# Course title: Visualizing Linear Models: An R Bag of Tricks

Instructor: Michael Friendly

Dates: 3 weeks, either Thurs: Oct 22, 29, Nov 5; or Fri: Oct 23, 30, Nov 6

Time: 3 hr sessions; aft.: 1pm – 4pm

Location: Online

Limit: 20

Minimum: At least five (5) registrants are required in order to hold the course.

# Abstract:

OK, so you ran your ANOVA, multiple regression (MRA), or multivariate counterparts (MANOVA, MMRA), but now you need to visualize the results to both understand them and communicate. Who you gonna run to? – R of course.

This course covers data visualization methods designed to convert models and tables into insightful graphs. It starts with a review of graphical methods for univariate linear models---data plots, model (effect) plots and diagnostic plots. A brief introduction to multivariate linear models uses data ellipses (or ellipsoids) as visual summaries of 2D (or 3+ D) of multivariate relations. The Hypothesis-Error (HE) framework provides a set of tools for visualizing effects of predictors in multivariate linear models. I give some examples of HEplots for MANOVA and MMRA designs. Finally, if time permits, some model diagnostic plots for detecting multivariate outliers and lack of homogeneity of (co)variances will be described.

Participants should have a background in statistics including a course in linear models (ANOVA, multiple regression). In addition, they should have some familiarity with using R and R Studio, such as the SCS course, *An Introduction to R and the Tidyverse* or equivalent. A web page for the course will give access to lecture notes and resources.