See you / see me:
An interactive real-time online course

Rent in Durham - bootstrap interval

The dot plot below shows the distribution of means of 100 bootstrap samples from the original sample. Estimate the 90% bootstrap confidence interval based on this bootstrap distribution.
background

Data analysis and statistical inference required for (some) SS majors

"lecture" (2/week) + computing lab (1/week)

Increasing demand ↓ larger class sizes

On campus summer sta 101

Study abroad + other demands/engagements
sta 104: data analysis and statistical inference (online)

online version of sta 101

summer 2013, session 1

motivation:
create a course that is the same (or as similar as possible) content / quality / pedagogy / rigor
7 students

[4 first-years
2 sophomores
1 junior]

I dropped sta 101 during spring due to work load

I enjoys taking online courses

most majoring in PubPol

placement

others avoiding taking course during regular session
# Tentative schedule

Below is a tentative schedule for the course (PS: Problem set, L: Lab, PE: Peer evaluation, and PR: Project, RA: Readiness assessment).

Links to slides and assignments will be updated prior to each unit. Additional resources (learning objectives, videos, etc.) for each unit under the resources tab.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Date</th>
<th>Topic</th>
<th>Lab</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15-May</td>
<td>Introduction</td>
<td>Lab 0 - Intro for R and RStudio - [Video]</td>
<td></td>
</tr>
<tr>
<td>Unit 1 -</td>
<td>16-May</td>
<td>Data collection, observational studies, and experiments</td>
<td></td>
<td>RA 1 (practice)</td>
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<tr>
<td>Introduction to data</td>
<td>17-May</td>
<td>Exploratory data analysis</td>
<td>Lab 1</td>
<td>PS 1</td>
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<tr>
<td></td>
<td>18-May</td>
<td></td>
<td></td>
<td>Lab 1</td>
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<tr>
<td></td>
<td>19-May</td>
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<tr>
<td></td>
<td>20-May</td>
<td>Introduction to inference, via simulation</td>
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<tr>
<td>Unit 2 -</td>
<td>21-May</td>
<td>Probability and conditional probability</td>
<td></td>
<td>RA 2, PA 1</td>
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<tr>
<td>Probability and Distributions</td>
<td>22-May</td>
<td>Bayesian inference</td>
<td>Lab 2</td>
<td></td>
</tr>
</tbody>
</table>
pre-course meeting

last week of classes

meet & greet

technical details
Test the hypothesis $H_0 : \mu = 10$ vs. $H_A : \mu > 10$ for the following 8 samples. Assume $\sigma = 2$.

<table>
<thead>
<tr>
<th>$n = 30$</th>
<th>Jacob</th>
<th>Shelby</th>
<th>Daryn</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\bar{x}$</td>
<td>10.05</td>
<td>10.1</td>
<td>10.2</td>
</tr>
<tr>
<td>$p - value$</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$n = 5000$</th>
<th>Thomas</th>
<th>Cece</th>
<th>Lili</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\bar{x}$</td>
<td>10.05</td>
<td>10.1</td>
<td>10.2</td>
</tr>
<tr>
<td>$p - value$</td>
<td></td>
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</tbody>
</table>
support

office hours
twice a week
on WebEx

impromptu
meetings
on Google
Hangouts

student
formed
study groups
on Google
Hangouts
WebEx for teaching

- Video feeds limited to 6
- Annotation tool buggy
- No auto recording
- No breakout sessions
- Polling tool buggy
- Proctoring exams [Lockdown browser + Video]
“I like the *convenience* of the online class but also the web chat structure makes it feel as if you are actually in a classroom. So it is the best of both worlds.”

“I have high opinions of the class. I think the web lectures are going well and the instructor is easily accessible. *The material is interesting and the work load is a fair amount but it is manageable.*”

“I like the pace and the *various opportunities* for help with concerns/questions. I like that there is a *forum* as well as the *online office hours*. I also enjoy the versatility of the class, that it ensures we are understanding the concept and don't get bored during lecture through *lab exercises, polls, discussions.*”

**Student Feedback**

- 6/7 pace is about right
- 5/7 learned most in sync. sessions
- Course evals look similar (but n = 3)
Great experience ✔

Synchronous sessions worthwhile ✔

Scalable?

Assessment submission and grading on Sakai ✔

Exams on Sakai?

Performance assessments ✔
don’t need to be tech savvy, but should be flexible especially if class size is large, a tech assistant first few days

remember to record [if not automatic] on call tech help throughout course

take screenshots [if planning to give a talk later]