

Friendship Network - A Case Study

Yun-Tsz Tsai, Xinyi Jiang

March 06, 2025

Introduction

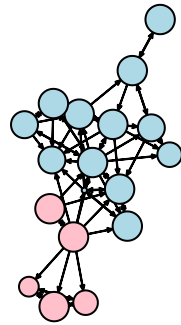


Figure 1. Visualization of Friendship Network by Gender

Model Specification

Simulation

Goodness of Model Fit

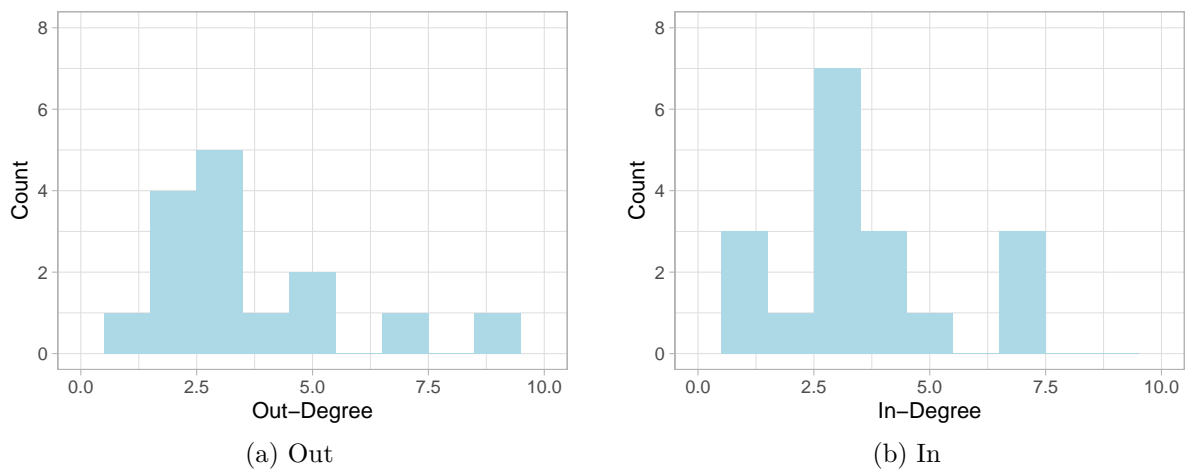


Figure 2. Distribution of Degrees

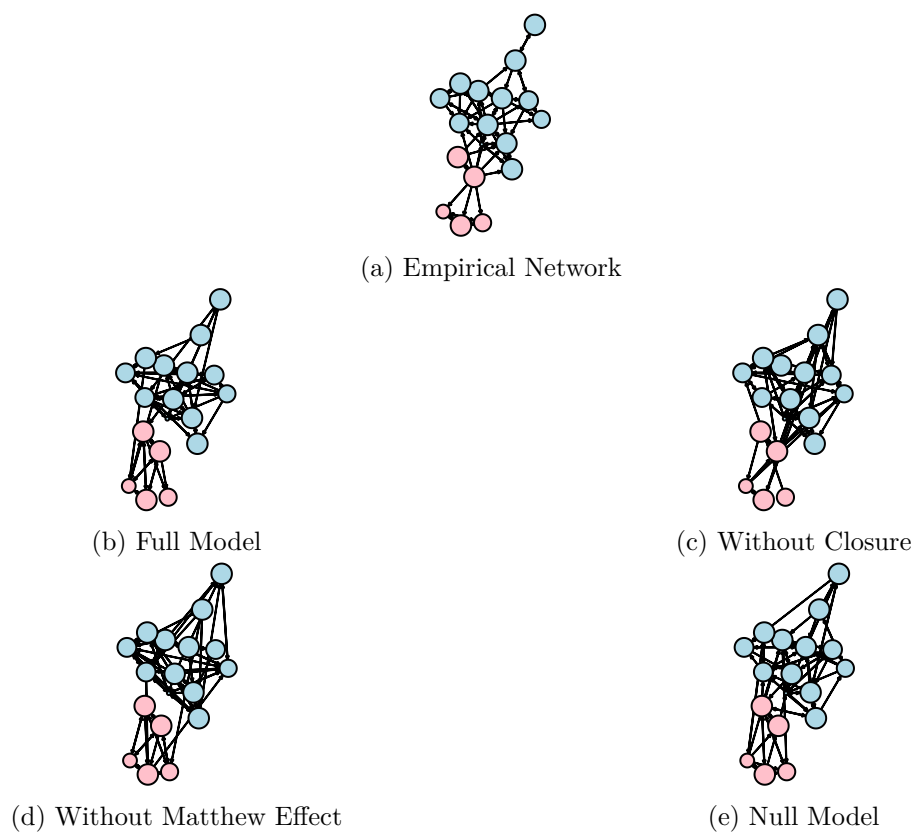


Figure 3. Visualization of Simulation

Table 1. Results from ERGM Models

Different Model Specification

	Full	No Clo1	No Matt2	Null
	(1)	(2)	(3)	(4)
edges	0.07*** [0.02, 0.23]	0.04*** [0.02, 0.11]	0.10*** [0.04, 0.24]	0.05*** [0.02, 0.09]
mutual	2.46 [0.97, 6.23]	5.25*** [2.01, 13.75]	3.27** [1.39, 7.67]	5.35*** [2.10, 13.60]
homophily*	2.13** [1.30, 3.50]	5.17*** [2.27, 11.79]	2.19*** [1.38, 3.47]	5.55*** [2.68, 11.50]
closure tend.*	3.60*** [2.39, 5.41]		3.36*** [2.23, 5.06]	
two path	0.73*** [0.64, 0.84]		0.72*** [0.63, 0.82]	
preferential tend*	3.04 [0.43, 21.50]	1.60 [0.23, 11.16]		
Num.Obs.	306	306	306	306
AIC	233.1	271.4	231.9	269.6
BIC	255.4	286.3	250.5	280.8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

1 No transitive closure tendencies

2 No Matthew effect

* Refers to *Gender* homophily.

* Closure tendency

* Preferential attachment tendencies

Figures based on authors' calculation

Reference: Knecht, A. B. (2008). *Friendship selection and friends influence. Dynamics of networks and actor attributes in early adolescence. PhD dissertation. Utrecht University*

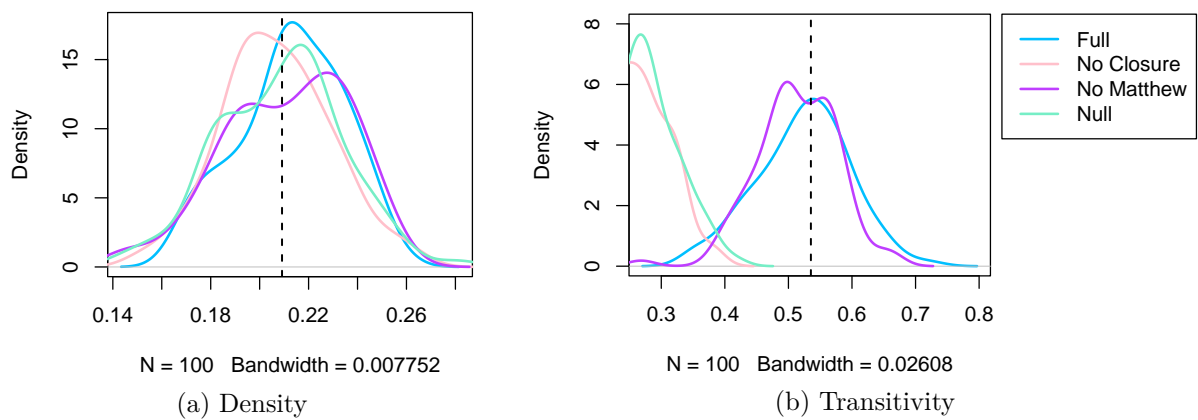


Figure 4. Model Parameters

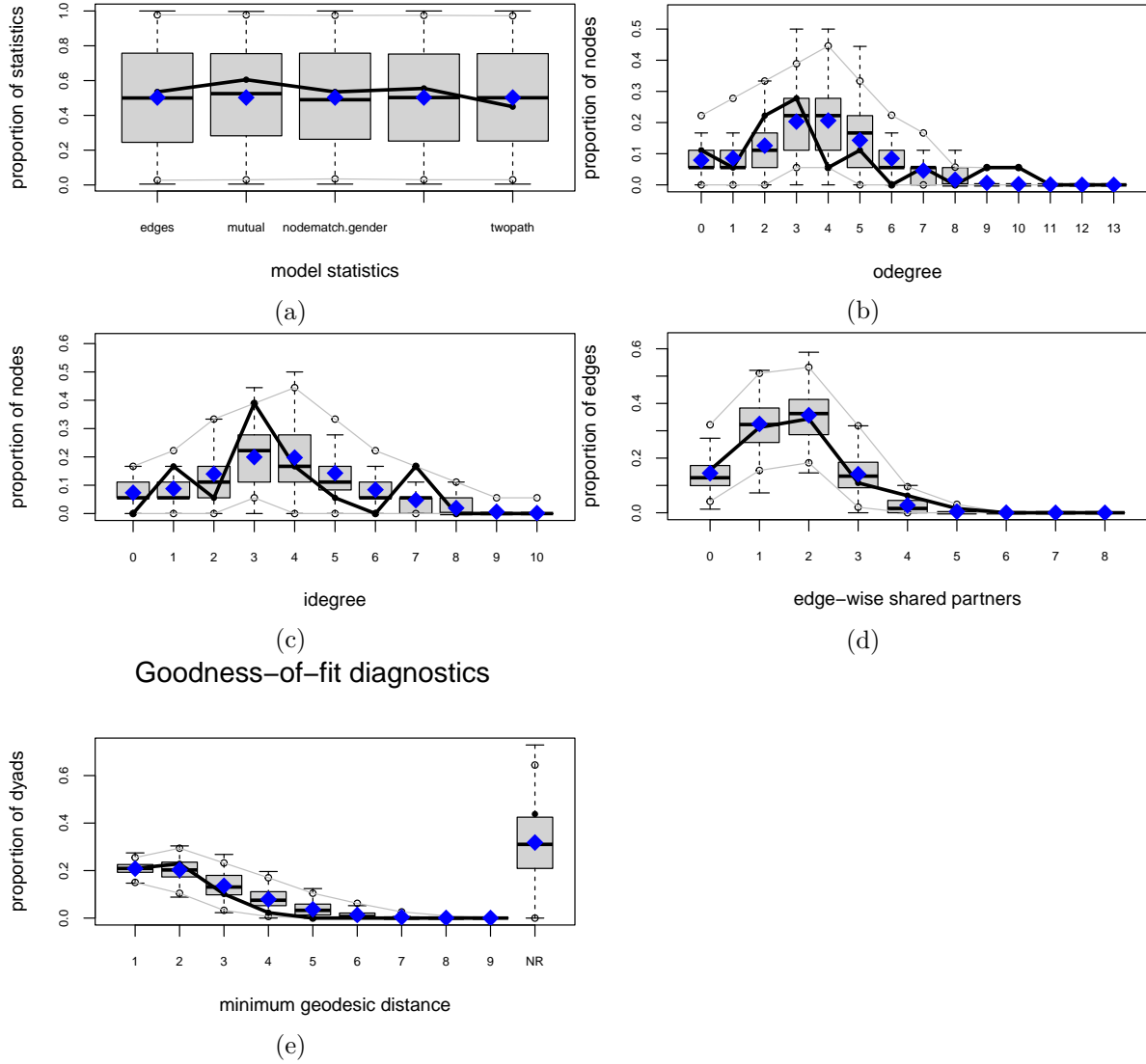


Figure 5. Overall Evaluation on No-Matthew-effect Model