

CH4 LAB - INTRODUCTION TO MULTIPLE REGRESSION

Consumer researchers were interested in factors that people consider when buying cars. Experts rated 8 cars for quality (1 = poor quality and 5 = high quality) and value (1 = poor value or expensive and 5 = good value or cheap). Consumers then rated the likelihood they would buy that car (higher values = more likely to buy). The results are below (*qual*, *valu*, and *buy* refer to quality, value, and likelihood of buying the care, respectively).

Qual	Valu	Buy
1	5	15
1	4	15
2	4	14
2	5	18
4	1	10
4	2	14
5	2	13
5	1	13

Variable	Mean	Std Dev
BUY	14.0000	2.2678
QUAL	3.0000	1.6903
VALU	3.0000	1.6903

-- Correlation Coefficients --		
	BUY	QUAL
QUAL	-.5963	
VALU	.8199	-.9000

Box 1. Preliminary Analyses.

1. Generate the statistics shown in Box 1, which are required to determine the multiple regression (MR) equation to predict *buy*. What do the data show about the relationship among the three variables? Anything unusual?
2. Use the values from 1 to calculate an MR equation to predict the likelihood of buying each car.
3. Determine the best-fit MR equation in SPSS and compare to calculations in 2. Compare the regression coefficients to the simple *rs* obtained in 1. Any interesting difference?
4. Repeat the analysis in 3, save predicted and residual scores, and show how MR has partitioned the total variability in *buy*.
5. How strong is the relationship between the two predictors and the likelihood of buying a car?
6. Is the overall relationship significant?

7. Create the 3D plot shown to the right: (a) Invoke the 3D dialogue box. (b) Select x, y, and z variables and move them into appropriate boxes. Remember that graph rotation will switch x and z axes. (c) Create graph (select *Ok*) and then double-click on it to invoke Chart Editor (if axes are correct). (d) Edit to reproduce the figure as exactly as possible. Changes generally involve clicking on some element, and then modifying its properties.

8. Correlate and obtain descriptive statistics for the original variables, and new variables created by the regression analysis. Identify results relevant to the overall regression equation with both predictors.

9. Think about how to generate the best-fit plane.

