Workshop

Analysis of longitudinal social network data with R Siena

Tom A.B. Snijders (Groningen /Oxford)

March 26, 2015, 10.00 a.m. – 5.30 p.m., at the University of Bremen

The workshop will take place in conjunction with the annual the meeting of the Methods Section of the German Sociological Association (DGS), March 27-28, 2015. Local organizer of the meeting is Prof. Sonja Drobnič, Ph.D. The RSiena workshop is organized by the bridge professorship of the high-profile area Social Sciences at the University of Bremen, Prof. Dr. Betina Hollstein.

The workshop fee is 75 Euro.

In order to register for the workshop please contact Dr. Raphael Heiberger:
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Since the number of participants is limited, we recommend to subscribe as soon as possible.

Description of the workshop

This workshop is about statistical inference for longitudinal observations on social networks. Longitudinal social network data are understood here as two or more repeated observations of a directed graph on a given node set (usually between 30 and a few hundred nodes). The workshop teaches the statistical method to analyze such data, for which a tutorial is given in Snijders, T.A.B., Steglich, C.E.G., and van de Bunt, G.G. (2010), Introduction to actor-based models for network dynamics (Social Networks), and implemented in the RSiena program.

The statistical model is the actor-oriented model where the nodes are actors whose choices determine the network evolution. This allows to include various network effects (reciprocity, transitivity, cycles, popularity, etc.), effects of individual covariates (covariates connected to the sender, the receiver, or the similarity between sender and receiver), and of dyadic covariates.

An important extension is to have, in addition to the network, one or more actor variables that evolve in mutual dependence with the network; an example is a friendship network of adolescents where drinking behavior is a relevant actor variable which influences, and is influenced by, the friendship network. This leads to models for the simultaneous dynamics ('co-evolution') of networks and behavior, which are a special option in RSiena. Further information about this method can be found at the SIENA website (see below).

The statistical analysis is based on many repeated Monte Carlo simulations of the network evolution model and therefore is a bit time-consuming. The computer program RSiena is a

package in the statistical computer system R. The workshop will demonstrate the basics of using RSiena. Attention will be paid to the underlying statistical methodology, to examples, and to the use of the software.

The first session is intended for those without previous experience with this method, and will focus on the intuitive understanding of the model and operation of the software.

The second session will present models for the simultaneous dynamics of networks and behavior and other more advanced topics such as model specification, multivariate networks, structurally determined values, and goodness of fit checking.

Participants are requested to check the **SIENA website** (Courses-activities tab) in the week before the workshop to download the workshop materials. For optimal benefit, it is advisable to bring an own laptop with R and RSiena already installed, such that some steps of data manipulation and analysis can be followed hands-on. Participants for whom R is new are requested to learn the basics of R before the workshop: how to run R and how to give basic R commands. This is to reduce the amount of new material to digest at the workshop itself. The Siena website (RSiena tab) has some links which can be helpful for this purpose: it's not hard!

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