NOTES FOR THE 11 DAYS BETWEEN DEC 4 AND THE FINAL EXAM

Final Exam: **Fri Dec 15, 10:30am-12:30pm.** Open book and notes.
Location: **If your last name starts with A to G, go to 212 Wellman.** Otherwise, the usual, 234 Wellman.
Details: The final exam will be comprehensive but will focus more heavily on concepts covered throughout the course, and on the more recent methods (Chapters 9-13). It is open book and notes. The “Key Topics” below cover the important concepts, and at least one example is provided with each of the topics to guide your studying for that topic. *Studying your old quizzes and figuring out where you went wrong on questions you got wrong will also be helpful.* (You may bring them with you to the final exam.)

Review Session: Thursday Dec 14, 10:30am to 12:30pm, 234 Wellman. Bring questions!

Office hours: We will hold our regular office hours the week of Dec 4, but not during finals week. Here are office hours by day; **CS = Clayton Schupp (1214 Math Sci), JU = Jessica Utts (4214 Math Sci).**
**Wed, Dec 6:** 9:30-11 (JU), 12:10-1 (CS); **Thurs, Dec 7:** 11-12 (JU), 1-2 (CS); **Fri, Dec 8:** 1-3:30 (JU)
**Mon, Dec 11:** 12-2 (CS); **Thurs, Dec 14:** 2-5pm (JU)

**TOPICS IN NEW BOOK SECTIONS TO STUDY FOR THE FINAL EXAM**
- Inference for $\mu_1 - \mu_2$: Sections 9.8, 11.4, 13.4. Skip “pooled” case – Lesson 2 in Sections 11.4, 13.4. No homework, but practice with problems 9.71*, 11.45*, 13.40**.
  *Answers in back of book for 9.71, 11.45. **For 13.40, s.e.($x_1 - x_2$) = 0.192, $t = -0.94$, do not reject $H_0$.
- Choosing which inference procedure to use: Section 13.6. (This is review.)
- Cautions in interpreting hypothesis testing results: Section 13.8. (This is review)
- Overview and guiding principles on the use of Statistics in life: Chapter 17. (Mostly review.)

**OTHER KEY POINTS TO STUDY FOR FINAL EXAM (with Examples)**
1. Conclusions that can be made from randomized experiments versus observational studies. The role of confounding variables in observational studies. (**Case Studies 1.5, 1.6; pg 707 in Chapter 17**)
2. Major features when describing a set of data. (**Case Study 1.1, All examples in Ch. 2**)
3. How to use and interpret a regression equation. (**Examples 5.2 and 5.6**)
4. Recognizing and interpreting relative risk. (**Examples 6.1 and 6.4**)
5. Conditional and unconditional probabilities; using tree diagrams to compute probabilities. (**Examples 7.12 and 7.27**)
6. The concept of a statistic as a random variable. Sampling distributions for a sample mean and a sample proportion; finding probabilities associated with them. (**Case Study 9.1**)
7. The goal of statistical inference, including the relationship between a parameter and a statistic. (**Sections 9.1 and 9.2, 10.1, 12.1; Example 9.1**)
8. The general form of a confidence interval; how to interpret a confidence interval. (**Example 10.3**)
9. Concepts of how hypothesis testing works (**Example 13.1 on pg. 553 and 13.1-continued on pg 556**)
   - How to determine the null and alternative hypotheses
   - The concept of a p-value
   - Possible decisions and what they mean (don't reject $H_0$; reject $H_0$ equivalent to accept $H_a$)
   - The two types of errors and their consequences
10. How the size of the sample relates to statistical significance. (**Example 12.18**)
11. The difference between statistical significance and practical importance. (**Case Study 1.7, Example 12.19**)
12. The 10 guiding principles on pages 720-721 (Chapter 17). If you understand those, you will be prepared to critically evaluate the results of statistical studies you encounter in the news.