**Statistical Interactions or Moderation**

Statistical Interaction or moderation is the relationship between two variables that is moderated by a third variable.

Statistical Moderation tests were conducted in the context of correlation where I moderated the correlation between oilperperson and urbanrate using a newly created categorical variable income\_group. income\_group was created using the quantitative variable incomeperperson. There are three levels in income group level1= low income, level2=moderate income and level3= high income.

*proc corr data=mydata.gapminder;var oilperperson urbanrate;run;*

*DATA GM;set mydata.gapminder;*

*IF incomeperperson EQ . THEN income\_group = .;*

*IF incomeperperson LE 744.239 THEN income\_group = '1';*

*ELSE IF incomeperperson LE 9425.326 THEN income\_group = '2';*

*ELSE IF incomeperperson GT 9425.326 THEN income\_group = '3';*

*IF income\_group NE .;*

*run;*

*proc sort; by country;*

*proc sort; by income\_group;*

*proc corr; var oilperperson urbanrate;by income\_group;*

*run;*

Correlation coefficient between oilperperson and urbanrate r=0.53218 with a significant p-value of <.0001.

<pic with no moderation>

***Correlation with moderation results***

For income\_group=1 oilperperson and urbanrate show a very high positive correlation r=0.99450 and p-value is not significant 0.0668.

<pic income\_group=1>

For income\_group=2 oilperperson and urbanrate show low positive correlation r=0.37106 and p-value is significant 0.0335.

<pic income\_group=2>

For income\_group=3 oilperperson and urbanrate show low positive correlation r=0.43467 and p-value is significant 0.0265.

<pic income\_group=3>

This proves that the association between oilperperson and urbanrate is not significant among low income groups.