

Exercise on subgroups

Data set: ego networks

Sub group detection: purpose and interpretation of results

- One can interpret the results of subgroup detection on 3 levels
- **1) Level of subset of actors**
- The objective is to analyse the subgroups in themselves : how many are they ? Which is their dimension? How to they differ from each others ? What are the behaviours, attitudes, beliefs , culture of the group ?
- The analysis of subgroups complements that analysis obtained through centrality measures
 - In given subgroups are the most central actors with other more central actors or are they in separate subgroups? Do the most central actor mix with others?

Sub group detection: purpose and interpretation of results

- 1) **Level of individual actors:** distinguish who belongs to subgroup (insiders, members) and who doesn't (outsiders, non-members)
 - characteristics of the members of the subsets, e.g. subgroup members more similar to each other with regard to some attribute than to outsiders

Sub group detection: purpose and interpretation of results

1) Level of individual actors (cont)

A- Those who are in cliques:

- How are they characterised ? Based on centrality measure or a variety of attributes of interest
- You can also use the information you get from other sources (knowledge of the field through observation etc)

B- Those who are not in cliques?

- What characterises them? (Based on centrality measures ex: they may have low degree but high betweenness)
- What attributes characterise them (are they the poorest/richest, the oldest/youngest, the worst/best students?)

Sub group detection: purpose and interpretation of results

- 3) Describing the network as a whole
- The objective is to detect fragmentation of the network into different subgroups, and the degree of overlap between subgroups
 - is the network ONE cohesive “subgroup” i.e. Do subgroup members overlap a lot?
 - Or is the network fragmented in two or more subgroups (that do not share subgroups)?
 - what may the effect of this subgroup’s pattern on , for instance, the capacity of the network to innovate, or to behave in a coordinated manners (cooperate)as a whole?

Subgroups in your ego network

- Run the clique and n-clique procedures on your ego-network data
- Network>subgroups>cliques
- # of cliques; their dimension (approximate – a majority of cliques size 3, 4, 5 ...) ; who is together in those cliques – example: those who live nearby? The family? Those of similar age?
- # of clusters? Who is gathered in the same clusters? On what basis do you differentiate clusters amongst themselves?

HIERARCHICAL CLUSTERING OF OVERLAP MATRIX

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j f q y a j b w h f c u z i e l i p s d a r g m r c t d b o n v g h
a r u o b i e a a r a p o v e a e r a t a l o a e i h o a o v a i e u k
c a i r e m n l l e r t e o v r n v t e n e b r l c r m l b i n c r g e

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Level	1	6	2	2	2	3	1	1	1	1	1	2	3	1	3	1	1	2	3	3	1	2	2	2	3	1	2	3	
6.000
3.667
3.000
2.667
2.000
1.571
1.556
1.111
1.000
0.750
0.667
0.550
0.454
0.333
0.296
0.244
0.169
0.146
0.124
0.027
0.021
0.000

4 clusters
3 clusters

Silicon friendship - symmetric

Subgroups in your ego network

- Network>subgroups>n-cliques
- # of n-cliques; their dimension (approximate – a majority of n-cliques size 4, 5, 6 ...) ; who is together in those n-cliques – example: those who live nearby? The family? Those of similar age?
- # of clusters? Who is gathered in the same clusters? On what basis do you differentiate clusters amongst themselves?

Cliques vs n-cliques

- What differences arise ?
- Dimension of cliques?
- More/different clusters?
- Based on what you know of your ego network what procedure seems to better identify cohesive subgroups?

Exercise subgroups

- Send text outputs and your comments by today to
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