

# **Network Effects in SME Clusters**

**An Experiment to Differentiate the  
Diffusion Paths of Business and  
Technical Training**

# Introduction

- Predominant occupation in developing countries is self-employment
- Determinants of entrepreneurship is an important research area
- Focus in literature has been on access to physical capital and external finance (Banerjee, et. al., 2010; De Mel, McKenzie and Woodruff, 2008)
- More recent focus on “managerial capital” (e.g. Bloom et al, 2010; Bruhn, Karlan, and Schoar, 2010)

# Business Training Evaluations

- Growing number of evaluations across different settings:
  - Female micro-entrepreneurs in Peru: Karlan and Valdivia (2010)
  - Rules-of-thumb training in the Dominican Republic: Drexler, Fischer and Schoar (2010)
  - Young entrepreneurs in Bosnia Herzegovina: Bruhn and Zia (2011)
  - Rural farmers and non-farmers in Pakistan: Gine and Mansuri (2011)

# Motivation for our Work

- Businesses do not operate in a vacuum:
  - Interact with neighbors
  - Interact with associates above and below in supply chain
- Conley and Udry (2010): pineapple farmers in Ghana consciously adjust their inputs to align with those of successful network peers
- Khwaja, Mian and Qamar (2005): up to one-third of all firms in Pakistan's economy are interlocked with other firms through a common director.

# Motivation (cont'd)

- But is this desirable and efficient outcome?
- Two competing views:
  - Market failures abound (credit, labor, inputs), and networks provide insurance, and jointly maximize profits and welfare:
    - Implication: information flows freely
  - Network membership is *involuntary*, inherited or enforced:
    - Implication: information withheld if possible, esp in competitive environment

# Our Study

- We can experimentally test these two competing theories
- Our setting:
  - Competitive market of informal small-scale industrial producers in urban Kampala, Uganda
  - Impact evaluation of a technical and business training program

# Test of Network Dynamics

- Technical training is highly observable, difficult to hide
- Business training is unobservable, very easy to hide
- Our study:
  - Identify network tree of each study participant ex-ante (in baseline survey)
  - Follow the flow of both types of information along network tree
  - Test for differential flow of observable and unobservable information

# Program Details

- Partnership with the Katwe Small Scale Industries Association (KASSIDA)
- 13% share of country's employment
- Most workers have no formal training
- Productivity is low and failure rate and wastage is high – 50% businesses shut down in first 3 years of operation
- World Bank sponsored training program:
  - 731 firms, approx. 2,000 workers in the study



# Evaluation Methodology

- Clustering of firms by sector and location (20m rule + major road rule)
  - 228 clusters across 9 sectors
- Randomization at cluster level to avoid immediate spillovers
- Identify spillovers to network members

# Important ID assumption

- Financial/business knowledge is as easily transferable as technical knowledge
- What we propose:
  - Very basic and relevant concepts taught by an ex-KASSIDA business owner
  - Each session will end with a do-it-yourself handout, such as a template for a simplified balance sheet. We will hand out extra copies
  - Exit survey ranking of network members to invite to a future session (do attendees rank out-of-sector network members higher?)

# Distribution of Sample

	Prop. Of Sample
Sector 1: Barbershop/Hair Salon	0.096
Sector 2: Carpentry	0.064
Sector 3: Catering	0.146
Sector 4: Fitting and machinery	0.015
Sector 5: Electricals	0.016
Sector 6: Foundry and forgery	0.089
Sector 7: Metal fabrication	0.261
Sector 8: Shoe making and repair	0.049
Sector 9: Tailoring and knitting	0.263

# Description of Data

	Mean	Median	S.D.
Age of business owner	37.8	37	10.0
# of businesses owned	1.231	1	0.520
Female owner	0.441		
Married	0.715		
Religion: Muslim	0.334		
Religion: Catholic	0.286		
Religion: Protestant	0.268		
Completed school	0.141		
Typical monthly revenue (US\$)	880	292	3,767
Number of Employees	3.84	3	3.72
Business has borrowed in past 12m	0.311		
Business keeps financial record	0.079		

# Network Members

- 2212 network members in total were declared (in average 3 per firm), from which 735 are firms in our study

	Mean	Median	S.D.
Years in the network	10.5	9	8.47
Operate in the same sector	0.763		
Belong to the same family	0.171		
Belong to the same cluster	0.200		
Are of the same gender	0.862		
Network member is Female	0.364		

# Summary Stats of Qs Asked

	Mean
Q29: Expects to share Information	0.965
Q43: Expects to share resources	0.713
Q30: Has shared employees	0.319
Q31: Has shared inputs	0.368
Q33: Has shared equipment	0.442
Q34: Has shared names of Suppliers	0.571
Q35: Has shared names of Customers	0.450
Q37: Has referred Customers	0.570
Q38: Network member has referred Customers	0.558
Q39: Has borrowed money from network member	0.286
Q40: Has lent money to network member	0.291

# Preliminary Baseline Results

- We wish to characterize how firms share information and resources
- All regressions have robust and clustered (by surveyed firm) standard errors, and control for sector fixed effects
- Regressions are robust to including surveyed firm fixed effects

**Table 1: Q29: Expects to share information**

	(1)	(2)	(3)	(4)	(5)
	Q29: Expects to share infor- mation	Q29: Expects to share infor- mation	Q29: Expects to share infor- mation	Q29: Expects to share infor- mation	Q29: Expects to share infor- mation
Network member is Family	0.004 (0.014)	0.006 (0.033)	-0.000 (0.016)	0.004 (0.014)	0.007 (0.033)
Network member is in the same Sector	0.060*** (0.022)	0.061** (0.024)	0.060*** (0.022)	0.063*** (0.022)	0.065*** (0.024)
Network member is in the same Cluster	-0.006 (0.010)	-0.006 (0.010)	-0.009 (0.012)	0.083*** (0.025)	0.084*** (0.028)
Number of years in Network	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)
Network member is Female	0.004 (0.015)	0.004 (0.015)	0.004 (0.015)	0.004 (0.015)	0.003 (0.015)
Interaction: Family * Sector		-0.003 (0.034)			-0.010 (0.035)
Interaction: Family * Cluster			0.020 (0.020)		-0.002 (0.035)
Interaction: Sector * Cluster				-0.092*** (0.027)	-0.097*** (0.031)
Interaction: Family * Sector * Cluster					0.025 (0.041)
Constant	0.899*** (0.028)	0.899*** (0.029)	0.900*** (0.028)	0.897*** (0.028)	0.897*** (0.029)
F-test (p-value): Sector + Sector*Cluster				0.134	0.156
F-test (p-value): Cluster + Sector*Cluster				0.401	0.313



Table 1: Q29: Expects to share information

	(1) Q29: Expects to share infor- mation	(2) Q29: Expects to share infor- mation	(3) Q29: Expects to share infor- mation	(4) Q29: Expects to share infor- mation	(5) Q29: Expects to share infor- mation
Network member is Family	0.004 (0.014)	0.006 (0.033)	-0.000 (0.016)	0.004 (0.014)	0.007 (0.033)
Network member is in the same Sector	0.060*** (0.022)	0.061** (0.024)	0.060*** (0.022)	0.063*** (0.022)	0.065*** (0.024)
Network member is in the same Cluster	-0.006 (0.010)	-0.006 (0.010)	-0.009 (0.012)	0.083*** (0.025)	0.084*** (0.028)
Number of years in Network	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)
Network member is Female	0.004 (0.015)	0.004 (0.015)	0.004 (0.015)	0.004 (0.015)	0.003 (0.015)
Interaction: Family * Sector		-0.003 (0.034)			-0.010 (0.035)
Interaction: Family * Cluster			0.020 (0.020)		-0.002 (0.035)
Interaction: Sector * Cluster				-0.092*** (0.027)	-0.097*** (0.031)
Interaction: Family * Sector * Cluster					0.025 (0.041)
Constant	0.899*** (0.028)	0.899*** (0.029)	0.900*** (0.028)	0.897*** (0.028)	0.897*** (0.029)
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Table 1: Q29: Expects to share information

	(1)	(2)	(3)	(4)	(5)
	Q29: Expects to share infor- mation	Q29: Expects to share infor- mation	Q29: Expects to share infor- mation	Q29: Expects to share infor- mation	Q29: Expects to share infor- mation
Network member is Family	0.004 (0.014)	0.006 (0.033)	-0.000 (0.016)	0.004 (0.014)	0.007 (0.033)
Network member is in the same Sector	0.060*** (0.022)	0.061** (0.024)	0.060*** (0.022)	0.063*** (0.022)	0.065*** (0.024)
Network member is in the same Cluster	-0.006 (0.010)	-0.006 (0.010)	-0.009 (0.012)	0.083*** (0.025)	0.084*** (0.028)
Number of years in Network	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)
Network member is Female	0.004 (0.015)	0.004 (0.015)	0.004 (0.015)	0.004 (0.015)	0.003 (0.015)
Interaction: Family * Sector		-0.003 (0.034)			-0.010 (0.035)
Interaction: Family * Cluster			0.020 (0.020)		-0.002 (0.035)
Interaction: Sector * Cluster				-0.092*** (0.027)	-0.097*** (0.031)
Interaction: Family * Sector * Cluster					0.025 (0.041)
Constant	0.899*** (0.028)	0.899*** (0.029)	0.900*** (0.028)	0.897*** (0.028)	0.897*** (0.029)
F-test (p-value): Sector + Sector*Cluster				0.134	0.156
F-test (p-value): Cluster + Sector*Cluster				0.401	0.313

Table 2: Q43: Expects to share resources

	(1)	(2)	(3)	(4)	(5)
	Q43:	Q43:	Q43:	Q43:	Q43:
	Expects	Expects	Expects	Expects	Expects
	to share	to share	to share	to share	to share
	re-	re-	re-	re-	re-
	sources	sources	sources	sources	sources
Network member is Family	-0.007	-0.022	-0.022	-0.006	-0.021
	(0.034)	(0.059)	(0.039)	(0.034)	(0.059)
Network member is in the same Sector	0.350***	0.345***	0.348***	0.362***	0.360***
	(0.036)	(0.040)	(0.036)	(0.037)	(0.041)
Network member is in the same Cluster	0.079***	0.079***	0.067**	0.496***	0.468***
	(0.026)	(0.026)	(0.029)	(0.106)	(0.128)
Number of years in Network	0.003	0.003	0.003	0.003	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Network member is Female	-0.019	-0.019	-0.020	-0.020	-0.021
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
Interaction: Family * Sector		0.022			0.002
		(0.064)			(0.068)
Interaction: Family * Cluster			0.075		0.143
			(0.051)		(0.138)
Interaction: Sector * Cluster				-0.431***	-0.415***
				(0.109)	(0.132)
Interaction: Family * Sector * Cluster					-0.075
					(0.145)
Constant	0.410***	0.414***	0.413***	0.402***	0.405***
	(0.040)	(0.043)	(0.041)	(0.040)	(0.043)
F-test (p-value): Sector + Sector*Cluster				0.510	0.669
F-test (p-value): Cluster + Sector*Cluster				0.015	0.065

**Table 3: Q30: Has shared employees**

	(1)	(2)	(3)	(4)	(5)
	Q30: Has shared employ- ees	Q30: Has shared employ- ees	Q30: Has shared employ- ees	Q30: Has shared employ- ees	Q30: Has shared employ- ees
Network member is Family	0.064*	0.004	0.051	0.065*	0.007
	(0.034)	(0.038)	(0.034)	(0.034)	(0.036)
Network member is in the same Sector	0.287***	0.268***	0.286***	0.299***	0.282***
	(0.027)	(0.030)	(0.027)	(0.026)	(0.029)
Network member is in the same Cluster	0.153***	0.152***	0.143***	0.543***	0.531***
	(0.032)	(0.032)	(0.034)	(0.179)	(0.200)
Number of years in Network	0.003*	0.003*	0.003*	0.003	0.003*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Network member is Female	0.001	0.001	0.000	-0.000	-0.001
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
Interaction: Family * Sector		0.086*			0.074
		(0.049)			(0.050)
Interaction: Family * Cluster			0.065		0.037
			(0.072)		(0.443)
Interaction: Sector * Cluster				-0.404**	-0.398*
				(0.182)	(0.204)
Interaction: Family * Sector * Cluster					-0.002
					(0.450)
Constant	0.029	0.043	0.032	0.021	0.035
	(0.028)	(0.028)	(0.028)	(0.027)	(0.027)
F-test (p-value): Sector + Sector*Cluster				0.566	0.574
F-test (p-value): Cluster + Sector*Cluster				0.000	0.000

**Table 4: Q31: Has shared inputs**

	(1)	(2)	(3)	(4)	(5)
	Q31:	Q31:	Q31:	Q31:	Q31:
	Has	Has	Has	Has	Has
	shared	shared	shared	shared	shared
	inputs	inputs	inputs	inputs	inputs
Network member is Family	0.023	-0.011	0.005	0.023	-0.014
	(0.034)	(0.033)	(0.036)	(0.034)	(0.032)
Network member is in the same Sector	0.331***	0.320***	0.329***	0.334***	0.326***
	(0.028)	(0.030)	(0.028)	(0.028)	(0.030)
Network member is in the same Cluster	0.188***	0.188***	0.174***	0.297*	0.261
	(0.034)	(0.034)	(0.036)	(0.164)	(0.185)
Number of years in Network	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Network member is Female	-0.025	-0.026	-0.026	-0.026	-0.027
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Interaction: Family * Sector		0.050			0.032
		(0.049)			(0.053)
Interaction: Family * Cluster			0.093		0.180
			(0.072)		(0.398)
Interaction: Sector * Cluster				-0.113	-0.089
				(0.167)	(0.188)
Interaction: Family * Sector * Cluster					-0.102
					(0.406)
Constant	0.116***	0.124***	0.120***	0.114***	0.122***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.029)
F-test (p-value): Sector + Sector*Cluster				0.186	0.210
F-test (p-value): Cluster + Sector*Cluster				0.000	0.000

**Table 5: Q33: Has shared equipment**

	(1)	(2)	(3)	(4)	(5)
	Q33: Has shared equip- ment	Q33: Has shared equip- ment	Q33: Has shared equip- ment	Q33: Has shared equip- ment	Q33: Has shared equip- ment
Network member is Family	0.038 (0.033)	0.034 (0.037)	0.027 (0.035)	0.039 (0.033)	0.029 (0.034)
Network member is in the same Sector	0.422*** (0.026)	0.421*** (0.029)	0.421*** (0.026)	0.434*** (0.026)	0.433*** (0.028)
Network member is in the same Cluster	0.228*** (0.031)	0.228*** (0.031)	0.219*** (0.033)	0.623*** (0.168)	0.539*** (0.194)
Number of years in Network	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)
Network member is Female	-0.020 (0.033)	-0.020 (0.033)	-0.020 (0.033)	-0.021 (0.033)	-0.022 (0.033)
Interaction: Family * Sector		0.006 (0.048)			-0.001 (0.052)
Interaction: Family * Cluster			0.057 (0.064)		0.455** (0.197)
Interaction: Sector * Cluster				-0.410** (0.169)	-0.332* (0.196)
Interaction: Family * Sector * Cluster					-0.414* (0.213)
Constant	0.104*** (0.027)	0.105*** (0.027)	0.106*** (0.027)	0.096*** (0.027)	0.098*** (0.027)
F-test (p-value): Sector + Sector*Cluster				0.885	0.605
F-test (p-value): Cluster + Sector*Cluster				0.000	0.000

**Table 6: Q34: Has shared names of Suppliers**

	(1)	(2)	(3)	(4)	(5)
	Q34:	Q34:	Q34:	Q34:	Q34:
	Has	Has	Has	Has	Has
	shared	shared	shared	shared	shared
	names	names	names	names	names
	of Sup-	of Sup-	of Sup-	of Sup-	of Sup-
	pliers	pliers	pliers	pliers	pliers
Network member is Family	-0.094***	-0.110***	-0.131***	-0.094***	-0.114***
	(0.036)	(0.041)	(0.038)	(0.036)	(0.041)
Network member is in the same Sector	0.454***	0.449***	0.451***	0.460***	0.461***
	(0.032)	(0.035)	(0.032)	(0.032)	(0.035)
Network member is in the same Cluster	0.110***	0.110***	0.081**	0.285	0.247
	(0.032)	(0.032)	(0.033)	(0.186)	(0.215)
Number of years in Network	0.000	0.000	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Network member is Female	-0.002	-0.002	-0.004	-0.002	-0.004
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
Interaction: Family * Sector		0.023			-0.026
		(0.054)			(0.058)
Interaction: Family * Cluster			0.191***		0.197
			(0.065)		(0.394)
Interaction: Sector * Cluster				-0.181	-0.173
				(0.187)	(0.216)
Interaction: Family * Sector * Cluster					0.001
					(0.402)
Constant	0.214***	0.218***	0.223***	0.211***	0.216***
	(0.036)	(0.037)	(0.036)	(0.036)	(0.037)
F-test (p-value): Sector + Sector*Cluster				0.134	0.181
F-test (p-value): Cluster + Sector*Cluster				0.001	0.028

Table 7: Q35: Has shared names of Customers

	(1)	(2)	(3)	(4)	(5)
	Q35:	Q35:	Q35:	Q35:	Q35:
	Has	Has	Has	Has	Has
	shared	shared	shared	shared	shared
	names	names	names	names	names
	of Cus-	of Cus-	of Cus-	of Cus-	of Cus-
	tomers	tomers	tomers	tomers	tomers
Network member is Family	0.015	-0.104*	-0.033	0.015	-0.105*
	(0.039)	(0.055)	(0.043)	(0.039)	(0.055)
Network member is in the same Sector	0.238***	0.200***	0.234***	0.244***	0.214***
	(0.034)	(0.039)	(0.034)	(0.035)	(0.039)
Network member is in the same Cluster	0.070**	0.070**	0.032	0.271	0.250
	(0.035)	(0.034)	(0.036)	(0.184)	(0.212)
Number of years in Network	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Network member is Female	0.056	0.055	0.053	0.055	0.052
	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)
Interaction: Family * Sector		0.173***			0.118*
		(0.062)			(0.065)
Interaction: Family * Cluster			0.252***		0.059
			(0.071)		(0.407)
Interaction: Sector * Cluster				-0.208	-0.219
				(0.185)	(0.212)
Interaction: Family * Sector * Cluster					0.154
					(0.415)
Constant	0.260***	0.288***	0.272***	0.256***	0.285***
	(0.038)	(0.040)	(0.038)	(0.038)	(0.040)
F-test (p-value): Sector + Sector*Cluster				0.843	0.981
F-test (p-value): Cluster + Sector*Cluster				0.069	0.401



**Table 8: Q37: Has Referred Customers**

	(1)	(2)	(3)	(4)	(5)
	Q37: Has Re- ferred Cus- tomers	Q37: Has Re- ferred Cus- tomers	Q37: Has Re- ferred Cus- tomers	Q37: Has Re- ferred Cus- tomers	Q37: Has Re- ferred Cus- tomers
Network member is Family	-0.111*** (0.037)	-0.152** (0.060)	-0.141*** (0.040)	-0.111*** (0.037)	-0.162*** (0.059)
Network member is in the same Sector	0.258*** (0.037)	0.245*** (0.040)	0.255*** (0.037)	0.264*** (0.038)	0.253*** (0.041)
Network member is in the same Cluster	0.071** (0.033)	0.071** (0.033)	0.047 (0.034)	0.262 (0.167)	0.150 (0.180)
Number of years in Network	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
Network member is Female	-0.006 (0.035)	-0.006 (0.035)	-0.008 (0.035)	-0.006 (0.035)	-0.009 (0.035)
Interaction: Family * Sector		0.058 (0.071)			0.034 (0.074)
Interaction: Family * Cluster			0.153** (0.073)		0.590*** (0.185)
Interaction: Sector * Cluster				-0.197 (0.167)	-0.105 (0.181)
Interaction: Family * Sector * Cluster					-0.464** (0.203)
Constant	0.366*** (0.041)	0.375*** (0.043)	0.373*** (0.042)	0.362*** (0.042)	0.374*** (0.044)
F-test (p-value): Sector + Sector*Cluster				0.687	0.404
F-test (p-value): Cluster + Sector*Cluster				0.052	0.197

**Table 9: Q38: Network member has Referred Customers**

	(1)	(2)	(3)	(4)	(5)
	Q38: Net- work member has Re- ferred Cus- tomers	Q38: Net- work member has Re- ferred Cus- tomers	Q38: Net- work member has Re- ferred Cus- tomers	Q38: Net- work member has Re- ferred Cus- tomers	Q38: Net- work member has Re- ferred Cus- tomers
Network member is Family	-0.128*** (0.038)	-0.178*** (0.060)	-0.144*** (0.041)	-0.128*** (0.038)	-0.185*** (0.060)
Network member is in the same Sector	0.199*** (0.038)	0.183*** (0.041)	0.197*** (0.038)	0.205*** (0.038)	0.190*** (0.042)
Network member is in the same Cluster	0.108*** (0.033)	0.108*** (0.033)	0.095*** (0.034)	0.323* (0.170)	0.235 (0.196)
Number of years in Network	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Network member is Female	0.012 (0.036)	0.011 (0.036)	0.011 (0.036)	0.011 (0.036)	0.009 (0.036)
Interaction: Family * Sector		0.072 (0.070)			0.066 (0.075)
Interaction: Family * Cluster			0.084 (0.073)		0.457** (0.203)
Interaction: Sector * Cluster				-0.223 (0.170)	-0.142 (0.196)
Interaction: Family * Sector * Cluster					-0.411* (0.220)
Constant	0.396*** (0.042)	0.408*** (0.044)	0.400*** (0.042)	0.392*** (0.042)	0.406*** (0.044)
F-test (p-value): Sector + Sector*Cluster				0.914	0.807
F-test (p-value): Cluster + Sector*Cluster				0.003	0.007

**Table 10: Q39: Has borrowed money from network member**

	(1)	(2)	(3)	(4)	(5)
	Q39:	Q39:	Q39:	Q39:	Q39:
	Has	Has	Has	Has	Has
	bor-	bor-	bor-	bor-	bor-
	rowed	rowed	rowed	rowed	rowed
	money	money	money	money	money
	from	from	from	from	from
	network	network	network	network	network
	member	member	member	member	member
Network member is Family	0.072**	0.066	0.066*	0.073**	0.075
	(0.037)	(0.055)	(0.038)	(0.037)	(0.055)
Network member is in the same Sector	0.028	0.026	0.027	0.030	0.032
	(0.030)	(0.032)	(0.030)	(0.030)	(0.033)
Network member is in the same Cluster	0.062*	0.062*	0.056*	0.124	0.220
	(0.032)	(0.032)	(0.033)	(0.177)	(0.199)
Number of years in Network	0.002	0.002	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Network member is Female	-0.047	-0.047	-0.047	-0.047	-0.047
	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
Interaction: Family * Sector		0.010			-0.014
		(0.066)			(0.068)
Interaction: Family * Cluster			0.034		-0.529**
			(0.077)		(0.206)
Interaction: Sector * Cluster				-0.064	-0.169
				(0.179)	(0.201)
Interaction: Family * Sector * Cluster					0.585***
					(0.226)
Constant	0.235***	0.236***	0.236***	0.233***	0.233***
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
F-test (p-value): Sector + Sector*Cluster				0.845	0.493
F-test (p-value): Cluster + Sector*Cluster				0.064	0.128

Table 11: Q40: Has lent money to network member

	(1)	(2)	(3)	(4)	(5)
	Q40:	Q40:	Q40:	Q40:	Q40:
	Has lent	Has lent	Has lent	Has lent	Has lent
	money	money	money	money	money
	to net-	to net-	to net-	to net-	to net-
	work	work	work	work	work
	member	member	member	member	member
Network member is Family	0.097***	0.090	0.076**	0.097***	0.092*
	(0.036)	(0.056)	(0.038)	(0.036)	(0.056)
Network member is in the same Sector	0.054*	0.051	0.051*	0.059*	0.062*
	(0.031)	(0.032)	(0.031)	(0.031)	(0.032)
Network member is in the same Cluster	0.058*	0.058*	0.041	0.229	0.241
	(0.032)	(0.032)	(0.033)	(0.172)	(0.194)
Number of years in Network	0.002	0.002	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Network member is Female	-0.025	-0.025	-0.027	-0.026	-0.027
	(0.034)	(0.034)	(0.033)	(0.034)	(0.033)
Interaction: Family * Sector		0.009			-0.025
		(0.067)			(0.070)
Interaction: Family * Cluster			0.112		-0.067
			(0.077)		(0.409)
Interaction: Sector * Cluster				-0.177	-0.207
				(0.174)	(0.196)
Interaction: Family * Sector * Cluster					0.191
					(0.420)
Constant	0.215***	0.217***	0.220***	0.212***	0.213***
	(0.032)	(0.033)	(0.033)	(0.032)	(0.033)
F-test (p-value): Sector + Sector*Cluster				0.494	0.456
F-test (p-value): Cluster + Sector*Cluster				0.108	0.326

# Consistent Patterns in the Data

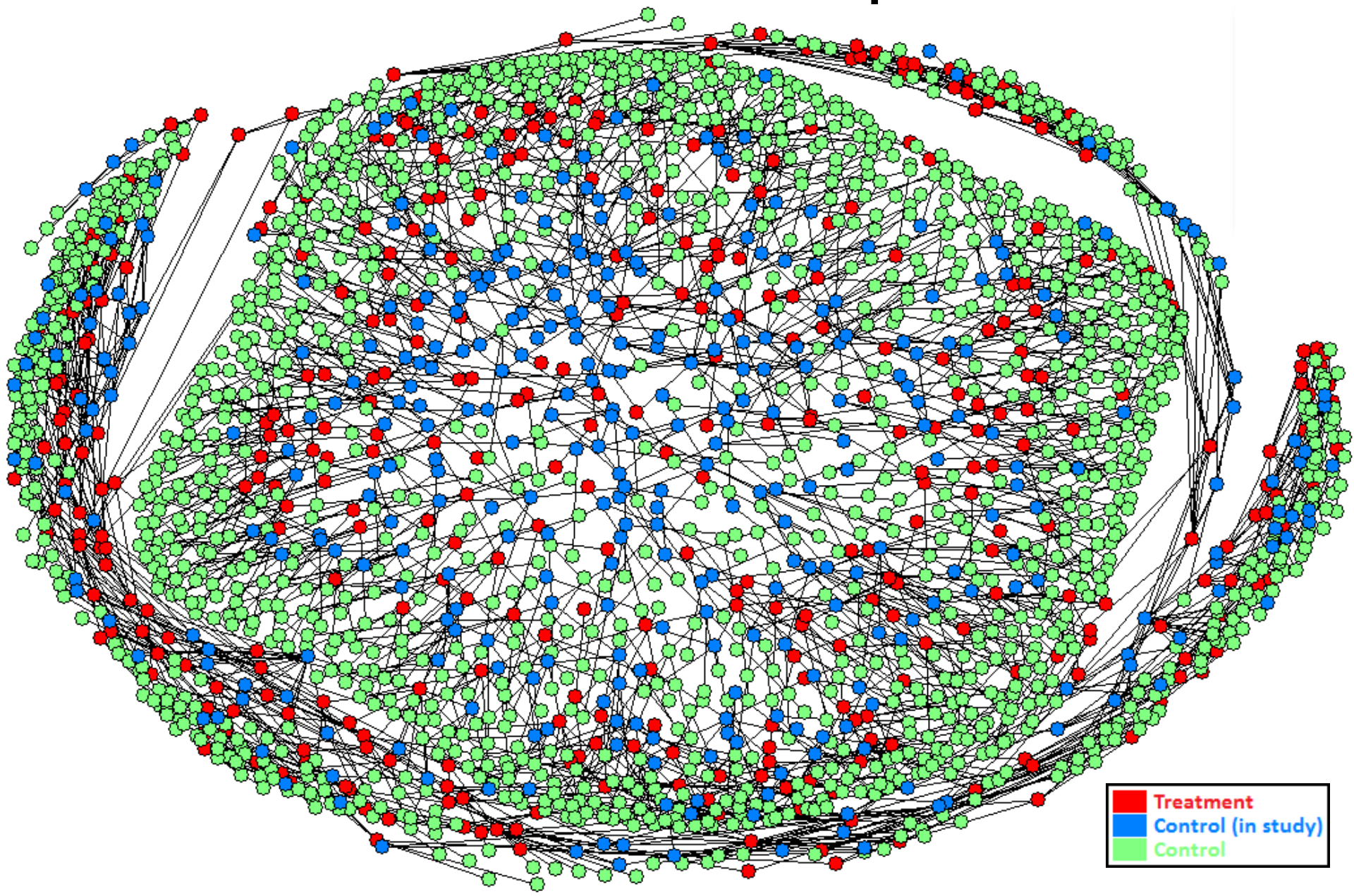
- Clearly there is tension if network member is in the same sector and cluster (hint of competition?)
- Family ties matter for informal credit, but not for sharing information or resources

**NOW FOR SOME FUN WITH THE DATA!**

# Description of Links

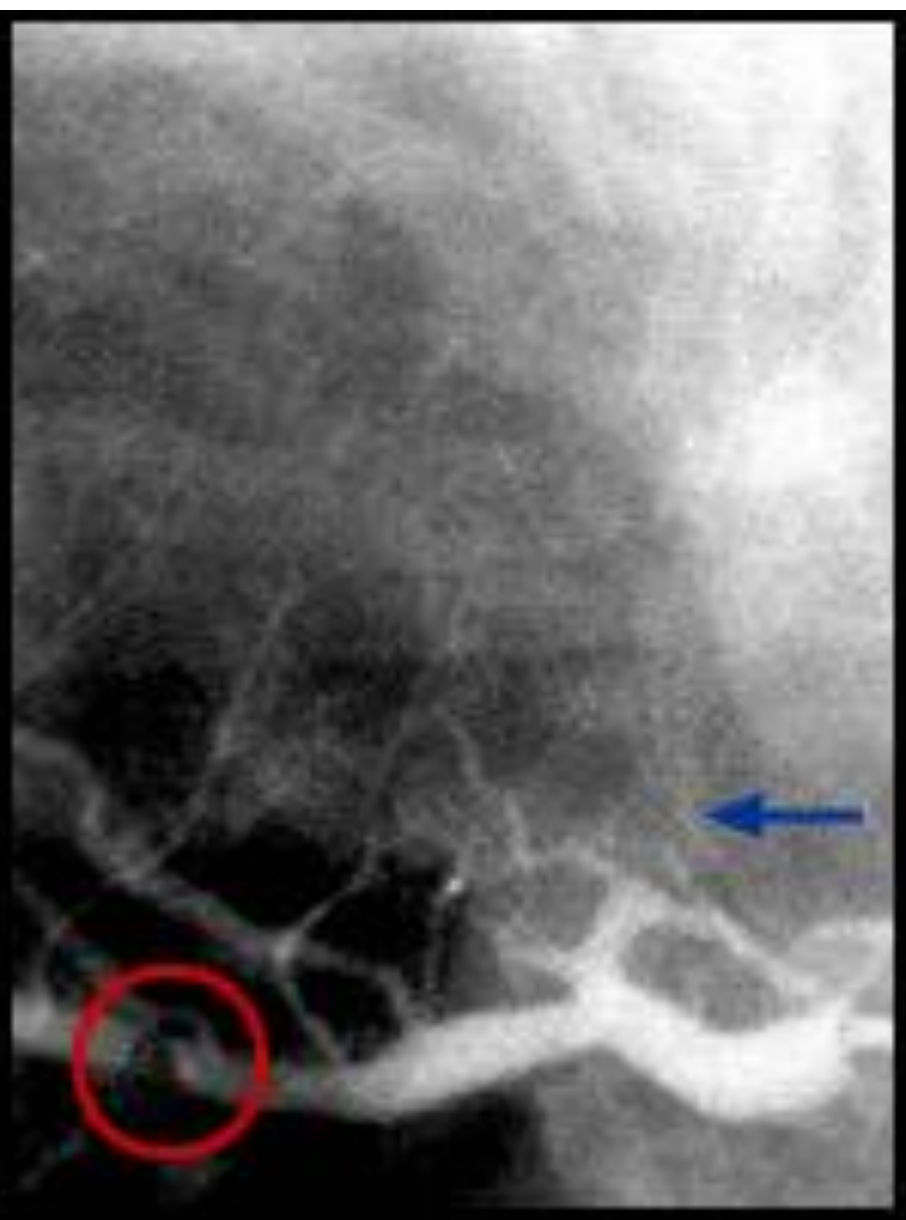
- A link between 2 firms is established if:
  - One firm is a network member of the other, or if
  - The 2 firms share the same network member
- Only “first-level” network is identified, i.e. network members of my network member are not linked to me.
  - Why not? Because 2/3 of the network roster sample consists of firms for which we don't have a network roster

# Network Map

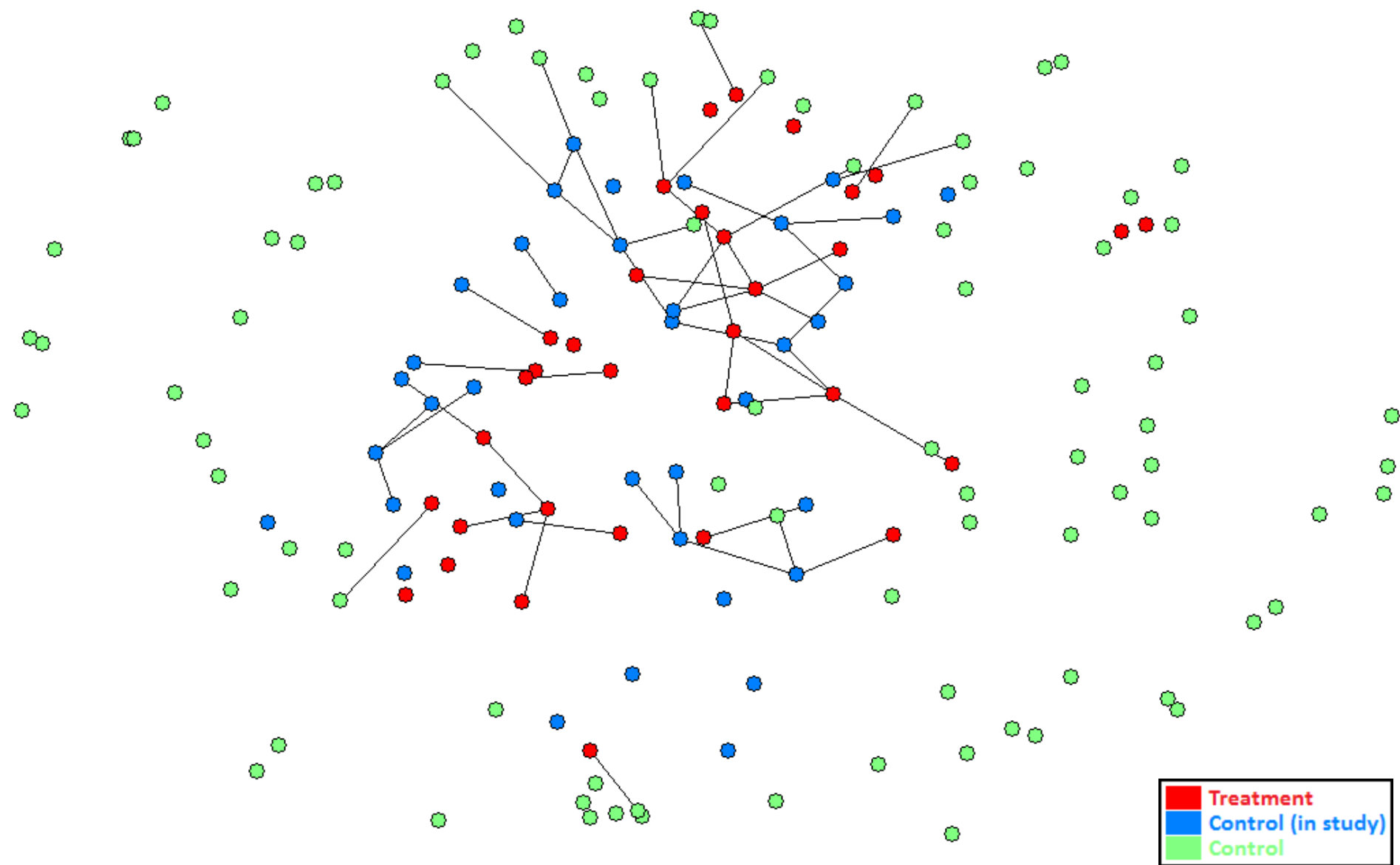




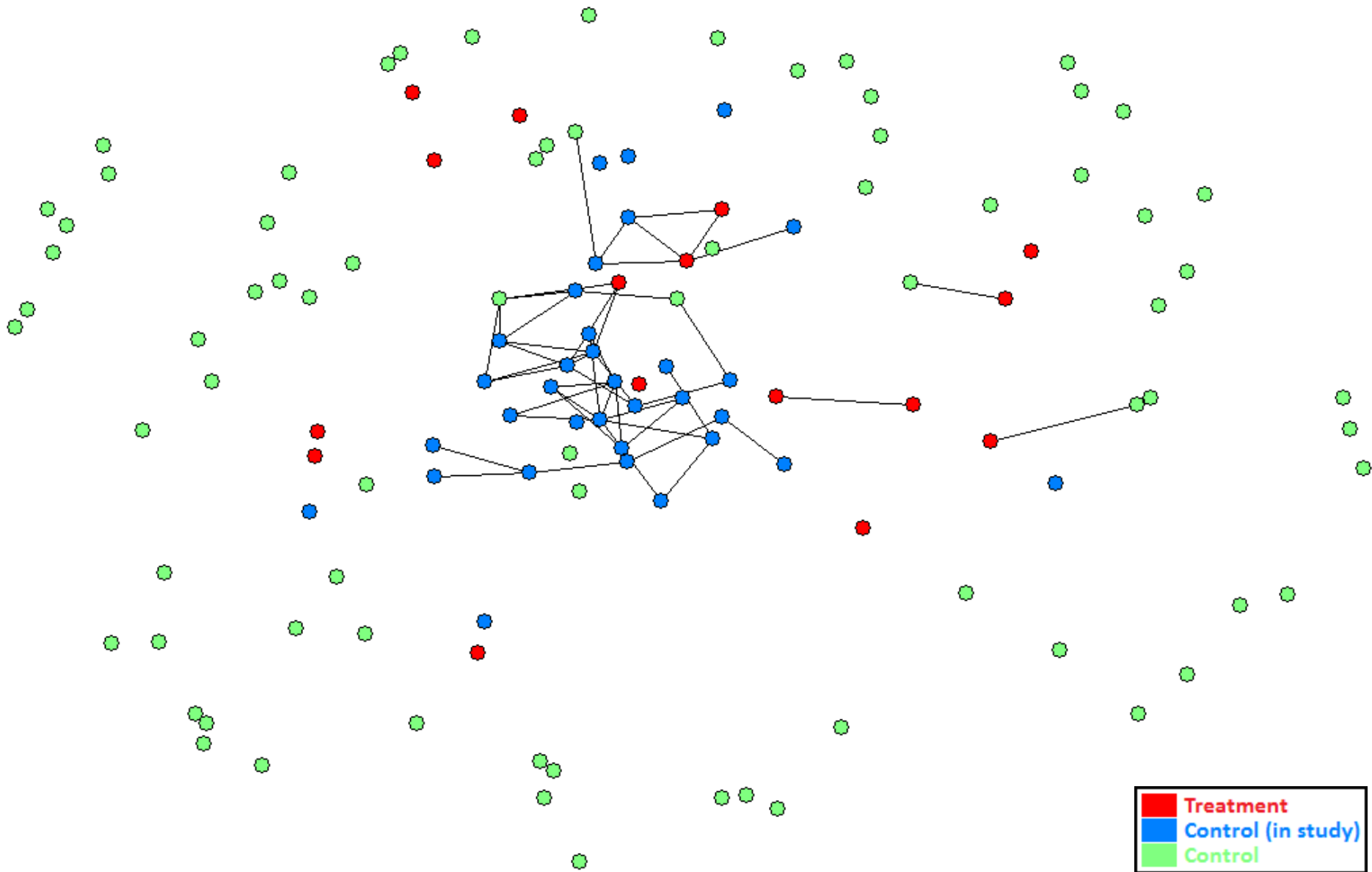




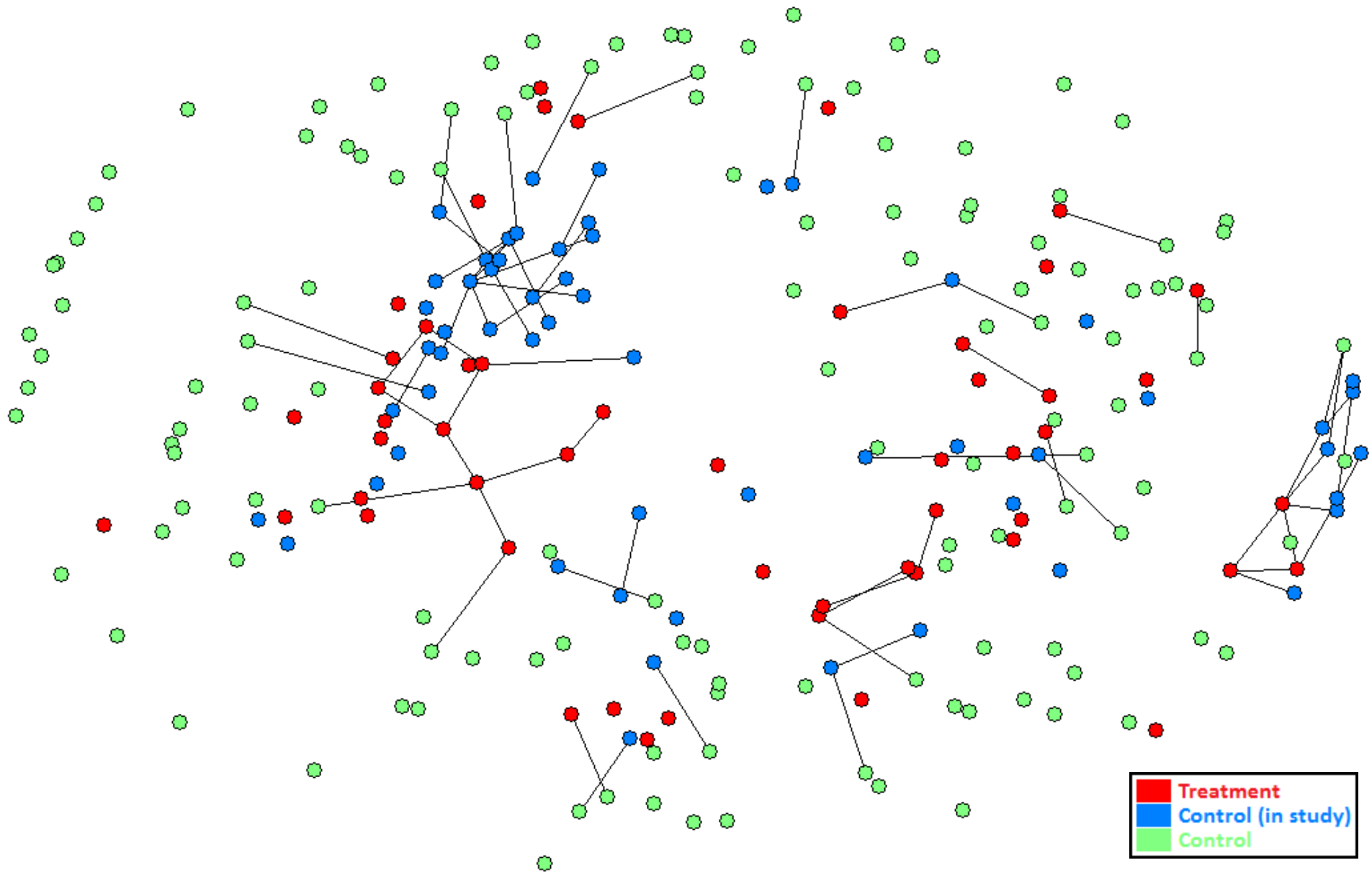
# Sector 1: Barbershop or Hair Salon



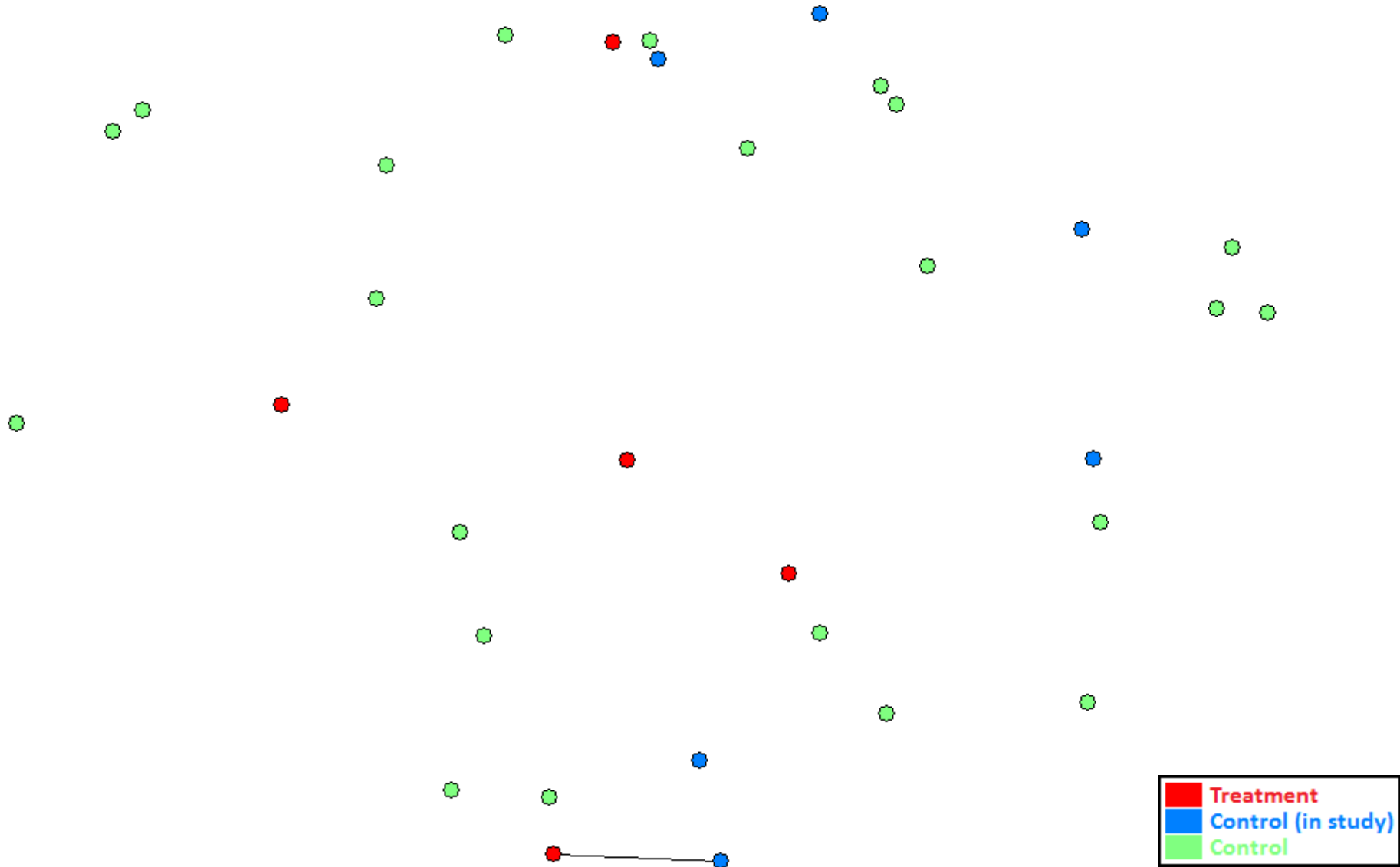
# Sector 2: Carpentry



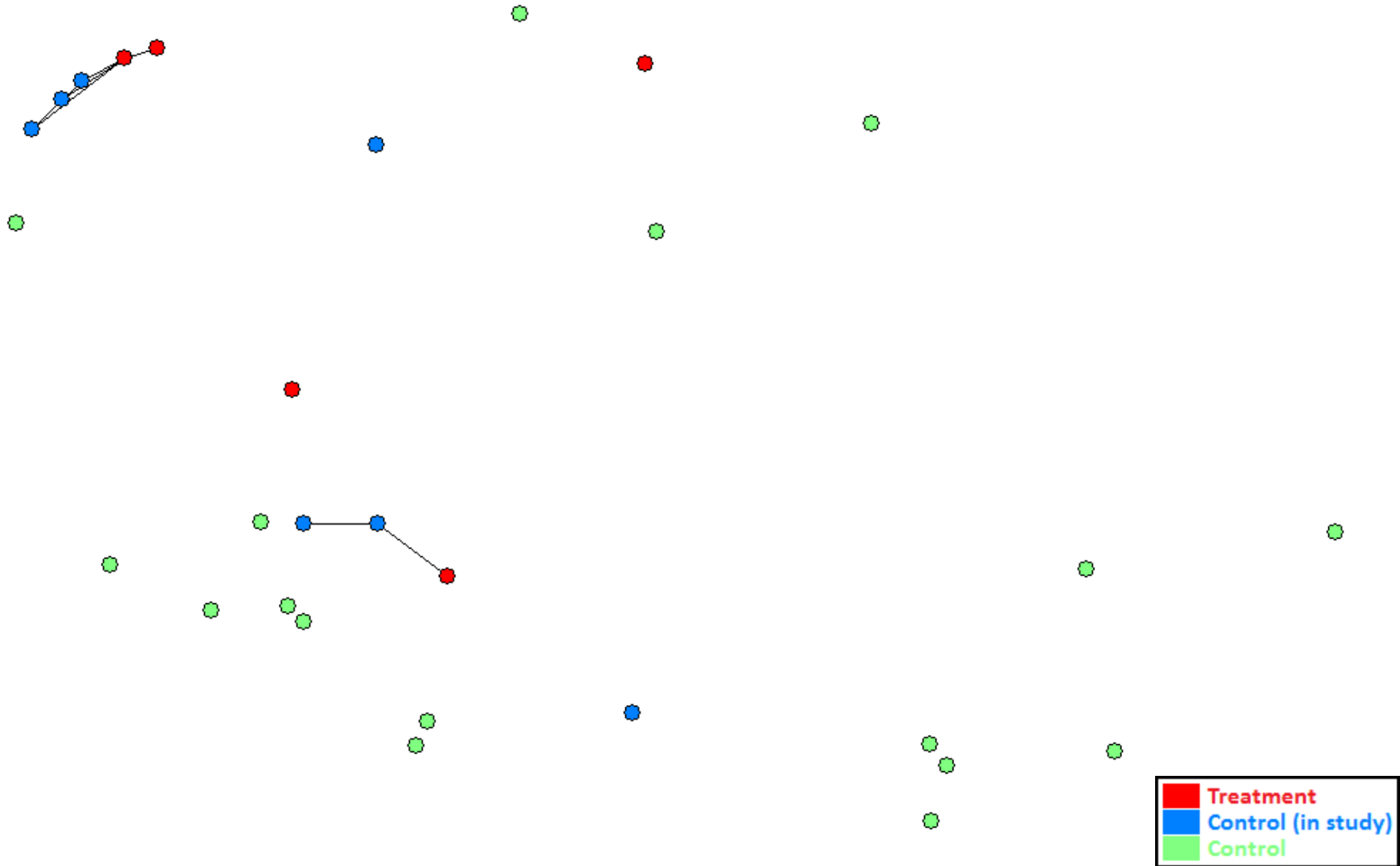
# Sector 3: Catering



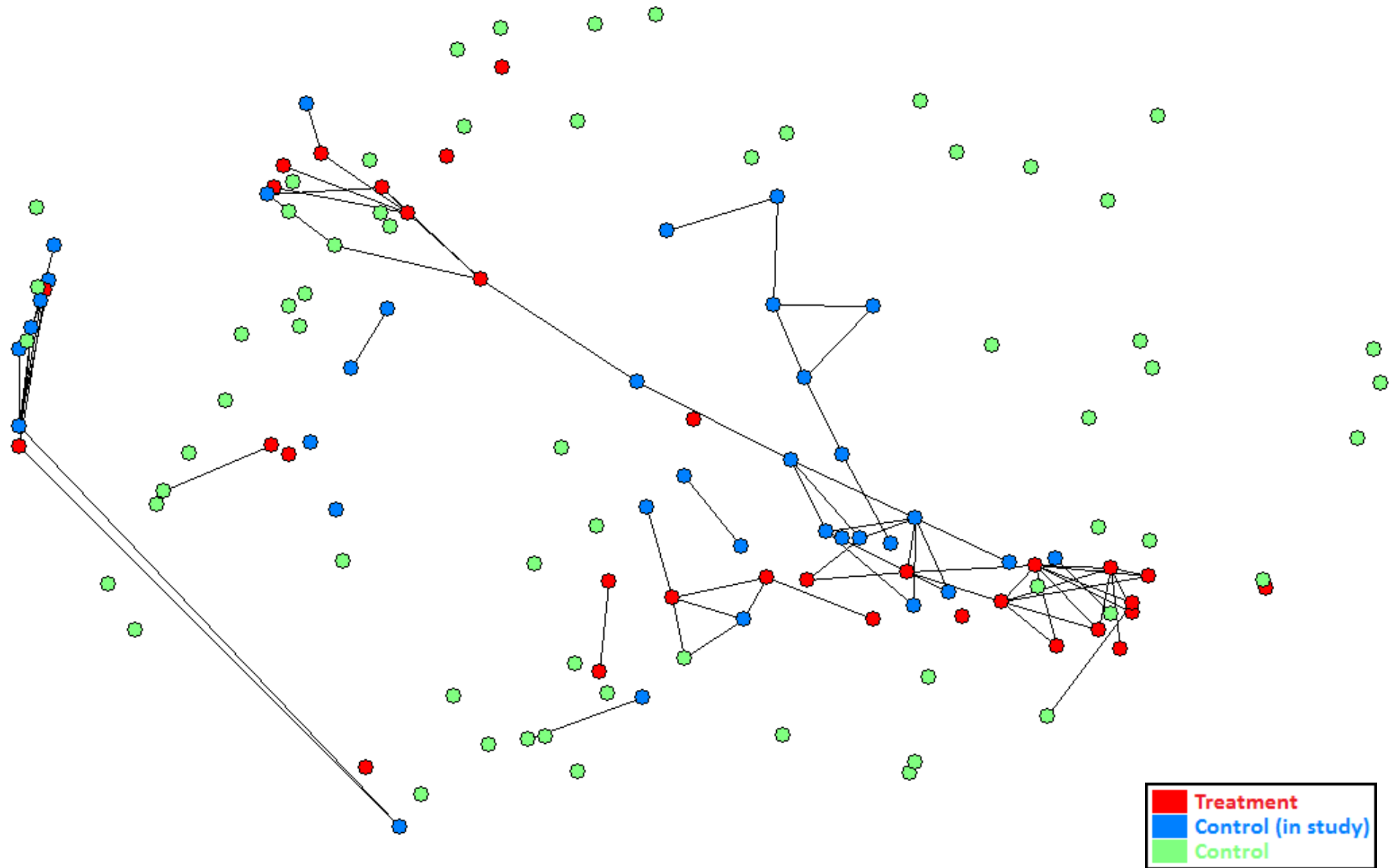
# Sector 4: Fitting and machinery



# Sector 5: Electricals

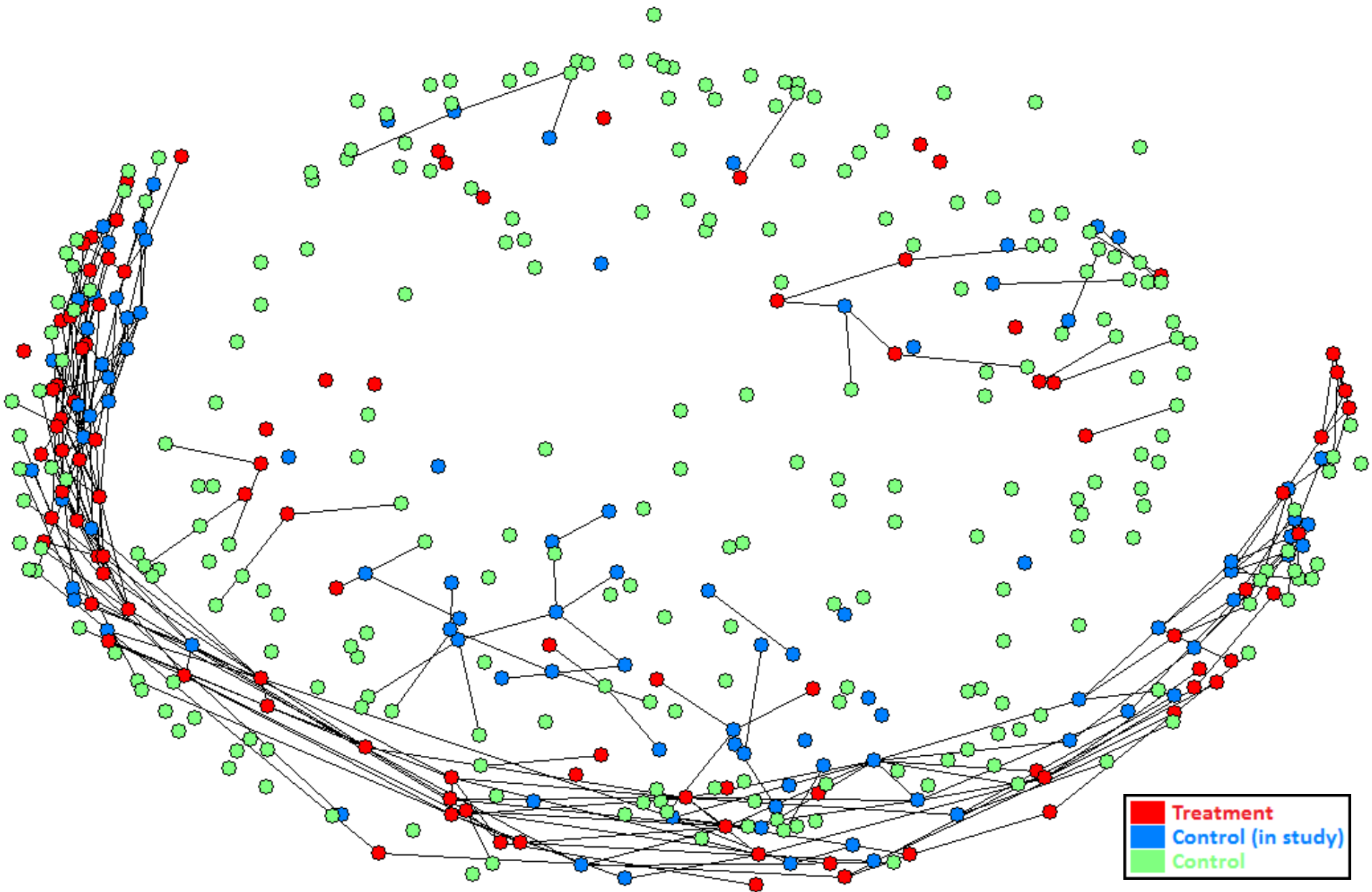


# Sector 6: Foundry and forgery

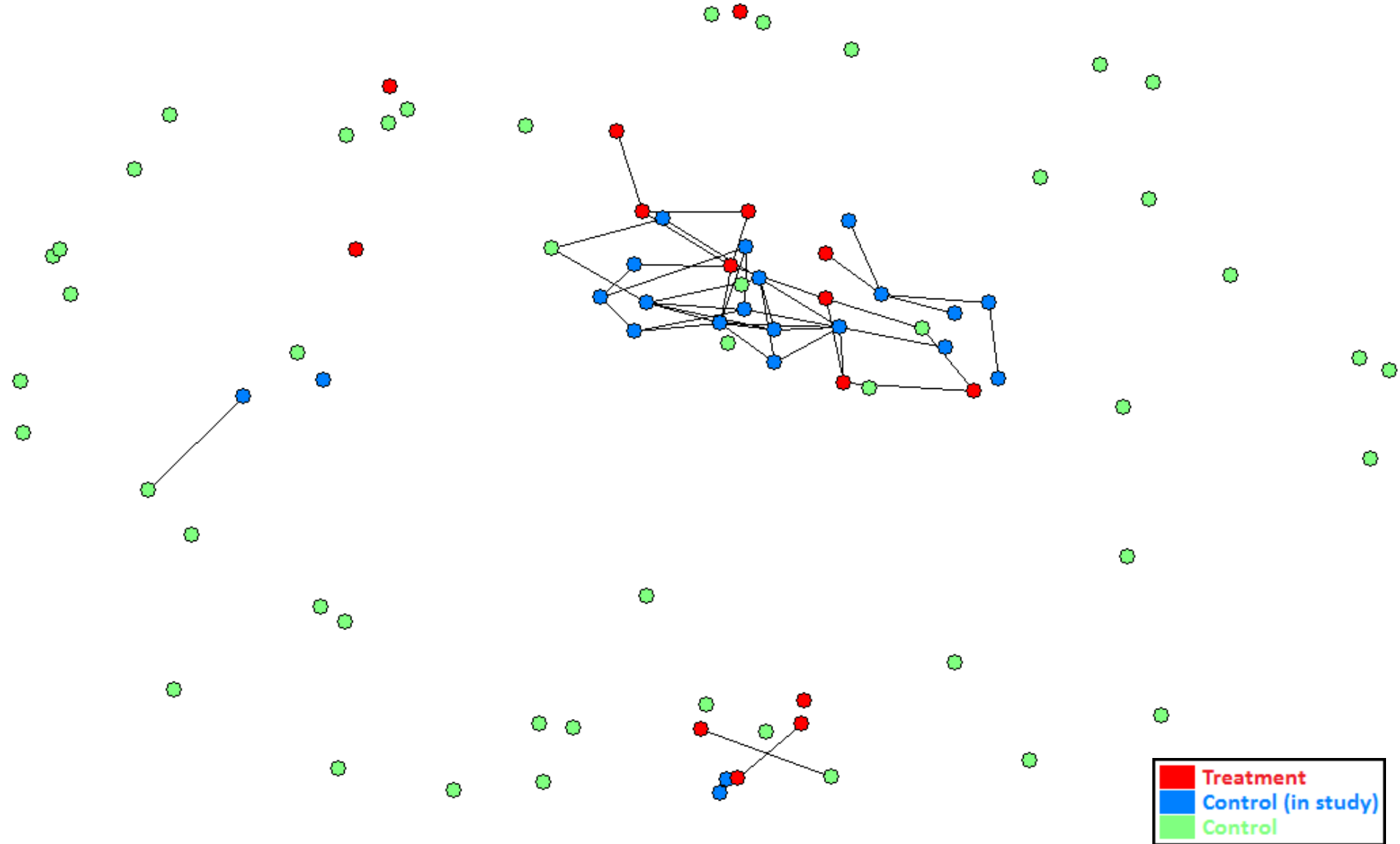




# Sector 7: Metal fabrication



# Sector 8: Shoe making and repair



# Sector 9: Tailoring and knitting

