

1 Problem 17 with additions

This is an exercise that is build on Problem 17 in the written exercises, which is also where you can find information about the dataset.

Problem 1 Analyze Anderson and Bancroft's model with a special emphasis on influence statistics. The necessary output may be obtained by calling the `reg` procedure like in

```
proc reg data=AandB plots=(Diagnostics CooksD RStudentByLeverage DFFITS DFBETAS);  
model y=x1 x2 x3 x1x2/r influence;
```

Are there any observations that have a considerable influence on the estimation of the model parameters?

Problem 2 The problem is now to try to construct a regression equation from the given data. You could consider including 2nd order terms (e.g. X_1^2, X_1X_2 etc.). In all it is possible to construct 512 regression equations given three independent variables, their squared values, and all possible products of two variables.

Problem 3 Compare the equation you find with the one proposed by Anderson and Bancroft. Are there any very influential observations in your equation. If, are they also found in Anderson and Bancroft's model?

If you do not wish to type all the data points in to SAS, feel free to copy this:

```
Data AandB;  
input x1 x2 x3 y;  
x1x1=x1*x1; x2x2=x2*x2; x3x3=x3*x3; x1x2=x1*x2; x1x3=x1*x3; x2x3=x2*x3;  
cards;  
1.76 0.070 7.8 110.4  
1.55 0.070 8.9 102.8  
2.73 0.070 8.9 101.0  
2.73 0.070 7.2 108.4  
2.56 0.070 8.4 100.7  
2.80 0.070 8.7 100.3  
2.80 0.070 7.4 102.0  
1.84 0.070 8.7 93.7  
2.16 0.070 8.8 98.9  
1.98 0.020 7.6 96.6
```

0.59	0.020	6.5	99.4
0.80	0.020	6.7	96.2
0.80	0.020	6.2	99.0
1.05	0.020	7.0	88.4
1.80	0.020	7.3	75.3
1.80	0.020	6.5	92.0
1.77	0.020	7.6	82.4
2.30	0.020	8.2	77.1
2.03	0.474	7.6	74.0
1.91	0.474	8.3	65.7
1.91	0.474	8.2	56.8
1.91	0.474	6.9	62.1
0.76	0.474	7.4	61.0
2.13	0.474	7.6	53.2
2.13	0.474	6.9	59.4
1.51	0.474	7.5	58.7
2.05	0.474	7.6	58.0

;