A Short Introduction to Networks and Model Comparisons

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Background

A Highly Connected World

- ▶ Networks are everywhere
- ▶ Technological, biological, social, informational

History

Travers & Milgram (1967)

- ▶ Letter correspondence between strangers in Nebraska and Massachusetts
- ▶ Overall, it took only around six people for the letter to be delivered
- ▶ "Six degrees of separation"

Network Statistics

- ▶ Analogous to statisitcs seen in elementary statistics
- ▶ Characterize a given network

Transitivity

Average Path Length

Diameter

Centrality

Degree Centrality

Graph Models

Erdős–Rényi Model

Watts-Strogatz Model

ERGMs

Simulation Study

Data Set

Erdős–Rényi Model

Watts-Strogatz Model

ERGMs

Conclusion

Results

Implications

Sources