

POLS 7014
INTERACTIVE TERMS
Spring 2015

Table 1: Linear Regression of Support for Social Welfare

Variable	Coefficient	Std. Err.	p-value
Female	-.003	.014	.828
Republican	-.221	.016	.000
Female $\times$ Republican	.084	.021	.000
Intercept	.745	.011	.000
N			1077
Adjusted R^2			.223

Note: Model estimated using data from the 2004 American National Elections Studies. SUPPORT FOR SOCIAL WELFARE is an additive index of support for the social welfare state. Table from Kam, Cindy D. and Robert J. Franzese Jr. 2007. Modeling and Interpreting Interactive Hypotheses in Regression Analysis. p. 26-29.

Table 2: Linear Regression of Number of Presidential Candidates

Variable	Coefficient	Std. Err.	p-value
Ethnic Groups	-.979	.770	.228
Runoff	-2.491	1.561	.136
Ethnic Groups $\times$ Runoff	2.005	.941	.054
Intercept	4.303	1.229	.004
N			16
Adjusted R^2			.203

Note: Model estimated using data from sixteen democratic presidential democracies in 1985. RUNOFF is a dichotomous variable indicating the presence or absence of a runoff system for presidential elections. ETHNIC GROUPS is a measure of the number of social cleavages in a country. Table from Kam, Cindy D. and Robert J. Franzese Jr. 2007. Modeling and Interpreting Interactive Hypotheses in Regression Analysis. p. 26-29.

Table 3: Linear Regression of Government Duration

Variable	Coefficient	Std. Err.	p-value
Number of Parties	-31.370	11.345	.013
Parliamentary Support	-.586	.454	.214
Number of Parties $\times$ Parliamentary Support	.469	.186	.022
Party Discipline	9.847	3.204	.007
Intercept	59.273	26.455	.039
N			22
Adjusted R^2			.511

Note: Model estimated using data from twenty-two parliamentary governments in the post-World War II era. The dependent variable, GOVERNMENT DURATION, is measured in months and takes values from 11 to 45.1. NUMBER OF PARTIES is the average number of parties in government and takes values between 1 and 4.3. PARLIAMENTARY SUPPORT is the percentage of the lower house held by the governing party or parties. PARTY DISCIPLINE measures the high levels of party discipline. Table from Kam, Cindy D. and Robert J. Franzese Jr. 2007. Modeling and Interpreting Interactive Hypotheses in Regression Analysis. p. 26-29.

HOMEWORK

1. Using the Prestige database (from the car library), estimate the regression model defined by the following R code:

$$lm(\text{prestige} \sim \text{income} + \text{education} + \text{income} * \text{education})$$

Substantively describe the effects of the independent variables on the dependent variable. In other words, describe the relationships implied by the interactive terms. Does this interaction make sense to you? Why or why not?

2. Next, estimate the regression model defined by the following R code:

$$lm(\text{prestige} \sim \text{income} + \text{type} + \text{income} * \text{type})$$

Interpret the results of this model. Calculate predicted levels of prestige for professional, white collar and blue collar jobs at various levels of income and report these predicted levels in a graph. What have you learned about prestige thanks to the interactive variable?