3.1 Alternate Variable Types and Interactions

Dr. Bean - Stat 5100

Describe the difference between multicollinearity and interactions.

Identify whether each of the following variables are qualitative or quantitative:

- hours worked
- shirt color
- a person's shoe size
- systolic blood pressure
- blood type
- college major

Ignoring the significance of the model coefficients and assuming that assumptions regarding residuals are satisfied, please write the estimated regression equation corresponding to the following SAS output (not that Y represents Oxygen Intake Rate).

Parameter Estimates

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	107.29565	43.38302	2.47	0.0202
Age	Age (in years)	1	-0.46161	0.87289	-0.53	0.6014
Weight	Weight (in kilograms)	1	-0.23470	0.54681	-0.43	0.6713
RunTime	Time to Run 1.5 Miles (in minutes)	1	-3.15204	0.37523	-8.40	<.0001
ageWeight	Age*Weight	1	0.00370	0.01115	0.33	0.7427

What is the expected change in the average of Y when a person ages by one year?

Suppose you are trying to predict a person's happiness and you suspect that country of origin is a significant predictor of happiness. You take a sample of 100 people to test your hypothesis. In this scenario, what issue will you run into trying to use country of origin as a predictor variable?