Stat 2216 Spring 2015
Statistical Methods R. Claycombe

Second Exam

Write all answers in your blue book and show all work there. Return your exam and printout(s) in your blue book.

25 pts
Suppose we have this data.
1)

A	B	C
1	3	0
2	6	7
3	5	8
4	4	5

a) Fit a regression where C is a function of A, show work.
b) Find the r^2 for the model and interpret it.
c) Find the standard error of the estimate and s_b, using them to test for a significant effect of A. ($\alpha = .10$, show all steps to the test)

15 pts
2) a) Use the normal equations for the data in problem 1 to find the regression coefficients for a model where C is a function of B and A. Show all work.
b) Compare the effect of A on C that you see in 2a to that in 1a and do your best to explain the difference or lack of difference that's there.

25 pts
3) Use the Bikes data from chapter 16 and SPSS to:
a) Fit a model where Price is a function of weight and type (you must create dummy variables). Do you see significant effects with this model? Explain. What do you see that suggests there are significant relationships?
b) Use the graph function to plot the data with the different types of bikes marked and interpret what you see there. If you can't do the computer graph, do it by hand.
c) Now rerun the model with weight squared as a variable. Describe and interpret the difference that it makes.

20 pts
4) Draw well-labeled diagrams that depict:
a) Heteroscedasticity
b) Autocorrelation

15 pts

5)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.992[a]	.984	.957	.44629	2.249

a. Predictors: (Constant), AVG, SB, 3B, BB, 2B, SLG, OBP, SO, CS, HR, H, RBI

b. Dependent Variable: RPG

Coefficients[a]

Model		Unstandardized Coefficients		t	Sig.	Collinearity Statistics	
		B	Std. Error			Tolerance	VIF
1	(Constant)	-1.482	.898	-1.650	.143		
	H	-.012	.016	-.779	.462	.008	125.539
	2B	-.009	.048	-.193	.852	.026	38.223
	3B	.458	.294	1.559	.163	.056	17.826
	HR	.053	.055	.961	.368	.018	55.702
	RBI	.018	.034	.511	.625	.005	221.950
	BB	-.004	.020	-.184	.859	.021	48.136
	SO	-.008	.013	-.577	.582	.029	34.144
	SB	.030	.043	.703	.505	.096	10.407
	CS	.015	.241	.061	.953	.047	21.122
	OBP	28.871	4.429	6.518	.000	.107	9.354
	SLG	5.742	4.046	1.419	.199	.057	17.415
	AVG	-21.941	4.841	-4.532	.003	.152	6.587

a. Dependent Variable: RPG

a) Does there appear to be serial correlation? Why?

b) Does there appear to collinearity? Why?

c) Interpret the adjusted R^2.

I have neither given nor received unfair aid on this test nor am I aware of anyone else who has.

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