

CH7- LAB: COGNITIVE PERFORMANCE AND AGING

Psychologists interested in gerontology tested 200 participants of various ages on a battery of cognitive tests. The total score on the tests (*cog*) was examined as a function of *age*, amount of exercise (*exer*), and self-rated health (*health*). Enter the following commands to generate data for this study and perform analyses to answer the following questions.

```
SET SEED = 1239845.
INPUT PROGRAM.
LOOP o = 1 TO 200.
END CASE.
END LOOP.
END FILE.
END INPUT PROGRAM.
COMPUTE za = RV.NORM(0,1) .
COMPUTE ze = RV.NORM(0,1)*.7071+za*.7071.
COMPUTE zh = RV.NORM(0,1)*.5292 + za*-.6 + ze*.6.
COMPUTE zc = RV.NORM(0,1)*.7071 + za*-.5 + ze*.5.
COMPUTE cog = RND(100+15*zc) .
COMPUTE age = RND(50 + 15*za) .
COMPUTE exer = RND(25 + 4*ze) .
COMPUTE health = RND((40+5*zh))/10.
DELETE VARI za ze zh zc.
FORMAT o cog age exer (F3.0) health (F4.1) .
```

1. Examine the pattern of correlations among the variables. Anything surprising?
2. Determine the best-fit regression equation using all three predictors. Calculate a few predicted and residual values and show that predicted and residual scores partition the total variability in cognitive performance.
3. Calculate statistics relevant to the strength and significance of the overall relationship between cognitive performance and the three predictors.
4. How strong and significant is the unique contribution of *health* to the prediction of cognitive performance? Is there anything surprising about this result?
5. Compute a residual health predictor to demonstrate the part r.
6. Use the /FORWARD procedure to obtain a final equation.
7. Use the /BACKWARD procedure to obtain a final equation. Do the /FORWARD and /BACKWARD options produce the same final equation? Why?
8. What do you think will happen with /STEPWISE? Why? Perform the /STEPWISE analysis and compare to your expected outcome. Change PIN and POUT to modify the outcome.
9. Can you explain the results?