**Discussion topics**

Class 1

1. Large class introduction (30 secs each): name, pronouns, year and major, current location, last movie you watched or book read
2. With groups: meet to designate the first (1)note-taker, (2)presenter and then submit their plan and group name for rotating rolls via Zoom whiteboard screenshot
   1. Research practice: find out experimental details about an example study

<https://linguisticpulse.com/2015/04/29/covering-baltimore-protest-or-riot/>

Answer these questions:

1. What are the observational units
2. What are the variables of interest
3. What kind of variables
4. Is this an experiment or observational study
5. ~~Present as group: infographic on details such as meaning of summation notation, meaning of E(X) and Var(X), what is xbar and s^2? Write out the formulas.~~
6. CLT simulations from R script for Class 1, answer questions there-in with group , practice screen sharing (maybe save this for next class)

Class 2

1. With groups design and present group logo via Zoom whiteboard (email jpg or png to me) (for me to do - create a slack channel for your group)?
2. With groups: solve and present solution to Ebola problem,

In New York City on October 23rd, 2014, a doctor who had

recently been treating Ebola patients in Guinea went to the hospital with a slight

fever and was subsequently diagnosed with Ebola. Soon after, a survey conducted

by the Marist Poll, an organization with a carefully designed methodology for drawing random samples from identified populations, found that 82% of New Yorkers

favored a "mandatory 21-day quarantine for anyone who has come in contact with

an Ebola patient."3

a) Verify that the sampling distribution of pˆ is nearly normal.

b) Construct a 95% confidence interval for p, the proportion of New York adults

who supported a quarantine for anyone who has come into contact with an Ebola

patient.

### Assumptions Necessary for Inference

The poll is based on a simple random sample and consists of fewer than 10% of the adult population of

New York, which makes independence a reasonable assumption. The success-failure condition is satisfied since,

1042(0.82) > 5 and 1042(1 − 0.82) > 5. b) 0.82 ± 1.96q

0.82(1−0.82)

1042 → (0.796,0.844).

.footnote[Introductory Statistics for the Life and Biomedical Sciences by Julie Vu and David Harrington, a derivative of

OpenIntro Statistics Third Edition, Authors David M Diez, Christopher D Barr, Mine Cetinkaya-Rundel]

Class 3

1. Ebola example from Class 2
2. With groups: solve and present results for a test for difference in proportions

Two types of medication for hives are being tested to determine if there is a difference in the proportions of adult patient reactions. Twenty out of a random sample of 200 adults given medication A still had hives 30 minutes after taking the medication. Twelve out of another random sample of 200 adults given medication B still had hives 30 minutes after taking the medication. Test at a 1% level of significance.

1. Packages and plots in R

Class 4

1. sample size determination problem based on single t-test

Suppose a mobile phone company wants to determine the current percentage of customers aged 50+ who use text messaging on their cell phones. How many customers aged 50+ should the company survey in order to be 90% confident that the estimated (sample) proportion is within three percentage points of the true population proportion of customers aged 50+ who use text messaging on their cell phones.

2. Practice differentiating between paired and unpaired examples. Make sure to give at least one example that they can’t use either methods for.

3. Reading data into R and

Class 5

1. Practice problem(s) - classifying which method to use
2. R lesson - none

Class 6

1. Practice problem(s) - finish Class 5 problems, chi-square test examples
2. R lesson - visualizing data

Class 7

1. Practice problem(s) - penguin data

- Chi-square test of independence between species and island

- Chi square test of homogeneity of species over two different years

1. R lesson

Class 8

1. Practice problem(s)
2. R lesson

**Comprehension quizzes**

Class 3

1. SE for difference between paired means
2. SE for difference between unpaired means
3. SE for difference between sample proportions
4. R code for paired difference t-test

Class 4

1. ~~R code, quantile of t-distribution~~
2. Assumptions for un-paired two sample t-test
3. ~~Interval contains zero means conclusion of two sided test is what?~~
4. Interval contains zero means conclusion of one sided test is what
5. Paired or unpaired
6. ~~R code , calculate p-value~~
7. R code Use prop.test or t.test
8. Which of the following probability statements is NOT always true: P(A given B) = P(A and B)/P(B), P(A or B) = P(A) + P(B), P(A) = 1 - P(A^C), P(A and B) = P(B)\*P(A given B)
9. ~~Table probability example~~
10. ~~Table probability example~~

Class 5 (complete and saved in word doc)

Class 6 (short to let people catch up)

Class 7

**Slack Community Building Check-ins**

Repeat 4 different topics three times throughout the semester

Week 1 - share a gif that describes how you feel being “back” at school right now

Week 2 - share a link to a song that you’ve been listening to a lot recently (please mention if it’s NSFW)

Week 3 - what was the last TV show you binge watched

Week 4 - share a shortish youtube video that you think more people should see (please avoid sending anything that is NSFW)

Week 5 - share one of your all-time favorite musical albums (please mention if it’s NSFW)

Week 6 - share a gif that describes how you feel being half way through the semester

Week 7 - what’s the last book you read (not assigned in a class)

Week 8 - Share a picture of your halloween costume or pumpkin carving skills from this year or a previous year or if you don’t celebrate halloween, what’s your favorite fall food/drink

Week 9 - what is your go-to TV show for sick days or when you’re feeling down in the dumps

Week 10 - what are three of your favorite movies

Week 11 - who is a youtube or other influencer you like to follow and why

Week 12 - share a gif that describes how you feel being almost done with the semester!

Group in-class discussion ideas

Present infographic

Whiteboard presentation

Create test questions

Concept questions

Outline study guide

Rstudio exercises

Use chat to send question directly to Professor or everyone in class

Pre-class assignments

* Join slack team and download slack app
  + Change profile picture to picture of face
* Edit Zoom profile (picture, pronouns, preferred name and registration last name)
* Install Swarthmore VPN
* Log in to Rstudio.swarthmore.edu and access shared folder
* Download CamScanner on your phone
* Fill out the access-needs form and email to Prof Thornton
* Read through syllabus