

## Homework 2

(Due Wed, Nov 18 at 4 pm)

1. Use the 2009 Urban Mobility Report (produced by the Texas Transportation Institute). You will need to download a new version of the data set (at <http://www.upa.pdx.edu/IOA/newsom/data.htm>). The new data set adds two new variables, a variable that distinguishes between cities in the Eastern and Western United States (EASTWEST; 0=East, 1=West) and a variable designating four regions of the US (REGION; 1=Northeast, 2=South, 3=Midwest/West, 4=Southwest).
  - a. Using the two major regions (EASTWEST) and population (POPULATION) as predictors, conduct a regression analysis predicting traffic delays (DELAY). Interpret your results in terms of the research problem, and be sure to include the special interpretation of the slope and intercept.
  - b. Using the variable designating four regions of the US (REGION), create a set of dummy codes to test for regional differences in traffic delays with regression analysis. Make the Northeast region the referent category. Include population as a predictor, but, for results to be more comparable with 1c, recompute population by subtracting out the mean ( $X - \bar{X}$ ) using as many decimal places as possible when you specify the mean. Report your results and find out if there are regional differences in delays after controlling for population.
  - c. Run an analysis of covariance to compare mean differences in traffic delays among the four regions, controlling for population. Use the MANOVA command in syntax as illustrated in class. Report the means, adjusted means, and whether region and the covariate had significant effects. Interpret your results in terms of the research problem and describe how these results are related to those obtained in 1b.
  - d. Using SPSS, run a simple regression analysis with population predicting delays. Obtain a residual plot using X-values (x-axis) and residuals (y-axis), and request the regression diagnostics that were discussed in class. Interpret the regression output results and be sure to discuss whether there are any outliers on X, outliers on Y, influential data points, and heteroscedasticity.
  - e. Remove any outliers that might have an important influence on the results and rerun the regression analysis. Report and interpret your results and discuss whether this remedy fixed the problems you noted in 1d above.
2. Read **one** of the following articles (copies available from the class website <http://www.upa.pdx.edu/IOA/newsom/da2>) and write **two paragraphs** summarizing the article. 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., multiple regression, categorical predictors, regression diagnostics), and, **in your own words**, describe the hypothesis that is being tested, the results obtained, and what the findings mean. Be sure to include the relevant statistical values and whether the results were significant. Write your paragraphs as if you were describing results in a published article and reporting someone else's results as in a review article.

Giffords, E. D.(2003). An Examination of Organizational and Professional Commitment Among Public, Not-for-Profit, and Proprietary Social Service Employees. *Administration in Social Work*, 27,5-23.

Hewitt, C.M. (2004). African-American concentration in jobs: The Political Economy of Job Segregation and Contestation in Atlanta. *Urban Affairs Review*, 39, 318-341.

Mohamed, R. (2006). The economics of conservation subdivisions: Price premiums, improvement costs, and absorption rates. *Urban Affairs Review*, 41, 376-399.

Morello-Frosch, R., Pastor, M., & Sadd, J. (2001). Environmental justice and southern California's "Riskscape": The Distribution of Air Toxics Exposures and Health Risks Among Diverse Communities. *Urban Affairs Review*, 36, 551-578.

van Ryzin, G.G., Muzzio, D., & Immerwahr, S. (2004). Explaining the race gap in satisfaction with urban services. *Urban Affairs Review*, 39, 613-632.