

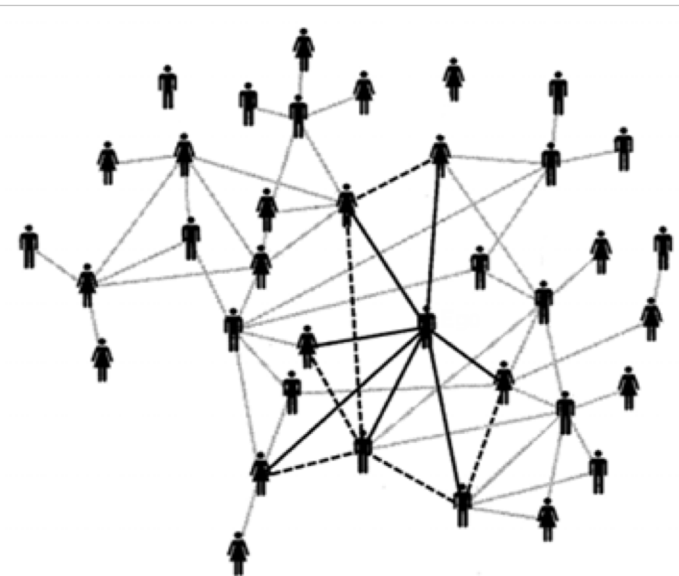
The role of social capital in local advice networks: case study rural community in Mexico

Alan Navarro

SOC 570

final paper

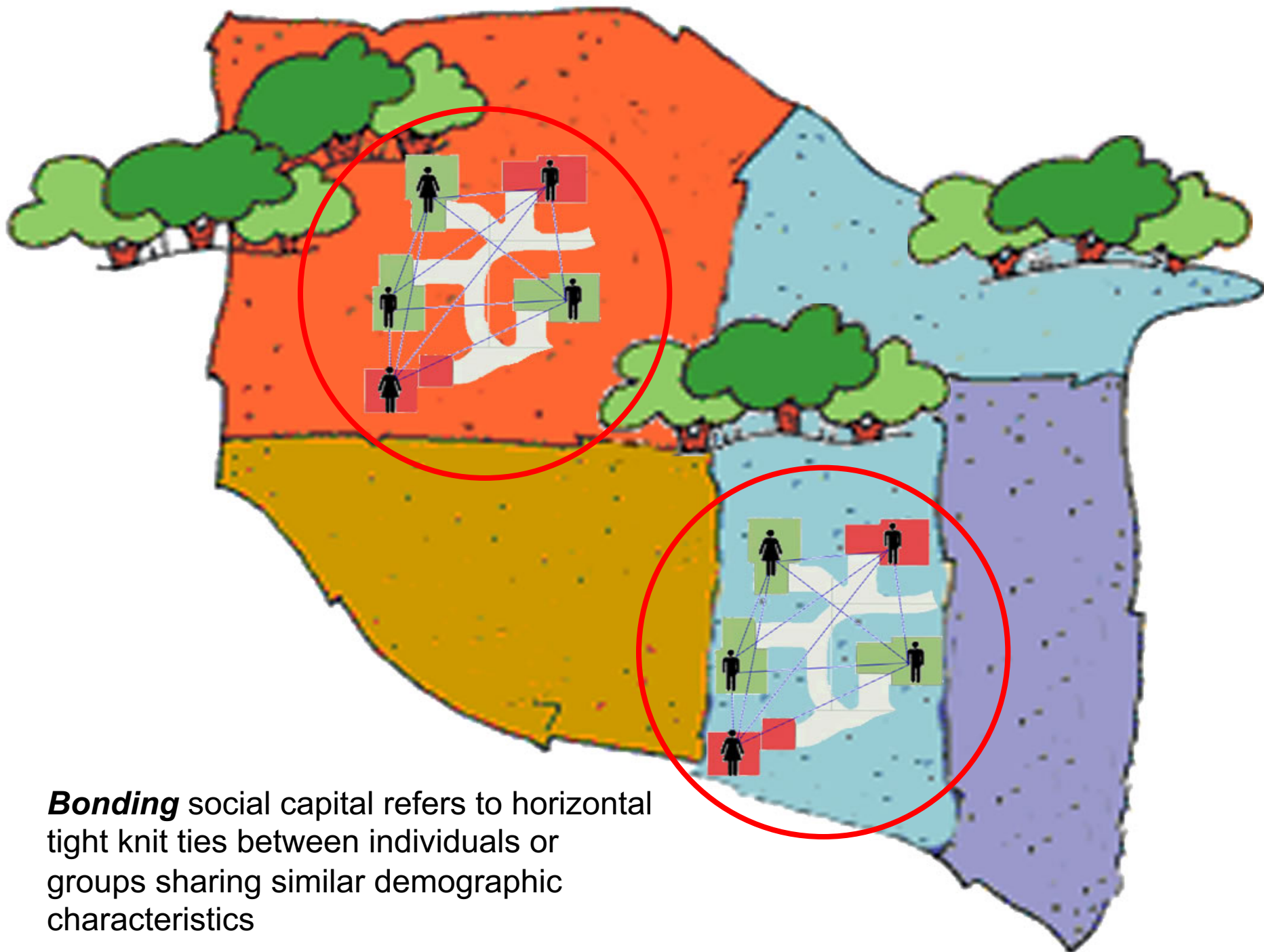
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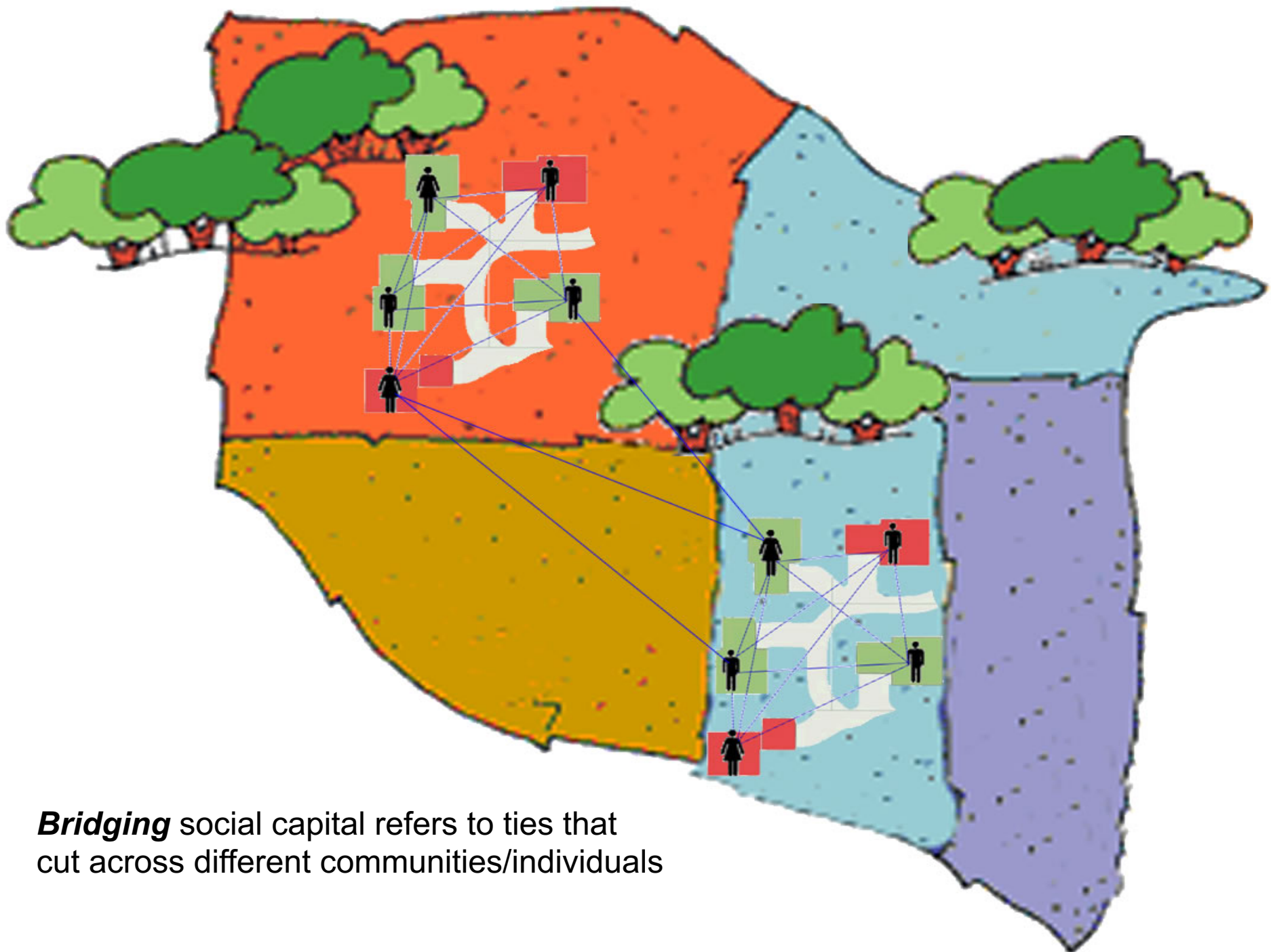
Rural development and social networks

- Why is it important for rural development?
 - As a part of livelihood strategies
 - Considered as a production factor
 - Reduce transaction costs
 - It represents a “safety-net”
 - Provide access to friend’s resources and information

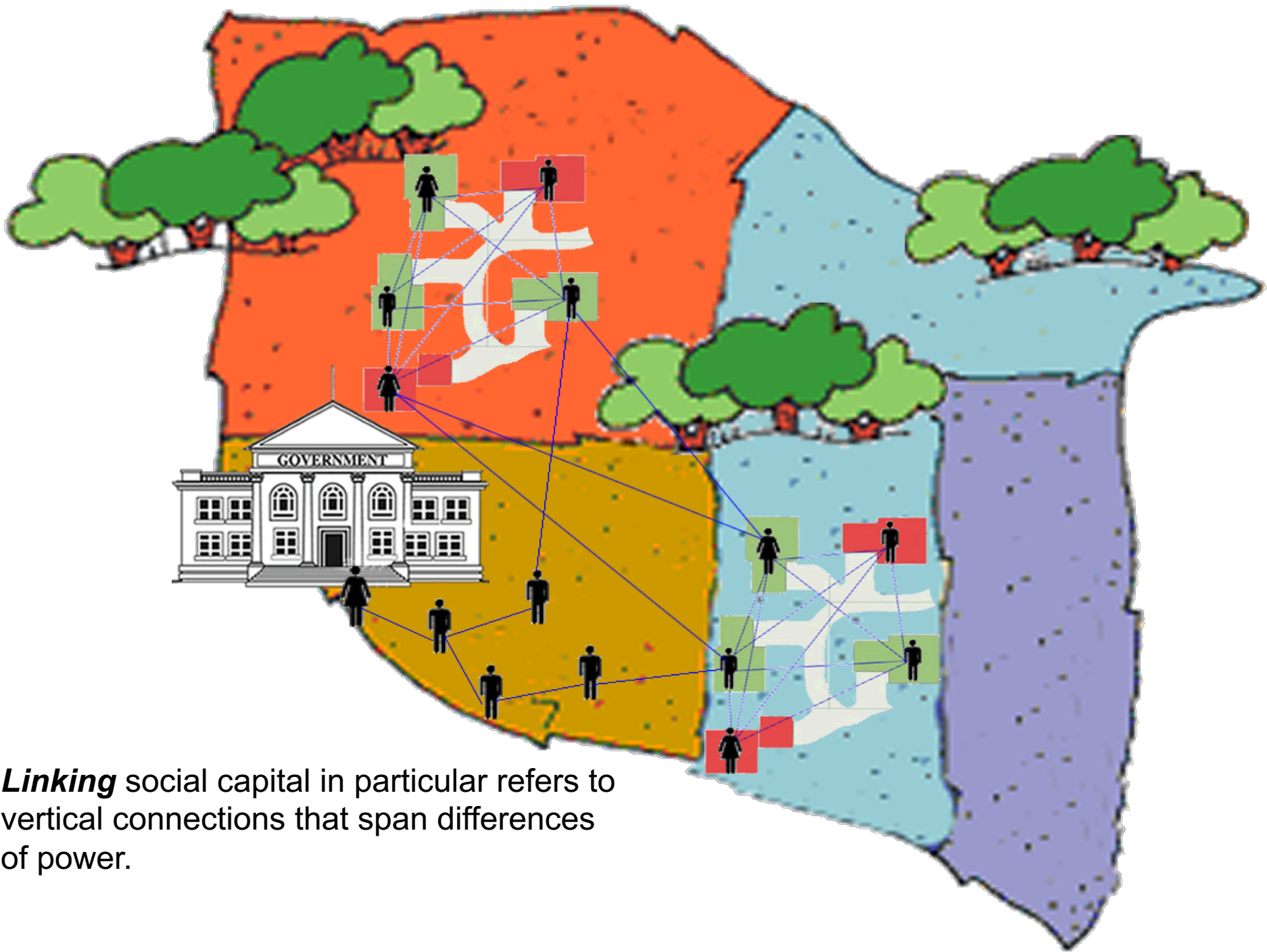
Three dimensions of SC



Bonding social capital refers to horizontal tight knit ties between individuals or groups sharing similar demographic characteristics



Bridging social capital refers to ties that cut across different communities/individuals



Linking social capital in particular refers to vertical connections that span differences of power.

What networks could be found in a rural community?

- Formal networks (linking social capital)
 - Village headmen are key “information brokers” between the local government, the official extension services, and villagers
 - The access to mass media and communication means (related positively with linking social capital)
 - In my case as was prevented that there were two “leaders” in the community

What networks could be found in a rural community?

- Informal social networks (bonding and bridging capital)
- Kinship networks:
 - Family ties are considered to be the primary and most important layer of social networks
 - Kinship networks are particularly important for gaining access to information

What networks could be found in a rural community?

- Neighbors
 - When individuals interact frequently in local networks and in the observance of local norms, they are more likely to exchange information

Extension practices and local SN

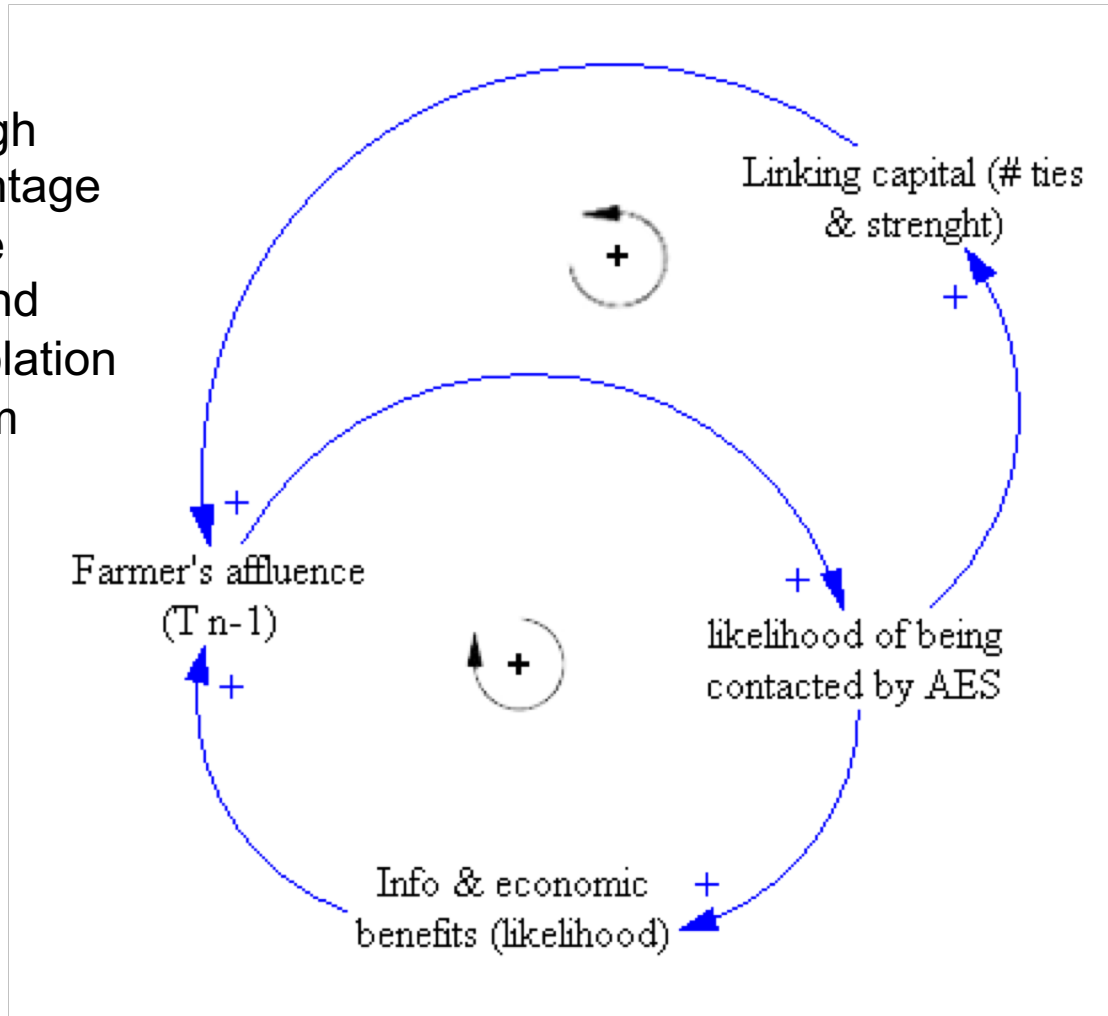
- Agricultural extension systems (AES) have been widely criticized as not being able to reach poorer farmers and tending to focus on better-off farmers
- They single out local leaders as a contact farmers
- Selected contact farmers tend to be wealthier and more powerful in the community

Extension practices and local SN

- Local leaders or better-off farmers as contact persons for AES are more beneficiated at expense of the already marginalized farmers

Extension practices and local SN

This runs through either the advantage or disadvantage of the farmer, and may lead to “isolation of the poor” from “linking ties”



Research questions

- How the advice social networks looks like?
- To whom farmers ask for advice? Family members, those more educated, those with more linking capital, their neighbors, etc.
- Are the two leaders the persons with more centrality?
- Are wealthier farmer those with more social capital?

Hypothesis

1. It is possible to cluster (hierarchical cluster) the network to find the two leader's group
2. Neighbors, family members, those more educated, those with more linking capital are more likely to form increase the chance for an advice relationship to form
3. The two leaders must have more indegree centrality
4. Wealthier farmers has more social capital (particularly linking social capital)

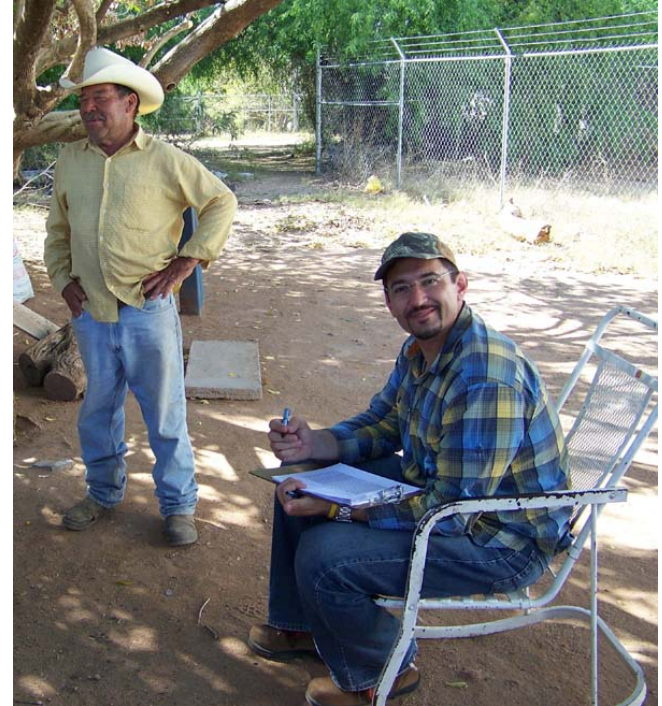
Where's the community located?

- First you get to Hermosillo 217 miles to the south of Tucson, then you drive 43 miles to the East
- This community makes use of 20,391 acres of land co-owned by 54 farmers under the “Ejido” system



Data gathering

- Face-to-face interviews
- N = 54
- Multiple SN:
 - Advice
 - Kinship
 - Work
 - Favors
 - Affiliation matrix with institutions (government)
 - Affiliation matrix with extensionists
 - Frequency
 - Attributes about the farmers



Questionnaire

Whole network approach seeks to interview all actors in the population

Binary data: relation absent or present

Time required: 30 minutes approximately

Expected number of actors = 54; Now I know that 3 passed away and their membership has not been replaced (their land rights are still in conflict), one refused to respond, and one is living in a very far place; so at maximum I could have 49 Interviewed.

Name: Date: _____ UTM 12 R NAD27MEX

#	Father Last Name	Mother Last Name	Name(s)	Known	Family or in-law	Someone you see to ask for advice?	Have you work and/or partner with?	Someone you can ask a favor (or borrow money from)?	How frequently do you talk to him/her?
1				✓	✗	✓	✗	✗	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
2				✓	✗	✗	✗	✗	1)Daily 2) Weekly <input checked="" type="checkbox"/> 3) Monthly 4) Rarely 5)
3				✓	✗	✗	✓	✗	1)Daily <input checked="" type="checkbox"/> 2) Weekly 3) Monthly 4) Rarely 5)
4				✓	✓	✗	✗	✓	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)
5				✓	✓	✓	✗	✓	1)Daily <input checked="" type="checkbox"/> 2) Weekly 3) Monthly 4) Rarely 5)
6				✓	✓	✗	✓	✓	1)Daily 2) Weekly 3) Monthly <input checked="" type="checkbox"/> 4) Rarely 5)
7				✓	✗	✗	✗	✓	1)Daily 2) Weekly 3) Monthly <input checked="" type="checkbox"/> 4) Rarely 5)
8				✓	✗	✓	✗	✓	1)Daily 2) Weekly 3) Monthly <input checked="" type="checkbox"/> 4) Rarely 5)
				✓	✗	✓	✓	✓	1)Daily 2) Weekly <input checked="" type="checkbox"/> 3) Monthly 4) Rarely 5)

Questionnaire (cont...)

What I intend to measure is “linking capital”

Institution	Known	How frequently do you see this person?
Universidades	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Judicial (Policia)	<input checked="" type="checkbox"/>	1)Daily 2) Weekly 3) Monthly <input checked="" type="checkbox"/> 4) Rarely 5)
Secretaria Salud	X	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)
Secretaria de Educacion	X	1)Daily 2) Weekly 3) Monthly <input checked="" type="checkbox"/> 4) Rarely 5)
CONAFOR (forestal)	X	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)
FIRCO (Microcuencas)	X	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)
SEDESSON	<input checked="" type="checkbox"/>	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)
SEMARNAT	X	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)
Fomento (Reconversion)	<input checked="" type="checkbox"/>	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)
Distrito (SAGARPA)	X	1)Daily 2) Weekly 3) Monthly <input checked="" type="checkbox"/> 4) Rarely 5)
Ayuntamiento	X	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)
Conagua	<input checked="" type="checkbox"/>	1)Daily 2) Weekly 3) Monthly <input checked="" type="checkbox"/> 4) Rarely 5)
Union Ganadera	X	1)Daily 2) Weekly 3) Monthly <input checked="" type="checkbox"/> 4) Rarely 5)
Banco	X	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)
Otra:	<input checked="" type="checkbox"/>	1)Daily 2) Weekly 3) Monthly 4) Rarely <input checked="" type="checkbox"/> 5)

Questionnaire (cont...)

What I intend to measure is “linking capital”

Extensionists	Known	How frequently do you see this person?
Name 1	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 2	✓	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 3	✓	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 4	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input type="checkbox"/>
Name 5	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 6	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 7	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 8	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 9	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 10	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 11	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 12	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 13	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>
Name 14	X	1)Daily 2) Weekly 3) Monthly 4) Rarely 5) <input checked="" type="checkbox"/>

Neighbors

	X	Y
1	505559	3216667
3	563615	3176215
5	563727	3176173
8	563790	3176284
10	563941	3176275
11	563770	3176288
12	563827	3176276
13	563996	3176281
14	563829	3176302
15	563893	3176299
16	563919	3176310
17	540955	3186113
18	563838	3176318
22	563670	3176303
25	563736	3176219
26	563709	3176289
27	563802	3176381
32	563826	3176448
35	563679	3176155
37	563783	3176487
42	563742	3176306
43	563838	3176318
44	566091	3182087
45	505559	3216667
46	563854	3176381
47	563936	3176408
49	563876	3176360
50	563876	3176360
52	563712	3176347
54	563765	3176374

	1	3	5	8	10	11	12	13	14	15	16	17
1	0	70759	70875	70864	70993	70845	70898	71035	70885	70940	70955	46759
3		0	120	188	331	171	221	387	231	290	318	24727
5			0	128	237	123	144	290	164	208	236	24847
8				0	151	20	38	208	43	104	132	24861
10					0	171	114	55	115	54	41	25003
11						0	58	228	61	123	151	24841
12							0	169	26	70	98	24898
13								0	168	105	82	25051
14									0	64	90	24889
15										0	28	24949
16											0	24969
17												0

Euclidian distance

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$



Attributes

- Education: years of formal schooling
- Communication means
 - TV
 - Radio
 - VCR/DVD
 - Telephone
 - Cell phone
 - Satellite TV
 - PC
 - Internet
 - Mail

Attributes (cont...)

- Have you held any elected or representative position in the community?

About economic affluence

- How many hectares do you plant each season? Rainfed _____ Irrigated _____
- Do you own livestock? How many?
- Are you a homeowner?

Attributes (cont...)

- Do you have a car? What year is it?
- Do you have credit card?
- Do you have saving account?
- Are you a trader (mainly if they owned a grocery store or buy livestock)?

My idea was to create a typology or a rank of affluence, that later I could verify it with the farmer's opinion about my rank.

Descriptive Analysis

Structural analysis: is leader's indegree different from the rest of the group?

● 44

Leaders do not ask each other for advice

● 27

Dyadic Analysis

DV: advice sociomatrix

- Advice: 29 x 29 non symmetric sociomatrix
(0,1) Is S/he someone you take advice from?

IV: Institutions, extension workers, and education

For **education**, number of ties with **institutions**, number of ties with **extension workers**, we are not expected to have reciprocity

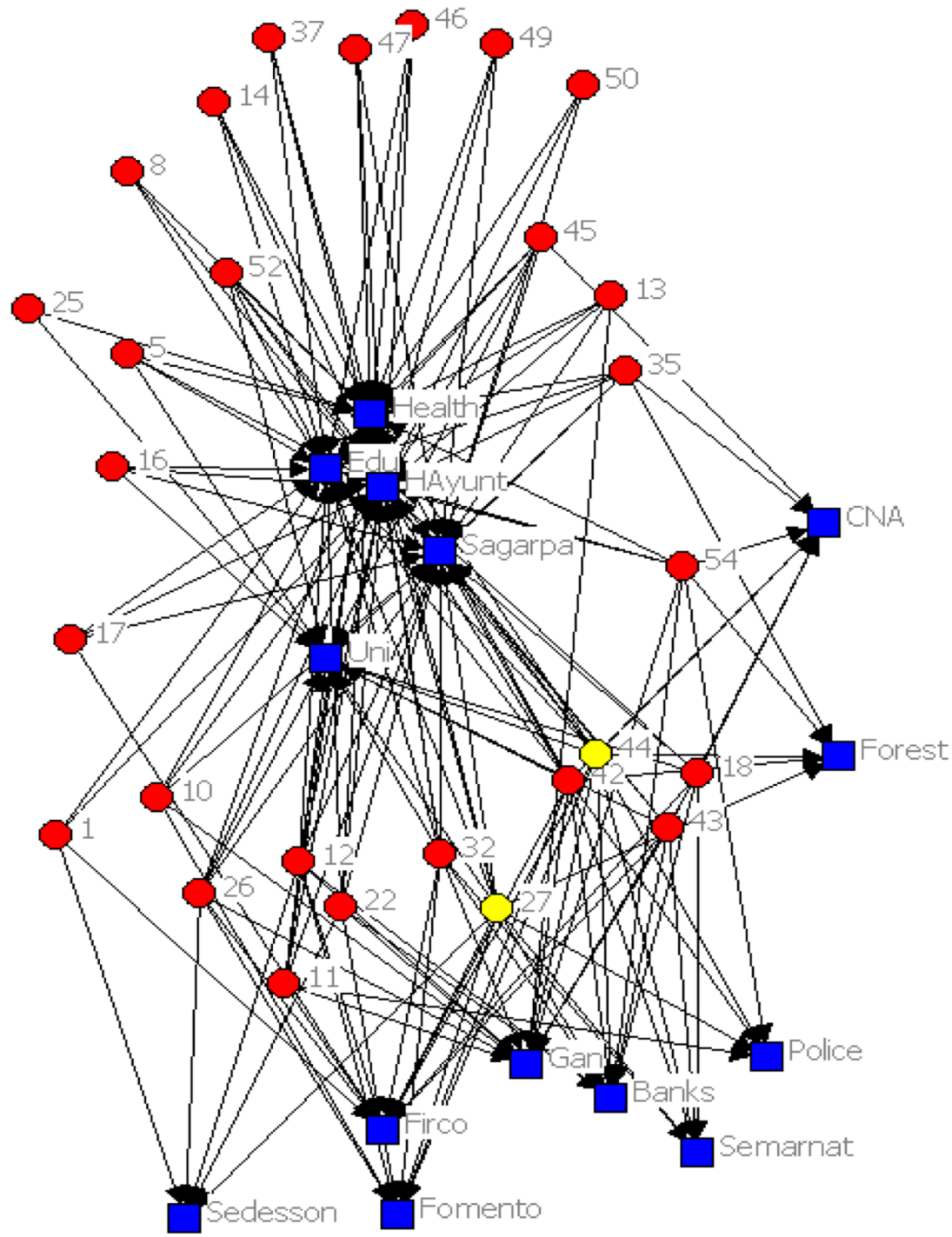
if $x_1 > x_2 \rightarrow 1 \rightarrow x_{12} \rightarrow 1$ *or*

$x_2 \leq x_1 \rightarrow 0 \rightarrow x_{12} \rightarrow 0$

if $x_{12} \rightarrow 1$ *then* $x_2 \leq x_1 \rightarrow x_{21} \rightarrow 0$

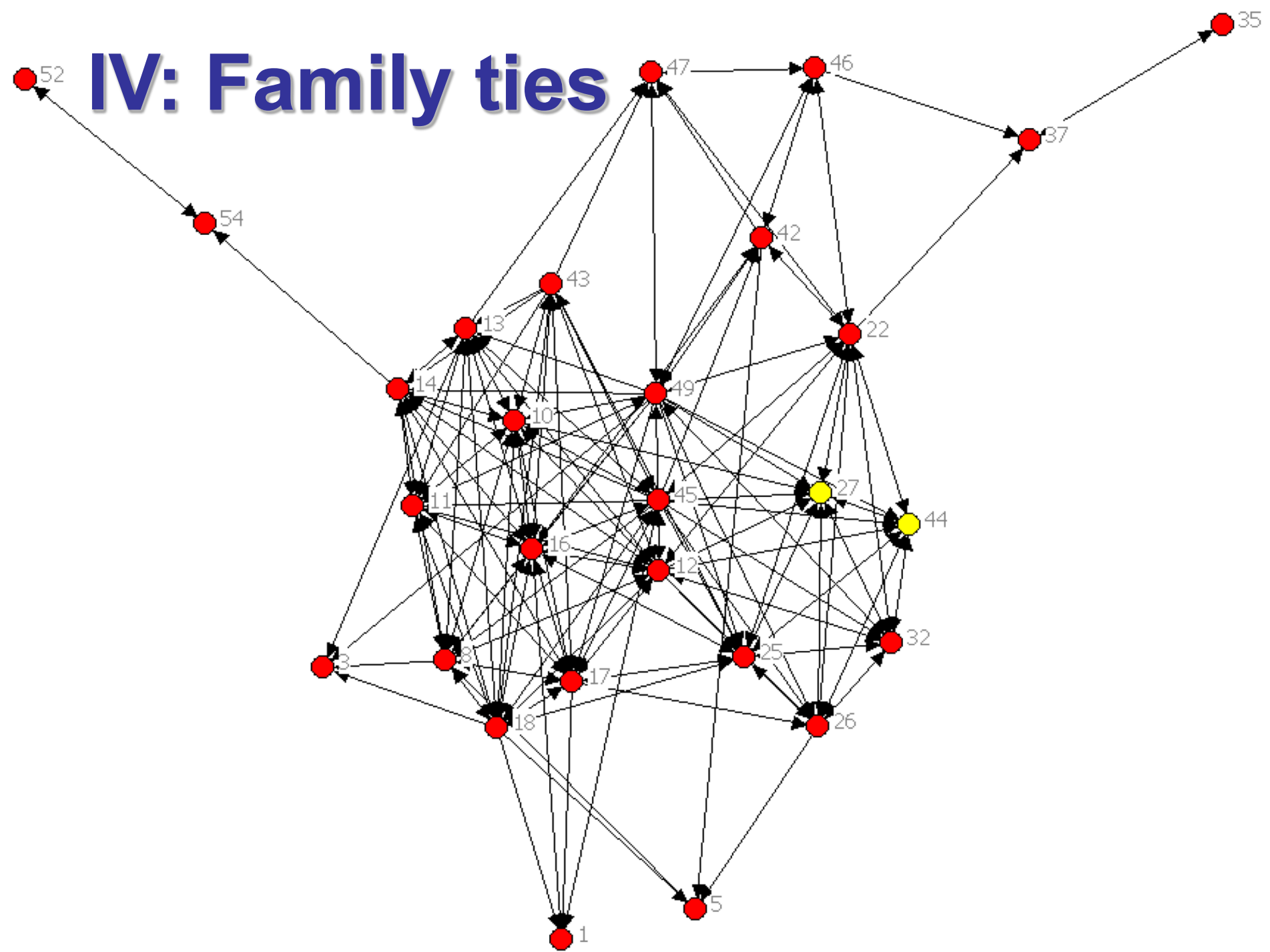
Do farmer ask for advice to those more educated than them?
or those with more linking capital?

● 3

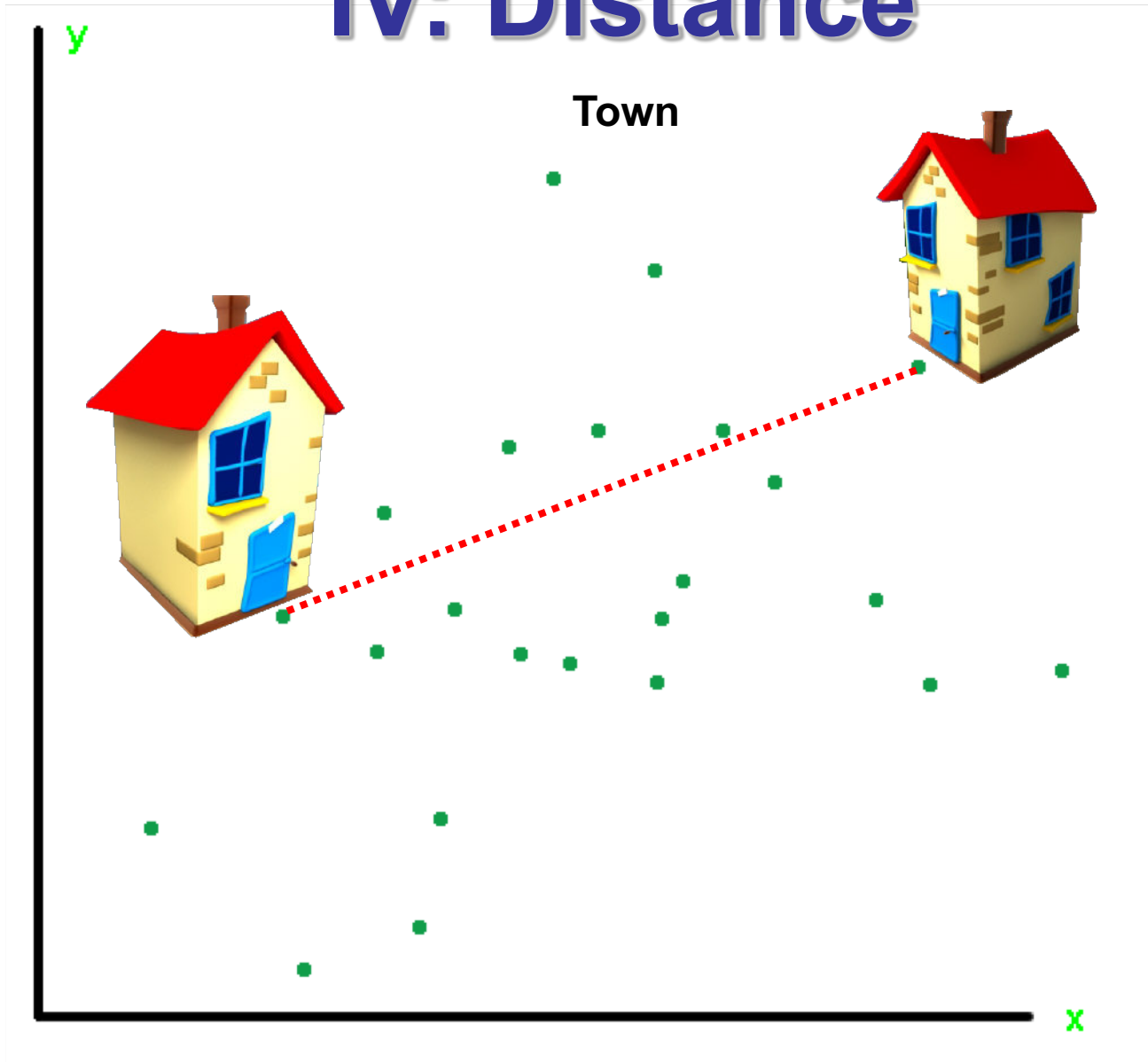


Affiliation Network

IV: Family ties



IV: Distance



Model

```
logit advice dist fam freq educ instit extens if nomiss==1
```

note: extens dropped due to collinearity

```
Logistic regression                Number of obs   =      812
                                   LR chi2(5)         =     142.79
                                   Prob > chi2        =      0.0000
Log likelihood = -491.37772         Pseudo R2      =     0.1269
```

advice	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
dist	.0031153	.0033523	0.93	0.353	-.003455	.0096856
fam	.8839236	.1749053	5.05	0.000	.5411155	1.226732
freq	-.7140608	.0867086	-8.24	0.000	-.8840066	-.544115
educ	.3300641	.1946584	1.70	0.090	-.0514593	.7115875
instit	.6623517	.1841095	3.60	0.000	.3015037	1.0232
_cons	.9707442	.2124519	4.57	0.000	.5543461	1.387142

fitstat

Measures of Fit for logit of advice

Log-Lik Intercept Only:	-562.774	Log-Lik Full Model:	-491.378
D(806):	982.755	LR(5):	142.792
		Prob > LR:	0.000
McFadden's R2:	0.127	McFadden's Adj R2:	0.116
ML (Cox-Snell) R2:	0.161	Cragg-Uhler (Nagelkerke) R2:	0.215
McKelvey & Zavoina's R2:	0.212	Efron's R2:	0.164
Variance of y*:	4.173	Variance of error:	3.290
Count R2:	0.677	Adj Count R2:	0.347
AIC:	1.225	AIC*n:	994.755
BIC:	-4417.042	BIC':	-109.295
BIC used by Stata:	1022.952	AIC used by Stata:	994.755

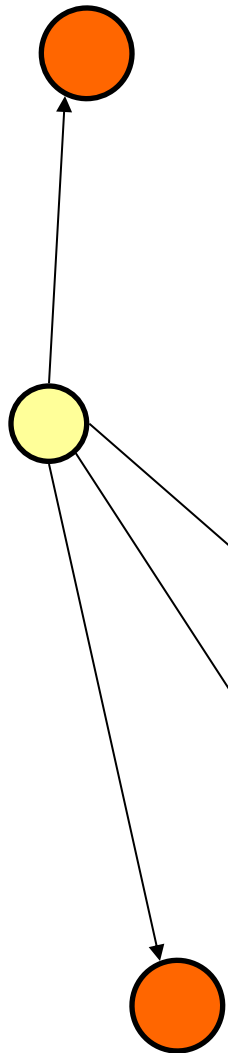
Interpretation

143% increase odds receive/give
Advice if ego/alter is a relative

```
. listcoef, percent help
Logit (N=812): Percentage Change in Odds
Odds of: 1 vs 0
```

advice	b	z	P> z	%	%stdX	SDofX
dist	0.00312	0.929	0.353	0.3	7.7	23.7921
fam	0.88392	5.054	0.000	142.0	49.5	0.4549
freq	-0.71406	-8.235	0.000	-51.0	-52.9	1.0533
educ	0.33006	1.696	0.090	39.1	17.4	0.4861
instit	0.66235	3.598	0.000	93.9	39.0	0.4976

```
b = raw coefficient
z = z-score for test of b=0
P>|z| = p-value for z-test
% = percent change in odds for unit increase in X
%stdX = percent change in odds for SD increase in X
SDofX = standard deviation of X
```



- If alter has more contacts with Institutions there is a 94% increase in odds of being asked for advice
- If alter is more educated 39.1% increase in odds of being asked for advice
- Frequency (1: Daily-5:Never) 51% decrease in odds as someone is seen less frequently

Hypothesis tested

1. It is possible to cluster (hierarchical cluster) the network to find the two leader's group
2. Ego is more likely to form an advice tie with alters more educated, with more contacts with institutions, and those more frequently seen. Distance seems not to be an important factor; the variable of contact with extension workers was dropped because of collinearity, probably those with many ties with Institutions have more ties with extension workers.
3. The two leaders must have more indegree centrality, the two leaders have the same indegree centrality value far different from the indegree centrality of the rest of farmers.
4. Wealthier farmers has more social capital (particularly linking social capital)

Questions

