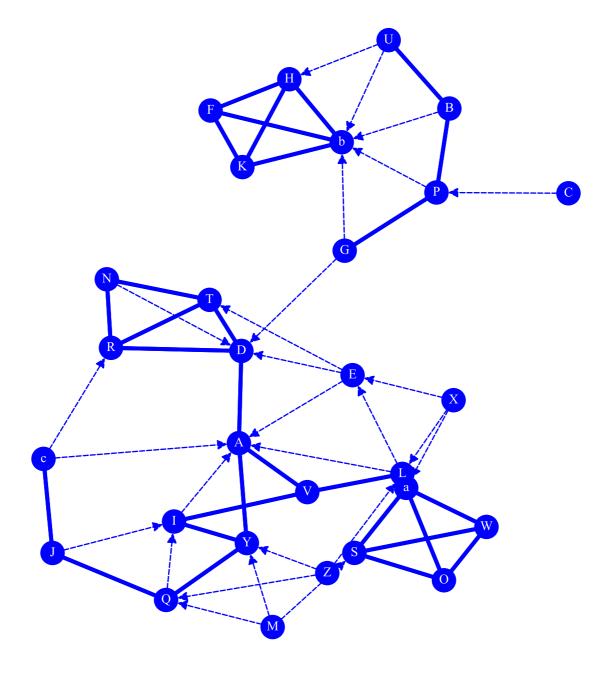


GROUP 1 - DEMO 2 SNA NETWORK GRAPH

A. Who would you choose to spend a free time outing with?

NN 29, NE 85, ND 10%, NC 12%, NT 58%, NR 68%





GROUP 1 - DEMO 2 SNA RAW SCORES

A. Who would you choose to spend a free time outing with?

ID	CHOICES	IC	PR	ВТ	CL	HU	ND
A	D, V, Y	0.25	0.08	0.15	0.35	0.05	
В	P, U, b	0.07	0.01	0.02	0.10	0.02	
C	P	0.00	0.01	0.00	0.00	0.01	←
D	A, R, T	0.21	0.08	0.14	0.34	0.07	
Е	A, D, T	0.07	0.01	0.02	0.17	0.08	
F	H, K, b	0.11	0.06	0.00	0.16	0.02	
G	D, P, b	0.04	0.01	0.07	0.07	0.04	
Н	F, K, b	0.14	0.06	0.00	0.18	0.02	
I	A, V, Y	0.14	0.04	0.02	0.23	0.06	
J	I, Q, c	0.07	0.02	0.03	0.17	0.03	
K	F, H, b	0.11	0.06	0.00	0.16	0.02	
L	A, E, V	0.11	0.02	0.04	0.21	0.05	
M	Q, S, Y	0.00	0.01	0.00	0.00	0.03	←
N	D, R, T	0.07	0.04	0.00	0.21	0.06	
O	S, W, a	0.11	0.04	0.00	0.13	0.01	
P	B, G, b	0.11	0.02	0.07	0.11	0.02	
Q	I, J, Y	0.14	0.03	0.05	0.22	0.04	
R	D, N, T	0.14	0.06	0.02	0.26	0.05	
S	O, W, a	0.14	0.04	0.00	0.15	0.01	
T	D, N, R	0.14	0.06	0.01	0.27	0.05	
U	B, H, b	0.04	0.01	0.00	0.06	0.02	
V	A, I, L	0.11	0.05	0.05	0.26	0.05	
W	O, S, a	0.11	0.04	0.00	0.13	0.01	
X	E, L, a	0.00	0.01	0.00	0.00	0.02	←
Y	A, I, Q	0.18	0.05	0.08	0.27	0.05	
Z	L, Q, Y	0.00	0.01	0.00	0.00	0.03	←
a	O, S, W	0.14	0.04	0.00	0.15	0.01	
b	F, H, K	0.25	0.07	0.02	0.25	0.02	
c	A, J, R	0.04	0.01	0.01	0.14	0.06	

IC In-Degree PR PageRank BT Betweenness CL Closenness HU Hub ND No In-Degree (\leftarrow) No Out-Degree (\rightarrow) No In or Out-Degree (\rightleftarrows)



GROUP 1 - DEMO 2 SNA RANK SCORES

A. Who would you choose to spend a free time outing with?

ID	CHOICES	IC	PR	ВТ	CL	HU	ND
A	D, V, Y	1	1	1	1	7	
В	P, U, b	6	21	10	19	20	
C	P	8	25	20	22	28	←
D	A, R, T	2	2	2	2	2	
E	A, D, T	6	20	12	13	1	
F	H, K, b	5	6	20	14	17	
G	D, P, b	7	22	4	20	12	
Н	F, K, b	4	4	18	11	19	
I	A, V, Y	4	11	11	7	4	
J	I, Q, c	6	19	9	12	16	
K	F, H, b	5	5	20	14	17	
L	A, E, V	5	17	8	10	11	
M	Q, S, Y	8	25	20	22	15	←
N	D, R, T	6	15	20	9	3	
O	S, W, a	5	14	20	17	24	
P	B, G, b	5	18	5	18	21	
Q	I, J, Y	4	16	7	8	13	
R	D, N, T	4	8	14	5	8	
S	O, W, a	4	13	17	15	27	
T	D, N, R	4	7	15	4	9	
U	B, H, b	7	24	19	21	18	
V	A, I, L	5	10	6	5	10	
W	O, S, a	5	14	20	17	25	
X	E, L, a	8	25	20	22	23	←
Y	A, I, Q	3	9	3	3	6	
Z	L, Q, Y	8	25	20	22	14	←
a	O, S, W	4	12	17	15	26	
b	F, H, K	1	3	13	6	22	
c	A, J, R	7	23	16	16	5	

IC In-Degree PR PageRank BT Betweenness CL Closenness HU Hub ND No In-Degree (\leftarrow) No Out-Degree (\rightarrow) No In or Out-Degree (\rightleftarrows) Very low Low High \blacksquare Very high



GROUP 1 - DEMO 2

SNA NODES ORDERED BY RANKS

A. Who would you choose to spend a free time outing with?

RANK	IC	RANK	PR	RANK	ВТ	RANK	CL	RANK	HU
1	A	1	A	1	A	1	A	1	Е
1	b	2	D	2	D	2	D	2	D
2	D	3	b	3	Y	3	Y	3	N
3	Y	4	Н	4	G	4	T	4	I
4	Н	5	K	5	P	5	R	5	c
4	I	6	F	6	V	5	V	6	Y
4	Q	7	T	7	Q	6	b	7	A
4	R	8	R	8	L	7	I	8	R
4	S	9	Y	9	J	8	Q	9	T
4	T	10	V	10	В	9	N	10	V
4	a	11	I	11	I	10	L	11	L
5	F	12	a	12	E	11	Н	12	G
5	K	13	S	13	b	12	J	13	Q
5	L	14	O	14	R	13	E	14	Z
5	O	14	W	15	T	14	F	15	M
5	P	15	N	16	c	14	K	16	J
5	V	16	Q	17	S	15	S	17	F
5	W	17	L	17	a	15	a	17	K
6	В	18	P	18	Н	16	c	18	U
6	E	19	J	19	U	17	O	19	Н
6	J	20	E	20	C	17	W	20	В
6	N	21	В	20	F	18	P	21	P
7	G	22	G	20	K	19	В	22	b
7	U	23	c	20	M	20	G	23	X
7	c	24	U	20	N	21	U	24	O
8	C	25	C	20	O	22	C	25	W
8	M	25	M	20	W	22	M	26	a
8	X	25	X	20	X	22	X	27	S
8	Z	25	Z	20	Z	22	Z	28	C

IC In-Degree PR PageRank BT Betweenness CL Closenness HU Hub



GROUP 1 - DEMO 2

SNA EDGES GROUPED BY TYPE

A. Who would you choose to spend a free time outing with?

Non reciprocal edges

 $X \rightarrow Y$ in network $A \cdot not Y \rightarrow X$ in network A



Reciprocal edges

 $X \to Y$ in network $A \cdot Y \to X$ in network A



Half symmetrical edges

 $X \to Y$ in network $A \cdot X \to Y$ in network B

 $\left(\mathbf{D} \cdot \mathbf{R} \right) \left(\mathbf{G} \cdot \mathbf{b} \right) \left(\mathbf{M} \cdot \mathbf{Q} \right) \left(\mathbf{N} \cdot \mathbf{R} \right) \left(\mathbf{N} \cdot \mathbf{T} \right) \left(\mathbf{O} \cdot \mathbf{S} \right) \left(\mathbf{O} \cdot \mathbf{W} \right) \left(\mathbf{P} \cdot \mathbf{b} \right) \left(\mathbf{U} \cdot \mathbf{b} \right)$

Reversed half symmetrical edges

 $X \rightarrow Y$ in network $A \cdot Y \rightarrow X$ in network B

 $J\cdot c\,$ $W \cdot a$ $\boldsymbol{H} \cdot \boldsymbol{K}$ $Q\cdot I$ $R\cdot D$ $R\cdot N$ $\mathbf{S}\cdot\mathbf{O}$ $S\cdot a$ $T\cdot N$ $T\cdot R$ $W \cdot O$ $\mathbf{Z}\cdot\mathbf{Y}$ $a \cdot O$ $H \cdot F$ $b \cdot F$ $b \cdot H$ $b \cdot K$

Full symmetrical edges

 $X \to Y, Y \to X$ in network $A \cdot X \to Y, Y \to X$ in network B

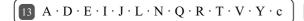


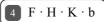
GROUP 1 - DEMO 2 SNA SUBGRAPHS

A. Who would you choose to spend a free time outing with?

Strongly Connected Components

Maximal subgraphs where all vertices are mutually reachable.









Weakly Connected Components

Maximal subgraphs where any vertices are connected by undirected paths.

29 A · B · C · D · E · F · G · H · I · J · K · L · M · N · O · P · Q · R · S · T · U · V · W · X · Y · Z · a · b · c

Cliques

Subgraphs that become fully connected when directional edges are ignored.

 $\mathbf{Q} \cdot \mathbf{S} \cdot \mathbf{W} \cdot \mathbf{a}$ $D\cdot N\cdot R\cdot T$ $F\cdot H\cdot K\cdot b$ $\mathbf{3} \mathbf{E} \cdot \mathbf{L} \cdot \mathbf{X}$ $B \cdot P \cdot b$ $B\cdot U\cdot b$ $H \cdot U \cdot b$ $G \cdot P \cdot b$ $I\cdot J\cdot Q$ $A\cdot I\cdot V$ $A\cdot I\cdot Y$ $A\cdot L\cdot V$ $A\cdot E\cdot L$ $A\cdot D\cdot E$ $D \cdot E \cdot T$ $Q \cdot Y \cdot Z$ $M\cdot Q\cdot Y$

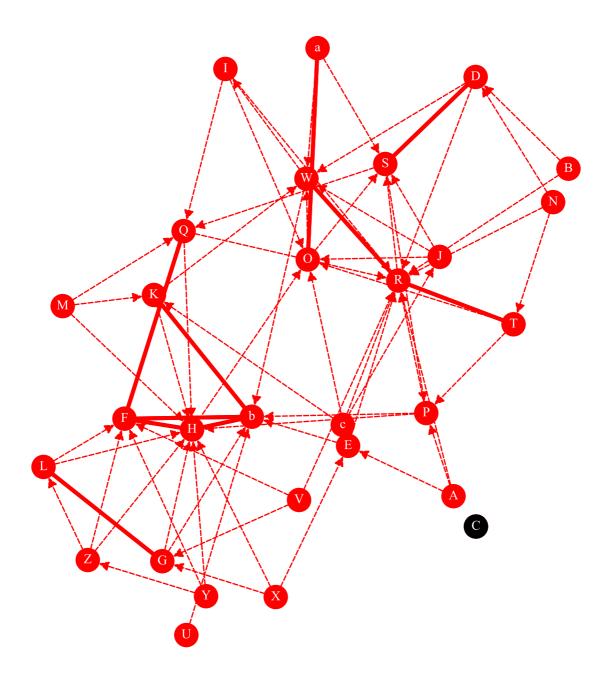
 $I\cdot Q\cdot Y$



GROUP 1 - DEMO 2 SNA NETWORK GRAPH

B. Who would you choose to organize a study group?

NN 29, NE 81, ND 10%, NC 31%, NT 32%, NR 25%





GROUP 1 - DEMO 2 SNA RAW SCORES

B. Who would you choose to organize a study group?

ID	CHOICES	IC	PR	ВТ	CL	HU	ND
A	E, P, R	0.00	0.01	0.00	0.00	0.03	←
В	D, R	0.00	0.01	0.00	0.00	0.03	←
C	-	0.00	0.01	0.00	0.00	0.00	\rightleftharpoons
D	R, S, W	0.11	0.03	0.01	0.32	0.04	
E	O, R, b	0.07	0.01	0.01	0.07	0.05	
F	H, Q, b	0.25	0.10	0.04	0.44	0.05	
G	H, L, b	0.11	0.01	0.01	0.11	0.04	
Н	F, O, b	0.39	0.12	0.09	0.51	0.04	
I	O, Q, R	0.04	0.03	0.01	0.33	0.04	
J	O, S, W	0.04	0.01	0.01	0.04	0.02	
K	H, W, b	0.11	0.04	0.02	0.37	0.05	
L	F, G, H	0.07	0.01	0.00	0.11	0.04	
M	H, K, Q	0.00	0.01	0.00	0.00	0.04	←
N	D, R, T	0.00	0.01	0.00	0.00	0.03	←
O	S, W, a	0.21	0.07	0.10	0.49	0.01	
P	H, R, b	0.11	0.04	0.02	0.33	0.06	
Q	F, H, R	0.14	0.06	0.04	0.43	0.06	
R	S, T, W	0.43	0.09	0.10	0.51	0.01	
S	D, P, Q	0.18	0.07	0.08	0.43	0.01	
T	O, P, R	0.07	0.03	0.02	0.34	0.04	
U	b	0.00	0.01	0.00	0.00	0.02	←
V	F, G, R	0.00	0.01	0.00	0.00	0.04	←
W	I, R, b	0.21	0.08	0.08	0.47	0.04	
X	E, G, H	0.00	0.01	0.00	0.00	0.03	←
Y	F, H, Z	0.00	0.01	0.00	0.00	0.04	←
Z	F, H, L	0.04	0.01	0.00	0.04	0.04	
a	O, S, W	0.04	0.02	0.00	0.33	0.02	
b	F, H, K	0.29	0.12	0.07	0.53	0.04	
c	J, K, R	0.00	0.01	0.00	0.00	0.03	←

 $\textbf{IC} \text{ In-Degree } \textbf{PR} \text{ PageRank } \textbf{BT} \text{ Betweenness } \textbf{CL} \text{ Closenness } \textbf{HU} \text{ Hub } \textbf{ND} \text{ No In-Degree } (\leftarrow) \text{ No Out-Degree } (\rightarrow) \text{ No In or Out-Degree } (\rightleftarrows)$



GROUP 1 - DEMO 2 SNA RANK SCORES

B. Who would you choose to organize a study group?

ID	CHOICES	IC	PR	ВТ	CL	HU	ND
A	E, P, R	11	19	19	16	19	←
В	D, R	11	19	19	16	22	←
C	-	11	19	19	16	28	\rightleftharpoons
D	R, S, W	8	12	13	12	17	
Е	O, R, b	9	17	12	14	3	
F	H, Q, b	4	3	8	5	5	
G	H, L, b	8	15	14	13	7	
Н	F, O, b	2	2	3	2	11	
I	O, Q, R	10	13	16	11	14	
J	O, S, W	10	18	15	15	23	
K	H, W, b	8	9	11	8	4	
L	F, G, H	9	16	17	13	6	
M	H, K, Q	11	19	19	16	16	←
N	D, R, T	11	19	19	16	21	←
O	S, W, a	5	6	2	3	27	
P	H, R, b	8	10	10	11	1	
Q	F, H, R	7	8	7	7	2	
R	S, T, W	1	4	1	2	25	
S	D, P, Q	6	7	4	6	26	
T	O, P, R	9	11	9	9	15	
U	b	11	19	19	16	24	←
V	F, G, R	11	19	19	16	9	←
W	I, R, b	5	5	5	4	12	
X	E, G, H	11	19	19	16	18	←
Y	F, H, Z	11	19	19	16	13	←
Z	F, H, L	10	18	18	15	10	
a	O, S, W	10	14	19	10	23	
b	F, H, K	3	1	6	1	8	
c	J, K, R	11	19	19	16	20	←

IC In-Degree PR PageRank BT Betweenness CL Closenness HU Hub ND No In-Degree (\leftarrow) No Out-Degree (\rightarrow) No In or Out-Degree (\rightleftarrows) Very low Low High Wery high



GROUP 1 - DEMO 2

SNA NODES ORDERED BY RANKS

B. Who would you choose to organize a study group?

DANIZ	10	DANIZ	DD.	DANIZ	DÆ	DANIZ	CI	DANIZ	TITI
RANK	IC	RANK	PR	RANK	ВТ	RANK	CL	RANK	HU
1	R	1	b	1	R	1	b	1	P
2	Н	2	Н	2	O	2	Н	2	Q
3	b	3	F	3	Н	2	R	3	E
4	F	4	R	4	S	3	O	4	K
5	O	5	W	5	W	4	W	5	F
5	W	6	O	6	b	5	F	6	L
6	S	7	S	7	Q	6	S	7	G
7	Q	8	Q	8	F	7	Q	8	b
8	D	9	K	9	T	8	K	9	V
8	G	10	P	10	P	9	T	10	Z
8	K	11	T	11	K	10	a	11	Н
8	P	12	D	12	E	11	I	12	W
9	E	13	I	13	D	11	P	13	Y
9	L	14	a	14	G	12	D	14	I
9	T	15	G	15	J	13	G	15	T
10	I	16	L	16	I	13	L	16	M
10	J	17	E	17	L	14	E	17	D
10	Z	18	J	18	Z	15	J	18	X
10	a	18	Z	19	A	15	Z	19	A
11	A	19	A	19	В	16	A	20	c
11	В	19	В	19	C	16	В	21	N
11	C	19	C	19	M	16	C	22	В
11	M	19	M	19	N	16	M	23	J
11	N	19	N	19	U	16	N	23	a
11	U	19	U	19	V	16	U	24	U
11	V	19	V	19	X	16	V	25	R
11	X	19	X	19	Y	16	X	26	S
11	Y	19	Y	19	a	16	Y	27	O
11	c	19	c	19	c	16	c	28	С

IC In-Degree PR PageRank BT Betweenness CL Closenness HU Hub



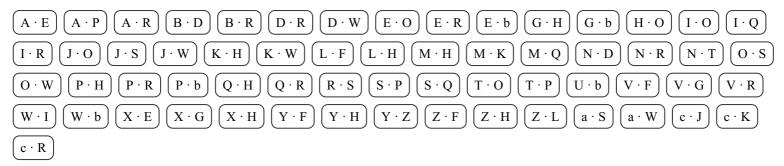
GROUP 1 - DEMO 2

SNA EDGES GROUPED BY TYPE

B. Who would you choose to organize a study group?

Non reciprocal edges

 $X \to Y$ in network $B \cdot not Y \to X$ in network B



Reciprocal edges

 $X \to Y$ in network $B : Y \to X$ in network B



Half symmetrical edges

 $X \to Y$ in network $B \, \cdot \, X \to Y$ in network A

Reversed half symmetrical edges

 $X \to Y$ in network $B \, \cdot \, Y \to X$ in network A

 $K \cdot H$ $N \cdot R$ $N \cdot T$ $\mathbf{O} \cdot \mathbf{S}$ $O\cdot W$ $T\cdot R$ $\mathbf{Y}\cdot\mathbf{Z}$ $\mathbf{a}\cdot\mathbf{O}$ $\boldsymbol{a}\cdot\boldsymbol{S}$ $\boldsymbol{a}\cdot\boldsymbol{W}$ $b\cdot F$ $\mathbf{A} \cdot \mathbf{E}$ $D\cdot R\\$ $H \cdot F$ $I \cdot Q$ $b \cdot H$ $b \cdot K$ $\mathbf{c}\cdot\mathbf{J}$

Full symmetrical edges

 $X \to Y,\, Y \to X$ in network $B \cdot X \to Y,\, Y \to X$ in network A

 $(F \cdot H) (F \cdot b) (H \cdot b) (K \cdot b) (O \cdot a) (R \cdot T)$



GROUP 1 - DEMO 2 SNA SUBGRAPHS

B. Who would you choose to organize a study group?

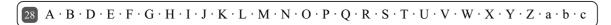
Strongly Connected Components

Maximal subgraphs where all vertices are mutually reachable.



Weakly Connected Components

Maximal subgraphs where any vertices are connected by undirected paths.



Cliques

Subgraphs that become fully connected when directional edges are ignored.

