Other Perspectives on 3rd Variables

We don't always look at 3rd variables as controls. There are at least two other ways to conceptualize 3 variable analysis:

I. Conjoint Effects

Rather than focus on the validity of a single mono-causal explanation of a dependent variable, we might be concerned with a more "complete" explanation. In a complex world, it is common that any one dependent variable is best explained by a combination of factors. The total effect of all independent or predictor variables is called their conjoint effect.

The process of examining the data mirrors our analysis of control variables. Create a 3 way table and consider whether combinations of the independent variable and the control maximize (or minimize) the dependent variable. However, there is a change in language here. We don't speak of X and Z as independent variable and control but now speak of X_1 and X_2 as two independent variables. The

tables could as easily be generated as Y by X_1 by X_2 or Y by X_2 by X_1.

Consider the situation of the cross-pressured voter.

Some voters are pushed to vote for one party by a variety of factors. On the other hand, other citizens may feel that they are pushed in two directions simultaneously. One variable pushes them toward the Republican candidate while another pushes them toward the democratic candidate.

We expect these two different types of citizens to behave differently:

Consistent	Cross-pressured
Straight ticket	Split ticket
Early decision	Late decision
High interest	Low interest
Strong partisan	Independent

Consider two issues that motivate voting: abortion and taxes. Opposition to abortion and reducing taxes are popular Republican positions. Votes with these views have should have little difficulty supporting the Republican candidate. Similarly, support for abortion rights and desire to maintain taxes to ensure “essential” government services are common Democratic positions. Voters with these attitudes are easily satisfied. But citizens who would lower taxes but are pro-choice and those who oppose abortion but would maintain taxes to protect their social security are clearly torn between who to vote for.

One possible outcome is the following:

	Pro-Life		Pro-Choice	
	Taxes		Taxes	
	Lower	Maintain	Lower	Maintain
REP	80	60	40	20
Vote				
DEM	20	40	60	80

II. Relative Effects

Another goal of empirical research is sorting out the impact of multiple independent variables.

Again, the process of examining the data for relative effects is identical to our analysis of conjoint effects. Create a 3 way table. The tables can as easily be generated as Y by X_1 by X_2 or Y by X_2 by X_1.

Again we speak of X_1 and X_2 as two independent variables. At issue is which of the two has a larger effect on Y and which has the smaller.

Consider the possibility that two variables affect the neighborhood crime rate, wealth of the homeonwers (attractiveness) and police patrol rates (deterrence)

	Police Patrol			
	Passive		Active	
	Wealth		Wealth	
	Lo	Hi	Lo	Hi
Victim	60	20	50	10
Crime				
Not Victim	40	80	50	90

Cell entries are column percentages.

Now it can be difficult to see the relative effect of wealth versus police in this setup. But we can convert this table to a simpler one by focusing just on one row of the table (realizing the second row is simply the opposite of the first).

From the 3-way table, create what looks like a bivariate crosstab but reflects the % of citizens who are crime victims according to whether or not they live in rich versus poor neighborhoods and whether or not their police departments patrol aggressively or cruise the neighborhood only after a crime is reported.

		Police patrol	
		Passive	Active
Wealth	Lo	60	50
	Hi	20	10

Cell entries are the percentages of victims in each neighborhood type.

In this table, we can compare the effect of changing one variable while holding the other constant.

For example, if police patrol is “passive”, then the difference between living in a rich versus poor neighborhood is a crime rate difference of 40%. The same is true when police are “active”.

On the other hand, the effect of active police patrol versus passive patrol is 10% in both rich and poor neighborhoods.

It appears that police patrol reduces crime but a much bigger determinant of the crime rate is the wealth of neighborhoods.

Generally, to see the effect of column variables compare across rows. To see the effect of row variables compare within columns.

Note: This style of presentation works best with a dichotomous dependent variable.