

### Homework 3

Due Tuesday May 31<sup>st</sup> at 4 PM

For all questions, please show your work or include a copy of the output, whichever is relevant. Please type your answers in report form, as if you were describing results in a published study. Include the relevant statistical values in the text. **Your answers should be in your own words** and most answers should be approximately one paragraph.

1. In 1999, NPC Research Inc, conducted a school survey of over 2,000 students in Oregon. The survey included 6 questions about the student's perceptions of his or her neighborhood. More detail about the 6 questions and the data set can be found at: <http://www.upa.pdx.edu/IOA/newsom/data.htm>. Investigate the internal reliability of the neighborhood perceptions scale using SPSS to compute Cronbach's alpha (be sure to obtain the mean inter-item correlation and alpha-if-item-deleted information). Report and interpret your findings. Would you recommend that any items be deleted to improve the scale?

2. A researcher conducts a study comparing non-governmental health agencies in Oregon, Washington, and California. He has a panel of experts give a rating of each agency's preparedness for addressing an infectious disease outbreak. Each of the 15 agencies is rated on a scale of 1 to 9, with 9 representing the most prepared. Using the data from the table below, conduct an ANOVA by hand to determine whether the agencies from the three states differ on preparedness. Compute eta-squared to examine the variance in preparedness accounted for by states. Report and interpret your results, including the relevant means and statistics in your write-up.

Oregon	Washington	California
1	5	2
1	6	3
2	7	4
4	8	2
2	9	4

3. I have added the socioeconomic data set used in HW 1 and HW 2 to the data page, <http://www.upa.pdx.edu/IOA/newsom/data.htm>. The new version of the data set includes a new region variable that divides the U.S. into four regions (Northeast, Southeast, Midwest, and West). Use SPSS to compute an ANOVA to see if growth differs significantly among the four regions. Compute eta-squared by hand using the appropriate information from the output (show your work). Report and interpret your findings in terms of the research problem.

4. Explore your results from Problem 2 further by obtaining a Tukey post hoc test to check which regions differ from one another on growth. Report and interpret your findings in terms of the research problem.

5. Artificial data on gas mileage (mpg in the city) for the top selling models of cars and trucks in the U.S. and Canada is available on the data page (<http://www.upa.pdx.edu/IOA/newsom/data.htm>). Use SPSS to obtain a factorial ANOVA to find out if the mpg advantage of cars over trucks is similar in the U.S. and Canada (i.e., is there a larger difference between car and truck mpg in Canada than in the U.S.?). Report and interpret your results in terms of the research problem, including results for all main effects and interaction tests. Plot your results to aid your interpretation.

6. Use SPSS to conduct two simple effects tests a) find out if there is a significant U.S.-Canadian difference in mpg for trucks, and b) find out if there is a significant U.S.-Canadian difference in mpg for cars. Report and interpret your findings including the means, F-tests, and significance.
7. From the website, <http://www.upa.pdx.edu/IOA/newsom/data.htm>, download a new version of the urban socioeconomic data. This version of the data set has per capita income for 1960 (INCOME60) and 1970 (INCOME70) and a binary variable that indicates whether or not a city had positive growth during this period (POSGRWTH, 1=negative growth, 2=positive growth). Use the new dataset to answer the following two questions with SPSS: a.) ignoring the growth variable for now and using the appropriate ANOVA test, does income significantly increase from 1960 to 1970? b.) does the change in income from 1960 to 1970 differ for cities with negative and positive growth?
8. Read **one** of the following articles (pdf files available on the class website). First, describe the study design (e.g., experimental, non-equivalent control group design, cross-sectional survey) and purpose of the study **in your own words**. Be sure to include who/what was studied (e.g., who were the participants?) and the number of cases. Then, choose one analysis used in the article that you have learned about in this section of the course (e.g., ANOVA), and, **in your own words**, describe the hypothesis that is being tested, the results obtained, and what they mean (no more than one paragraph). Be sure to include the relevant means and statistical values and whether the results were significant. Write this as if you were describing results in a published article and reporting someone else's results as in a review article

Ditto, P.H. et al. (2003). Stability of older adults' preferences for life-sustaining medical treatment. *Health Psychology, 22*, 605-615.

Gross, J.S. (2005). Business improvement districts in New York City's low-income and high-income neighborhoods. *Economic Development Quarterly, 19*, 174-189.

Knippenberg, B.V, & Knippenberg, D.V. (2005). Leader self-sacrifice and leadership effectiveness: The moderating role of leader prototypicality. *Journal of Applied Psychology, 90*, 25-37.

Renjilian, D.A. et al. (2001). Individual versus group therapy for obesity: Effects of matching participants to their treatment preferences. *Journal of Consulting and Clinical Psychology, 69*, 717-721.