Display 9.9 A strategy for data analysis using statistical models

Preliminaries: Define the questions of interest. Review the design of the study (for thinking about model assumptions). Correct errors in the data. Explore the data. Look for initial answers Use graphical tools; consider to questions and for potential models. transformations; fit a tenative model: check outliers. Formulate an inferential model. Word the questions of interest in terms of model parameters. Check the model. (a) If appropriate, fit a richer model Check for nonconstant variance; assess outliers. Test (with interactions or curvature, for whether extra terms in the rich example). (b) Examine residuals. Model model can be dropped. (c) See if extra terms can be dropped. Mòdel OK Infer the answers to the questions of in-Confidence intervals, tests. terest using appropriate inferential tools. prediction intervals, calibration intervals (as needed). Answer questions (as much as Presentation: Communicate the results. possible in subject matter to the intended audience. language — not statistical language). Make inferential statements compatible with study design.