**Homework 3 Due Monday by 1:10 pm, 3/04/2019**

For the data used in homework 2, use the GEE model to assess the association between bmipct and all level-1 and level-2 independent variables. Answer the following questions.

1. Use the exchangeable and toep working correlation structures. Compare the resulting QIC values. Which structure seems better?
2. Compare the GEE model using an exchangeable working correlation with the single-level model. In general, which model produces greater standard errors of parameters?
3. Use the **backward** selection procedure to decide on the best model for these data by using the QIC and QICu as the selection criteria. Follow the instructions below:
4. Start with the model including all level-1 and level-2 independent variables. Use the exchangeable working correlation structure.
5. From the model in 1), remove the most insignificant variable (with the largest p value larger than 0.05). Refit the model and obtain QIC and QICu. If the QIC and QICu values are smaller than those in 1), then the model at this step is a better one. Otherwise, if the QIC and QICu values are substantially greater than those in 1), then keep this most insignificant variable regardless of its significance and return to model 1).
6. From the model selected at 2), remove the next most insignificant variable and refit the model and obtain QIC and QICu. If the QIC and QICu values are smaller than those in 2), then the model at this step is a better one. Otherwise, if the QIC and QICu values are substantially greater than those in 2), then keep this most insignificant variable regardless of its significance and return to model 2).
7. Repeat in this way until no more variables can be removed.
8. Report the parameter estimates from the final model.