

Text: Anderson, Sweeney and Williams (ASW), Statistics for Business and Economics, 11th ed.
Optional Manual and Software: SPSS 15.0 for Windows: Student Version

This class meets and extra half hour on Wednesday; from 8:40 to 10:10 in section 01 and on Wednesday from 12:40 to 2:10 in section 02. This extra time allows us to cover the material in both a traditional lecture context and also spend enough time in the labs to be trained in statistics software. Previously (2011) I used an extra hour a week to get all this done. To do it in less time now, we leave parts of two review chapters out of the course (8 & 9). Last year, I left all of them out but it seems that understanding was not so good. So this year we'll try it the basics of these chapters in.

Syllabus

Week	Dates	Assignments
1	Jan 28 – Feb 1	SPSS Chap. 1 – 3(27-31) ASW 1, 3.3, 7.2, 7.8, 22 (see handout), 6.2, 7.3,7.4,7.5
2	Feb 4 - 8	ASW 7.6, 7.7 SPSS Chap. 4, 6, 11, 12(frequencies)
3	Feb. 11 - 15	ASW 8.1, 8.2, 9.1, 9.3, 9.4
4	Feb. 18 - 22	ASW Chapter 14
5	Feb 25 – Mar 1	ASW Chapter 14
6	Mar 4 - 8	SPSS Chap. 12(regression), Exam ASW Chapters 15
7	Mar. 11- 15	ASW Chapter 15
8	Mar. 18 - 22	ASW Chapters 15(except 15.9), 16.1, 16.6
9	Mar 25 – 29	ASW Chapter 10, SPSS Chap. 12(compare means, t test)
10	Apr 1 - 5	Review of old tests, Exam ASW Chapter 13
11	Apr. 8 - 12	ASW Chapter 13 SPSS Chap. 12(anova)
12	Apr. 15 - 19	ASW Chapter 13
13	Apr. 22 – 26	ASW Chapter 13, 11
14	Apr 29 – May 3	ASW Chapter 11, 18 (as time allows) SPSS Chap. 12(exponential smoothing, maybe)

Grades:	First & second exam	25% each
	Final	30%
	Homework, class participation	15%
	Project	5%

Homework Problems for ASW (11th ed.) and “Clayco”

ASW 3-32, 7-1, 7-9, Clayco 1 (listed below)

ASW 6-19, 6-21, 6-25, 7-15, Clayco 2, 7-25, 7-28(a,b only), 7-30,7-37,7-41, Clayco 3

ASW 8-7, 8-14, 8-18(Excel)*, 8-20(Excel), 8-21 (SPSS)

ASW 9-1, 9-2, 9-3, 9-19, 9-21, 9-28, 9-34(SPSS)

ASW 14-5, 14-13(SPSS), 14-14(Excel), 14-15, 14-22(SPSS), 14-25, 14-28 (Excel), 14-37(SPSS for basic regression as in # 13, C.I. by hand), 14-39(Excel), 14-40, 14-41,14-49(Excel),14-53(Excel), Clayco 4 & 5,

ASW 15-2 (Excel&hand), 15-5 (SPSS), 15-17(Excel or SPSS), 15-25 (Excel), 15-35 (SPSS), 15-36 (SPSS) 15-41 (SPSS) , 15-42 (SPSS)

ASW 16-4(Excel), 16-5(Excel), 16-8 (SPSS), Clayco 6

ASW 10-13 (Excel), 10-15, 10-17, 10-26(SPSS), 10-33
Clayco 7

ASW 13-9 (Excel&hand), 13-11(SPSS), 13-15(Excel), 13-18(part a, SPSS),13-19,
13-27(Excel&SPSS),13-30(Excel&hand), 13-32(SPSS)

ASW 11-5(Excel for a; b & c by hand), 11-11, 11-19(Excel), 11-25(Excel for a,b; c by hand)

ASW 18-27(SPSS and use the curve fit procedure to examine other possible trend shapes: identify the best fit that you find), 18-12, 18-14, 18-15(Excel), 18-38(Excel)

*Problems followed by "(SPSS) or (Excel)" are to be done using that software. In most cases the data is already prepared and can be found in the Stat2216 folder on any Windows lab machine or Hoover lab windows machine. Most of these data sets are also contained on the CD that comes with ASW. You can use this disk to load these data onto your own computer, if you have one. In any case, be sure to type your name into your printout so there will be no confusion about whose work is being printed. Problems followed by "(SPSS&hand) or (Excel&hand)" are to be done using the software and by hand. Otherwise the problems are to be done by hand. You may use the computer to check your hand work, if you wish. You may also use the Excel spreadsheet to do “hand” calculations.

**Self-test problems and even numbered problems in ASW have answers given in the back of the book. If you use these, be sure to show enough work behind the answers to substantiate that you are not merely copying what is in the book.

Clayco Problems:

- 1) The research group at the Paramount's King's Island theme park in Kings Mills, Ohio, uses surveys to determine what visitors like about the park.
 - a. Assume that the research group treats the population of visitors as an infinite population. Is this acceptable? Explain.
 - b. Assume that immediately after completing an interview with a visitor, the interviewer returns to the entrance gate and begins counting individuals as they enter the park. The 25th individual counted is selected as the next person to be sampled for the survey. After completing this interview, the interviewer returns to the entrance and again selects the 25th individual entering the park. Does this sampling process appear to provide a simple random sample? Explain.

- 2) Open the Employee Data (in the Stat2216 folder). Make frequency tables and bar charts for education. What percentage of the data has at least a high school diploma? What percentage of the data has at least a college (4 year) diploma? Would you use these results to approximate educational attainment for the nation as a whole? Why?

- 3) Use the following small population for this exercise, {2, 4, 6}. $n = 2$
 - a) Display the sampling distribution for the sample mean when sampling without replacement and use it to calculate the EV and standard deviation.
 - b) Display the sampling distribution for the sample mean when sampling with replacement and use it to calculate the EV and standard deviation.
 - c) Calculate the standard deviation for the population and compare it to those in parts a and b. Are the sizes as theory predicts? Calculate the standard error of mean using the finite population correction factor. Which of the previous values does it match? In what sense does sampling with replacement make the population infinitely large?
 - d) Compare the population mean to the expected value of the sample mean in parts a and b. What property of the sample mean does this illustrate?

Exercises 4, 5 and 7 use data created by other applications (Lotus, Excel, Sylk). To open them in SPSS you must use the file-type window after you ask the machine to open a file. After you select one of these file types, be sure to check the read variable names box. Otherwise you will get no data.

- 4) Open the Grocery Store Data (in the Stat2216 folder) on the hard drive of a Windows Lab machine. Compute a correlation coefficient for real producer price and real price. Compute a correlation coefficient for the concentration ratio and real price. Are either of these correlations statistically significant? Explain. (Input of this type of data file into SPSS is awkward. Use the initial display in the output window to identify your variables.)

- 5) Open the Department Store Data (in the Stat2216 folder) on the hard drive of a Windows Lab machine. Run a simple regression where Furnishings Prices (furnpric) are explained by Concentration (c4). Run the same regression for only cities in the Northeast region (use the select cases command). Which model gives a better fit? Why? (As before, use the initial display in the output window to identify your variables.)

6) Open the Time Series GNP data (in the Stat2216 folder) on the hard drive of a Windows Lab machine. Use the SPSS curve fit procedure to get both a linear fit and a growth model fit for gnp for all years 1929 to 1983. Which fits better? Why? Now use the values for lngnp to get the growth model via the linear regression procedure and ask for the durbin watson statistic. What does the d.w. stat suggest about serial correlation?

7) Open the Before and After Employment Data (in the Stat2216 folder) on the hard drive of a Windows Lab machine. Use SPSS to compare the mean change in employment of state 0 to that of state 1. Use Recode to group chains 1 and 2 together and to group chains 3 and 4 together. (Do not save your results on the hard drive). Then compare the mean change in employment of the two groups. Are either of the differences statistically significant? Why? (As before, use the initial display in the output window to identify your variables.)

Project

The SPSS software can access a few large (clayco) data sets on the hard drives of the PC's that we use. These are suitable for the following project, or if you prefer, you may assemble your own data set from a source such as the Economic Report of the President or a number internet sources that I have assembled on my McDaniel web page. Just go to the McDaniel site and follow the links: Academics>Econ> Faculty> Claycombe. If you happen to find data that also includes statistical analysis, you must do something original with the data. After we finish our study of regression, you should decide on a data set and start the following project.

- 1) Study the variables in the data set and construct a model of cause and effect. Discuss your idea with me, before proceeding.
- 2) Consider any problems that you fear might arise due to omitted variables or other econometric problems.
- 3) Estimate your model and discuss your results.
- 4) Prepare a paper that covers all of the points above and attach printouts of the appropriate computer work. This paper is due on the last day of class. Feel free to consult with me but take care to work independently of others. Although some of you may use the same data sets, I do not expect your approach to the project to be identical.