**AML 612 Spring 2019 Homework #8**

**Submit all files to** **smtowers@asu.edu****.**

**R Shiny and paper draft due Friday April 19th, 2019 at noon.**

**In class presentations on Monday, April 22nd, and Wednesday April 24th**

**All other parts due Friday, April 26th, 2019 at noon**

**Please submit with name format hwk8\_<first name>\_<initial of last name>**

**All code must not use tabs, and must conform to good coding practices, as described 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/) **and all plots must conform to good plotting practices, as described in** [**http://sherrytowers.com/2013/01/04/good-practices-in-producing-plots/**](http://sherrytowers.com/2013/01/04/good-practices-in-producing-plots/)

**Question 1 (group)**

Create a GitHub account and upload the data associated with your analysis to a folder in that account.

Create an R Shiny visual analytics application that will read in this data and plot it. Also have the app overlay your model, with slider bars controlling the parameter selections within reasonable ranges. Set the default parameters to the best-fit values you determined in Homework #6.

Upload you R Shiny app to shinyapps.io and send me the URL link in the email along with your homework submission.

**Question 2 (group)**

1. Complete the Summary section of the paper with a paragraph briefly summarising what you did in the study, and a paragraph that briefly summarises your main conclusions and what is novel about the study.
2. Complete the Abstract (ensure it is below the maximum word count)
3. Add mention of R shiny visual analytics application to paper. Do this in three places; in the Introduction mention that you created a visual analytics application to allow exploration of the model and data. In the Methods and Materials section for the model, mention that the R Shiny application allows for exploration of the model under user-defined parameter hypotheses. In the Discussion section, mention that a novel aspect of your analysis is that you have made the model and data available to users to explore. In all three places, give the URL of your R Shiny application.
4. Write a cover Letter to Journal Editor, giving the title of your paper, very briefly describing why it was done, what was done, why it was novel, and why the paper is appropriate to the journal. Mention the R Shiny visual analytics application as a novel aspect of the analysis.
5. **Run both your paper and the cover letter through a spell checker before submitting them to me!**

**Question 3 (group)**

Prepare a 20 minute presentation related to your project, to be given in class the week of April 22nd.

Monday, April 22nd: Decision making group, Elk/Wolves group

Wednesday, April 24th: Opioid group

All students are expected to attend each presentation, and there will be a 10 to 15 minute question period after each presentation where each student in the class is expected to ask at least one question.

**Question 4 (individual)**

Group members of each of the following groups need to fill out the online survey provided in the link, assessing the contributions of each of your project-mates to the project. **Also, fill out the survey assessing your own contributions.**

So, if a group has five members, each member will fill out the survey five times, assessing every member of the project group.

I’m looking for an honest assessment of who did what on the project, including your own assessment of what you yourself did. *It is OK if not all group members contributed to every single aspect of the project.*

**Elk/Wolves:** [**https://www.surveymonkey.com/r/V35K57W**](https://www.surveymonkey.com/r/V35K57W)

**Opioids:** [**https://www.surveymonkey.com/r/VPHSG99**](https://www.surveymonkey.com/r/VPHSG99)

**Indecisive monkeys:** [**https://www.surveymonkey.com/r/78SHYSG**](https://www.surveymonkey.com/r/78SHYSG)



**Question 5 (individual)**

For our class publication project, we are estimating the dropout rates for various diets using Google Trends data for searches for diet recipes.

1. Suggest a title for the paper that is descriptive, yet catchy. In order to maximize citations on a paper, it is desirable to come up with a title that search engines like Google Scholar will hit on when people search on that topic or peripheral (but related) topics.
2. Do a literature review to find relevant papers (see below) and write the Introduction for the paper that will describe our studies. I will take these drafts and merge them into a draft for the final paper.

Once the course ends, students will have the option to choose whether or not they would like to be included as co-authors on the paper, in which case, there will be certain requirements that have to be met (such as attendance at potential future meetings, and editing of subsequent drafts… see Question 5, below).

*For this course, however, all students need to participate in this part of the homework, whether they intend to go on as a co-author or not.*

Send me the LaTex for your write up, and the compiled PDF. Also send me the annotated bibliography you used. **Run your document through a spell checker before submitting it to me!**

1. First paragraph: With several (at least three) cited references for all statements of fact, describe the toll of obesity in the US (fraction of people overweight and obese, the cost to the economy, the effect on health and lifespan, etc etc etc)
2. Second paragraph: Again, with several (at least three) cited references for all statements of fact, indicate approximately how many people in the US diet every year. Cite studies of the average time spent on diets, and average weight lost. Mention the study sizes (ie: often the studies are done with just a few dozen people at most, because they are expensive and complicated to do).
3. Third paragraph: Describe the problems involved with assessing of how long people stick to diets (difficulties inherent in such studies, such as small sample sizes, participants dropping out very early on, etc). Include citations for all statements of fact.

Describe the field of digital epidemiology (include citation to a reference or two), and the advantages it has over traditional surveillance methods.

Mention that in this study we will use Internet search data to try to infer dropout rates for new dieters. And that we will look at various types of diets. Mention the time range we look at. And mention that we examine searches for diet recipes, since those presumably represent people actually dieting.

1. Fourth paragraph: Mention that we fit a mathematical model for the dynamics of people embarking on diets in January, and dropping out, along with long-term temporal trends in dieters who diet any time of year. Mention why this analysis is novel, and what gaps it fills in the literature.

**Question 6**

In the email with your homework submission, indicate whether or not you would like to continue participating in the class publication project after the course ends. *Continuation is conditional on you having completed all course assignments that involved the diet data.*

In past publication projects, I have collated the writings of student participants, and created a paper draft. The draft is then sent to all co-authors for review, generally with a 72 hour period deadline. *Comments on the draft must be received within the designated period, otherwise the student is dropped from the co-author list.* The edited paper is then submitted. When reviewer comments are returned, there is a meeting to discuss the review, *with required attendance either in person or by video*. I prepare a fresh draft and responses to the reviewer comments, there is another 72 hour mandatory comment period, and the new draft is submitted. The process repeats as many times as necessary (so far, except for last year’s paper, there has only ever been one round of review).