Visualizations of Network Statistics Over Time Using Vertex Bootstrap and Jackknife

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This document contains visualizations showing distributions of the differences in several network statistics over time. The distributions are obtained using the vertex bootstrap and jackknife procedures. Two different temporal networks are examined.

Friendship in a Dutch school class

Data source:

- RSiena
- Andrea Knecht
- https://www.stats.ox.ac.uk/~snijders/siena/tutorial2010_data.htm
- 2008

```
# Read the network data
f1 <- as.matrix(read.table("friendship/klas12b/klas12b-net-1.dat"))
f2 <- as.matrix(read.table("friendship/klas12b/klas12b-net-2.dat"))
f3 <- as.matrix(read.table("friendship/klas12b/klas12b-net-3m.dat"))
f4 <- as.matrix(read.table("friendship/klas12b/klas12b-net-4m.dat"))

# Remove missing data points
f1[f1 == 9] <- NA
f2[f2 == 9] <- NA
f3[f3 == 9] <- NA
f4[f4 == 9] <- NA

# Create graphs for each network
fg1 <- graph_from_adjacency_matrix(f1, mode = "undirected", add.colnames = NA)
fg2 <- graph_from_adjacency_matrix(f2, mode = "undirected", add.colnames = NA)
fg3 <- graph_from_adjacency_matrix(f3, mode = "undirected", add.colnames = NA)
fg4 <- graph_from_adjacency_matrix(f4, mode = "undirected", add.colnames = NA)
```

Ant Interactions

Data source:

- **The Network Data Repository with Interactive Graph Analytics and Visualization**
- Ryan A. Rossi and Nesreen K. Ahmed
- *AAAI*
- http://networkrepository.com/

- 2015

```
# Read the network data
ant1 <- (graph_from_data_frame(read.table("ants/insecta-ant-colony1.edges"), directed = FALSE))
ant2 <- (graph_from_data_frame(read.table("ants/insecta-ant-colony2.edges"), directed = FALSE))
ant3 <- (graph_from_data_frame(read.table("ants/insecta-ant-colony3.edges"), directed = FALSE))
ant4 <- (graph_from_data_frame(read.table("ants/insecta-ant-colony4.edges"), directed = FALSE))
ant5 <- (graph_from_data_frame(read.table("ants/insecta-ant-colony5.edges"), directed = FALSE))
ant6 <- (graph_from_data_frame(read.table("ants/insecta-ant-colony6.edges"), directed = FALSE))
```