

COMM 645, LAB 8: DUE OCTOBER 31, 2012

Please e-mail your lab to comm645@ognyanova.net before 2pm on Wednesday.

This assignment will test your ability to build, estimate, and interpret actor-based longitudinal network models using RSiena.

For Lab 8, we will use data from the *Teenage Friends and Lifestyle Study*. The dataset includes three network files (s50-network1.dat, s50-network2.dat, and s50-network23.dat) containing friendship relationships between 50 teenage girls recorded at three consecutive points in time. The data also includes information about the smoking behavior of the 50 female students (s50-smoke.dat). The smoking variable has three levels: 1 (does not smoke), 2 (smokes occasionally) and 3 (smokes regularly).

Note that this is the same data we used in class – but the model you will have to estimate is different.

Your assignment consists of the following:

- 1) Read the data files into R. Create a siena data object including the longitudinal friendship network and the smoking behavioral variable.
- 2) Formulate network hypotheses based on the following suggestions. Create a sienaEffects data frame and add the appropriate effects to it. Estimate a model using your data and effects.

Predicting friendship relations:

- a. Establishing and maintaining friendships takes time and resources. Students will not befriend people indiscriminately.
- b. If a student nominates a person as a friend, that person is also likely to consider the student a friend.
- c. Students will be friends with the friends of their friends (if $A \rightarrow B$ and $B \rightarrow C$, then $A \rightarrow C$)
- d. Leaving school to find a place where smoking is permitted takes time that could otherwise be used for socializing. Students who smoke more will have less time to establish and maintain friendships.
- e. Smoking is increasingly frowned upon in the U.S. Students who smoke more will likely not be very popular and few people will nominate them as friends.
- f. People with similar smoking behavior will be more likely to become friends.

Predicting smoking behavior:

- a. Students will likely smoke more as they get older.
 - b. Friendship relations will make students more similar in their smoking behavior.
- 3) In your results section, report which hypotheses were supported and which were not. Make sure to also report the goodness of fit for your model with regard to in-degree and out-degree distributions.

Your report from this lab should be formatted as a **mini research paper**. Include Methods (what you did), Results (what you discovered) and Discussion (what it all means). Follow APA guidelines in your writing.

In addition to your report, turn in the **r script** you used for the data analysis. No need to include R output, only the code you used to read the data and conduct the analysis.