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Peer influence in two-mode networks



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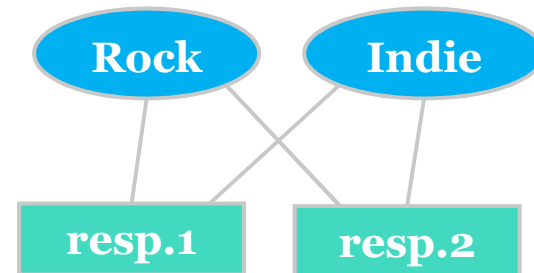
Peer influence in two-mode networks

Suppose you ask a battery of items to any set of respondents...

43. Which of the following types of music do you like listening to?
Tick one or more boxes.

- | | | | |
|--------------------|--------------------------|-----------|--------------------------|
| Rock | <input type="checkbox"/> | Indie | <input type="checkbox"/> |
| Chart music | <input type="checkbox"/> | Jazz | <input type="checkbox"/> |
| Reggae | <input type="checkbox"/> | Classical | <input type="checkbox"/> |
| Dance | <input type="checkbox"/> | 60's/70's | <input type="checkbox"/> |
| Heavy Metal | <input type="checkbox"/> | House | <input type="checkbox"/> |
| Techno | <input type="checkbox"/> | Grunge | <input type="checkbox"/> |
| Folk/Traditional | <input type="checkbox"/> | Rap | <input type="checkbox"/> |
| Rave | <input type="checkbox"/> | Hip Hop | <input type="checkbox"/> |
| Other (what?)..... | | | |

... then you can create a two-mode network from the responses:



a four-cycle structure, frequent in two-mode data

What options does RSiena offer for analysing two-mode networks?

First of all, additional model assumptions are made:

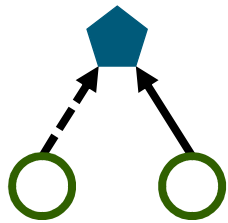
Both node sets must be stable over time.

→ This rules out co-authorship and other event-type second modes! A journal article cannot be repeated.

Besides this, the differences to the “usual” modelling are mainly in the special type of effects that one can select in a model specification.

Some examples on the following slides...

Some effects for modelling the dynamics of bipartite networks



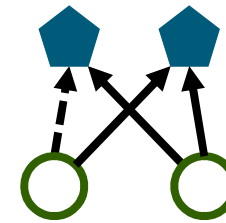
Indegree popularity
“Matthew effect”

Not really new, it is an effect that also can be included in normal ‘one mode’ networks.

Several other “normal one mode effects” do not exist for two-mode networks:



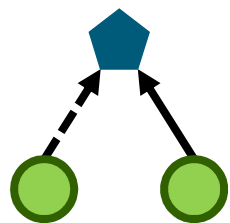
etc.



4-cycle effect
“Amazon recommender”

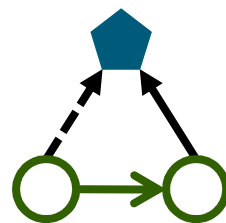
Expresses *peer influence* and/or *group formation* in two-mode networks

More effects for modelling the dynamics of two-mode networks: exogenous variables



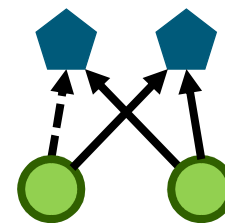
Similarity-to-agreement

Similarity on an individual variable (here **green colour**) may lead to the choice of the same clubs.



Network-to-agreement

Also a normal one-mode network (here **friend-ship**) can lead to the choice of the same clubs.



4-cycle × similarity

Copying the behaviour of those who are similar to you on an individual variable.

etc.

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