

Today: Ch 4 of Cleveland – continuation

But first,

What did you learn from the Bimbo assignment?

1. Simulation is not only for exploring theory, but useful for data analysis.
2. Use of Intuition (Subjectivity?) is useful and inevitable in modeling.
3. Graphical methods are often the best way to portray results of analysis.
4. Simple probability methods can be used to solve practical problems.
5. Programming requires good knowledge of syntax but modifying a program is not so demanding.
6. Doing anything properly on computer takes more time than anticipated!

Back to Ch 4:

We introduced coplots (conditioning plots) to study the dependence of the relationship between two variables on a third variable. (Rubber data, p 185 and p 187)
Quantitative variables for this.

Possible confusion – alpha for loess in coplot (proportion of data used per grid point)
_ alpha for slices for coplot (proportion overlap in adjacent slices)

Much more informative than matrix plots (p 183) – signal amplification – how?
Ability to visualize the nature of interactions – much more flexible and informative than analysis of variance.

Rubber data shows little interaction between Tensile Strength and Hardness in predicting Abrasion Loss.

Compression data (p 188): understand as well as possible from matrix plot

Coplot on p 189 shows strong interaction between ER and CR in predicting NOX.
Review definition of interaction. Check that you understand the following:

P 191: If the 5 lower panels, or the 4 upper panels (but not both), were all the data you had, you would conclude that the interaction between ER and CR in predicting NOX was negligible.

The coplot of the Compression data on p 190 should also show interaction – can you see it?

Brushing – Direct Manipulation – Try it in Minitab?

Coplots of Fitted Surfaces:

Fitted Surfaces? Parametric Fits (p 194) Nonparametric Fits (p 195) Loess

Result p 197. Shows a more smoothly described interaction. Note the different “residuals” involved in p 189 vs p 197.

Next time: More Ch 4

HW Study pp 180 ff we are now approx p 198. Next time to p 228 or more.

Midterm Test – Oct 17 class – Ch 1-4 and other examples from class (Ubi, Mercedes, Bimbo, ...)