



Taking a Better Picture

Using Social Network Analysis to
Evaluate Public Health
Preparedness

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Evaluation in Preparedness

- ◆ Ultimate goal
- ◆ Realistic goal: To evaluate persons/organizations so they can have helpful information to better prepare themselves for an emergency.

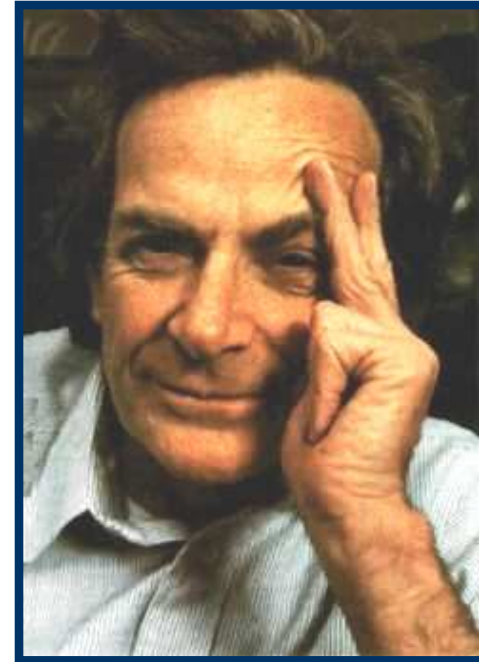


Social Network Analysis (SNA)

Experience and reflection should easily persuade us that the cause of any effect must consist of a constellation of components that act in concert.

- *JSA Mill, 1862*

Rationale





Levels of Evaluation



- ◆ Organizational
 - Less Personal
 - Key players still identified

- ◆ Individual
 - Turnover
 - Too personal

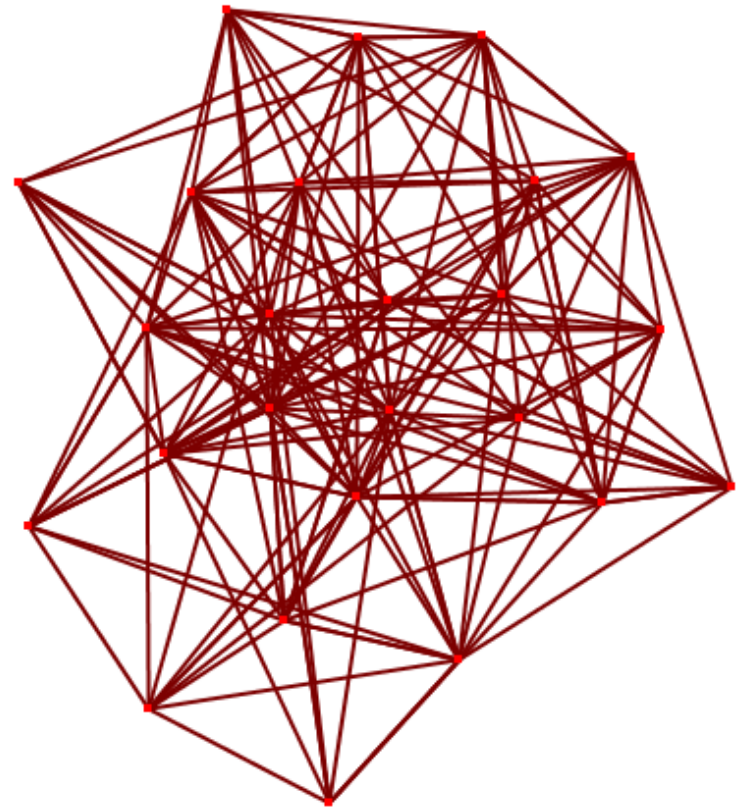
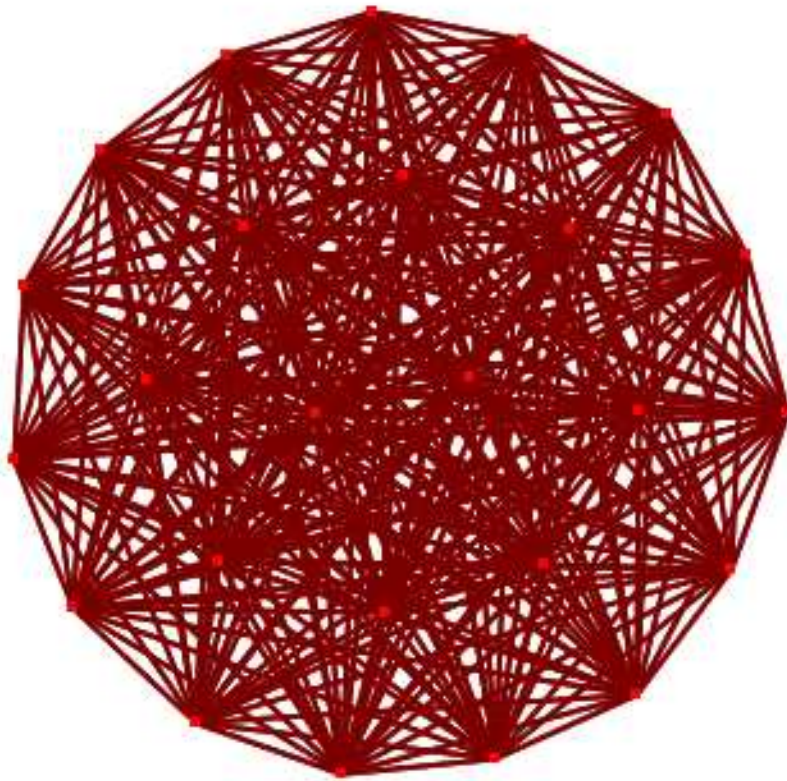


Measures of Centrality

Density

- ◆ Proportion of ties in a network relative to the total number possible (sparse versus dense networks).

Density: 1.0 vs. 0.3



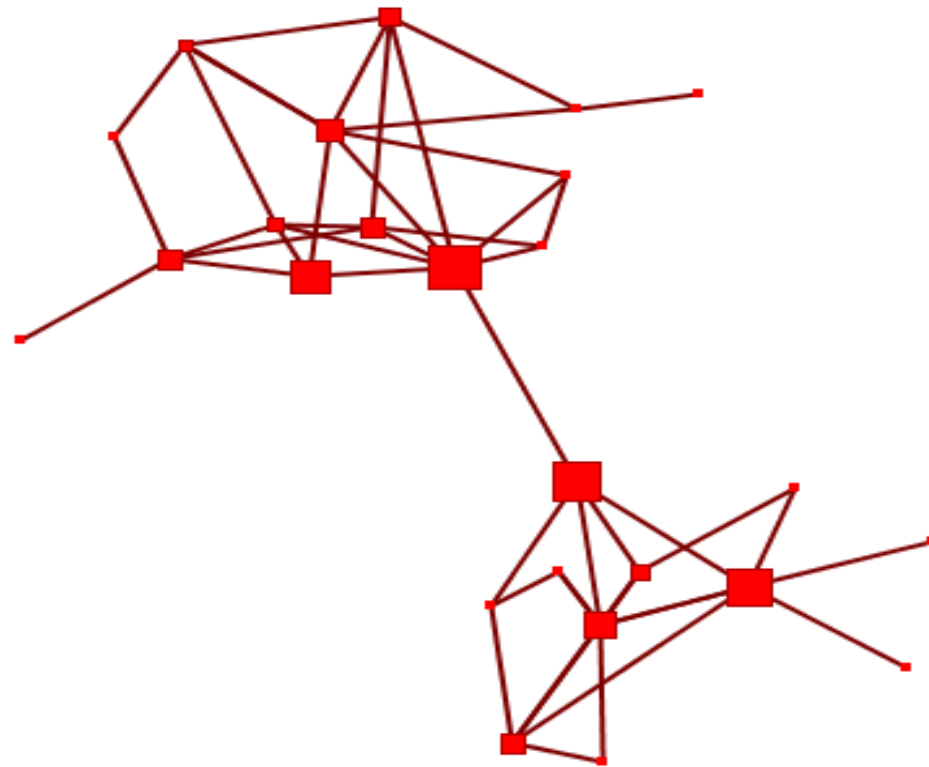


Measures of Centrality

Betweenness

- Vertices that occur on many shortest paths between other vertices have higher betweenness than those that do not.

Betweenness





Define Communication

- ◆ If one organizational representative said they communicate and the other did not, there wasn't communication

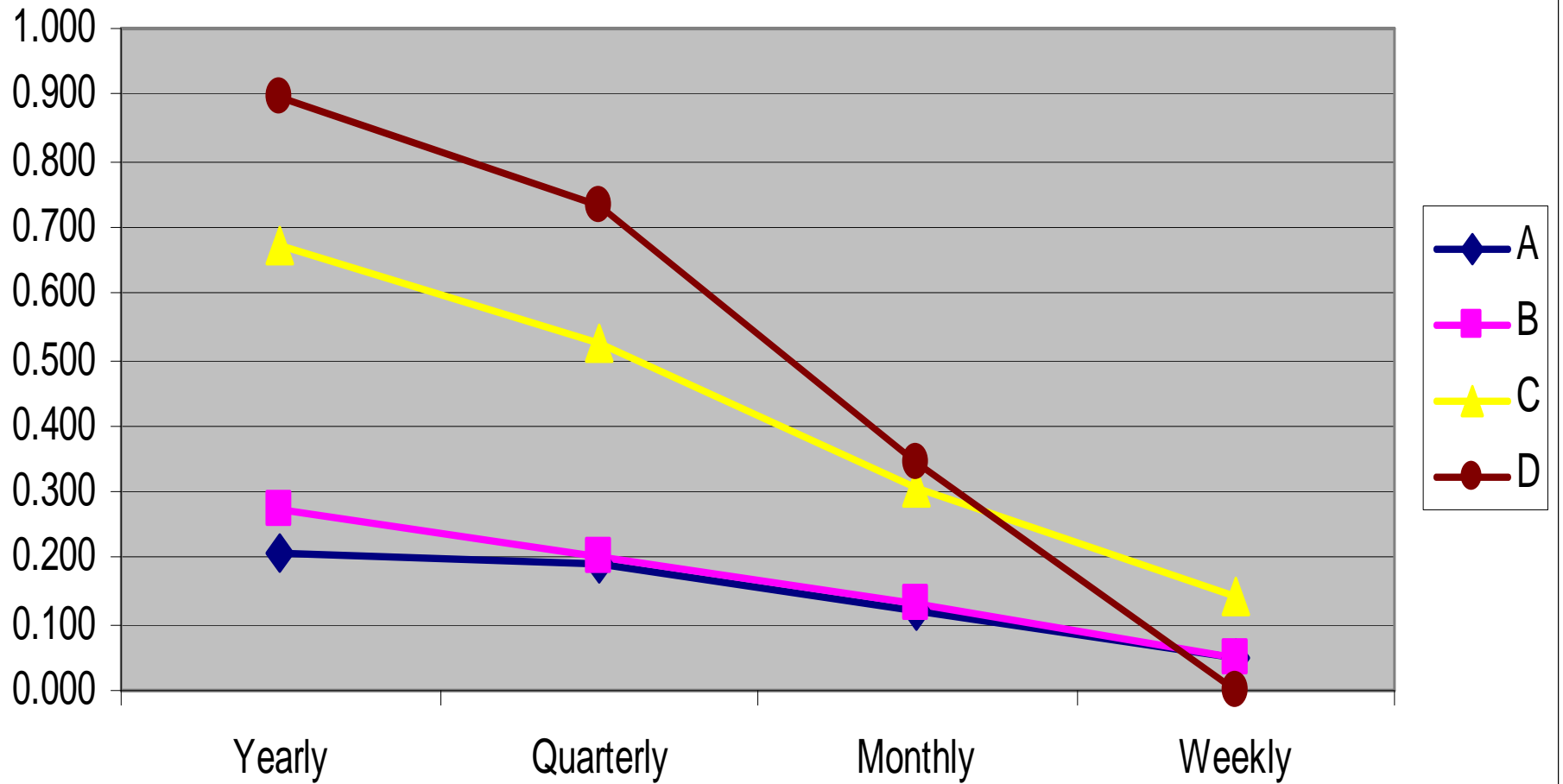


Question

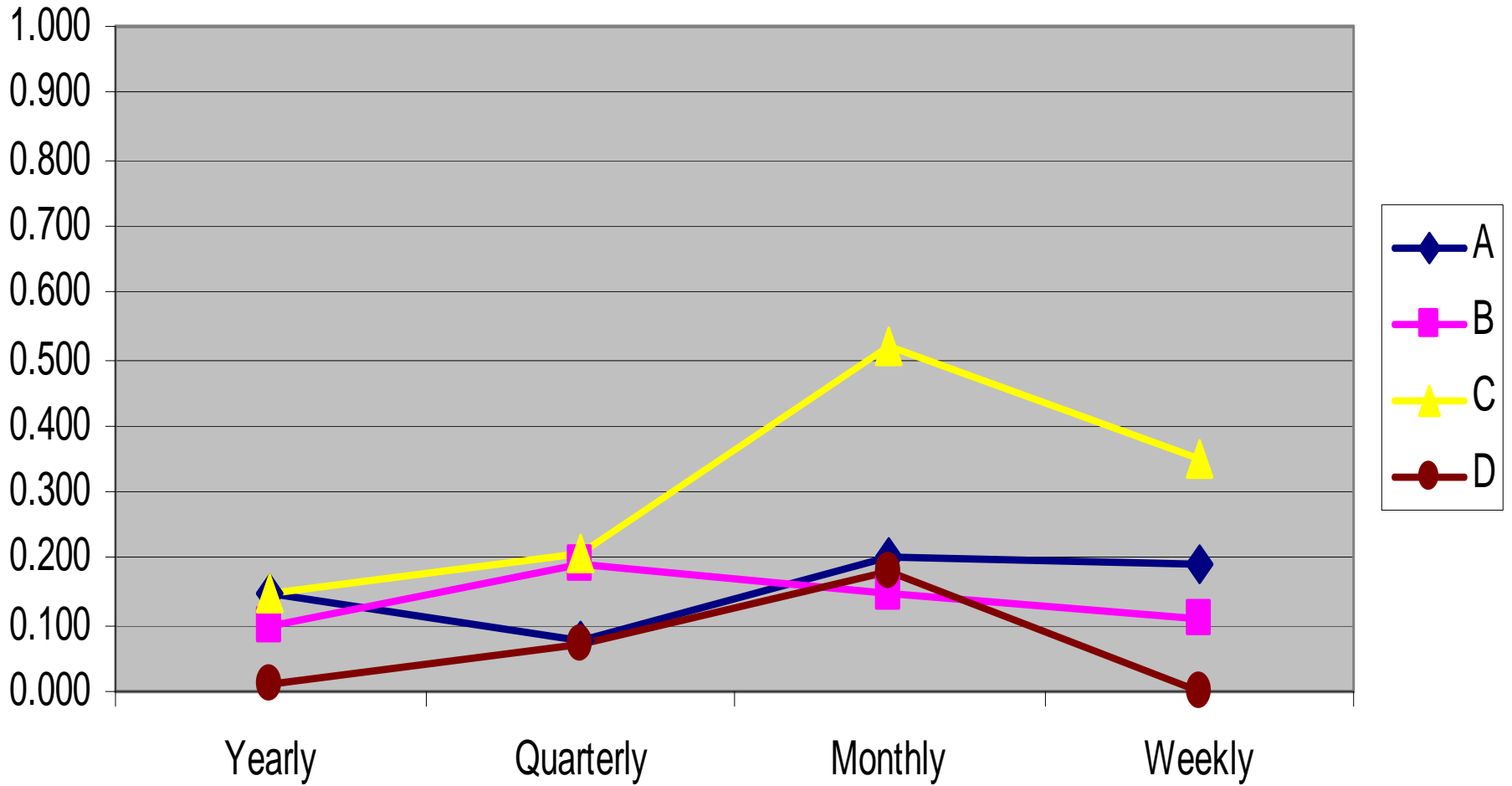
How often do you verbally communicate with the following agencies:

- Daily, Weekly, Monthly, Quarterly, Yearly
- Not at all, Don't Know

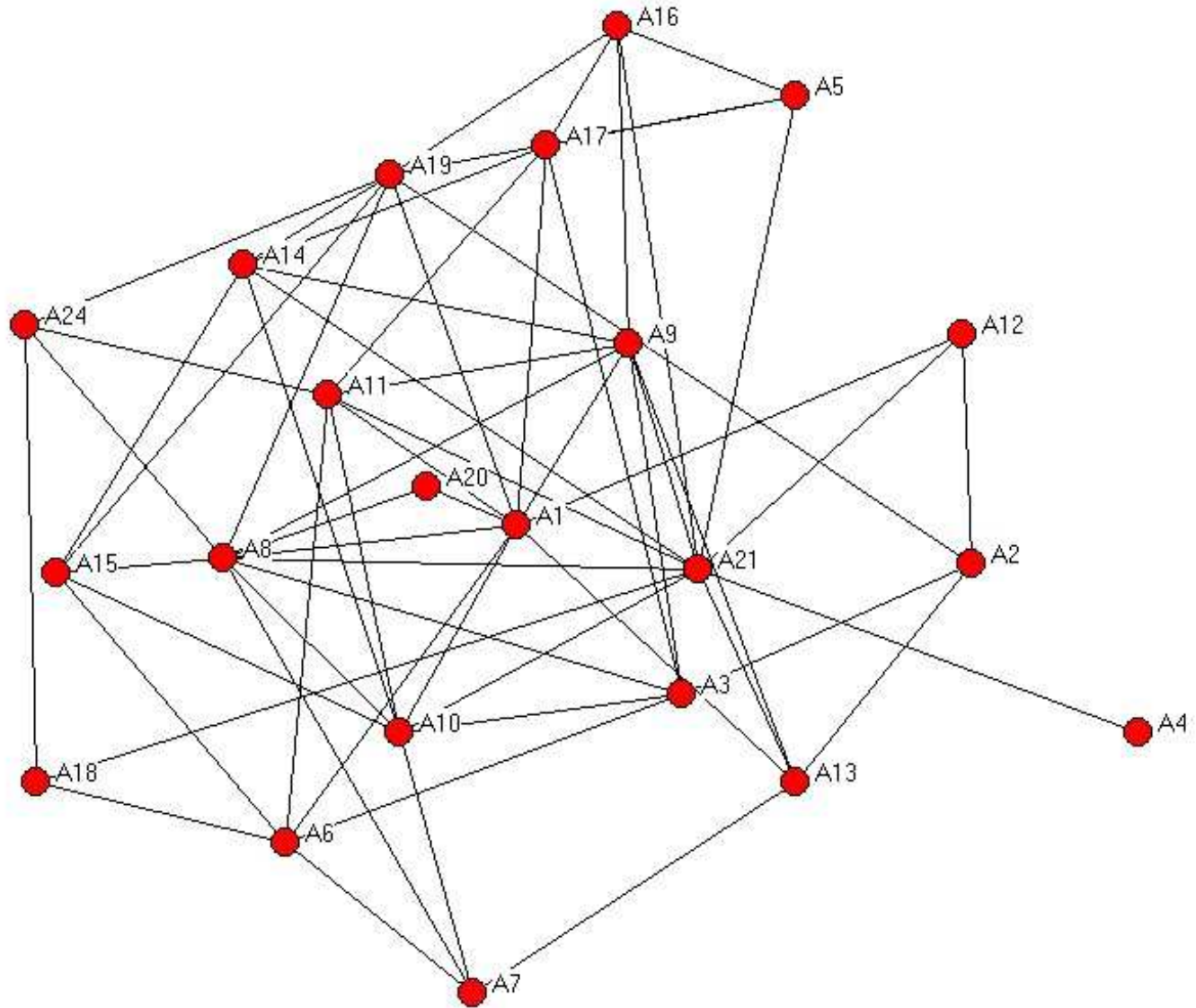
Density of Communcation Networks



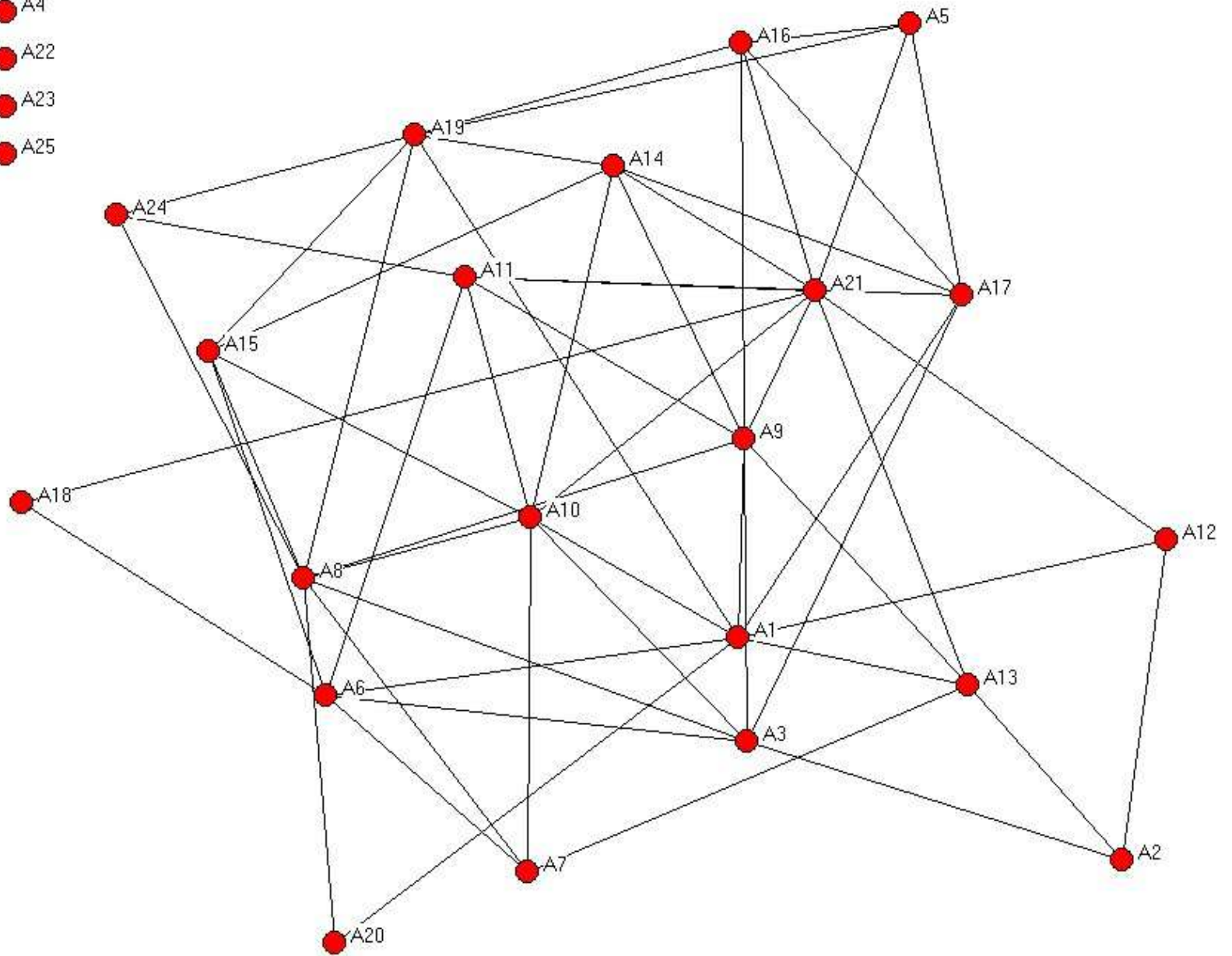
Betweenness of Communication Network



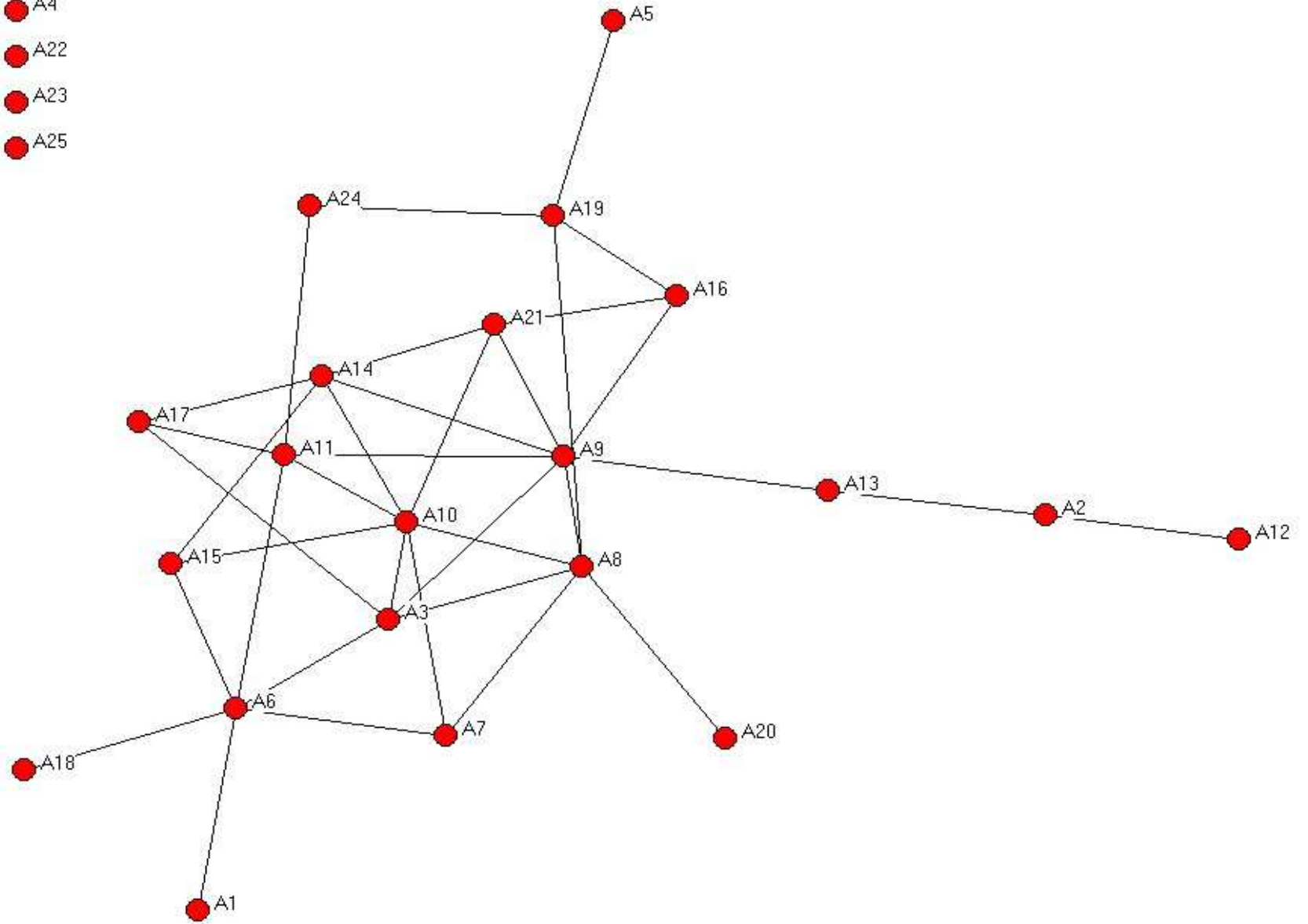
- A22
- A23
- A25



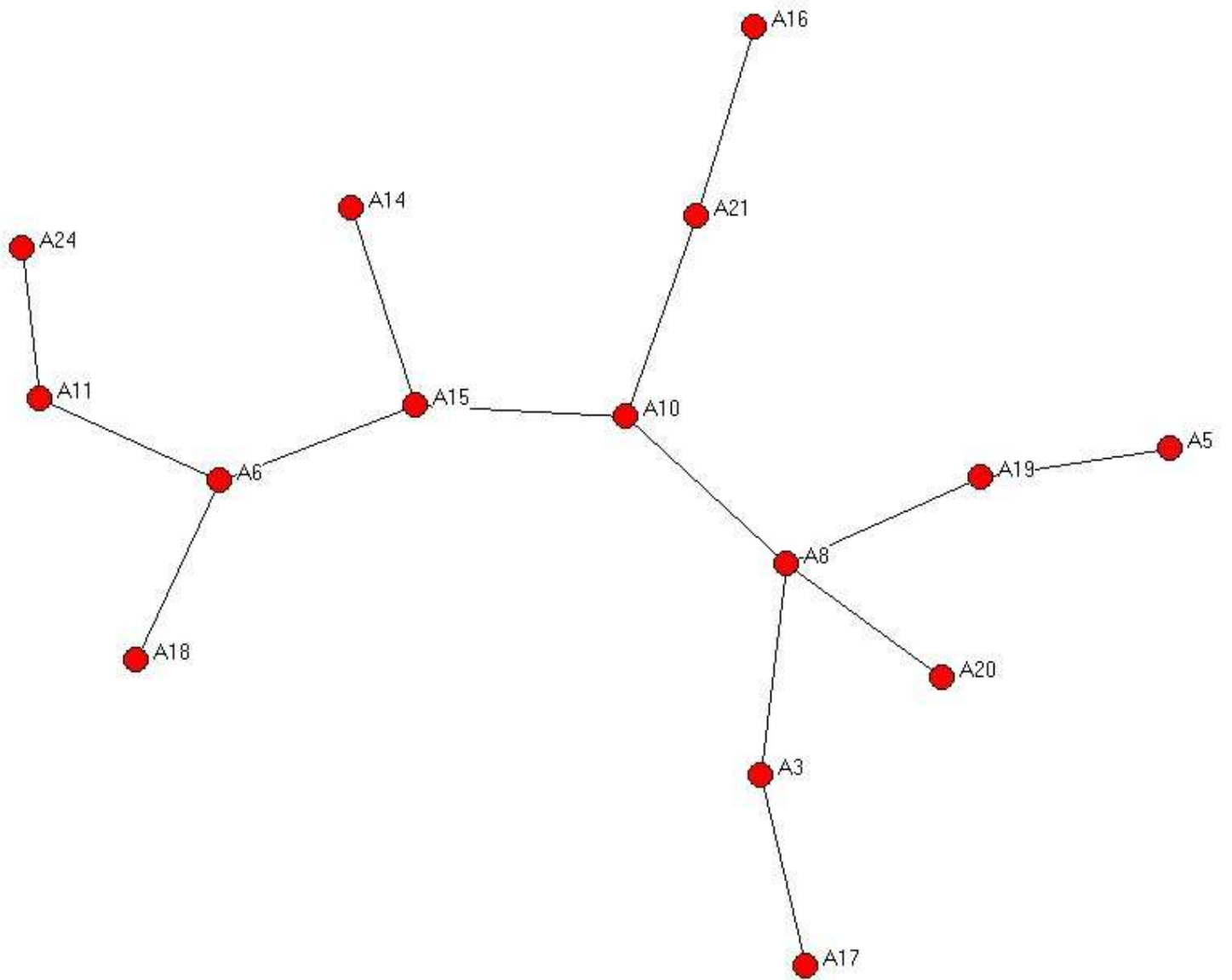
- A4
- A22
- A23
- A25



- A4
- A22
- A23
- A25



- A1
- A2
- A4
- A7
- A9
- A12
- A13
- A22
- A23
- A25



● A1

● A2

● A3

● A4

● A5

● A7

● A8

● A9

● A10

● A12

● A13

● A14

● A15

● A16

● A17

● A19

● A20

● A21

● A22

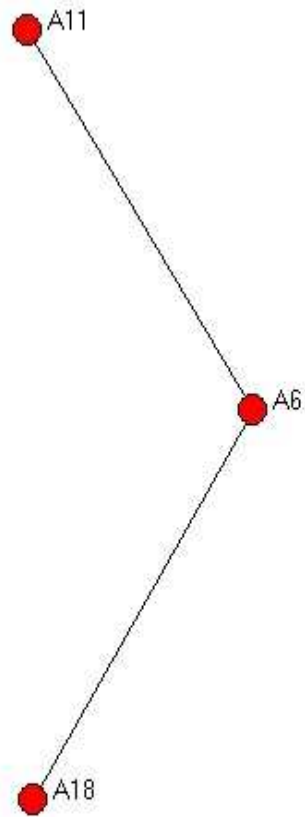
● A23

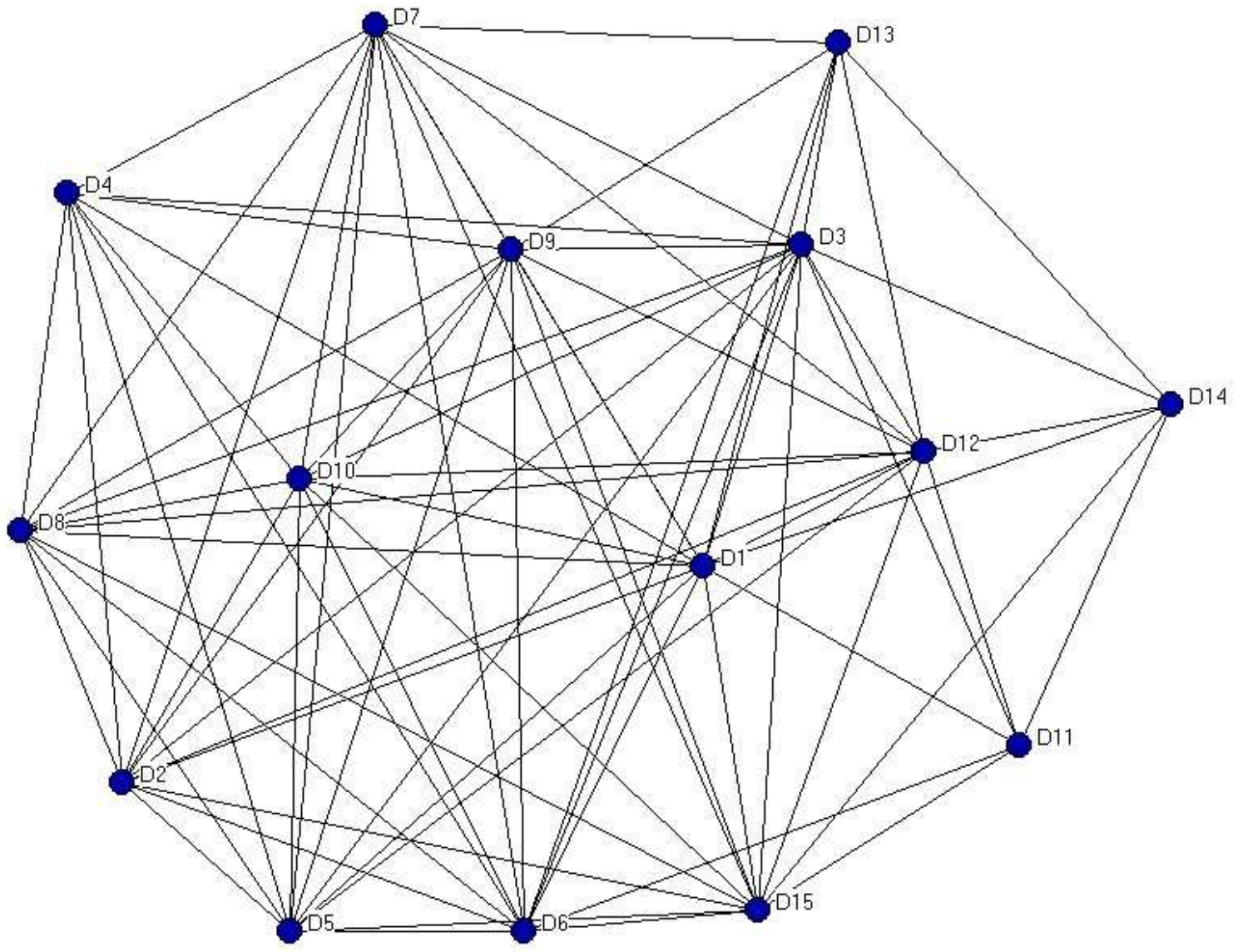
● A24

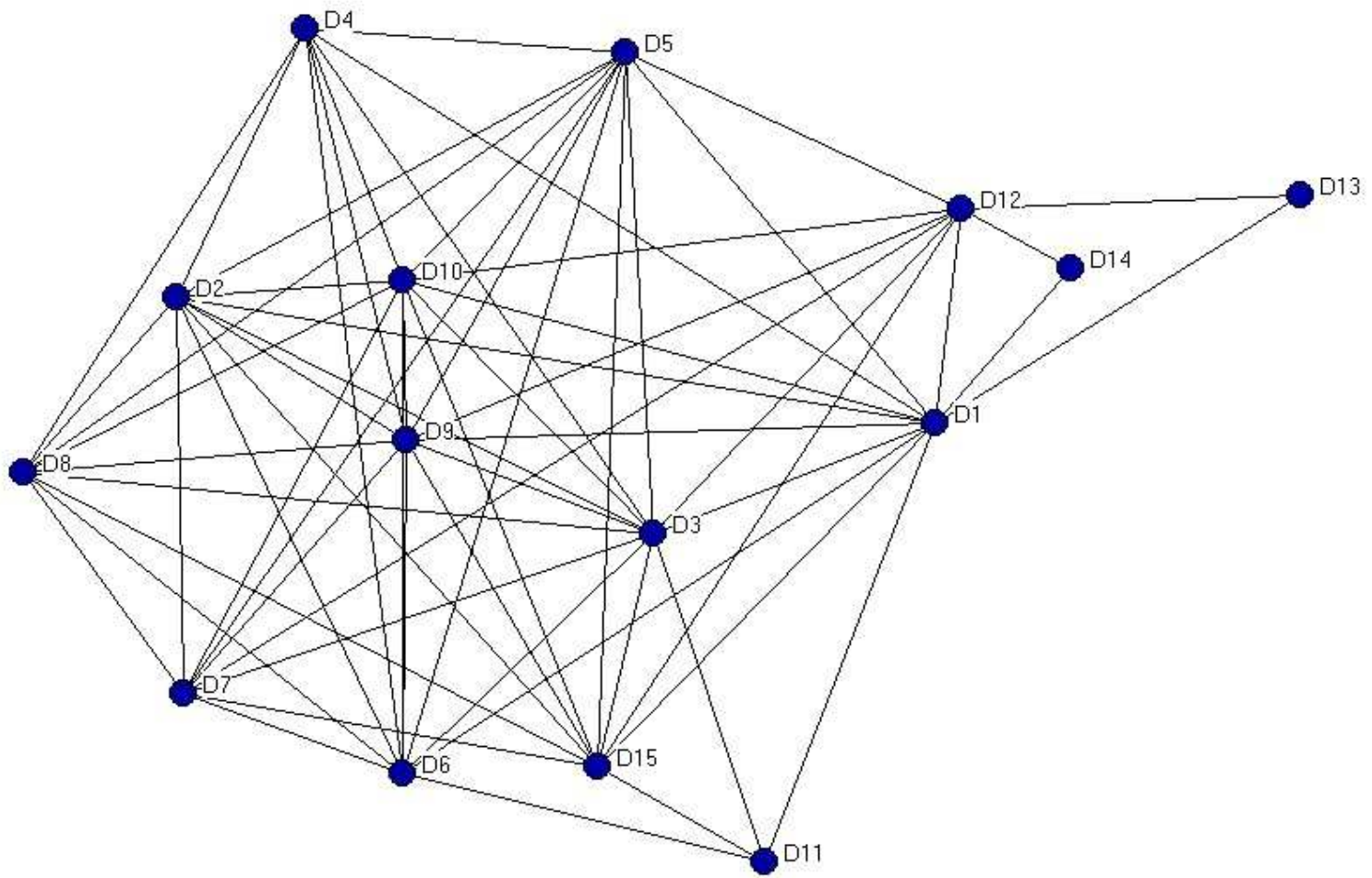
● A11

● A6

● A18



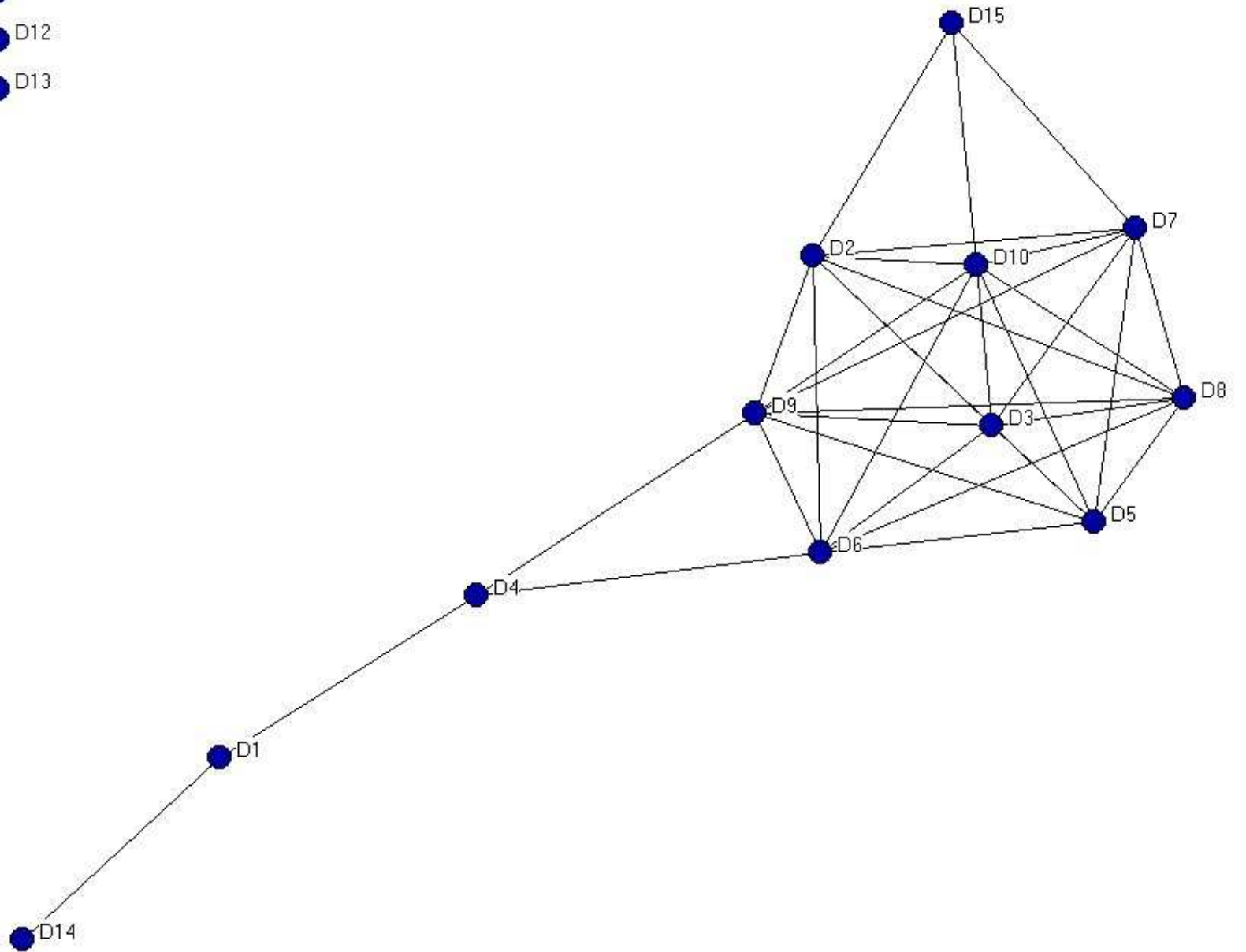




● D11

● D12

● D13





● D11

● D12

● D13

● D15

● D2

● D10

● D7

● D9

● D3

● D8

● D6

● D5

● D4

● D1

● D14



Standards for Evaluation

- ◆ What is the optimal density of a public health preparedness network?
- ◆ How often should they communicate?
- ◆ What is the maximum betweenness that one agency can sustain?



Evaluation Methods



- ◆ Define Key Players
- ◆ Add question to survey
- ◆ Train observers



Limitations

- ◆ Sensitivity
- ◆ Possible inaccurate information
- ◆ Static
- ◆ Only positive relationships



Benefits

- ◆ Baseline data
- ◆ Visual depiction
- ◆ More analyses possible



Future Needs

- ◆ Decide communication timeframe
- ◆ Measure:
 - Agreement between agencies
 - Optimal density
 - Maximum betweenness