

Social Networks Analysis Data

Denise Scholtens

SNAData contains `graphNEL` objects of the social networks analysis data available in Appendix B of Wasserman. S. and Faust. K. (1994). *Social Network Analysis*. New York: Cambridge University Press. The descriptions of the data available here are based on the information in Appendix B.

```
> library(graph)
> library(Rgraphviz)
> library(SNAData)
```

Krackhardt's High-tech Managers

Tables B.1 - B.3 in Wasserman and Faust contain data for three directed relations between Krackhardt's 21 high-tech managers: advice, friendship, reports to. Table B.4 contains a table of four attributes for the managers: age (in years), tenure (length of time employed by the company, in years), level in corporate hierarchy (coded 1,2,3), department of the company (coded 1,2,3,4).

Relation	W & F Table No.	<i>SNAData</i> object
Graphs:		
advice	B.1	<code>advice</code>
friendship	B.2	<code>friendship</code>
reports to	B.3	<code>reportsTo</code>
Attributes:		
attributes	B.4	<code>krackhardtAttrs</code>

```
> data(advice)
> data(friendship)
> data(reportsTo)
> data(krackhardtAttrs)
> advice
```

A graphNEL graph with directed edges
Number of Nodes = 21
Number of Edges = 190

> *friendship*

A graphNEL graph with directed edges
Number of Nodes = 21
Number of Edges = 102

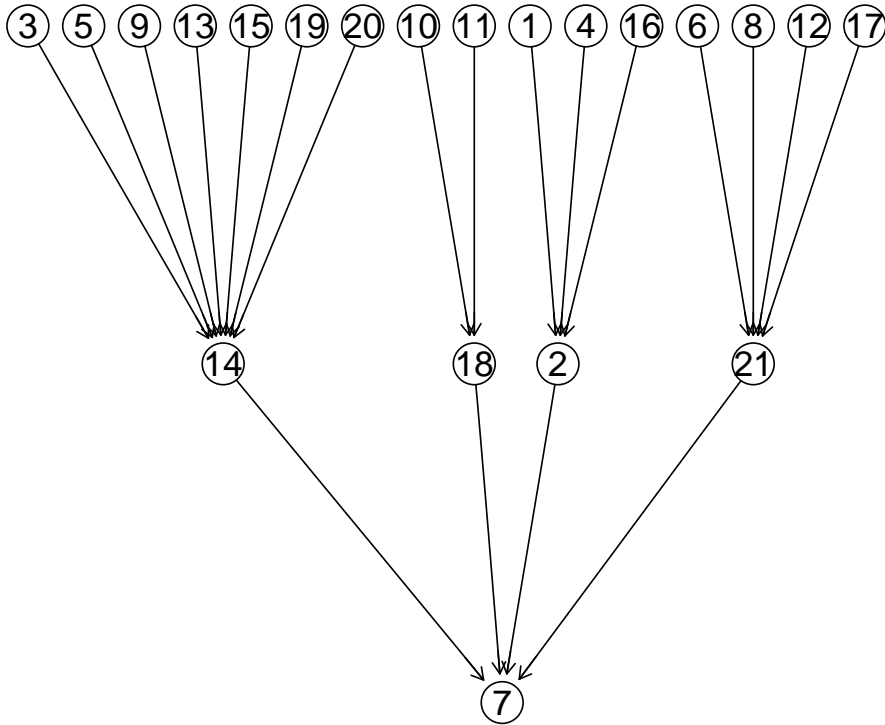
> *reportsTo*

A graphNEL graph with directed edges
Number of Nodes = 21
Number of Edges = 20

> *krackhardtAttrs*

	Age	Tenure	Level	Dept
1	33	9.333	3	4
2	42	19.583	2	4
3	40	12.750	3	2
4	33	7.500	3	4
5	32	3.333	3	2
6	59	28.000	3	1
7	55	30.000	1	0
8	34	11.333	3	1
9	62	5.417	3	2
10	37	9.250	3	3
11	46	27.000	3	3
12	34	8.917	3	1
13	48	0.250	3	2
14	43	10.417	2	2
15	40	8.417	3	2
16	27	4.667	3	4
17	30	12.417	3	1
18	33	9.083	2	3
19	32	4.833	3	2
20	38	11.667	3	2
21	36	12.500	2	1

> *plot(reportsTo)*



Padgett's Florentine Families

Tables B.5 - B.6 contain data for two undirected relations between 16 of Padgett's Florentine families: business, marital. Table B.7 contains a table of three attributes for the families: wealth (net wealth, measured in 1427, in thousands of lira), number of priorates (number of seats on the Civic Council held between 1282 and 1344), number of ties (number of business or marital ties in the total network of 116 families).

Relation	W & F Table No.	<i>SNAData</i> object
Graphs:		
business	B.5	business
marital	B.6	marital
Attributes:		
attributes	B.7	florentineAttrs

```
> data(business)
> data(marital)
> data(florentineAttrs)
> business
```

A graphNEL graph with undirected edges
Number of Nodes = 16
Number of Edges = 15

```
> marital
```

A graphNEL graph with undirected edges
Number of Nodes = 16
Number of Edges = 20

```
> florentineAttrs
```

	Wealth	NumberPriorates	NumberTies
Acciaiuoli	10	53	2
Albizzi	36	65	3
Barbadori	55	NA	14
Bischeri	44	12	9
Castellani	20	22	18
Ginori	32	NA	9
Guadagni	8	21	14
Lamberteschi	42	0	14
Medici	103	53	54
Pazzi	48	NA	7
Peruzzi	49	42	32
Pucci	3	0	1
Ridolfi	27	38	4
Salviati	10	35	5
Strozzi	146	74	29
Tornabuoni	48	NA	7

```
> adj(business, "Bischeri")
```

```
$Bischeri
[1] "Guadagni"      "Lamberteschi" "Peruzzi"
```

```
> adj(marital, "Bischeri")
```

```
$Bischeri
[1] "Guadagni" "Peruzzi"  "Strozzi"
```

Freeman's EIES Network

Tables B.8 - B.10 contain data for three directed, weighted relations between 32 of Freeman's EIES researchers: acquaintanceship at time 1, January 1978, the start of the study; acquaintanceship at time 2, September 1978, the end of the study; the number of messages sent. The acquaintanceship relations are valued as follows: 4=close personal friend, 3=friend, 2=person I've met, 1=person I've heard of, but not met, 0=unknown name or no reply. Table B.11 contains a table of four attributes for the researchers: original ID as reported in Freeman and Freeman (1979), number of citations in 1978, discipline (coded 1,2,3), discipline itself.

Relation	W & F Table No.	<i>SNAData</i> object
Graphs:		
acquaintanceship at time 1	B.8	acqTime1
acquaintanceship at time 2	B.9	acqTime2
messages	B.10	messages
Attributes:		
attributes	B.11	freemanAttrs

```
> data(acqTime1)
> data(acqTime2)
> data(messages)
> data(freemanAttrs)
> acqTime1
```

```
A graphNEL graph with directed edges
Number of Nodes = 32
Number of Edges = 650
```

```
> acqTime2
```

```
A graphNEL graph with directed edges
Number of Nodes = 32
Number of Edges = 759
```

```
> messages
```

```
A graphNEL graph with directed edges
Number of Nodes = 32
Number of Edges = 460
```

```
> freemanAttrs[1:5, ]
```

OriginalID	Citations	DisciplineCode	Discipline
1	1	19	1 Sociology
2	2	3	2 Anthropology
3	3	170	4 Communication
4	6	23	1 Sociology
5	8	16	4 Psychology

```
> edgeL(acqTime1, 6)
```

```
$`6`
$`6`$edges
[1] 1 8 14 16 19 21 27 29 31
```

```
> edgeL(acqTime2, 6)
```

```
$`6`
$`6`$edges
[1] 1 2 8 10 11 14 15 16 19 21 24 26 27 28 29 31 32
```

```
> edgeL(messages, 6)
```

```
$`6`
$`6`$edges
[1] 1 2 4 6 8 10 11 15 16 17 24 27 28 29 30 31
```

Countries Trade Data

Tables B.12 - B.16 contain data for five directed trade relations between 24 countries: basic manufactured goods; food and live animals; crude materials, excluding food; minerals, fuels, and other petroleum products; exchange of diplomats. Table B.17 contains a table of four attributes for the countries: average annual population growth between 1970 and 1981; average GNP growth rate per capita between 1970 and 1981; secondary school enrollment ratio in 1980; energy consumption per capita in 1980, in kilo coal equivalents.

Relation	W & F Table No.	<i>SNAData</i> object
Graphs:		
basic manufactured goods	B.12	<code>basicGoods</code>
food and live animals	B.13	<code>food</code>
crude materials, excluding food	B.14	<code>crudeMaterials</code>
minerals, fuels, and other petroleum products	B.15	<code>minerals</code>
exchange of diplomats	B.16	<code>diplomats</code>
Attributes:		
attributes	B.17	<code>countriesAttrs</code>

```

> data(basicGoods)
> data(food)
> data(crudeMaterials)
> data(minerals)
> data(diplomats)
> data(countriesAttrs)
> basicGoods

```

A graphNEL graph with directed edges
Number of Nodes = 24
Number of Edges = 310

```
> food
```

A graphNEL graph with directed edges
Number of Nodes = 24
Number of Edges = 307

```
> crudeMaterials
```

A graphNEL graph with directed edges
Number of Nodes = 24
Number of Edges = 307

```
> minerals
```

A graphNEL graph with directed edges
Number of Nodes = 24
Number of Edges = 135

```
> diplomats
```

```
A graphNEL graph with directed edges
```

```
Number of Nodes = 24
```

```
Number of Edges = 369
```

```
> countriesAttrs[1:5, ]
```

	PopGrowth	GNP	Schools	Energy
Alg	3.3	3.0	33	814
Arg	1.6	0.3	56	2161
Bra	2.1	5.3	32	1101
Chi	1.5	NA	43	618
Cze	0.7	NA	44	6847

```
> degree(basicGoods)
```

```
$inDegree
```

Alg	Arg	Bra	Chi	Cze	Ecu	Egy	Eth	Fin	Hon	Ind	Isr	Jap	Lib	Mad	NZ	Pak	Spa	Swi	Syr
13	10	11	15	13	9	12	10	15	9	14	10	17	9	6	14	14	17	15	12
Tai	UK	US	Yug																
15	16	19	15																

```
$outDegree
```

Alg	Arg	Bra	Chi	Cze	Ecu	Egy	Eth	Fin	Hon	Ind	Isr	Jap	Lib	Mad	NZ	Pak	Spa	Swi	Syr
4	13	21	21	21	2	9	2	21	1	14	11	23	0	1	11	13	22	23	0
Tai	UK	US	Yug																
14	22	23	18																

```
> degree(diplomats)
```

```
$inDegree
```

Alg	Arg	Bra	Chi	Cze	Ecu	Egy	Eth	Fin	Hon	Ind	Isr	Jap	Lib	Mad	NZ	Pak	Spa	Swi	Syr
16	19	19	21	18	12	19	7	16	7	18	13	23	6	4	6	14	20	22	12
Tai	UK	US	Yug																
13	22	23	19																

```
$outDegree
```

Alg	Arg	Bra	Chi	Cze	Ecu	Egy	Eth	Fin	Hon	Ind	Isr	Jap	Lib	Mad	NZ	Pak	Spa	Swi	Syr
15	17	19	20	15	13	18	14	13	9	16	8	23	10	8	11	15	18	17	13
Tai	UK	US	Yug																
15	21	23	18																

Galaskiewicz's CEO and Clubs Network

Table B.18 contains information about the membership of the chief executive officers from 26 corporations in 15 clubs. *SNAData* contains both a graph and affiliation matrix representation

of these data. The rows of the affiliation matrix represent CEOs and the columns represent clubs. The graph is a bipartite graph which contains two sets of nodes for the CEOs and clubs, and directed edges connect the CEOs to the clubs of which they are members.

Relation	W & F Table No.	<i>SNAData</i> object
Graph:		
club membership	B.18	CEOclubsBPG
Affiliation Matrix:		
club membership	B.18	CEOclubsAM

```
> data(CEOclubsBPG)
> data(CEOclubsAM)
> CEOclubsBPG
```

A graphNEL graph with directed edges
 Number of Nodes = 41
 Number of Edges = 98

```
> CEOclubsAM[1:5, 1:5]
```

	Club1	Club2	Club3	Club4	Club5
CEO1	0	0	1	1	0
CEO2	0	0	1	0	1
CEO3	0	0	1	0	0
CEO4	0	1	1	0	0
CEO5	0	0	1	0	0

```
> cc5 <- c(paste("CEO", 1:5, sep = ""), paste("Club", 1:5, sep = ""))
> subG <- subGraph(cc5, CEOclubsBPG)
> edgemode(subG) <- "directed"
> plot(subG)
```

