

# GLOSSARY

## Accident:

“An event without apparent cause, or an unfortunate event, especially one causing physical harm or damage, brought about unintentionally, or occurrence of things by chance; the working of fortune” (Moore, 1997, p8).

## Actor

“Social entities are referred to as actors. Actors are discrete individuals, corporate or collective social units. ... Social network analysis is concerned with understanding the linkages among social entities (actors) and the implications of these linkages” (Wasserman and Faust, 1994, p17)

## Adjacency Matrix

A set of social interactions can be represented by a  $g \times g$  adjacency matrix. In this matrix (M), the rows and columns correspond to individual actors or nodes (N) of the network graph (G). Each entry ( $m_{ij}$ ) in the matrix, indicates if a relationship is directed from an individual actor ( $n_i$ ) to another actor in the network ( $n_j$ ). The entry equals 1 if the pair of actors (i,j) is a member of the set of edges or ties (E) observed in the network. In a dichotomous graph (see entry “Network”):

$$m_{ij} = 1 \text{ if } (i,j) \in E \quad (\text{i.e. a tie is observed directed from i to j})$$

$$m_{ij} = 0 \text{ if } (i,j) \notin E \quad (\text{i.e. no tie is observed directed from i to j})$$

Matrices may either be directed (where the direction of relationship between actors is specified), or undirected (where the direction of relationships between two actors is unspecified). In a directed matrix the rows list the outgoing ties emanating from each actor, whereas the columns list incoming ties. If the relationship is undirected the matrix will be symmetrical.

## Alliance

“A union or agreement to cooperate, especially of nations by treaty or families by marriage” (Moore, 1997, p 34). Members of an alliance typically act independently, except under the terms specified by the alliance agreement.

## Alter

A member of an ego network that has a tie to ego – the focal actor under study. See Ego Network.

### Average Degree

Average Degree is a commonly cited measure of cohesion. Degree is the number of ties observed for an individual actor. Average degree is therefore the average number of relationships observed for each actor in the network (Scott, 2000).

$$\text{Average Degree} = \frac{I}{N}$$

Where: I = "lines" i.e. the number of relationships, N = number of members of the network

### Blockmodel

A blockmodel consists of two things:

1. A partition of actors into discrete subsets called positions
2. For each pair of positions a statement of the presence or absence of a tie within or between the positions (or subsets) on each of the relationships

A blockmodel is thus a model, or a hypothesis about a multirelational network. It presents the general features of the network, such as the ties between positions (subsets of the network), rather than information about individual actors (Wasserman and Faust, 1994).

### Broker

"A middleman" (Moore, 1997, p 162)

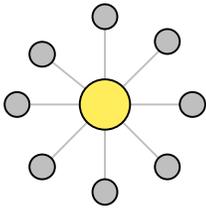
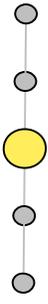
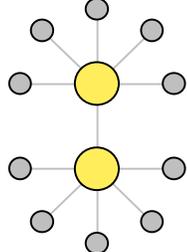
George Simmel noted that the "terius" role offers certain actors an important structural advantage to negotiate desirous social outcomes (Simmel, 1923 cited Burt, 1992).

"Terius Gaudens", or "the third who benefits" refers to the observation that actors gain social power when they can act as a middleman between two unconnected actors or groups who are unable to negotiate with each other directly. How actors use this social opportunity depends on their motivation. They may choose to act as a facilitator who assists other actors to negotiate mutually beneficial social objectives, or as gatekeepers who by selectively transmitting information or resources gain social or commercial advantage. An actor's brokerage potential can be estimated using "Betweenness Centrality" (see entry "Centrality"), which measures the number of occasions an actor is situated on the shortest relational pathway joining other actors in the network.

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### Centrality

Centrality is one of the most important and widely used conceptual tools for studying the prominence of individual actors within a network (Everett and Borgatti, 2005). Empirical studies have confirmed theoretical suspicions that the most “central” actors are also the most powerful actors (Markovsky et al., 1988; Brass and Burkhardt, 1993). They possess the greatest leadership potential in a social network. Freeman (1979) proposed three measures of actor centrality: degree centrality, closeness centrality and betweenness centrality (Table G1).

	Diagrammatic Representation	Description
Degree Centrality		<p>The absolute count of the number of relationships maintained by an actor. It is a measure of an actor's immediate sphere of influence. In directional matrices “in-degree centrality”, the number of times ego is nominated by other actors, can be distinguished from “out-degree centrality”, the number of relationships nominated by ego. Degree centrality can be normalised by dividing an actor's degree by the maximum possible degree and expressed as a percentage.</p>
Closeness Centrality		<p>The “farness” of an actor is the sum of the shortest path (geodesic) between this actor (ego) and all other actors within the network. The reciprocal of farness is closeness centrality. Actors with higher scores are closer to the rest of the network and can thereby communicate more efficiently. Closeness can be normalised by dividing the maximum closeness score (n-1) by absolute closeness. It is then expressed as a percentage of the maximum possible closeness score.</p>
Betweenness Centrality		<p>The number of occasions an actor is situated on a geodesic pathway connecting two other actors in the network. Actors with high betweenness scores are therefore in a better position to control the flow of information. They can either act as brokers (facilitators of information exchange), or as gatekeepers (i.e. they selectively prevent the passage of information).</p>

**Table G.1 Freeman's (1979) measures of actor centrality**

### Centralisation

A measure of how tightly a network is organised around its most central point, i.e. a central actor or group of actors (Scott, 2000). For a given binary network with vertices  $v_1 \dots v_n$  and maximum degree centrality  $c_{\max}$ , the network degree centralization measure is  $\sum(c_{\max} - c(v_i))$  divided by the maximum value possible  $(n - 2)$ , where  $c(v_i)$  is the degree centrality of vertex  $v_i$  (Borgatti et al., 2002).

### Clustering coefficient

"Is the average value of the local clustering coefficient across all nodes" (Robins et al, 2005a; Watts, 1999; Borgatti et al., 2002). Local Clustering Coefficient  $C_i$  of an actor is the proportion of dyads to whom node  $i$  is connected which are connected to each other (Robins et al, 2005a).

### Coalition

"A temporary alliance for combined action, especially of distinct parties" (Moore, 1997, p245). It implies a formal agreement between parties. However, no long term relationship is necessarily assumed.

### Cohesion

"The act or condition of sticking together" (Moore, 1997, p 249). In social network analysis, "cohesive groups are groups of actors among whom there are relatively strong, direct, intense, frequent or positive ties" (Wasserman and Faust, 1994, p 149-250). Many authors use network cohesion as an important explanatory variable in social theory. "The more tightly that individuals are tied into a network, the more they are affected by group standards" (Friedkin, 1981, p41). Many different measure of cohesion are proposed in social network analysis essentially based on four concepts: frequency (of contact between actors), adjacency (direct contact between members for example, density and average degree), connectivity (for example transitivity, clustering coefficient, centralisation and core periphery indices) and distance (for example distance based cohesion).

### **Collaborating Networks**

Collaborating Networks display ongoing commitment to other network members and the shared objectives of the network. The purpose is specific, often complex, and usually long term. Membership is very stable and the addition or loss of network members may have significant detrimental effects on the network. Members share resources to meet network objectives and are willing to delegate some responsibility for the assignment of these resources to the network itself. There may be attempts to formalise network activities through written objectives, policies and reporting processes. However, these do not necessarily imply binding legal agreements between network members.

### **Community**

“A collective of people identified by common values and mutual concern for the development and wellbeing of their group or geographical area” (Green and Kreuter, 1999, p504)

### **Construct**

The representation of concepts within a causal explanation or theoretical framework, for example, predisposing, enabling and reinforcing factors are constructs for the representation of more specific concepts or variables such as health beliefs, attitudes, skills and rewards (Green and Kreuter, 1999, p 504).

### **Cooperative Networks**

Co-operative Networks exchange information and members acknowledge and accommodate the overall objectives of the network and other network members, provided this does not significantly interfere with their own objectives. However network members form policy independently.

### **Coordinating Networks**

Coordinating Networks exchange information and members adopt common objectives after negotiation between network members. Membership is more stable, with attention given to who joins and who leaves. Network members pool resources to meet shared objectives, but maintain autonomous control over the assignment of their organisation's resources.

### **Core periphery structure**

“The tendency of a network to form around a core group of central actors who themselves have cohesive (i.e. dense) relationships with each other” (Borgatti and Everett, 1999).

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### Degree

The degree of an individual actor (ego) is the number of ties linking them to other actors in the network (Scott, 2000). In directed networks “in degree” can be distinguished from out degree. “In degree” is the number of ties directed towards ego by other actors in the network (i.e. the sum of the column for an individual actor in the adjacency matrix). “Out degree” is the number of ties directed from ego to other actors in the network (the sum of the row for that actor). The normalised degree of an actor is their degree divided by the maximum possible degree (if the actor knew every member of the network) expressed as a percentage.

### Density

Density is a commonly calculated measure of network cohesion. The density of a group is defined as the number of edges or relationships observed divided by the total number of possible relationships. For a directed graph (Scott, 2000):

$$\text{Density} = \frac{I}{N \times (N-1)}$$

Where I = the number of ties joining all actors in the network

N = total number of actors in a network

### Determinants of Health

“The forces predisposing, enabling, and reinforcing lifestyles, or shaping the environmental conditions of living, in ways that affect the health of populations” (Green and Kreuter, 1999, p504).

### Determinism

“The doctrine that all events, including human action, are determined by causes regarded as external to the will” (Moore, 1997. P 359).

### **Discourse**

A domain of language use that is unified by common assumptions. There may be similarities between discourses of different topics at any one time. The discourse of political economy in the eighteenth and nineteenth century, for instance, takes the same form as the discourse of natural history. However, it is also important to stress that although discourses may overlap or reinforce each other, they may also conflict. For example at certain moments in the history of Western societies, different, and often, contradictory discourses of the individual have coexisted, some of which stress the freedom to act, while others emphasise the individual's duty to society. Sociological attention also concentrates on the social function of discourses, most importantly on their ability to close off possibilities. Within a discourse, there are some things that cannot be said. This means that discourses may have an effect similar to ideology. That is, a discourse, as a ready made way of thinking, can rule out alternative ways of thinking and hence preserve a particular distribution of power (Abercrombie, 1994, p 119).

### **Distance**

The geodesic distance or distance is the length of the geodesic path – the shortest path connecting two actors (Degenne and Forsé, 1999). A path is a sequence of ties joining two actors in a network. A number of different paths may be possible. The path length  $d_{ij}$  is the number of ties traversed to connect the two actors (Degenne and Forsé, 1999). The average distance is the average geodesic distance between all nodes.

### **Distance weighted fragmentation**

The average of the reciprocal of the distances between all actors. Ranges between 1 and 0. Larger values indicate more fragmentation of the network (Borgatti et al., 2002).

### **Distance based cohesion**

Equals 1 minus the distance weighted fragmentation. Larger values indicate the network is more cohesive (Borgatti et al., 2002).

### **Dyad**

A dyad consists of a pair of actors and the ties between them. At the most basic level, a linkage or relationship establishes a tie between two actors. The tie is inherently a property of the pair and therefore not thought to pertain simply to an individual actor.

Dyadic analyses focus on the properties of pairwise relationships, such as whether ties are reciprocated or not, or whether specific types of multiple relationships occur together. The dyad is frequently the basic unit for the statistical analysis of social networks (Wasserman and Faust, 1994, p18).

## **Ecology**

“The study of the relationships among living organisms and their environment. Human ecology means the study of human groups as influenced by environmental factors, including social and behavioural factors” (Last, 1995, p 52).

## **Ecological fallacy / aggregation bias / ecological bias**

“The bias that may occur because of an association observed between variables on an aggregate level does not necessarily represent the association that exists at an individual level. An error in inference due to failure to distinguish between different levels of organization. A correlation between variables based on group (ecological) characteristics is not necessarily reproduced between variables based on individual characteristics: an association at one level may disappear at another, or even be reversed” (Last, 1995, p51).

## **Edge** see tie

## **Effectiveness**

“The extent to which a specific intervention, procedure, regimen or service, when deployed in the field in routine circumstances, does what it is intended to do for a specified population” (Last 1995, p 52).

## **Efficacy**

“The extent to which a specific intervention, procedure, regimen, or service produces a beneficial result under ideal conditions” (Last, 1995, p 52).

## **Ego**

A particular actor under study in a personal network (see Ego Network).

## **Ego Network**

An ego-centered network consists of a focal actor, termed ego, and the set of actors (alters) who have ties to ego, and the measurement of ties among these alters. For example, when studying people, one samples respondents, and each respondent reports a set of alters to whom they are tied, and on the ties among these alters. Such data is often referred to as a personal network data. Clearly these data are relational, but limited, since ties from each actor are measured only to some (usually only a few) alters. ... Ego-centered networks have been widely used by anthropologists to study the social environment surrounding individuals. Ego-centered networks are also quite often used in the study of social support.

### **Empiricism**

This is an epistemological doctrine based on the supposition that the only source of knowledge is experience. In sociology it is used positively to describe that style of sociology that tries to avoid untested theoretical speculation and to aim always for the provision of quantitative, empirical evidence. Negatively, ... it is suggested that empiricism tends to reduce the importance of theory on the one hand and, on the other, underestimates the technical and theoretical difficulties of gathering reliable data (Abercrombie, 1994, p 142).

### **Enlightenment**

A European philosophical and social movement of the eighteenth century, often referred to as the "Age of Reason". Enlightenment philosophers developed a variety of progressive ideas: freedom of thought and expression, the criticism of religion, the value of reason and science, a commitment to social progress and the significance of individualism. These critical, secular ideas played a crucial role in the emergence of modern sciences (Abercrombie, 1994, p144).

### **Epistemology**

In philosophy this concept is used technically to mean the theory of knowledge of the external world. The term is used more loosely in sociology to refer to methods of scientific procedure which would lead to the acquisition of sociological knowledge (Abercrombie, 1994, p147).

### **Equilibrium**

Societies or social systems are said to be in equilibrium when forces acting within them are balanced and the society is consequently stable. Parsons holds that societies are systems which always tend to equilibrium, even if they do not reach it. He conceives of social change as the movement from one equilibrium position to another (or one tendency to another) as the internal forces are changed and rebalance themselves. This is referred to as dynamic equilibrium (Abercrombie, 1994, p149).

### **Ethnography**

The direct observation of the activity of members of a particular social group, and the description and evaluation of such activity, constitute ethnography. The term has mainly been used to describe the research technique of anthropologists, but the method is commonly used by sociologists as well (Abercrombie, 1994).

### **Gestalt**

In Psychology, an organised whole that is perceived as more than the sum of its parts. In German, gestalt = form or shape (Moore, 1977, p555).

### **Graph**

A network can be represented mathematically as a graph  $G = (N,E)$  comprised of a set of nodes (N) and a set of edges (E) that connect a pair of nodes (see network).

1.  $N = \{1,2, \dots, g\}$  denotes a set of nodes or actors. These actors can be persons, teams, organizations, countries, machines, or concepts.
2.  $E = \{a,b, \dots, g\}$  denotes a set of edges. Each edge represents a particular relationship linking a pair of actors. Data is collected in pairs or dyads.  $e_{ij}$  indicates the presence or absence of an edge or relational tie linking a pair of actors (i,j). When  $e_{ij} = 1$  this indicates the presence of a tie, whereas if  $e_{ij} = 0$ , no tie was observed (Borgatti et al., 2002).

### **Health**

“A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1948).

### **Health Promotion**

“The combination of educational and environmental supports for actions and conditions of living conducive to health” (Green and Kreuter, 1999, p14)

### **Holism**

“The theory that certain wholes are to be regarded as greater than the sum of their parts of Reductionism (q.v ). Or the treating of the whole person including mental and social factors rather than just the symptoms of a disease” (Moore, 1997, p634).

### **Hospital Separation**

A term used in commentaries on hospital statistics to describe the departure of a patient from hospital without distinguishing whether the patient departed alive or dead. The distinction is unimportant from a statistical perspective of hospital activity such as bed occupancy (Last, 1995, p79).

### **Human Ecology**

“The study of human groups as influenced by environmental factors, including social and behavioural factors” (Last, 1995, p 52).

### **Individualism**

A term used to describe a moral, political, or social outlook which stresses human independence and the importance of individual self-reliance and liberty. Individualists promote the unrestricted exercise of individual goals and desires. They oppose any external interference with an individual's choices - whether by society, the state, or any other group or institution. Individualism is therefore opposed to collectivism, which stresses community and societal goals over individual goals (Wikipedia, 2006a).

### **Injury**

"Any unintentional or intentional damage to the body resulting from acute exposure to thermal, mechanical, electrical, or chemical energy or from the absence of such essentials as heat or oxygen" (NCIPC, 1989, p. 4).

### **Intersectoral**

"In health promotion, health-oriented policy affecting and involving sectors outside health services (such as employment, housing, food production, social care), but usually evolved in collaboration with the health sector. Also used to refer to collaboration between levels of various sectors – for example government health authorities plus local transport authority plus community education" (Hawe et al., 1990, p209).

### **Isolate**

"Actors who do not have a relationship with any other network members" (Scott, 2000).

### **Knowledge Networks**

Knowledge networks exchange information for mutual benefit. Minimal ongoing commitment to network activities is expected. Members maintain organisational autonomy. Resource sharing is limited to the exchange of ideas, news and reports.

### **Lifestyle**

"The culturally, socially, economically, and environmentally conditioned complex of actions characteristic of an individual, group, or community as a pattern of habituated behaviour over time that is health related but not necessarily health directed" (Green and Kreuter, 1999, p507).

## **Lifestyle Diseases / Chronic Diseases of Lifestyle**

Diseases that trace mainly to imprudent living, such as poor diet, obesity, lack of exercise, and cigarette smoking. The six major “lifestyle” diseases—that is, coronary heart disease, stroke, lung cancer, colon cancer, diabetes and chronic obstructive pulmonary disease—were responsible for 43 percent of all (American) deaths in 1998 (Doyle, 2001, p30).

Lifestyle diseases are diseases that appear to increase in frequency as countries become more industrialised and people live longer. They include Alzheimer’s disease, atherosclerosis, cancer, chronic liver disease or cirrhosis, chronic obstructive pulmonary disease, diabetes mellitus, heart disease, nephritis or chronic renal failure, osteoporosis, stroke and obesity. Factors in diet, lifestyle, and the environment are thought to influence susceptibility to the diseases listed above. Smoking, alcohol and drug abuse as well as the lack of exercise may increase the risk of certain diseases in later life (Wikipedia, 2006b).

## **Mackay Statistical Division**

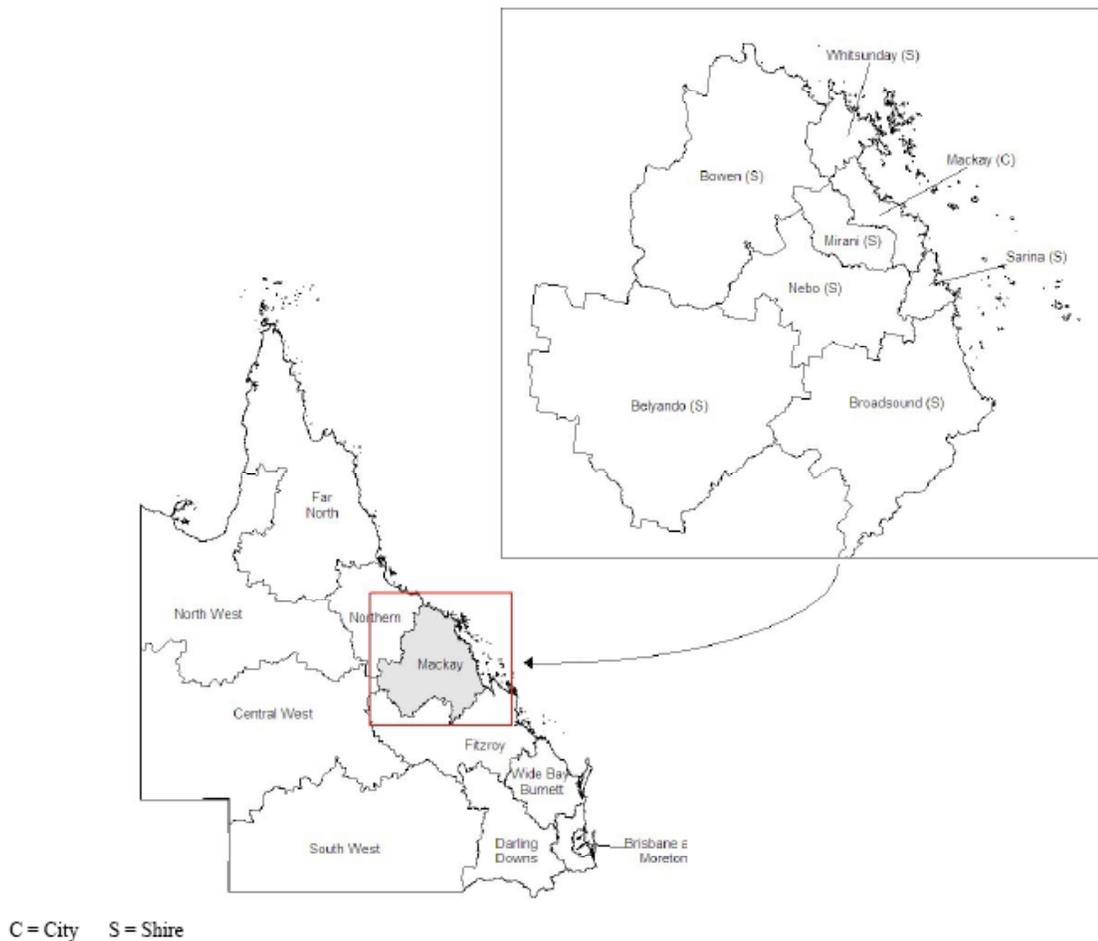
The Mackay Statistical Division as defined by the Australian Bureau of Statistics is a region comprising of eight local government areas See Figure G.1:

1. Belyando
2. Bowen
3. Broadsound
4. Mackay
5. Mirani
6. Nebo
7. Sarina
8. Whitsunday

The region covers a total area of 90,340 square kilometres, or 5.2% of the total area of Queensland. The estimated population of the region at June 2003 was 141,548 persons, or 3.7% of the total Queensland Population of 3,796,244 persons (OESR, 2005).

The Mackay Statistical Division is served by the Bowen, Mackay and Moranbah Health Service Districts.

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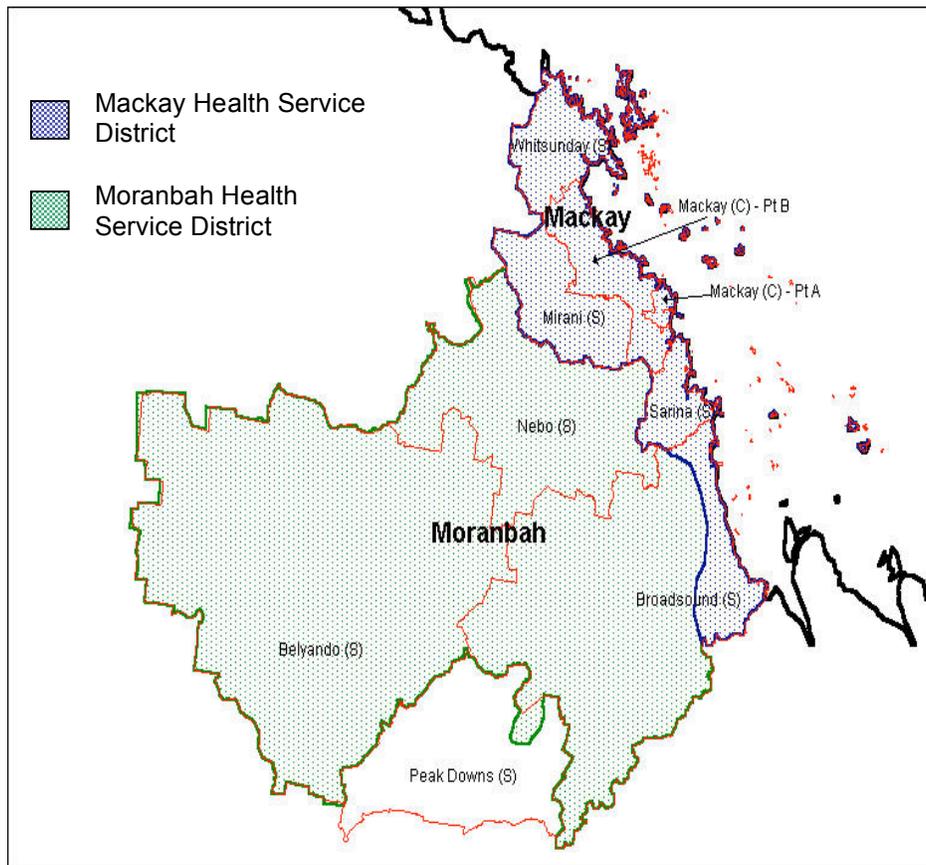
**Figure G.1 Mackay Statistical Division**

### **Mackay City (Local Government Area)**

Mackay is a coastal city located 1000km north of the Queensland state capital Brisbane and 360km north of the Tropic of Capricorn. It serves the Mackay Statistical Division, a region of over 90,000 square kilometres with an estimated population of 141,458 on June 30<sup>th</sup> 2003 and supports diverse industries including coal mining, engineering, sugar cane, cattle grazing, fishing and tourism (OESR, 2005).

The Mackay Local Government Area had a population of 82,288 persons on the 30<sup>th</sup> of June 2005, representing 2.1% of Queensland's population. It covers an area of 2,897 km<sup>2</sup> including approximately 100 km<sup>2</sup> of islands (Lindeman, Smith Group, Newry Group, Brampton, Carlisle, Keswick and St Bees) and extends from Alligator Creek in the south to O'Connell River in the north (OESR, 2006a).

## Mackay Health Service District



**Figure G.2: Boundaries of the Mackay and Moranbah Health Service Districts**

The Mackay Health Service District (Figure G.2) serves a population of 111,058 (estimated population 30<sup>th</sup> June 2003) living in five Local Government Areas (Queensland Health, 2006a):

1. Broadsound Shire (The costal part of the Shire, east of Connors Range)
2. Mackay City
3. Mirani Shire
4. Sarina Shire
5. Whitsunday Shire

Three Public Hospitals are maintained within the Mackay Health Service District:

1. Mackay Base Hospital (serving Mackay City and Mirani Shire, but also acting as the Base Hospital, providing specialist support services for all hospitals within the Mackay and Moranbah Health Service Districts)
2. Proserpine Hospital (serving Whitsunday Shire)
3. Sarina Hospital and Primary Care Centre (serving Sarina Shire and the costal portion of Broadsound Shire)

## **Mackay Injury Surveillance Network (MISN)**

Emergency Departments from all six public hospitals within the Mackay and Moranbah Health Service Districts (Clermont, Dysart, Mackay Base, Moranbah, Proserpine and Sarina) and the Mackay Mater Private Hospital's after-hours medical clinic, collect NDS-IS Level 2 Injury Data providing a regional sample for the Queensland Injury Surveillance Network. Data is not collected within the Bowen Health Service District.

## **Markov Property**

In probability theory, a stochastic process has the Markov property if the conditional probability distribution of the future state of that process depends only on the current state and is independent of past states, that is the path of the process up until the present (Wikipedia, 2006c). In social networks the current network structure can be used to predict the future structure of the network. Stochastic models using current triad configurations to predict the future structure of a network are known as Markov Random Graphs.

## **Monte Carlo Method**

Monte Carlo method refers to a statistical sampling technique used to approximate solutions to quantitative problems that cannot be easily solved. A Monte Carlo simulation calculates multiple scenarios of a model by repeatedly sampling values from the probability distribution of an unknown variable until a stable model is created. This method is often used when the model is complex, non-linear or involves more than a couple of uncertain parameters (Wikipedia, 2006d). The simulation typically involves multiple iterations (> 10,000) and therefore is heavily dependant on computer power.

## **Moranbah Health Service District**

The Moranbah Health Service District (Figure G.2) serves a population of 19,505 (estimated population 30<sup>th</sup> of June 2004) living in four Local Government Areas (Queensland Health, 2006b):

1. Belyando
2. Broadsound Shire (The hinterland part of the Shire, West of Connors Range)
3. Nebo
4. Peak Downs (that part of the shire which is in the town of Tieri)

Six health facilities are maintained within the Moranbah Health Service District:

1. Clermont Multi-Purpose Health Service
2. Dysart Hospital
3. Glenden Community Centre
4. Middlemount Community Health Centre
5. Moranbah Hospital
6. Tieri Community Health Centre

### **Modern / Modernity**

A term describing the particular attributes of modern societies. A good deal of sociological work is based on the assumption of a sharp divide between pre-modern and modern societies. Modernity is distinguished on economic, political, social and cultural grounds. For example, modern societies typically have industrial capitalist economies, democratic political organisation and a social structure founded on the division into social classes. There is less agreement on cultural features, which are said to include a tendency to the fragmentation of experience, a commodification and rationalisation of all aspects of life, and a speeding up of the daily pace of life. There is disagreement about the periodisation of modernity, some writers associating it with the appearance and spread of capitalism from the fourteenth to the eighteenth centuries, some with the religious changes of the fifteenth century onwards (which provided the basis for rationalization) others with the onset of industrialisation in the late eighteenth and nineteenth centuries, and still others with the cultural transformation at the end of the nineteenth and the beginning of the twentieth century coinciding with modernism (an arts movement between about 1880 and 1950). Recently it has been argued that contemporary societies are no longer modern but postmodern (Abercrombie, 1994, p269).

### **National Data Standards for Injury Surveillance (NDS – IS)**

The National Injury Surveillance Unit, in conjunction with injury surveillance and prevention practitioners in Australia, has defined data standards for public health injury surveillance. This provides for two levels of surveillance data.

- Level 1 is proposed for use in basic, routine public health surveillance.
- Level 2 surveillance data builds on the first level with more extensive classification of some items and several additional data items. This dataset is suitable for use in emergency departments in hospitals and in other settings where at least some resources are available for injury surveillance data collection (NISU, 1998).

### **Network**

“A group of people who exchange information, contacts, and experience for professional or social purposes” (Moore, 1997, p899).

A social network consists of a finite set or sets of actors and the relation or relations defined by them. The presence of relational information is a critical and defining feature of a social network (Wasserman and Faust, 1994, p20).

### **Networking**

“Exchanging information for mutual benefit. It does not require much time or trust nor the sharing of turf” (Himmelman, 2001, p277).

### **New Public Health**

The new public health is the totality of the activities organised by societies collectively (primarily lead by governments) to protect people from disease and to promote their health. These activities occur in all sectors and include the adoption of policies which support health. They ensure that social, physical, economic and natural environments promote health. The new public health is based on the belief that the participation of communities in activities to promote health is essential to the success of these activities as is the participation of experts. The new public health works to ensure that practices of the government and private sector (including the health sector) do not detract from health and wherever possible promote health (Baum, 1998, p510).

### **Old Public Health**

The old public health model is based on the discipline of epidemiology and the subject matter of the biomedical and behavioural sciences. It analyses the cause of disease in terms of factors in the individual and factors in the social and physical environment. Strategies are aimed at interrupting the chain of causation, with the traditional tools being education, the provision of services and legislation (O’Connor and Parker, 1995, p20).

### **Partner**

A partner is defined as “a person who shares or takes part with another or others, especially in a business firm with shared risks or profits, or either member of a married couple, or an unmarried couple living together” (Moore, 1997, p978). It is a derivation of the Middle English parcener – “joint heir”. Based on this derivation, a partnership implies a longstanding relationship between partners with mutual obligations mandated by contractual agreement or by common law that relates to most aspects of their shared work.

### **Partnership**

“The state of being a partner or a joint business or a pair or group of partners” (Moore, 1997, p 978).

### Population Health

Population health refers to the health of a population as measured by health status indicators and as influenced by social, economic, and physical environments, personal health practices, individual capacity and coping skills, human biology, early childhood development, and health services. As an approach, population health focuses on interrelated conditions and factors that influence the health of populations over the life course, identifies systemic variations in their patterns of occurrence, and applies the resulting knowledge to develop and implement policies and actions to improve the health and well being of those populations. (Dunn and Hayes, 1999, p57).

### Positivism

A doctrine in the philosophy of science, positivism is characterised mainly by an insistence that science can only deal with observable entities known directly by experience. The positivist aims to construct general laws or theories which express relationships between phenomena. Observation and experiment will show whether the phenomena fits the theory (Abercrombie, 1994, p322).

### Reciprocity

In directed relationships, reciprocity refers to the situation where both actors nominate each other. With directed data there are four possible dyadic relationships: A and B are not connected, A nominates B ( $A \rightarrow B$ ), B nominates A ( $B \rightarrow A$ ), or A and B nominate each other ( $A \leftrightarrow B$ ). Some theorist argue that there is an equilibrium tendency towards dyadic relationships that are either null or reciprocated. A network that has a predominance of null or reciprocated ties over asymmetric ties may be a more “equal” or “stable” network than one with a predominance of asymmetric ties (which might be more of a hierarchy).

There are (at least) two different approaches to indexing the degree of reciprocity in a network (Hanneman and Riddle, 2005):

1. The dyadic method calculates the number of reciprocated dyads as a proportion of the number of dyads with any tie (this in the method used in this study)
2. The arc method calculates the proportion of ties observed in the network that are reciprocated ties.

### Reductionism

“The tendency to or principle of analysing complex things into simple constituents. The doctrine that a system can be fully understood in terms of its isolated parts or an idea in terms of simple concepts” (Moore, 1997, p 1131).

### **Relation**

“The collection of ties of a specific kind among members of a group” (Wasserman and Faust, 1994, p20). For any group of actors, we might measure several different relationships (for example, in addition to formal diplomatic ties among nations, we might also record the dollar amount of trade in a given year). (Wasserman and Faust, 1994, p 20).

### **Relational Tie** see tie

### **Risk Factors**

“Characteristics of individuals (genetic, behavioural, and environmental exposure and sociocultural living conditions) that increase the probability that they will experience a disease or specific cause of death as measured by population relative risk ratios” (Green and Kreuter, 1999, p509).

### **Risk Ratio**

The mortality or incidence of a disease or condition in those exposed to a given risk factor divided by the mortality or incidence in those not exposed.

### **Safety**

“A state in which hazards and conditions leading to physical, psychological or material harm are controlled in order to preserve the health and well-being of individuals and the community” (Maurice, 2001, p238).

### **Snowball Sampling**

“A technique of finding research subjects. One subject gives the researcher the name of another subject, who in turn provides the name of a third, and so on” (Vogt, 1999).

### **Social Capital**

“The features of social organization, such as networks, norms and trust that facilitate coordination and co-operation for mutual benefit” (Putnam, 1995, p 67).

### **Sociogram**

Network data can be displayed as graphs, where a line indicates the presence of a relational tie linking two nodes or actors. Arrows are used if the relationship described is directional. In social networks this graph is called a sociogram. A sociogram gives a spatial representation of the relationships identified by respondents.

### **Structural Equivalence**

“Two actors are structurally equivalent if they have identical ties to and from all other actors in the network” (Wasserman and Faust, 1994, p 356).

### **Structural Holes**

A concept promulgated by Ronald Burt (1992) to explain the social power gained by social entrepreneurs acting at the interface between other disconnected actors or groups. Rather like an insulator in an electrical circuit, “structural holes” are areas of sparse relationships separating different subgroups. Each social “sub-circuit” carries its own “current” (different flows of information). Individuals that reside on the bridges that connect the different social sub-circuits assume importance because, like an electronic switch, they can control how the social system works by switching on or off interactions between different sub-groups contained within the social system. As a consequence, they assume a central role in any social interaction that depends on the productive exchange of information, expertise or resources between sub-groups.

### **Sustain**

“Support, bear the weight of, especially, for a long period or give strength to; encourage, support or give nourishment to or endure, stand; bear up against or maintain or keep” (Moore, 1997, 1376).

### **Tie, Relational Tie, Edge**

Actors are linked to one another by social ties. The range and type of ties can be quite extensive. The defining feature of a tie is that it establishes a linkage between a pair of actors (Wasserman and Faust, 1994, p 18).

### **Transitivity**

Transitivity is a measure of closure in social relationships. In a group of three actors “A”, “B”, and “C” (Triad), if actor “A” knows “B” ( $A \rightarrow B$ ), and “B” knows “C” ( $B \rightarrow C$ ), it is likely that over time A will be introduced to C and ultimately develop a relationship (i.e. if  $A \rightarrow B$  and  $B \rightarrow C$  then it is more likely that  $A \rightarrow C$ ). This tendency for relationships between three actors to close is called transitivity (Scott, 2000).

### **Triad**

Many important social network methods focus on the triad: a subset of three actors and the ties among them. Balance theory has informed and motivated many triadic analyses. Of particular interest is whether the triad is transitive (if actor i “likes” actor j, and j in turn “likes” actor k, then actor i will also “like” actor k), and whether the triad is balanced (if actors i and j like each other, then i and j should be similar in their evaluation of a third actor k, and if i and j dislike each other, then they should differ in their evaluation of a third actor, k). (Wasserman and Faust, 1994, p 19).

### **Utilitarianism**

This social philosophy placed the satisfaction of the individual’s wants (utility) at its core. Consequently the greatest good was defined simply as the greatest happiness for the greatest number of people. Its main impact on the social sciences has been via its model of social action in which individuals rationally pursue their own self interests, and its conception of society as the aggregation of atomised individuals united by self interest (Abercrombie et al., 1994, p 442).

### **Whitsunday Shire (Local Government Area)**

The Whitsunday Shire is located about 1,100 km north of Brisbane in Queensland, Australia. The Shire encompasses the rural town of Proserpine, the coastal settlements of Cannonvale, Airlie Beach and Shute Harbour, and 74 resort and national park islands. The shire covers an area of 2,679 km<sup>2</sup> and had a population of 17,512 persons on the 30<sup>th</sup> of June 2005 (OESR, 2006b).

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