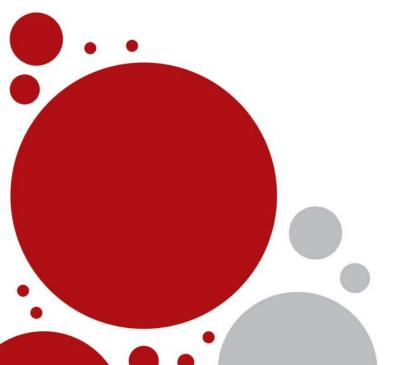# SOCIAL NETWORK ANALYSIS USING STATA

GENERAL DESCRIPTION

The field of Social Network Analysis is one of the most rapidly growing fields of the social sciences. Social network analysis focuses on the relationships that exist between individuals (or other units of analysis) such as friendship, advice, trust, or trade relationships. As such, network analysis is concerned with the visualization and analysis of network structures, as well as with the importance of networks for individuals' propensities to adopt different kinds of behaviors. Up until now, researchers wishing to implement this type of analysis have been force to use specialized software for network analysis. A new set of user written commands (developed by Thomas Grund, co-author of the forthcoming Stata Press title "An Introduction to Social Network Analysis and Agent-Based Modeling Using Stata") are however, now available for Stata. This workshop introduces the so-called nwcommands suite of over 90 Stata commands for social network analysis. The suite includes commands for importing, exporting, loading, saving, handling, manipulating, replacing, generating, visualizing, and animating networks. It also includes commands for measuring various properties of the networks and the individual nodes, for detecting network patterns and measuring the similarity of different networks, as well as advanced statistical techniques for network analysis including MR-QAP and ERGM.

In common with TStat's workshop philosophy, each individual session, is composed of both a theoretical component (in which the techniques and underlying principles behind them are explained), and an applied (hands-on) segment, during which participants have the opportunity to implement the techniques using real data under the watchful eye of the course tutor. Throughout the workshop, theoretical sessions are reinforced by case study examples, in which the course tutor discusses current research issues, highlighting potential pitfalls and the advantages of individual techniques. The intuition behind the choice and implementation of a specific technique is of

the utmost importance. In this manner, course leaders are able to bridge the "often difficult" gap between abstract theoretical methodologies, and the practical issues one encounters when dealing with real data.

At the end of the course, participants are expected to be able to autonomously implement the theories and methodologies discussed during the workshop.

TARGET AUDIENCE

The workshop provides an interdisciplinary opportunity for social scientists, mathematicians, computer scientists, ethnologists, epidemiologists, organizational theorists to acquire the necessary statistical tools required to analyse social networks in Stata.

COURSE REQUISITES

Basic working knowledge of Stata.

PROGRAM

SESSION I: INSTALLING NETWORK COMMANDS

1. Theoretical motivation
2. Networks and node attributes
3. Finding help: *help*
4. Managing variables
5. Return vector: *return, ereturn*
6. User written commands: *adopath*
7. Installation of *nwcommands*
8. Dialog boxes for network commands

SESSION II: GETTING STARTED WITH NETWORKS

1. Setting networks: *nwset*
2. Listing networks: *nwds*
3. Current network: *nwcurrent*
4. Using and saving networks: *nwuse, nwsave*
5. Importing and exporting networks: *nwexport, nwimport*
6. Dropping and keeping networks: *nwdrop, nwkeep, nwclear*
7. Network transformation: *nwtoedge, nwfromedge*

SESSION III: NETWORK VISUALIZATION

1. Schemes
2. Network visualization: *nwplot, nwplotmatrix, nwplotjs*
3. Animation of networks: *nwmovie*

SESSION IV: NETWORK EXAMINATION

1. Summarize networks: *nwsummarize*
2. Tabulate networks: *nwtabulate*
3. Dyads, triads: *nwdyads, nwtriads*
4. Simmelian ties: *nwsimmelian*
Components: *nwcomponents*

SESSION V: DISTANCE AND PATHS

1. Distance and paths: *nwgeodesic, nwpath*
2. Distance distribution
3. Shortest paths
4. Local and global bridges: *nwbridge*

SESSION VI: NEIGHBORS AND CONTEXT

1. Network neighbors: *nwneighbor*
2. Attributes of neighbors: *nwcontext*
3. Attributes of neighbors at certain distance

SESSION VII: CENTRALITY AND CENTRALIZATION

1. Importance in networks
2. Degree centrality: *nwdegree*
3. Betweenness centrality: *nwbetween*
4. Katz centrality: *nwkatz*
5. Closeness centrality: *nwcloseness*
6. Centralization in networks

SESSION VIII: CHANGING NETWORKS

1. Extract tie values
2. Change networks: *nwreplace, nwreplacemat, nwrecode*
3. Symmetrize: *nwsym*

SESSION IX: CALCULATING WITH NETWORKS

1. Multiplying networks
2. Adding networks
3. Network generators: *nwgen*
4. Network expressions

SESSION X: NETWORK SIMULATION

1. Random networks
2. Lattice networks
3. Small-world networks
4. Preferential attachment networks
5. Homophily networks
6. Commands: *nwrandom, nwsmall, nwhomophily, nwdyadprob, nwpref, nwring, nwlattice*

SESSION XI: HYPOTHESIS TESTING 1

1. Correlation of networks
2. Conditional uniform graphs
3. Permutation tests: *nwpermute*

SESSION XII: REGRESSION BASED HYPOTHESIS TESTING

1. Logistic regression: *logit*
2. Dyad-level regression
3. Network transformation: *nwtoedge, nwfromedge*
4. Quadratic assignment procedure: *nwqap*
5. Short introduction to P2 models and their estimation in Stata

LOCATION AND DATE

The Workshop will be held in Berlin from the 13th to 15th of December 2017.

REGISTRATION FEES

Students*: € 735.00
Academic: € 1225.00
Government /Nonprofit: € 1513.00
Commercial: € 1800.00

*To be eligible for student prices, participants must provide proof of their full-time student status for the current academic year.

All fees are subject to VAT (applied at the current Italian rate of 22%).

Please note that a ***non-refundable deposit*** of €100.00 for students and €200.00 for academic, Government/Nonprofit and commercial participants, is required to secure a place and is payable upon registration. The number of participants is limited to 15. Places will be allocated on a first come, first serve basis.

Course fees cover: i) teaching materials (copies of lecture slides, databases and Stata routines used during the workshop); ii) a temporary licence of Stata valid for 30 days from the beginning of the workshop.

In order to maximize the usefulness of this workshop, we recommend that participants bring their own laptops with them, in order to be able to actively participate in the empirical sessions.

Individuals interested in attending this workshop must return their completed registration forms either by email (training@tstat.eu) or by fax (+39 0864 206014) to TStat by the 25th of November 2017. Further details regarding our registration procedures, including our commercial terms and conditions, can be found at www.tstattraining.eu/training/i-ws15.

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