

1 OBJECTIVES

Effective and efficient delivery of healthcare services require comprehensive collaboration of healthcare actors and the complex inter-reliant activities.

Patient-sharing provider network can ensure the best possible health outcomes and value for money.

The dynamics of patient-sharing provider network is fundamentally important in Australian context to measure the efficiency of healthcare delivery services.

3 PROPOSED RESEARCH METHOD

Researchers will propose a network-based approach using social network analysis and administrative healthcare data.

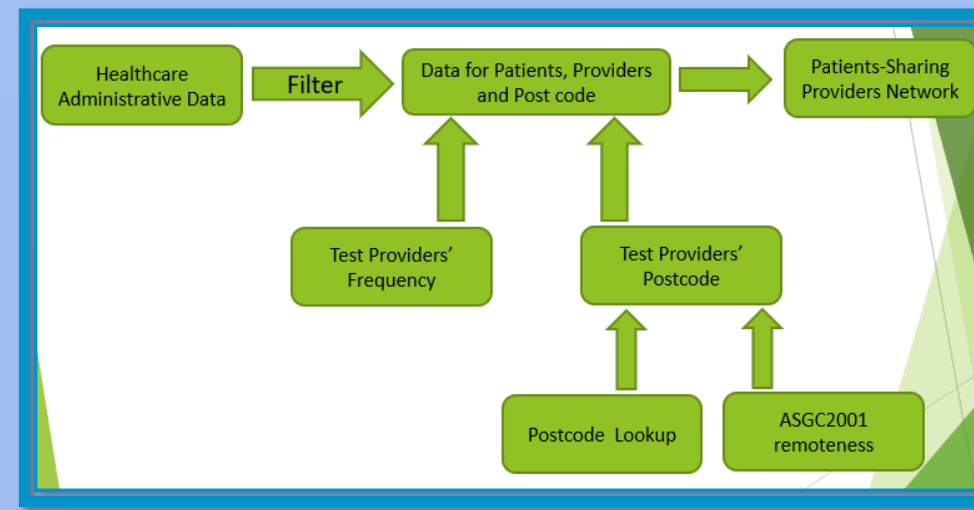
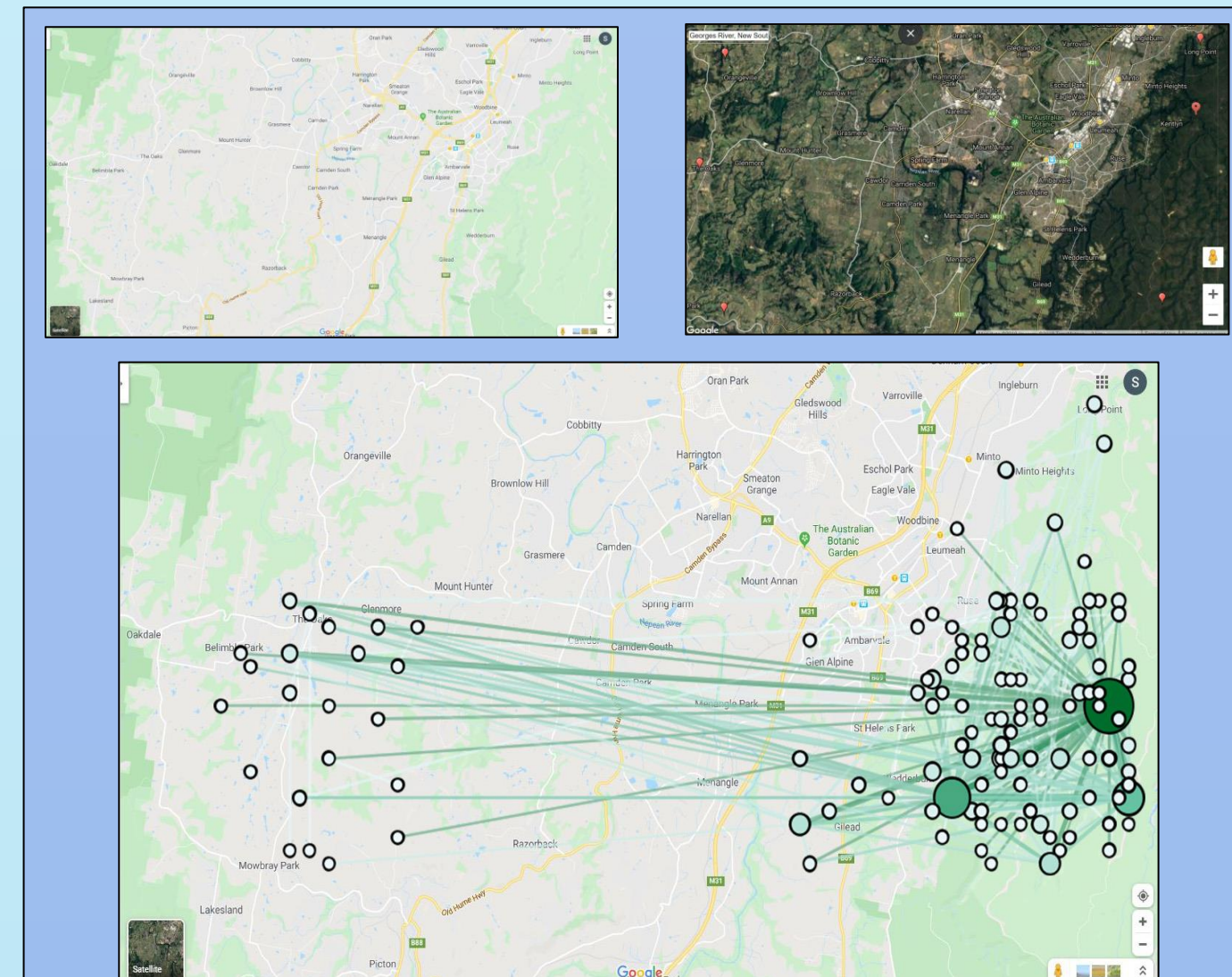


Figure 6. Block Diagram of the Proposed Framework

6 PATIENT SHARING PROVIDER NETWORK, NSW



2 EXISTING THEORY

The researchers have reviewed the current literature to get an overview of how different network-based methods are applied to understand the dynamics of patient-sharing provider network in Australia (Fig. 1).

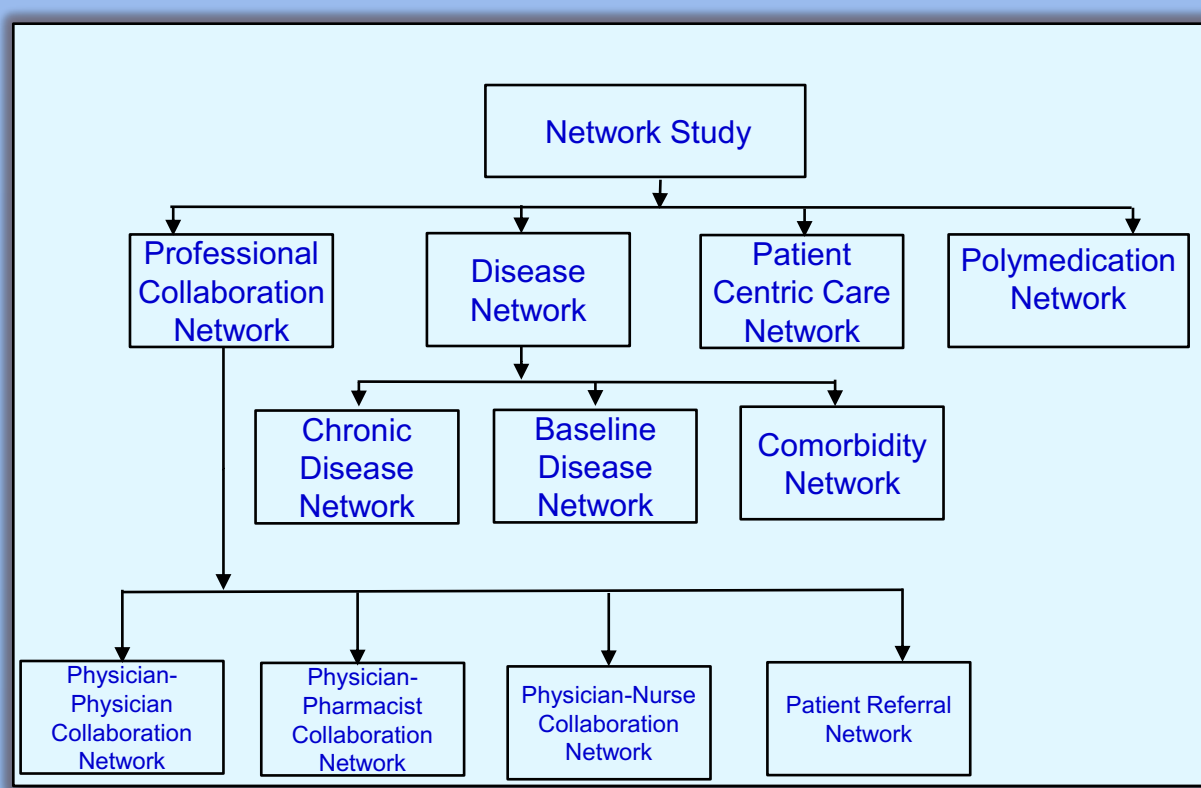


Fig. 1. The list of various methodologies applied for Network study

Table 1. Literature Type and Source

Literature Type	Academic Source
Academic books	Google Scholar
Journal articles	ScienceDirect
Conference papers	IEEE Xplore Digital Library
	PubMed

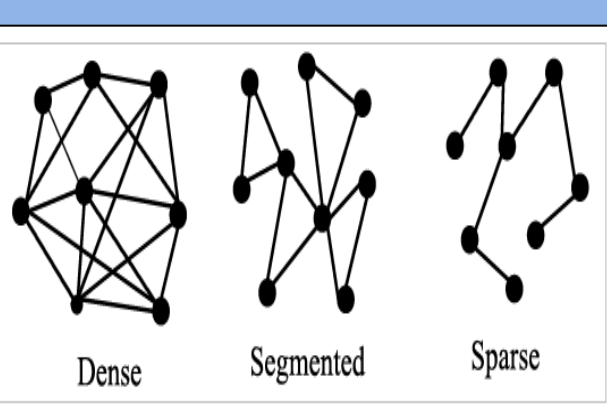


Figure 2. Diverse Forms of Physician Collaboration Structures (S. Uddin et al., 2013)

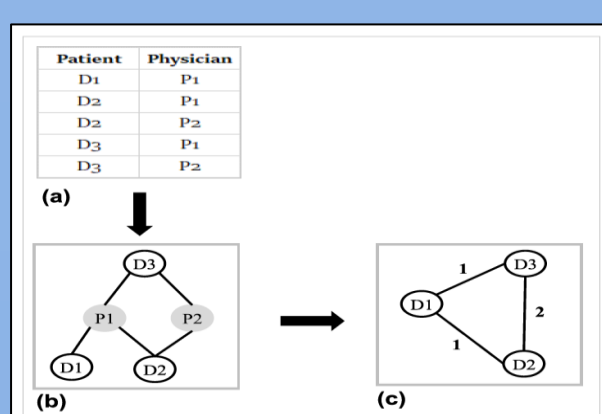


Figure 3. Physician Collaboration Network based on an abstract of : (a) Physicians' Visit to Patients; (b) The Corresponding Patient-Physician Connections; and (c) the Values of Physician Collaboration Network (S. Uddin et al., 2018).

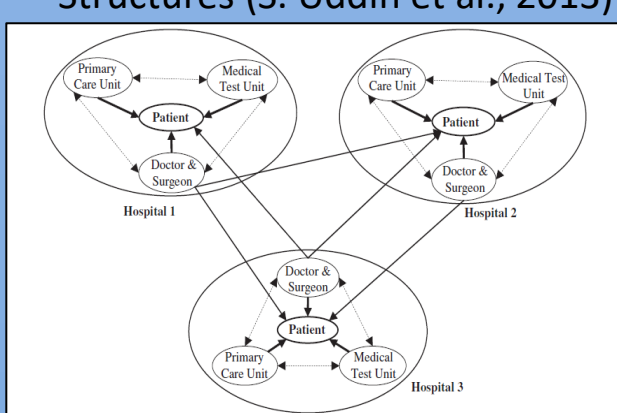


Figure 4: Patient-Centric Care Network that Evolve During Intolerant Stay for Each Hospital Entry (M. S. Uddin & Hossain, 2011)

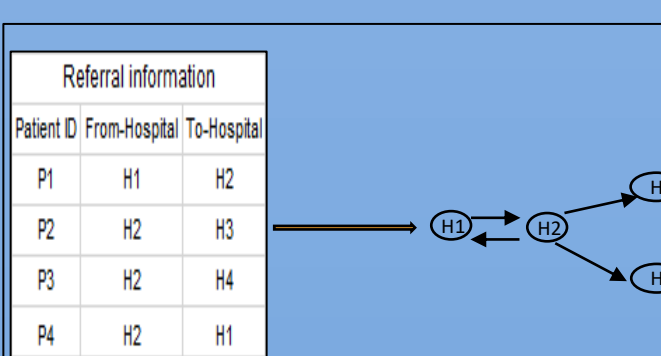


Figure 5: Extraction of a Referral Network (Right-Hand Panel) among hospitals from an Abstract Referral Information (Left-Hand Panel)

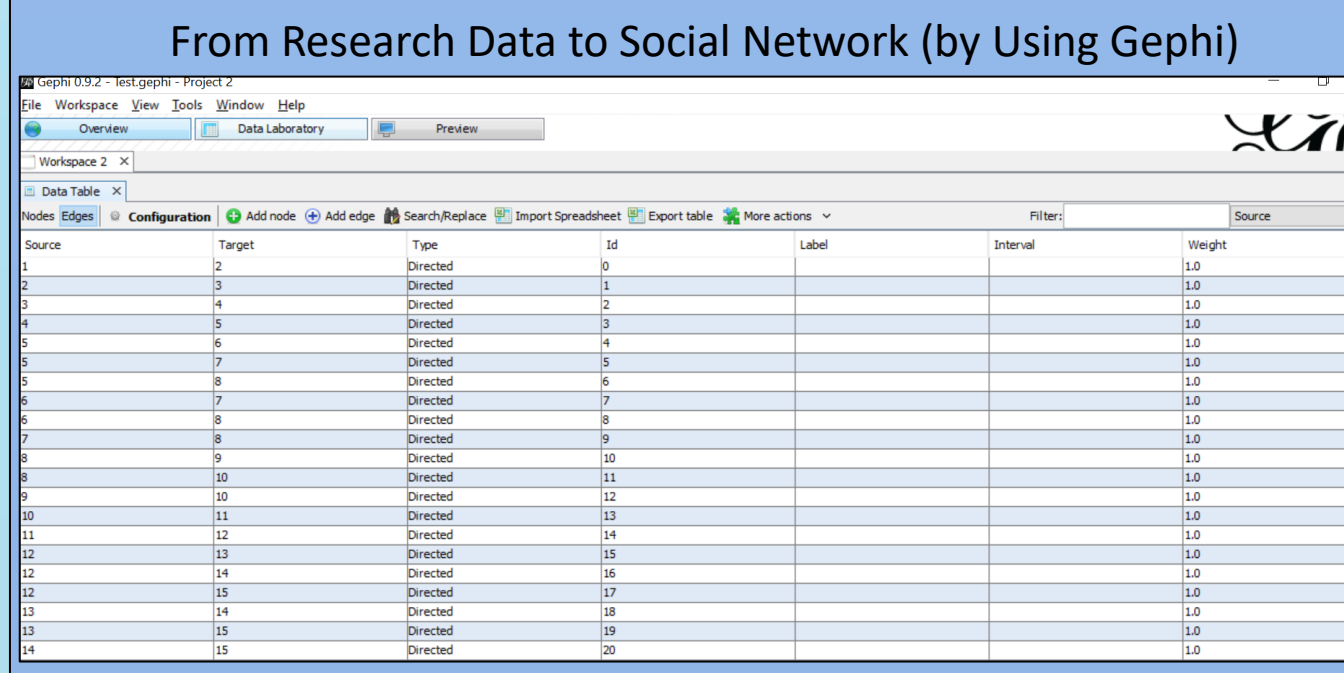
4 RESEARCH DATA

Research Data Source: CBHS Health Care Data

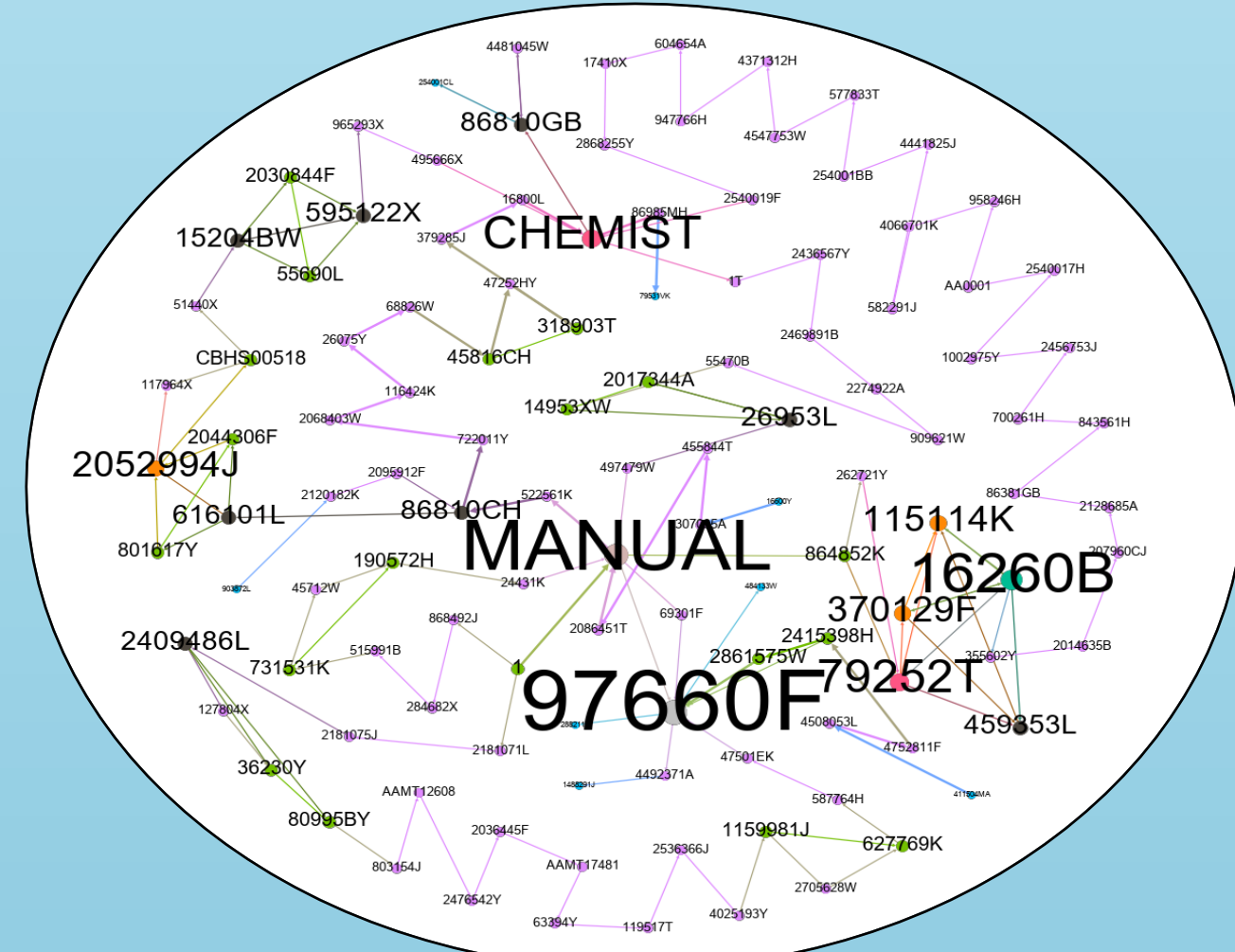
id	person_id	provider_number_id	service_date	postcode
21111	21111	74058	1997-10-28 00:00:00	4109
21112	21112	15806	2012-03-21 00:00:00	4810
21113	21113	16122	2014-05-21 00:00:00	4810
21114	21114	20631	2015-01-28 00:00:00	4810
21115	21115	16122	2017-10-20 00:00:00	4814
21116	21116	124746	2012-09-20 00:00:00	2250
21117	21117	200091039	2015-01-29 00:00:00	2250
21118	21118	200092363	2014-03-22 00:00:00	2095
21119	21119	200253882	2016-03-18 00:00:00	3910
21120	21120	200253883	2016-03-23 00:00:00	3910

provider_number_id	postcode	Frequency
MANUAL	NULL	0
MANUAL	NULL	9565
MANUAL	1	0
MANUAL	1	8730
MANUAL	1	8196
MANUAL	1	2166
MANUAL	2113	1247
MANUAL	2150	941
MANUAL	0	690
MANUAL	2039	558
MANUAL	2039	482
MANUAL	2031	471
MANUAL	2113	437
MANUAL	2150	433
MANUAL	4066	407
MANUAL	3066	365
MANUAL	6008	351
MANUAL	2065	339
MANUAL	4000	314
MANUAL	4008	307
MANUAL	2305	303
MANUAL	3121	290

Source	Target
411504MA	4508053L
4508053L	4752811F
4752811F	2415398H
2415398H	2861575W
2415398H	97660F
2861575W	2861575W
903872L	2120182K
2120182K	2095912F
2095912F	866810CH
866810CH	616101L
616101L	801617Y
616101L	2044306F
2095912F	2052994J
801617Y	2044306F
801617Y	2052994J
2044306F	2052994J
2052994J	117964X



5 PATIENT-SHARING PROVIDER NETWORK



7 LESSON LEARNED

- Patient-sharing provider network techniques impacts on healthcare industry and healthcare results.
- Patient-sharing provider network promises substantial involvements, positive changes, modernisations, and integration within patients' lives.
- Patient-sharing provider network can be used to inform decision-making in health disciplines.
- Patient-sharing provider network makes the health sector more challenging and helps to take the quick and proper decisions with real time.
- Patient-sharing provider network helps people to arrive at new findings and new ways of making life better for people.
- Australia may use Patient-sharing provider network to make better strategic and operational decisions.
- Thus, this research can potentially help in transforming the way Australian health industry manage, analyse and leverage on data.

8 IMPLICATIONS

The outcomes are beneficial for-

- University Academics
- Tertiary Students
- Patients
- Primary Care Doctors (GPs) and/or Specialists
- Hospitals/Clinics, Hospital/Clinical Heads
- Chemists
- Health Insurance Companies, Health Insurance Managers
- Medicare, Medicare Managers and Australian Government.

Uddin, S., Hossain, M. E., & Khan, A. J. I. A. (2018). Triad Census and Subgroup Analysis of Patient-Sharing Physician Collaborations. *6*, 72233-72240.
 Uddin, M. S., & Hossain, L. J. J. F. H. Q. (2011). Social networks enabled coordination model for cost management of patient hospital admissions. *33*(5), 37-48.
 Uddin, S., Hossain, L., & Kelaher, M. J. T. E. J. o. P. H. (2011). Effect of physician collaboration network on hospitalization cost and readmission rate. *22*(5), 629-633.
 Uddin, S., Hamra, J., Hossain, L. J. C., & Theory, M. O. (2013). Exploring communication networks to understand organizational crisis using exponential random graph models. *19*(1), 25-41.

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If you are interested to know more about our research on this as well as complex systems and large datasets, you can find us at - School of Project Management, Faculty of Engineering University of Sydney L2, 21 Ross street, Forest Lodge, NSW 2037 Email- shakir.karim@sydney.edu.au