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**Homework 7**

1. This problem set examines a different determinant of crimes, the viewing of violence in movies. Some argue there is a connection between viewing violent movies and the incidence of violent crimes. On the other hand, movies get people off the streets and into theaters at times when most crimes occur, the nighttime. And they substitute for other activities that lead to a violent behavior (drugs and alcohol). To analyze this type of behavior you will work with a data set ***Movies.xxx***. A description of the variables is given in a file called **movies\_description.pdf.** The data set includes weekend U.S. attendance for strongly violent movies (*attend\_v*) (such as Hannibal), mildly violent movies (*attend\_m*) (such as Spider Man) and non-violent (*attend\_n*) (such as Frozen).
2. Compute the logarithm of assaults (*ln\_assaults*) and regress it on month and year dummy indicators using January as a base. Is there evidence of “seasonality” in this type of violent crime, *i.e.,* do there tend to be more assaults in some months than others? Is there a trend in assaults over the sample years?

(b) Generate the total attendance of all three categories of movies (*attend = attend\_v* + *attend\_m* + *attend\_n*) and regress it on year and month indicators. Do you see seasonality in movie attendance? Is there a trend in movie going over time?

1. Now regress *ln\_assaults* on the attendance in each of the three types of movies, along with month and year dummy indicators, and the weather and holiday control variables available in the data set. Does viewing a strongly violent movie increase or decrease assaults, by how much? Is it statistically significant?
2. Test whether the effects of attendance at strongly violent and mildly violent movies are the same. Do the same for the effects of attendance at strongly violent and non-violent movies. State the Null hypothesis and specify your restricted regression.
3. Movie attendance and the incidence of violent crimes can be determined by certain common factors. Weather is a good example: when bad weather causes people to stay at home, they do not go to theaters and they are also not the target of assault. Instrumental variable regression might correct for the endogeneity of the attendance variables. The dataset contains three potential instruments which provide estimates of the predicted attendance of strongly violent, mildly violent and non-violent movies, *pr\_attend\_v, pr\_attend\_m* and *pr\_attend\_n*, respectively. These predictions are based on knowledge of typical patterns for attendance of movies during their theatrical distribution.
4. Estimate the first stage of the 2SLS procedure and test whether the three variables are “strong” instruments.
5. Run two stage least squares regression using these three variables as instruments for the three endogenous regressors. Evaluate the coefficient on attendance of violent movies and test whether it is different from the coefficient on mildly violent movies, and then again for nonviolent movies.

1. Comment on R2 from regression in part (b)
2. A different collection of instruments included in the dataset are the attendance of each of the three categories of movies in the previous and subsequent weeks, *e.g, attend\_v\_b* and *attend\_v\_f* are attendance at violent movies the week before and the week following, respectively. Perform 2SLS using these six variables as instruments for the three endogenous regressors. As before, evaluate the coefficient on attendance of violent movies and test whether it is different from the coefficient on mildly violent movies, and then again for non-violent movies.
3. Perform a test for overidentification. What do you conclude about the instruments?