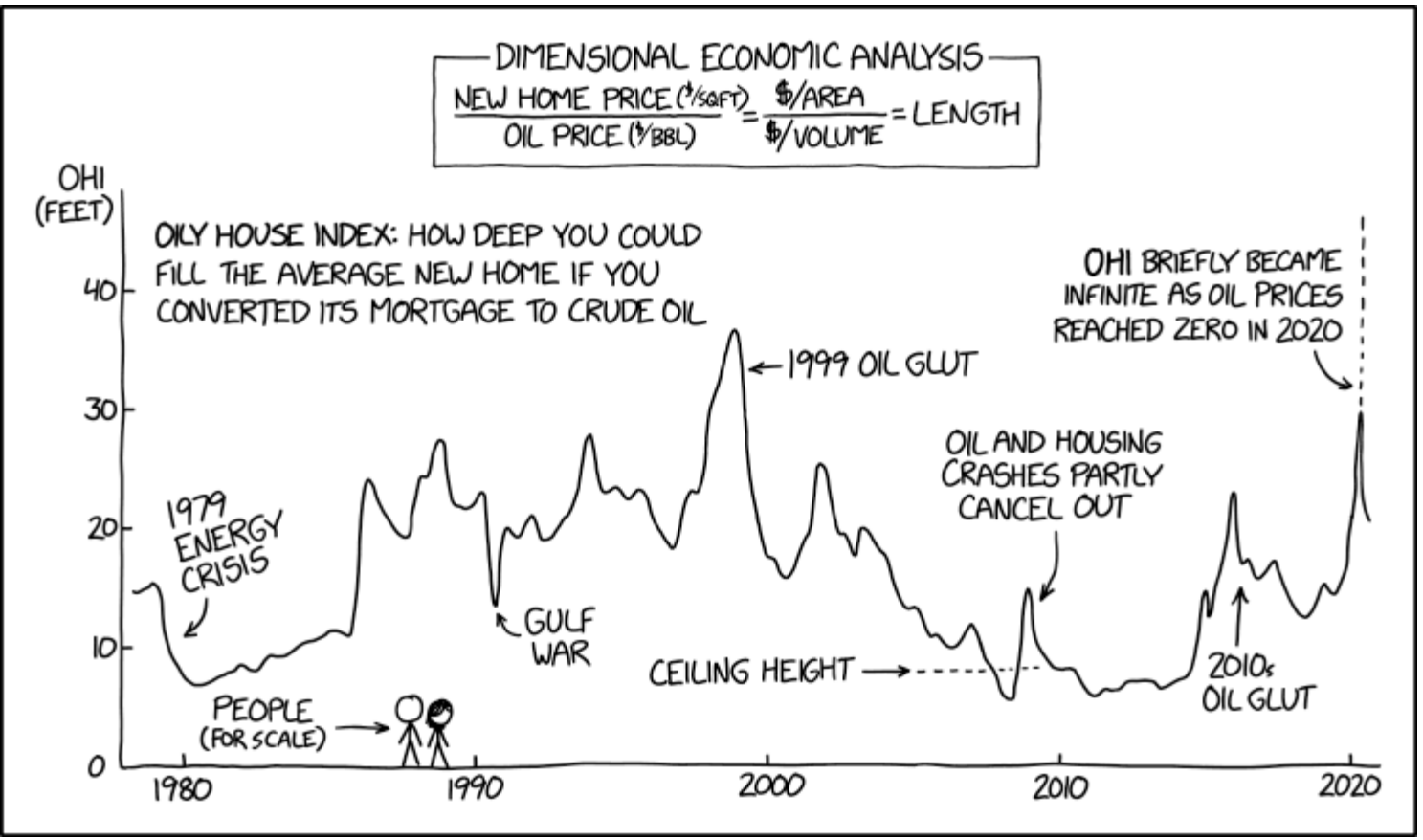
Learn more about how Piazza complies with FERPA

Companies looking for talent start here

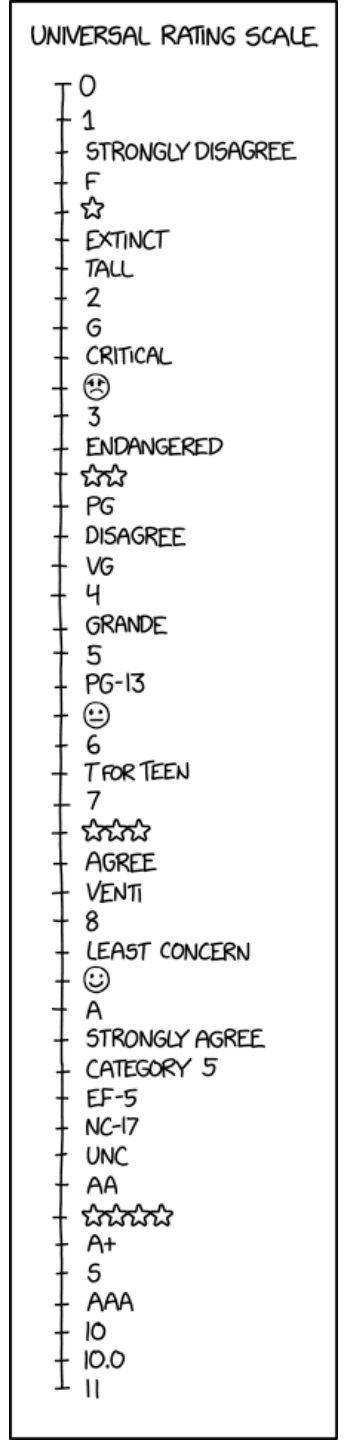
Stephen John Senn
@stephensenn

@neilpearce53x Data science is the art of producing misleading conclusions from huge datasets whereas statistics is the much more efficient science of doing so from small ones.

7/2/20, 2:42 AM



MY HOBBY: PLAYING BASKETBALL AGAINST SPACE



https://xkcd.com/2327 https://xkcd.com/2328 https://xkcd.com/2329 and also explainxkcd.com