Provide short paragraph answers to the questions below. Well written, TYPED answers are expected. You will be graded on your writing as well as the quality of your answers. The assignment is due on the date specified. Late work will not be accepted. Printouts must be originals; xeroxed copies will not be accepted. *Staple all pages.*
1 Purpose

The purpose of this lab is to allow you to build and analyze a multiple regression model for an actual problem. At the end of this lab, you will be able to

1. specify a multiple linear regression model for a problem;
2. estimate a multiple linear regression model in EViews;
3. interpret key statistics;
4. identify shortcomings in the proposed linear model;
5. summarize the regression output;
6. estimate elasticities and judge their reasonableness;
7. build a model portfolio.

2 Problem

Crime is a topic on everyones’ mind. Politicians historically have raised the issue at election time, pointing out that there is a serious crime problem and that only they can solve it - if elected. We now, of course, have substituted the word ”terrorism” for violent crime, but the effect is the same: we feel insecure in our own homes. Crime is actually divided into categories, violent crime being just one. In this lab, you will estimate a complex model to explain violent crime rates at the state level in the United States.

3 Data

Using the Statistical Abstract of the U.S. (2007 edition), find the 2004 total violent crime rate data by state (Table 297) and collect data on each state for the violent crimes in that state. Collect data by state on the 2004 total unemployment rate, 2004 Gross State Product (would you use Current or Real Dollars?), 2004 personal income (would you use Current or Real Dollars?), and one other variable of your choice that you believe affects violent crime.

The U.S is divided into four Census regions. These can also be found online (google ”MapStats: United States”). Create dummy variables for the regions and include the dummies in your models.

Be sure to graph your data and interpret the graphs. All graphs must be clearly labeled. A coding sheet, data assessment table and correlation matrix are expected.

4 Procedures

Build several multiple regression models explaining violent crime. You have many options with the variables you have.
5 Detailed Questions

Please provide short, brief, but thorough and thoughtful answers to the following:

1. What is the relationship between violent crime and the independent variables? Is this the relationship you expected? Be sure to state your null hypotheses, defend why you stated them this way, and test them.

2. Interpret the $R^2$.
   (a) What does it say about your model.
   (b) How can you make the model better?
   (c) Are there any additional variables you can think of that should be included, or is this model sufficient? Defend your answer.

3. Interpret the F-statistic.
   (a) What hypothesis does it test?
   (b) What do you conclude from it?

4. Are violent crimes elastic or inelastic with respect to each of the independent variables?
   (a) Do they make sense?
   (b) Is it what you expect? Defend your answer.

5. What is the practical significance of your model? In other words, what can this be used for, it for anything at all? How would you answer the question: “So what?” Defend your answer.

6. Build a model portfolio and select a ”best” model. Why did you select this one?