

Stat 705, Homework 1

1. Refer to the **Chemical Shipment** data in 11.10 (I have placed a copy of the data in Blackboard) to answer the following questions.
 - (a) Generate a ridge plot in SAS (you don't need the output provided at the start of 11.10).
 - (b) 11.10b, d.
 - (c) Run LASSO and comment on the evolution plot. Compare slope estimates with your ridge regression results.
2.
 - (a) 11.11a
 - (b) 11.11c (use `method=m (wf=huber maxiter=1)`) to obtain parameter estimates after a single iteration).
 - (c) 11.11e
3. **Rehabilitation Therapy.**
 - (a) 16.9a, 16.9b, 16.9d-g. Answer 16.9a using default boxplot displays rather than dotplots.
 - (b) Estimate the effects model parameters using PROC GENMOD.
 - (c) 17.10b-f
 - (d) 17.15a-c
4. 17.33
5. Refer to the AADT traffic data. The variables are County, Station, Route Designation, Route Number, Route Aux, AADT (the response), Year, and Location. Select records for Lexington County (County=32).
 - (a) Construct a boxplot by Route Designation (1=Interstate, 2=US Primary, 4=SC Primary, 7=Secondary, 9=Local) with attractive labels for Route Designation. Do the assumptions of the one-factor ANOVA model appear to be satisfied?
 - (b) What transformation is recommended by the Box-Cox procedure?
 - (c) Working with the transformed data, again construct a box plot and comment. Fit a one-factor ANOVA model; is Route Designation a significant factor?
 - (d) Construct contrasts that test simultaneously whether (i) average Interstate traffic is higher than average traffic for the other four route designations, (ii) Average traffic on primary roads is greater than average traffic on secondary and local roads ($\alpha = 0.05$).