Data Analysis Exercises for Chapter 11: *Applied Regression Analysis, Generalized Linear Models, and Related Methods, Third Edition* (Sage, 2016)

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Last modified: 2015-01-29

Exercise D11.1 In Exercises D5.5/D6.5, D.7.1, and D8.2 various linear models were fit to data. Employ the methods of this chapter to look for unusual data in each of these analyses. In each case, consider the impact of any unusual data that you discover on the results of the analysis, and —within your knowledge of the dataset—suggest how the unusual data should be treated. Some of these models include dummy regressors, deviation regressors, or interaction regressors. Does it make sense to construct added-variable plots for these regressors?

Exercise D11.2 Chapter 8 describes an experiment performed by Moore and Krupat examining the relationship of conformity to subjects' authoritarianism and the status of their partners. The data from the experiment are analyzed in a two-way analysis of variance in Section 8.2 and in an analysis of covariance in Section 8.4.

(a) Use the methods of this chapter to look for unusual data in the two-way ANOVA.

(b) Use the methods of this chapter to look for unusual data in the ANCOVA model.

(c) Does it make sense to construct added-variable plots for the deviation regressors and interaction regressors in an ANOVA or ANCOVA model?

Exercise D11.3 Using Duncan's data on the prestige of 45 U.S. occupations, regress prestige on education, income, and two dummy variables to represent the effects of the three occupational types.

(a) Construct added-variable plots for education, income, and the two dummy regressors for occupational type.

(b) Construct leverage plots for education, income, and occupational type. Confirm that the leverage plots for education and income are identical to the added-variable plots in part (a), except for the scaling of the horizontal axis. Compare the information obtained from the leverage plot for occupational type with the two partial-regression plots for the occupational type coefficients in part (a).