

**STAT 892 Learning Letter Assignment
Due Friday, 12 December 2014
Turn in with your Portfolio**

Forgot to do
this.
oops!

As a final assignment for STAT 892, you will turn in a learning letter explaining your work in this course.

Engagement with the Work of the Course: In your learning letter, you should make a case for your learning and for how the work you have done in the class has supported the learning that is most important to you. The learning letter is a chance for you to give us your assessment of your overall engagement with the course. Be sure to comment on your participation in the course, and how the course has or has not functioned as an intellectual community for you. You might address the following:

- How have peer reviews, reading responses, specific class activities, low-stakes writing exercises and small and large group discussions factored in your learning?
- An assessment of your work in the course. What have you learned about yourself as a student learning to teach? What questions do you still have? How have you actively engaged in this class? How have you contributed to the intellectual work of this class? Has the intellectual community of this class and, if applicable, your mentor/mentee relationship factored in your learning and teaching? If so, how? If not, why not? As you reflect on your participation in this class and, if applicable, your mentoring experience, what, if anything, would you do differently? Why?
- What goals do you have for yourself as you teach STAT 218 next semester or in future work (e.g., other teaching assignments, research, etc.)? What can we (and/or others in our 892 community) do to facilitate your learning/teaching in the future? What can you do?

Statistics 892

Writing for Statistics/TA Preparation

10:00 am Wednesdays, Hardin Hall 354 (Large Conference Room)

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Goals of the Course:

Your goal, as an instructor or assistant for STAT 218/STAT 380 (or any other course), is to help your students learn statistical concepts. Our primary goal, in STAT 892, is to help you develop strategies to most effectively teach those statistical concepts to your students. One way to both teach statistical concepts and to gauge your students' understanding is through the use of writing. The ability to translate "stat-speak" into clear non-technical language is one of the best indications that technical concepts in statistics are genuinely understood. Learning how to do this is an effective way to learn – and teach – technical concepts in statistics. We call this process "writing for learning." We will talk about this concept, and practice "writing to learn" activities throughout the course.

As a second goal of the course, we will also develop writing/critical thinking skills you will need as a teacher. This includes writing clear assignments and exam questions and developing grading rubrics. We'll spend class time analyzing examples of "good" and "bad" assignments and exam questions, and gain practice writing effective rubrics.

We hope that, through the use of active learning strategies, your classroom will become a learning community for your students. Similarly, our final goal for this course is to foster a vibrant teaching/intellectual community in the department. We hope to stimulate discussions about teaching among all instructors (TAs and faculty) and create a safe environment for idea exchange.

Course Content:

The course will follow the basic outline of the STAT 218 curriculum. We will try to introduce major topics a couple of weeks before they are scheduled to come up in your class, so you have some advance preparation before you teach them/assist your mentor with teaching them. We will not cover all of the STAT 218 content. Instead, we will focus on the areas with which students most often struggle. For each statistical content area, we will discuss/model/practice how to enhance/assess student learning through the use of low-stakes writing exercises (and even some mid- and high-stakes writing), carefully written questions, grading rubrics, peer evaluation, and others. For more detail, see the approximate schedule below.

The major topics are:

- **Variation.** Using descriptive statistics (numbers, graphs and plots) to visualize, characterize and interpret data.
- **Sampling Distributions.** The key to statistics. *Really* understanding this is a necessary, if not quite sufficient, condition for understanding all of statistics. This is the make-or-break concept – in Stat 218 and in Stat 883 and 970.
- **Inference (Interval Estimation and Hypothesis Testing).** Really a corollary to sampling distributions and variation. Understanding the behavior of a statistic tells us about the conclusions we can draw to the larger population of interest.

Classroom Visits: Over the course of the semester, the course instructors will be observing your STAT 218 classes (if you are involved in STAT 218). As part of the classroom visit, you will be asked to participate in a post-observation conference. We will coordinate our visits with your mentor, so that we are able to observe you teaching. More details will be given at a later date.

You will also be asked to visit other instructors' classes. This will give you the opportunity to see how other instructors approach the same material.

Class Portfolio: During the semester, you will be asked to collect lesson plans and assessment tools in a course portfolio. The purpose of the portfolio is to provide you with a valuable resource to use with your own class in the future. We will collect the portfolios at least twice during the semester (at mid-term and at the end of the semester). By mid-term, the portfolio should contain a fairly complete plan for the first three weeks of your course. By the end of the semester, you should have a rough draft of the entire semester. Your portfolio should NOT be a carbon copy of your mentor's materials. The portfolio should be specific to a course (STAT 218/380). If you are assisting with STAT 380 or STAT 801/882, you may choose the course on which to focus your portfolio.

Teaching Journal: It is beneficial to keep a teaching journal, reflecting on your experiences this semester (and during future teaching opportunities). This may include writing about the mentoring experience; how a particular class or activity went; or just comments, ideas, and notes for your future teaching reference. We may also throughout the semester pose specific questions as a part of class that you may want to include in your journal.

Grading: Will be based on class participation (attendance, participating in in-class writing activities and discussion), classroom visits, written work turned in (including the class portfolio), constructive completion of peer reviews and timeliness of submitted work.

Approximate schedule

Week	Date (Week Of)	Statistical concepts	Modeled through the use of . . .
0	Aug 17*	GAISE Recommendations	Low-, mid- and high- stakes writing
1	Aug 24	Measures of Center Variability	Assignment construction; peer review; Rubrics
2	Aug 31	Variability	Low-stakes writing exercises; reflection
3	Sept 6	Exam Construction	Mid-stakes writing Question construction
4	Sept 14	Sampling distributions	Construction of exercises that promote insight into sampling dist
5	Sept 21	Sampling distributions	Writing to engage students – the see if they’re getting it part since this is where students begin to get lost
6	Sept 28	Sampling distributions	Benchmarks for sampling distributions
7	Oct 5	Sampling distributions	Journals as low-stakes writing activities
8	Oct 12	Interval Estimation	Writing exercises to gauge understanding
9	Oct 19		Fall break
10	Oct 26	H ₀ Testing	Activities will depend on mid-course assessment
11	Nov 2	Two-samples interval estimation	TBD
12	Nov 9	Two-sample H ₀ Testing	TBD
13	Nov 16	The Big Picture	TBD
14	Nov 23		Thanksgiving Week
15	Nov 30	Final Exams/Grading	TBD
16	Dec 7	Wrap-Up	TBD
17	Dec 14		Finals week

* new TA workshop – effectively, though not formally, the first week of this course

		Benchmark & Q
11/14	all present	email
11/18	all present	original sample

Erin Blankenship

From: julie.couton@huskers.unl.edu
Sent: Friday, August 28, 2015 11:01 AM
Subject: TOPICS: STAT&PROBLTY STAT892 SEC 003 FALL 2015: Treat Schedule

Below is the sign-up sheet for treats. Please bring something to share with the class!

- Aug. 26- Erin
- Sept. 1- Jessica
- Sept. 9- David
- Sept. 16- Kismi
- Sept. 23- Thao
- Sept. 30- Johnna
- Oct. 7- Rani
- Oct. 14- Jason
- Oct. 21- NO CLASS
- Oct. 28- Ronghao

- Nov. 4- Yumou
- Nov. 11- Julie
- Nov. 18- Erin
- Nov. 25- NO CLASS
- Dec. 2- Yumou
- Dec. 9- POT LUCK- Everyone bring something to share.

Food makes everything better!

Wednesday, 22 August

- Syllabus
- Food → sign-up sheet
- GAISE: write for a few minutes → which recommendation do you think is most important to the class you're working on this semester, & why?
 - share in pairs
 - whole class discussion
- Mean/Median question
 - share in pairs
 - pick one to share w/ group
 - give feedback
 - pair revise chosen question & post in discussion board

Reminders: CONTRACT

get used to getting assignments after class.

GAISE: Incorporating real data - 462
& data collection

Key Concepts over procedures - 218

Group Activities - 218

Literacy over calc/procedures - 218

Computations of probability - 462 ??? not in GAISE?

Activities - 218 Student Engagement/Gauge understand.

Conceptual understanding - 218

August 25, 2018

Mean/Median Question:

Shared 4 - 3 focused on STAT 218 initially:

1) on 462 ~~for 218~~ ~~for 218~~ ~~for 218~~ ~~for 218~~ ~~for 218~~

Revise & post on Blackboard

Drop document of first group from assignment

? ~~for 218~~ ~~for 218~~ ~~for 218~~ ~~for 218~~ ~~for 218~~

Next week:

Write shared understanding that students (218 or 462) should have about measures of center

- fundamental concepts / learning objectives
Implementation will change depending on class

How do these questions address these fundamental concepts?

Rubrics for mean/median questions PROJECTOR

- for question from another group

- each group write rubric on board

Collect contracts

HW - Write question to assess student's understanding of variability

+ Author's note

email w/ assignment → revise Q & post on Blackboard by 9:00 am Wednesday

Wednesday, 29 August

- Shared understanding about measures of center all students should have.
- Divided up questions to groups who had not authored → how does this Q address these fundamental concepts?
- Write rubric for each question (5 or 10 pts); put rubric on board

Assignment: question addressing students' understanding of variability + authors note
Authors note should point out a special area that you would like partner to pay attention to
or why your think question works well.
Post by 9am on Wednesday 9/5

Next week: Partner examine Q & present to class - what they liked, what they thought could be improved. Open to class discussion.

Have this ready

lesson plan - incorporate Q to assess students' understanding of lesson - revised

September 5

Questions about Variability + authors note

- pairs & triples

discuss Q & concerns

partner present Q, what they liked,
how could be improved.

good questions

Revise & incorporate into lesson plans - due next week

Next week: lesson plan - send email

highlights of lesson plan

Writing - how could histogram activity (or similar)
enhance lesson plan?

Send email - important components
copies → 2 copies

Authors Note → what most proud of
& what question on?
most want feedback on?

Wednesday, 19 September

- Feedback was given on lesson plans
- Revise & upload to Blackboard (post by Friday)
- Peer review another person's lesson plan
 - (peer review partner will be assigned)
 - Comments, questions, 2 reflection Q
 - Similarities / diff between this one & yours
 - What you really liked & how you might incorporate later
 - do peer review as reply on Blackboard
Should be posted by next Wednesday.

Casey / Ling

Dola / Fan

Nadeeshani → Mohzu

Beth → Nadeeshani

Mohzo → Beth

- Sampling Distributions

- 1 Slip of paper: write word or phrase key to the defn of sampling dist.
- Words put on board
- Packets passed out w/ additional words
- Select words to create defn of Sampling dist

- Their Words:
- sample
 - general dispersion
 - probability
 - count shape
 - diff between a value & an avg value
 - behavior of a particular sample

Fan & Beth: The probability distribution of a population parameter of a random variable is based on the observed behavior of a random sample

Casey & Nadeeshani: Probability distribution of repeated random samples of size n from the RV that describes the observed behavior of the statistic which is about the parameter(s) of the parent distribution with some mean & variance.

Ling, Mohzu & Dola: Prob distribution of the sample statistic based on repeated samples of size n from the parent population with mean μ & variance σ^2 .

Similarities

prob distribution
random sample
mean & var of parent population
observed behavior
statistics
repeated samples

Differences

'population' used differently
observed behavior of what?

Each group describe their thought process on putting together defn.

- how sample behaves (C & N)
- behavior of sample stat (C & N)
- Sample stat have pop dist, evident from repeated sampling (L, M)
- connection between pop param & sample stat (L, M, D)
- prob dist for a parameter of pop dist (B & F)
- behavior of sample, how relates to pop (B & F)

Next week:

= why didn't use normal in definitions?

- difference between dist

- parent dist

Sampling dist

- ~~parent distribution~~

- data dist

How Where does probability dist fit in here?

- write about similarities/differences between different distributions.

- simulation exercise

- what is parent ~~pop~~ dist

} which are

data dist

} approximate,

sampling dist

} which are true?

- explore dist of min, max, median, range

- see how to get cont dist in SP

- each group draw from a diff cont dist
(unimodal, skewed, wacky)

- Reflect on earlier writing

- have ^{had} diff & similarities changed?
thoughts on

= what would have to be modified to investigate sample size?

Wednesday, 26 September

• Writeup

- discuss differences (& similarities) between
parent distribution
sampling distribution
data distribution
- where does 'probability distribution' fit in?

• Simulation

- explore dist of min, max, median, range
- 3 dist → unimodal, skewed, crazy
- plotted on board
- which are ~~mean~~ parent, sampling & data dist
- which ~~are~~ approximate, which are theoretical?

- What would have to be modified to explore sample size?

Next week: Write defn_n of sampling dist

You'd give your students post to Bb

Bring to class

by Tuesday noon

Come up with 1 defn of sampling dist

based on individual ones - as a class

(see what look like)

Based on definition

- identify benchmarks for student understanding
 - key parts
 - what do students really need to understand to fully comprehend definition
 - what kinds of questions would you ask them to see if they've achieved those benchmarks
 - write activity to explore sampling dist which benchmarks it reinforces

Assignment for Next Week

- defn post to Blackboard
- talk w/ mentor about when next teaching & send 3 (ranked) dates (bring to class)

in Oct (preferably before fall break)

Wednesday, 3 October

- * groups → come up w/ 2 defn of sampling distribution to give to students
 - Nadeeshani & Casey
 - Mozhu & Dala
 - Ben, Fan & Ling

Write defn on board

- * As a class → 1 definition

• N & C: A sampling dist is the probability dist of different values the statistic, which is based off of a random sample from a parent population.

• M & D: The prob dist of a statistic, based on all possible random samples of size n , that can be drawn from a given population is called the sampling dist. The computed stat can be the mean, median, proportion, std dev, etc.

• B, F & L: A sampling dist of a statistic (descriptive measure of a sample) is the probability dist. that specifies probabilities for all possible values of the statistic which result from repeated random samples of size n .

defn: The probability distribution of a statistic based on repeated random samples of size n from a given/parent population

really

Benchmarks: what do students need to understand?

- dist of stat may be very different from parent pop
- dist is that of stat & not individual data pts
- how to use them / how to construct them
- patterns will emerge w/ repeated samples
- effect of sample size
- why do we need sampling dist?
- use to make inferences about the population
- making sure they understand what a prior dist is
- key features of sampling dist. (shape, center, spread)
- sample stats are themselves RVs
- variability is natural

What kind of question would you ask to assess understanding?

Pick benchmark / what would you ask?

D&M: Dist of stat may be diff from parent pop & patterns may emerge
Uniform parent & use simulation to explore

dist of mean.

Ask them to write \rightarrow 5 vs 100 samples

Do you expect...

Do you see a pattern?

Compare parent pop & dist of stat

Number of runs of simulation for fixed sample size

B, F & L: Patterns w/ repeated samples

- give values of means

- what do they think pop will look like?

- repeated samples of 1 size, then change.

- make sure dist comes from means,
not ind. data pts.

- smaller sample sizes will have more variability
→ won't be as accurate

C & N: Scenario: parent pop

2 sample sizes $P(\bar{X} > c)$

for both sample sizes

Why do they differ?

Next week:

Author's note for observation

- what concerned, what feedback on, pay special
attention to

Assignment - activity to reinforce sampling dist

w/ assessment

Share highlights of activity & assessment plan +
learning objectives (≈ 20 min)

What knowledge
with the
assessment
process student
proves

- Does assessment plan match the learning objectives? Learning

- Would you do this in your class?

- What would help you from doing it? - What would you change

- If so, ~~then could it be changed to alleviate concerns?~~ then would use it, why? what do like? changes?

- Is there enough detail that you could walk in
& carry out right now (≈ 30 min)

Portfolios - Oct 12

Answer for author input
Self eval. Now you don't need ab twu-
works input esp if i p. aligning. Writing -
answer most serious ticks now. Then -

Mid-Semester Eval - 17 Oct

Turned in to Stacey. Answered all ticks.
Showed work from

To do: email gpt training: gptm02: h89

peer review sheet for gptm02 &

sys alignment ref

Self eval. Now you don't need ab twu-

Answered all ticks. Show ticks

Answered ref. Standard NA

Writing part, no answer ab twu, because ab twu -

Answered ref. Standard NA

Author: Sub gptm02 error at activated → thermometer

thermoses (w)

+ write thermometer p. 111 as a difficult word

(min 20) write p. 10 journal

Author: write journal when make thermometer next -

Small note in. don't ab my blrow -

Answered ref. Standard NA

Answered ref. Standard NA

Author: write journal when make thermometer next -

(min 20) write journal when make thermometer next -

Wednesday, 10 October

Highlights of Sampling Dist

- C: Step by step approach for activity
- L: leading Q about how to choose sample size & relationship between sampling dist & pop size. How sample size impacts sampling dist.
- D: Class lab - groups w/ diff prob dist
ask dist of mean ② simulation w/ varying sample size
③ Questions → guessing about sample size to achieve CLT
- N: Rolling dice dist of sample mean for diff sample size (10/20/30). Sketch dist
Calc. mean & std dev for sampling dist
Assess → what happens when components of simulation are changed.
- M: 3 color balls in box; guess proportion
est prop of red balls & compare w/ truth
vary sample size Assessment → why larger better?
- F: Sampling dist of \hat{p} as changes w/ diff sample sizes. 2 coins → S = 2 heads
Compare dist for diff sample size
Assessment → What would happen if $n=200$.
- B: Flipping coin - (10 @ 1 time) Record # tails
do 15 times → dist Stat vs Parameter
15 more times → how did it change?

Peer Review - handout

Next week: NO CLASS, portfolios due by Friday 10/12,
mid-semester evals - turn in to Stacey by Wednesday 10/17

Next Week:

Assign - go visit a class

- focus on classroom management/presentation style
- how did the particular instructor actively engage the class; ~~why~~ would you use this strategy? Why or why not?
- what classroom management strategies did the instructor use (keeping students on task, focused, & engaged, dealing w/ difficult situations that arose)
- Ask permission
- Be done by next week (10/31)
- Be prepared to report back

Assgn Project → due Nov 7

- find an instructor who's used a project in their class, interview them to learn about the project. Write about what they liked & would incorporate into a project of their own. What would change & why? Report back
- post in Blackboard who you will be interviewing (NO REPEATS)

Comments from Portfolios:

- don't feel like need to include everything your mentor did
- what are the important components of a portfolio
- difficulties preparing / thought process

Comments from Evaluations

- next 2 assignments
- discussion topics - what would you like?
- hyp testing

Hyp Testing - Q

Portfolio/Eval Summaries

- Assignments (hard copies)
- visit
- project

Hyp Testing Handout

Wednesday, 24 October

Portfolio/Eval Summaries

- don't feel like you need to do everything the mentor does
- Beth's first writing assignment - shared
- Important components of portfolio
- Difficulties/Questions?
 - timing
 - normal dist: tables vs applet

Assignments

- classroom visits (due next week)
- project interviews (due ~~10/29~~ in two weeks)

Airline/Hyp Testing Questions

- what makes this scenario diff from typical?
- purpose of using range?
- purpose of using simulation?
- Q1 - 4

Next week:

Classroom obs: share something you think could be helpful to other instructors.

Hyp Testing: 463 Q

- send Q → do ahead of time & write rubric to allocate 9 pts

- compare rubric w/ group members
- grade your Q → present what they found • 1st class
- No different from what we see on Comp

- Re-do Q1 on airplanes
 - what changed?
 - what did you take from other Q that influenced changes
- Q2, briefly
- Q3 & Q4
- Q5, Q6, Q7
- Q8

(down then up) zhuang mooyan -
 (down out in ~~up~~ up) zwingshi tseng -

mooyen@ jidet gyt\ainho
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Wednesday, 31 October

Classroom observation: share something you think could be helpful to other instructors

Hypothesis testing?

- get in groups, compare rubrics
- grade your question, present what you found
- grade final one as a class

Next week:

Wednesday, 7 November

Project Interview: Share what learned

Airline Handout : Q1

Next questions

{ What is the variability of the sampling dist
of a statistic measure? ↗ Dola

email to me

→ Write & post by Monday 9:00 am

#5 & #7

Which 2 are "best"? Why? ↗ Fan

How does variability of sampling connect

~~to the distribution of test statistics & confidence intervals~~

to Tests & CIS ↗ Fan

Next week: 14 NOV

→ Bring to class

Revisit Q5 & Q7 - pull quantiles of plot?
Line ↗ Beth

Benchmarks about Tests & CIS.

Bring ball

Discussion leaders:

[Casey
Mozhu
Nadeeshani]

Wednesday, November 14

2 "Best" Answers - Dola

3 & 5	
1 & 5	
4, 2 & 5	

Connection to Hyp Tests & CIs - Fan

→ std error shows up in ME & test stat
variability as 'believability'

Q5 - find appropriate test stat - Ling

- what is a test stat?

- properties of test stat?

Q7 - 95% CI - Beth

(-140, 140) → 95 "middle" dots

Benchmarks for Hyp Tests & CIs

- at the end of the semester

- 1 year later

Next weekend 2nd to last class (11/28):

CI Benchmarks - Casey

Notipfolios
due Dec 7

Hyp Test Benchmarks - Mozhui

Journal stan - Nadeeshani

Benchmarks for your group (at the end of semester, 1yr later)

- Read article

- final Q based on benchmarks ~~for 218 or 462~~ for 218 or 462 for final