

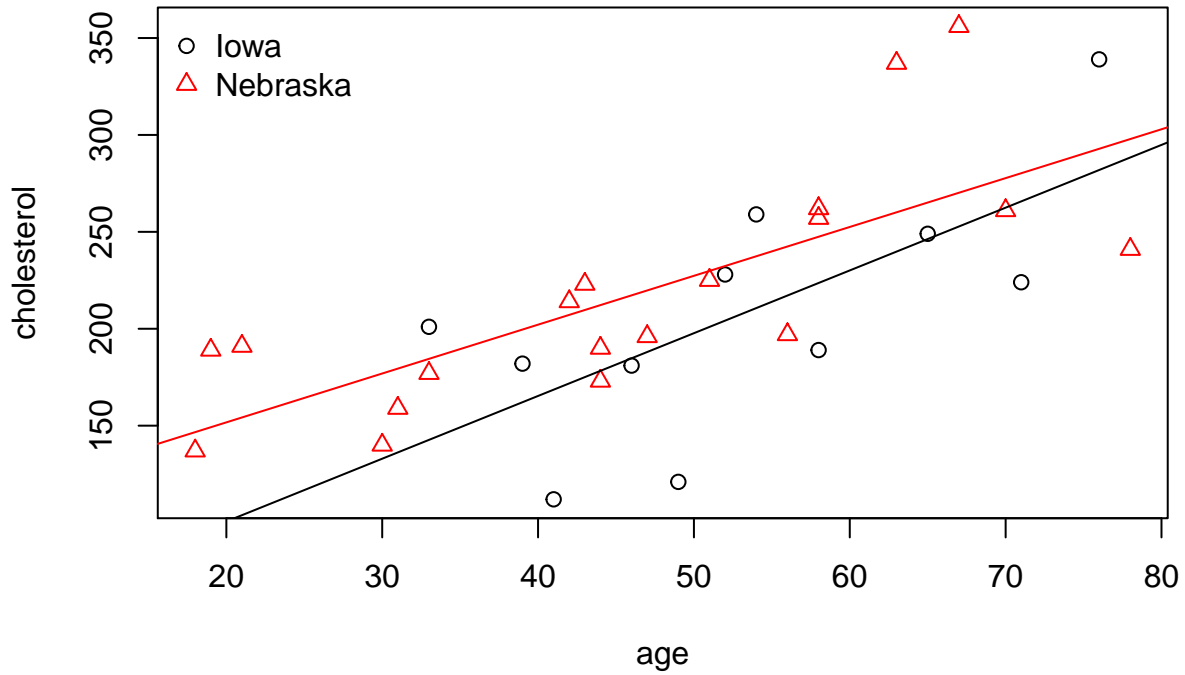
ANCOVA example with Cholesterol

Joel Steele

The Data

Cholesterol levels [mg/ml] for 30 women from two US states, Iowa and Nebraska. Age [years] may be a relevant covariable.

Source: G.W. Snedecor, W.G. Cochran: Statistical Methods, 7th ed. Ames: Iowa State University Press 1980.



Descriptives

Table 1: Sample statistics

	n	mean	sd	median	min	max
cholesterol	30	213.67	59.75	199	112	356
age	30	48.57	16.35	48	18	78

Table 2: Correlations

	cholesterol	age
cholesterol	1.00	0.69
age	0.69	1.00

The models

$$\text{Cholesterol}_i = b_0 + b_1 \text{Age}_i + b_2 \text{State}_i + b_3 (\text{Age} \times \text{State})_i + \epsilon_i$$

Table 3: Uncentered predictors

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	35.81	55.12	0.650	0.522
age	3.24	1.01	3.210	0.004
stateNebraska	65.49	61.98	1.057	0.300
age:stateNebraska	-0.72	1.16	-0.617	0.542

Table 4: Mean centered age

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	193.08	13.79	14.006	0.000
cage	3.24	1.01	3.210	0.004
stateNebraska	30.63	17.04	1.798	0.084
cage:stateNebraska	-0.72	1.16	-0.617	0.542

Table 5: Age centered at 20 years

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	100.57	35.83	2.807	0.009
cage20	3.24	1.01	3.210	0.004
stateNebraska	51.13	40.08	1.276	0.213
cage20:stateNebraska	-0.72	1.16	-0.617	0.542