Dr. Ali Tafti
IDS 564: Social Media and Network Analysis, Spring 2016
Lab 1: Network Visualization

The purpose of this lab is to help you get familiar with Gephi. First, I would like to refer you to some good tutorials and instructions available online. Here are two tutorials I would recommend first. You don't necessarily need to complete every step, but you can do just enough of the steps to familiarize yourself with the key steps, and begin the journey of empirical explorations:

A. Martin Grandjean, especially part 1 (letters over Europe): http://www.martingrandjean.ch/gephi-introduction/

B. Tutorial on layouts in Gephi: https://gephi.org/users/tutorial-layouts/

C. Matthew Jackson's tutorial (file and data also provided here): https://d396qusza40orc.cloudfront.net/networksonline/resources/Gephi/Gephi_instruction_1_updatedApr2015.pdf

I've also provided links to a couple of inexpensive e-books ($5 each) about Gephi in Blackboard.

Next, complete each of the following three parts. **Please submit a single PDF file here as your submission for Lab 1, and also answer the corresponding multiple choice questions for Lab 1 quiz.**

Part 1: Karate club network

Please open the provided file, karate.gml, in a new Gephi project, selecting the "undirected network" option. Show the node labels (Grandjean's tutorial will show you how). Then, try running the Fruchterman Reingold algorithm, and then Force Atlas 2 algorithm with Scaling parameter at about 55 and the Prevent Overlap option selected. Feel free to adjust the layout further using any of the Gephi features. *Briefly* describe your observations about the schism evident in this network community, in five sentences or less.

For your interest, you can find a rich historical analysis of this network in this article, provided in the Blackboard Session 1 folder:

Zachary, Wayne W. "An information flow model for conflict and fission in small groups." *Journal of anthropological research* (1977): 452-473.

Please answer the corresponding quiz 1 questions. You may save those answers and get back to them.

Part 2: Florentine marriages—visualize and answer some questions

Once you have done a few tutorials in Gephi, you will know how to import a network dataset from .csv files, and do a basic visualization. Please use the following files the provided files: a) marriage_names.csv, for the nodes, and b) marriage_edges.csv, for the network edges.

Please show a completed network graph after running a combination of appropriate layout algorithms—as you will find in the linked tutorials, this is a combination of art and science. Please *briefly* describe what the marriage network shows about the centrality of the Medici family, in comparison to other well-connected families; in five sentences or less.

For your interest, you can find a rich historical analysis of this network in this article, provided in the Blackboard Session 1 folder:

Padgett, John F., and Christopher K. Ansell. "Robust Action and the Rise of the Medici, 1400-1434." *American journal of sociology* (1993): 1259-1319.

Please answer the remaining quiz 1 questions. You may save those answers and get back to them.

Advanced exercise

Each of the labs will have an optional challenge, called an Advanced Lab, which is due one week after the regular lab. You will need to complete two of these over the course of the semester. Please find the Lab 1 Advanced Exercise in the separate section in Blackboard.