

Chapter 4-2 Practice

Jim Bang

Exercise

1. Estimate the model from the previous practice exercises *with and without region variables*. Name your models `crime.lm1` (unrestricted model with regions) `crime.lmr` (restricted model without regions).

$$\begin{aligned} \ln(CrimeRate) = & \beta_0 + \beta_1 \ln(LawExpendPC) + \beta_2 \ln(IncomePC) + \beta_3 \ln(PopulationDensity) \\ & + \beta_4 West + \beta_5 Northeast + \beta_6 South + u \end{aligned}$$

2. Calculate the test statistic for the presence of risk-adjusted (controlling for other factors) regional differences in crime rates *by hand* using the restricted and unrestricted R^2 .
3. Calculate the corresponding p-value.