NOTES FOR THE WEEK OF NOV 27 TO DEC 4

NOTES ABOUT OFFICE HOURS AND REVIEW FOR FINAL EXAM:
Many of you have asked what you can do to improve your grades, study more wisely, etc. My best advice is to come to office hours, when I can work with you one-on-one to see where you are having problems. Therefore, I am scheduling lots of extra office hours between now and the final exam. Office hours tend to be busy on Monday afternoon, but not at other times. I am also available by appointment – just ask! Here are upcoming office hours, and review for the final exam:

♦ Mon, Dec 4 is one of the 3 days announced on the syllabus when I will NOT have my office hours from 3-4:30. I will have them 1-2:30 instead. See below for additional hours that day.
♦ Office hours this week: Wed, 9:30-11; Thurs, Nov 30, 10-12:00, Mon, Dec 4, 10:30-11:30 and 1-2:30
♦ Office hours for the final exam: Wed, Dec 6, 9:30-11, Thurs, Dec 7, 11-12; Fri, Dec 8, 1-3:30; Thurs, Dec 14, 2-5pm. (I will be out of town Mon to Wed, Dec 11-13.)
♦ Clayton Schupp will have office hours Mon, Dec 11, 12-2pm (no Monday review that week).
♦ Review session for final exam: Thursday, Dec 14, 10:30-12:30, 234 Wellman Hall (our classroom).
♦ Final exam: Friday, Dec 15, 10:30-12:30, 234 Wellman Hall

This week you will learn about hypothesis testing for 4 of the 5 parameters we have been studying. You had a brief introduction to hypothesis testing in Chapter 6 when we studied chi-square tests. Here is an overview of what we are covering this week, and where to find it:

<table>
<thead>
<tr>
<th>Hypothesis Testing Topic</th>
<th>Textbook Section(s)</th>
<th>CyberStats</th>
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<tbody>
<tr>
<td>Background for hypothesis testing</td>
<td>Sections 9.9, 12.1, 12.2, 13.1</td>
<td>Unit C3</td>
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<tr>
<td>( p = \text{one population proportion} )</td>
<td>Section 12.3*</td>
<td>Unit C7 (covers conf. intervals too)</td>
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<tr>
<td>( p_1 - p_2 = \text{diff. in two proportions} )</td>
<td>Section 12.4</td>
<td>Unit C8, Uses 4 only</td>
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<tr>
<td>( \mu = \text{one population mean} )</td>
<td>Section 13.2*</td>
<td>Units C4 and C6</td>
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<tr>
<td>( \mu_d = \text{mean diff. in matched pairs} )</td>
<td>Section 13.3</td>
<td>Unit C9 (covers conf. intervals too)</td>
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<tr>
<td>Cautions about hypothesis testing</td>
<td>Section 12.5</td>
<td>Unit C3, Warnings</td>
</tr>
</tbody>
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*You can skip the following subsections on finding exact p-values for a binomial proportion, and on the “rejection region approach”: Pgs 521-524; pgs 559-561

Here is what you should know how to do:

- Calculate standardized \( z \) and \( t \) statistics; know when to use which one. (Section 9.9)
- Know how to write null and alternative hypotheses in word and symbols, including whether one-sided or two-sided. Remember that hypotheses are about population parameters!
- Understand the two types of errors and their consequences, in context. (Lesson 3 of Section 12.2).
- Know how to carry out the 5 steps of hypothesis testing for each of the 4 parameters above. The summary table on pages 586-587 should be very helpful for this! The following should be helpful for visualizing how to compute \( p \)-values: Table 12.1 (p. 517), Table 13.1 (p. 556).
- Understand the role sample size plays in statistical significance vs. practical importance (Section 12.5)

Interactivities to play with:
Unit C3: Basics 3, Uses 2 - both designed to show the meaning of a \( p \)-value through simulation.
Unit C4: Self-assess, top of page – calculates a one and two-sided \( p \)-value for any \( z \)-score you enter.
Unit C6: Basics 2 (all 3 interactivities) – Illustrates the Student’s \( t \) distribution and compares to \( z \).

Exercises to hand in: Ch. 9: #77bc, 86, 94 Ch. 12: #2, 13, 19, 48a-e, 58, 83, 100ab, Ch. 13: #1, 14, 24