PROBLEM SET TWO

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Use the dataset *bwght.dta*. You can download the dataset from Prof. Ragusa Luiss page on Didactic Material.

1.

A. Regress *bwghtlbs* (birth weight in pounds) on *cig* (cigs smoked per day) and explain the model. Is there correlation between the variables? Is the regression statistically significant? How should you prove it? Comment.

B. Make a plot of *bwghtlbs* against *cig*. Can you prove there is correlation? Comment.

C. Construct a statistical procedure to test that birth weight in pounds is equal whether babies are male or not against the alternative hypothesis that male babies weight more. Use a significance level of 5%. Comment.

2.

A. Do the same regression of point **1.A** adding *male* and explain the new model. Does this new variable help you in explaining *bwghtlbs*? Why? Comment. {HINT : Try observing significance of model}

B. How can you interpret β_2 and β_0? Do you note some similarities with the point **1.C**? Why? Comment. {HINT : Try testing that $\beta_2 = 0$ against the alternative hypothesis that $\beta_2 > 0$, hence compare the two t-statistics}

Use the dataset *cig.dta* explained in PROBLEM SET ONE (Exercise 5). You can download it from Prof. Ragusa Luiss page on Didactic Material.

3.

A. After you've made a regression (*packs* on *price*) and explained significance of coefficients, suppose that your boss wants the regression expressed in cigarettes smoked and euro. How will β_1 and β_0 change? Comment carefully alighting on every computation. {HINT : Remember that *1€ = 1.39$* and *1packs = 20cigs*}

B. You have been moved in the Tax Department and you have a new boss who wants to collect money from the taxation of cigarettes. He knows that you did a regression in a similar topic for the other Department. Assuming that your regression is realiable, do you advice to him to raise the taxation on cigarettes? Comment carefully.

Use the dataset *crime.dta*. You can download it from Prof. Ragusa Luiss page on Didactic Material.
The variables of interest for this exercise are:

- **Narr86 : number of times the man was arrested during 1986 ; it is zero for most of the sample (72.29%) and it varies from 0 to 12.**
- **Black : dummy variable = 1 if black and = 0 otherwise.**
- **Hispan : dummy variable = 1 if Hispanic and = 0 otherwise.**

4.

A. Regress *narr86* on *black* and explain the model. How can you interpret the coefficients? Have a shot of constructing a statistical procedure. Comment.

B. Regress *narr86* on *hispan*. Explain the model and interpret the coefficients. Have a shot of constructing a statistical procedure. Comment.

C. Regress jointly *narr86* on *black* and *hispan* explaining the model. How will model change? Comment. {HINT : you have to comment carefully significance of coefficients}