Networks & Sports Workshop

Social Network Analysis - A Primer for Sport Scientists

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1 Assignment 1 - Handling Network Data

1.1 Task 1

1. Enter the network in Figure 1 as an edge list in R.
2. Convert the edgelist to a matrix.
3. Plot the network (with the arrows, i.e., directed).
4. Nodes a, f, e, c are all 'smokers', color these nodes blue. Create an attribute-file for your data and add a smoker-variable. Plot the network again. Make sure you include a legend.

1.2 Task 2

1. Read in the edgelist.
2. Create an attributes data frame.
3. Transform the edgelist into an adjacency matrix.
4. Create a network object and add at least one attribut to the object.
5. Plot the network and color nodes with an attribute.
6. Additional: Size nodes with their indegree-centrality (see help-file for ggnet2).

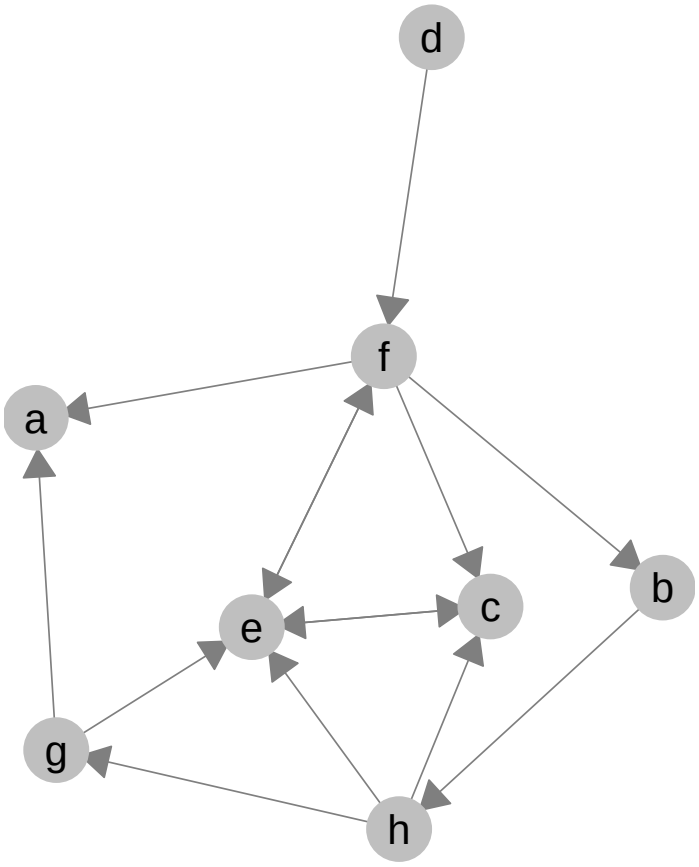

Figure 1: Random directed network

2 Assignment 2 - Calculating Centrality Scores

1. Using Helga's sports data, set everything up
2. Compute undirected and directed degree centrality.
3. Compute closeness and betweenness centrality.
4. Check for a correlation between a centrality score and an attribute of your choice.
5. Plot the network again and size the nodes by their betweenness centrality. Interprete the graph.

3 Assignment 3 - Running a Network Autocorrelation Model

1. Prepare Helga's data.
2. Compute centrality scores.
3. Compute network autocorrelation terms of your choice (think about your theory first! What do you want to explain?)
4. Run a simple OLS regression and control for network terms.
5. Interpret the results.
6. Bonus: add an interaction effect and interpret the results.