Quiz#3   Homework #16   Partial Answers

The study examined the possible relations between the wellness rating following six months of psychotherapy with Initial Psychopathology (the severity of the mental illness at the beginning of the current treatment) and Prior Treatments (the number of prior treatment regimens they had completed).

Linear Model

1. Get the univariate statistics for the Initial Pathology variable   mean =   62.9776   std =   8.72896

& the number of Prior Treatments variable   mean =   9.3575   std =   3.35190
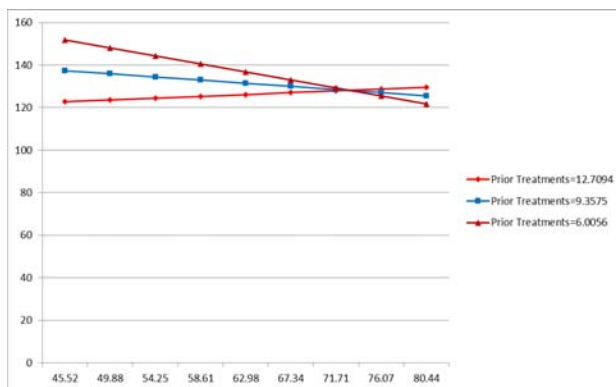
Computed a mean-centered version of each of these quantitative predictors
Compute a linear interaction term as the product of these mean-centered variables

2. Complete a linear regression analysis

    *   Include the mean-centered predictors
    *   Include their linear interaction term

R^2 .189   F 18.305   df 3, 235 p .000

Effect	b	p
constant	131.467	
Initial Pathology	-.336	.004
Prior Treatment	-1.579	.000
Interaction	.158	.000

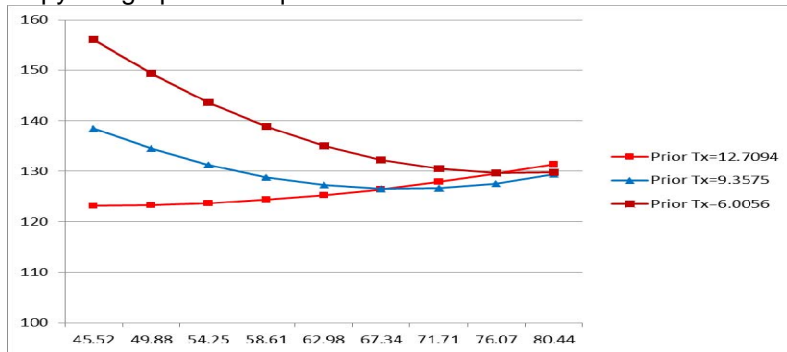3. Copy the graph of the linear model in below

Non-linear Model

4. Complete a non-linear regression analysis

- Compute a quadratic term for each quantitative predictor
- Compute the quadratic interaction terms: 1) quadPath & linTx, 2) linPath & quadTX 3)quadPath &quadTx

R^2 .249   F 9.528 df 8, 230 p .000

Effect	b	P
constant	127.241	
Linear Initial Pathology	-.263	.068
Quadratic Initial Pathology	.022	.128
Linear Prior Treatment	-1.455	.000
Quadratic Prior Treatment	.260	.002
Linear Interaction	.147	.000
quadPathology – linearTreatment interaction	-.003	.431
linearPathology – quadTreatment interaction	.000	.959
Quadratic Interaction	-.001	.689

5. Copy the graph of the quadratic model in below

6. Describe the results (carefully eyeballing the myriad things you don't have significance test for)

Describe the pattern of the interaction in terms of the differential relationship between Initial Pathology & Wellness for folks at the high, medium and low Numbers of Prior Treatments

Describe the pattern of the interaction in terms of how Numbers of Prior Treatments relates for Wellness for those with low, medium and high levels of initial Pathology.

Describe the main effect of Initial Pathology? Is it descriptive or misleading (explain carefully)?

Describe the main effect of Number of Prior Treatments? Is it descriptive or misleading (explain carefully)?

7. Get the quadratic model of the relationship between Initial Pathology and Wellness for each of the following values of Number of Prior Treatments (by re-centering Number of Prior Treatments – remember to recompute quad & interaction terms).

iniPath simple effects for specific values of Prior Treatment

  5 Prior Treatments   IniPath Linear -.896 p .000   Quad .025 p .355   constant 138.527

  10 Prior Treatments   IniPath Linear -.168 p .243   Quad .020 p .174   constant 126.414

  15 Prior Treatments   IniPath Linear .585_ p .069   Quad -.011 p .747 constant 127.321

8. Use the "q nonlinear" tab on the plotting program to get the plot of each of these "simple effects". Copy the graphs in below.

5 Prior Treatments

15 Prior Treatments

10 Prior Treatments