**Centrality**

For the first part of the lab we will use 3 datasets:

**WIRING**:

This is a stacked dataset that includes many different files. We will be working with RDGAM. This is a dichotomous adjacency matrix of 14 employees of the bank wiring room of Western Electric. Ties are symmetric and represent participation in games during work breaks.

**PRISON**:

This is a dichotomous adjacency matrix of 67 prisoners. Ties are directed and represent each ego’s friends. Each was free to choose as few or as many "friends" as he desired.

**DRUGNET**:

This is a dichotomous adjacency matrix of drug users in Hartford. Ties are directed and represent the lending of drug needles. We will also work with the attribute file **DRUGATTR**.

**EXERCISES:**

1. Centrality using UCINET and NetDraw with **RDGAM**

If you have not done so already use UCINET to unpack **WIRING** (Data | Unpack).

a) Open **RDGAM** in Netdraw to familiarize yourself with the data

 In UCINET calculate the following measures of centrality using

 Network | Centrality & Power |
 Degree

 Freeman Betweenness | Node Betweenness

 Closeness measures

 Eigenvector

1. Using your Netdraw visualization, compare your calculations of various Centrality measures.
2. Now run Centrality multiple measures in UCINET using Network | Centrality | Multiple Measures. Be sure to indicate you want “Raw” scores.
3. Compare the profile of W1 with W5 across all measures. Note that W1 is stronger in eigenvector while W5 is stronger on betweenness. Interpret this result
4. Compare W5 with W7. They have same degree yet differ on eigenvector centrality. Why is W7 so much weaker on eigenvector centrality?
5. Remove isolates using Data | Remove | Remove Isolates on **RDGAM** and recalculate centrality measures on the resultant data set (RDGAM-NoIsolates), making sure to use whatever you specify as an Output dataset when removing isolates as the input dataset for calculating centrality. (That is, when you remove isolates, it creates a NEW dataset, and RDGAM will still have the isolates. Run it on the new file.)
6. Compare the results for closeness centrality with those from the previous run. (Use File | View Previous Output to see prior output). What happened and why?
7. Directed Centrality using UCINET with **PRISON**

a) Open **PRISON** in NetDraw to familiarize yourself with the data

b) Using UCINET calculate Centrality measures, remembering that these are directed data.

c) Identify which individuals have the most friends in this dataset. (What measure(s) did you use to identity them, and why?)

3) Directed Centrality using NetDrawwith **PRISON**

a) Open **PRISON** in Netdraw

b) Using NetDraw calculate Centrality measures under Analysis | Centrality measures. Tell the
 routine you have directed data.

c) Resize the nodes based on various Centrality measures. (don’t worry about measures we didn’t
 talk about).

d) Identify which individuals **list** the most number of friends

e) Identify which individuals **are listed as friends** by the most number of others

4) Directed Centrality using UCINET with **DRUGNET**

1. Open **DRUGNET** in NetDraw to familiarize yourself with the data
2. Using UCINET identify which individuals are at highest risk of contracting a disease based on their needle sharing habits.
3. In NetDraw, with **DRUGNET** already open, load the attribute file, **DRUGATTR,** by clicking on the folder with the A
4. Calculate Centrality measures in NetDraw (remember that this is directed data)
5. Using NetDraw color the nodes based on different attributes (e.g., gender, race) and size the nodes based on different Centrality measures. Do you see any patterns?