**AML 612 Homework #6**

**For all questions, please submit your R code, and a doc file with a copy of the screen output and plots (where applicable), and all other relevant files to** **smtowers@asu.edu****.**

**Due Monday April 2nd at noon**

**The code in your R files should exhibit all of the good coding practices mentioned in** [**http://sherrytowers.com/2012/12/14/good-programming-practices-in-any-language/**](http://sherrytowers.com/2012/12/14/good-programming-practices-in-any-language/)

**Plots should exhibit all of the good plotting practices mentioned in** [**http://sherrytowers.com/2013/01/04/good-practices-in-producing-plots/**](http://sherrytowers.com/2013/01/04/good-practices-in-producing-plots/)

**Please submit your files in a format hwk6\_<last name>.xxx where xxx is the format of the document (R, doc, tex, pdf, bib, etc)**

**Question 1)**

The project groups:

Crime and student performance

   Rick

   Bechir

   Cesar

State alcohol laws and DUI fatalities

   Karen

   Juan

Bullying and academic achievement

   Mugdha

   Caleb

   Josean

**a)** Beginning the process of filling in the Statistical Methods subsection under Methods and Materials:

From now until the end of the semester, each project group is to schedule a regular weekly meeting with me to consult on their project. In our initial consultation, we will talk about statistical methods that might be appropriate for the data related to your project. Based on this consultation, you will begin the process of filling in the Statistical Methods section of the manuscript, describing the statistical methods planned to be used in the analysis.

**b)** Filling in the Data subsection under Methods and Materials (note that this subsection comes before the statistical methods subsection):

In the latex documents for the project write-ups, the Data subsection in the Methods and Materials section needs to be filled in with a full description of the data. If the data were obtained online, the URL of the source(s) of the data need to be stated, along with the date the data were accessed. What the data obtained from the URL’s consist of needs to be **thoroughly** described (ie; if it was a measure of school performance, for example, how is that measure defined?). The number of events in each data set needs to be given, and the date range over which it was taken (if applicable) needs to be stated.

If the data were not online data, but instead data from a study, the study protocol needs to be **thoroughly** described.

**c)** Beginning the process of filling in the Results section:

All project groups need to begin the “meet and greet” process of getting to know their data. Accordingly, begin filling in the Results section with at least two or three properly labelled publication quality plots, with a descriptive caption, showing the dependent variable plotted against the potential explanatory variables (or histograms of the dependent variable within bins of the explanatory variables, if they are factors, for example), histograms of the variables, etc. Guidance on which meet and greet plots would be important to examine can be obtained during the weekly meeting with me.

In latex, the easiest way to include figures is to export them in R in eps format. Here is an example of some R code that does that:

x = rnorm(1000)

y = rnorm(1000)

setEPS()

postscript("myplot.eps")

plot(x,y)

dev.off()

Note that this plot will not appear in R’s plotting area.. it gets directed to the external file.

To include eps format figures in latex, in the header file of the latex document, have the directive

\usepackage{epsfig}

Then, in the text of the latex document, where you want to include the figure, have the following (note that using the \label{} directive, we label this figure as fig:myplot):

\begin{figure}[h]

 \begin{center}

 \mbox{\put(-190,0){ \epsfxsize=13cm

 \epsffile{myplot.eps}

 }}

 \vspace\*{-0.0cm}

 \caption{

 \label{fig:myplot}

 This is the caption for the figure.

 }

\end{center}

\end{figure}

If you want to refer to that particular figure in the document, you would type something like:

In Figure~\ref{fig:myplot}, we show a plot of y versus x.

Note that you should never include a figure that is not referenced somewhere in the text. Also, whenever you refer to a specific figure, table, or section in a document, you always capitalize those words because they are proper nouns in that case.

Btw… the “~” after the “Figure” in the above text is a space that forces whatever comes after it to always be on the same line as whatever comes before it. This prevents a line break between “Figure” and the figure number. It’s not necessary to include the ~, and you could use a space instead, but it is good style to use the ~.

Tips on writing papers can be found at <http://sherrytowers.com/?p=1876>