

Conceptualizing Diffusion and Collaboration with Social Network Analysis

Instructor: Nicole Fernandez, MS

This presentation begins with a comparison of Density in Networks, Density when a fixed choice survey design has been implemented, and the nodal measure of Clustering Coefficient. Applications of the Clustering Coefficient in Alzheimer's Research will be briefly emphasized for its relevance in the structural approach.

Refining the structural description of a network through Stratified Density calculations will follow. This will facilitate a brief discussion of across group ties and information diffusion in the context of hospital based SNA research. This case study will allow a brief exploration of formal testing for sparse across group ties using the Binomial Hypothesis test, a novel but intuitive approach when exploring the collaboration of nurses and doctors in the hospital setting.

A second case study will then be presented focusing on diffusion of expertise. A data-mining project from the World Bank will inform this section of the presentation while giving concrete applications of bimodal data. Opportunities to focus on how SNA can support the tasks of Knowledge Management inform this section and provide organizational relevance.

Finally, the theme of Cascade Scenarios from Easley and Kleinberg's textbook Networks, Crowds and Markets (Chapters 16 and 19) will be presented. This will inform a perspective on the role of hubs in diffusion and as a firewall to diffusion. Observations from the text about collective action and cascades will be introduced.

The computational aspects of Bayes's Rule will close the presentation while reemphasizing the potential risks of cascades based on incorrect judgments. Should time permit, a brief thematic introduction to Positive Influence Dominating Sets (PIDS) will be discussed.

Technology Requirement: None

Participants will receive slides and hard copies of examples to practice along with calculations included in the lecture.