

COMMUNITY SAFETY PROMOTION NETWORKS: FROM METAPHOR TO METHODOLOGY

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STATEMENT OF ACCESS

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STATEMENT OF SOURCES

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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STATEMENT OF THE CONTRIBUTION OF OTHERS

I wish to acknowledge the contribution of my co-authors to a number of manuscripts included as part of this thesis:

1. Chapter 3, Collection of NDS-IS Level 2 Injury Surveillance Data in Regional Queensland; Dr Robert Pitt, Richard Hockey, Elizabeth Miles and Dr Reinhold Müller.

Richard Hockey extracted data from the Queensland Injury Surveillance Unit (QISU) data base. I conducted a literature review on emergency department injury surveillance systems, reviewed published data concerning injury in the Mackay and Moranbah Health Service District, analysed the QISU data set, and drafted the original manuscript which was circulated to my co-authors for editorial comment.

2. Chapter 4, Safe Communities: An Ecological Approach to Safety Promotion; Paul Vardon and Jacqui Lloyd.

The key concepts from this paper were the result of early brainstorming sessions involving Paul Vardon, Senior Health Promotion Officer with the Tropical Population Health Unit (TPHU) in Mackay, Jacqui Lloyd, Director of Health Promotion with the TPHU, and myself regarding the rationale for Mackay Whitsunday Safe Communities. As lead author I drafted the original manuscript after a literature review into the ecological basis on safety promotion. The injury iceberg was conceived by myself as a visual metaphor to illustrate Green and Kreuters (1999) social ecological model of health promotion, though the concept was refined in collaboration with my co-authors. This manuscript was published as a chapter in "Reducing Injury in Mackay North Queensland" edited by Reinhold Müller

3. Chapter 5, The Injury Iceberg: An Ecological Approach to Planning Sustainable Community Safety Interventions; Dr Jan Hanson, Paul Vardon, Kathryn McFarlane, Jacqui Lloyd, Dr Reinhold Müller and Dr David Durrheim.

A literature review regarding intervention and coalition sustainability was undertaken by myself and, in collaboration with Paul Vardon and Jacqui Lloyd, was published as a chapter entitled "Becoming Queensland's First Safe Community: Considering Sustainability from the Outset", in "Reducing Injury in Mackay North Queensland" edited by Reinhold Müller (see Appendix 22). I subsequently undertook a further literature review into the ecological foundations of sustainability in environmental systems culminating in the drafting of this manuscript. After comment from my co-authors the manuscript was refined and submitted to the Health Promotion Journal of Australia.

4. Appendix 20, Addressing Childhood Injury in Mackay: A Safe Communities Initiative; Kelly Hart, Kathryn McFarlane, Anthony Carter, Richard Hockey and Elizabeth Miles.

In 2003 I conducted an epidemiological analysis of all Emergency Department injury presentations in children under 15 years of age over a five year period from 1998 to 2002 in the Mackay and Moranbah Health Service Districts. This analysis was published by QISU in June 2003 in collaboration with Kelly Hart, the newly appointed Child Injury Prevention Officer and Kathryn McFarlane, Senior Health Promotion Officer with the Tropical Population Health Unit in Mackay to ensure that the local facilitators of the project had an intimate knowledge of the underlying epidemiology but just as importantly to ensure that the report was drafted in a way that made it accessible and understandable to non health professionals engaged in the ChIPP action group.

5. Appendix 21, Ecological Models for the Prevention and Control of Unintentional Injury; John Allegrante and Ray Marks.

I was invited to co- author a chapter entitled Ecological Models of Unintentional Injury Prevention in the textbook “Injury and Violence Prevention: Behavioural Science Theories, Methods, and Applications” edited by Andrea Gielen, David Sleet and Ralph DiClemente. The initial draft of the chapter had already been completed by John Allegrante, Senior Professor of Health Education at Teachers College, Columbia University and Ray Marks, Associate Professor of Health Education at Columbia University when I became involved. I contributed a number of new sections to the manuscript, which were ultimately incorporated in the introduction and conclusion, resulted in a major revision of the section on ecological models and new sections on community safety promotion and WHO Safe Communities. John Allegrante as senior author retained final editorial control over the manuscript. However my contribution to the final version of the manuscript was substantial.

6. Appendix 22, Becoming Queensland’s First Safe Community: Considering Sustainability from the Outset; Paul Vardon and Jacqui Lloyd.

A literature review regarding intervention and coalition sustainability was undertaken by myself and after comment from my colleagues Paul Vardon and Jacqui Lloyd was published as a chapter in the monograph, “Reducing Injury in Mackay North Queensland” edited by Ray Müller.

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Signature

Date

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SUMMARY

Injuries are preventable. However, discrepancy between academic, practitioner, community and political perceptions regarding injury causation remain an important barrier to mounting an effective response.

The biomechanical model of injury prevention dominated the late 20th century. Injury was defined as “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”. This reductionist perspective overlooks the importance of the psychological and sociological determinants of injury. Safety has physical, psychological and sociological dimensions. Interventions aiming to achieve long term improvements in community safety must seek to develop sustainable safety promoting characteristics within the target community.

The thesis proposes the “injury iceberg”, a unifying cognitive framework designed to facilitate productive dialogue between the academic, professional and community groups required to design and implement effective community based safety promotion interventions. The individual is, metaphorically speaking, the “tip of the iceberg,” just one part of a complex ecological system. While they may be the most visible part of this system, important determinants of behaviour and environmental risk are “hidden below the waterline.”

While this comprehensive, wholistic model of safety promotion offers many opportunities to address a community’s injury problem, it also poses special challenges. The dynamic, multi-causal, multi-level nature of community safety means it is resistant to interventions designed by a single profession or agency. Promoting safety requires a multifaceted, comprehensive response.

Networks have been advocated as an effective response to the complex problems that plague modern society. Health practitioners, researchers, administrators and politicians have all embraced the network metaphor. By networking, sharing knowledge, expertise and resources, it is argued that

communities can be empowered to generate the critical mass of expertise, resources and activity required to promote their own health and safety.

The Mackay Injury Surveillance Network was established in 1997 as part of the Queensland Injury Surveillance Network. It reported 35,211 injury presentations to regional Emergency Departments over the three year period from the 1st of January 1998 to the 31st of December 2000. This represented an age standardised rate of 12,584 per 100,000 for males, 2.0 times that observed in South Brisbane, and 6,319 per 100,000 for females, 1.7 times that observed in South Brisbane, suggesting that Mackay, like other Australian regional cities, had comparatively high injury rates in relation to major urban centres.

Mackay Whitsunday Safe Communities was launched in February 2000 in response to excess injury morbidity observed in the region. In keeping with contemporary wisdom it formed a collaborative network. Given that Mackay Whitsunday Safe Communities used a social process, a collaborative network, to achieve its public health objectives, it was important to evaluate the network using a research tool able to analyse the structure and function of this social system. The standard approach used by epidemiologists and health promotion researchers is to define a population and study a representative sample of individuals with this population. A key assumption is that the attributes and behaviour of individuals are independent. However, in human systems, the interdependence of actors and their social and physical environment is an essential characteristic of human social interaction. To meaningfully understand how social systems work, research tools must be able to describe and model the inter-dependence of human social systems.

This thesis used social network analysis to evaluate Mackay Whitsunday Safe Communities. Social network analysis is a quantitative sociological methodology that maps and analyses the relationships observed in a social network. By collating this set of relationships, it is possible using graph theory to mathematically describe and analyse a social system. Social network analysis therefore has the capacity to model the interdependent interaction between

individuals, their immediate interpersonal environment and the overall social system. It therefore had the potential to provide unique insights into how safety promotion networks such as Mackay Whitsunday Safe Communities function.

The network was delineated using a snowballing technique that followed a chain of relationships emanating from the Mackay Whitsunday Safe Communities Network Support Group over three survey waves. Respondents were asked to actively recall relationships with people they considered facilitated their contribution to community safety, including people who were not members of Mackay Whitsunday Safe Communities. This allowed the identification of an external support network that may also contribute to the capacity of the network.

Social network analysis proved a powerful tool, providing diagrammatic representation of the social structure and quantifying important changes in the structure and function of community safety promotion network and its external support network. Since the network was established the number of relationships doubled from 500 to 1002, the relational distance separating network members decreased (average distance reduced from 3.9 to 2.7) and cohesiveness of the network increased (density increased from 0.022 to 0.036). There was increased tendency for group formation (clustering coefficient increased from 0.30 to 0.50) and a more centralised structure (centralisation index increased from 18% to 43%). Mackay Whitsunday Safe Communities had clearly succeeded in developing cohesive social capital – the ability to collaborate for mutual benefit.

However, social network analysis also provided compelling evidence that a small number of well-connected social entrepreneurs played an important facilitative role in network activities. Whether measured in terms of direct social influence, efficiency of communication, or brokering potential, six actors were disproportionately influential, maintaining 44% of all relationships and brokering 52% of in-kind, 54% of human and 66% of financial investments made in the network. They provided an important social conduit for the transfer of information, expertise and resources within the system.

In 2004 the network accessed an estimated 6.5 FTE of staff time and \$0.9 million dollars. However, Mackay Whitsunday Safe Communities is an open network. It can only be properly understood in the context of its external support network. While rich in social resources, the discretionary in-kind, human and financial resources mobilised within this community network were limited. These resources were largely accessed from, and controlled by, an external support network. Open systems never achieve equilibrium, a theoretic state of in which the resources produced by the system are sufficient to sustain system function. Rather, open systems can only be sustained in steady state, a dynamic state in which the flux of resources into and out of the system are sufficient to maintain network function. The entrepreneurial bridging relationships that unite network members around a cause and facilitate access to the in-kind, human, financial and social resources necessary to maintain network productivity are therefore critical to ensure the sustainability of community safety promotion networks.

Maintaining a functional safety promotion network has a cost. In this study the number of relationships maintained by network members was strongly correlated with the amount of time they invested in network activities. However, the relational pressure this placed on the network facilitators was evident. As a group they process 258 incoming relationships (43 relationships per facilitator), compared with 1.8 incoming relationships for other network members.

This network analysis identified that two types of social capital were necessary to develop and sustain a productive community safety promotion network: cohesive social capital and entrepreneurial social capital. The development of stronger, dense relationships (cohesive social capital) meant that Mackay Whitsunday Safe Communities was better positioned to co-operate for mutual benefit and thereby promote safe standards of community conduct and a safe physical environment. However, to develop this state and facilitate a sustainable resource base to maintain it, the entrepreneurial social capital of key network facilitators appeared to be critical component of network function.

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LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
AIPN	Australian Injury Prevention Network
ATODS	Alcohol, Tobacco and Other Drugs Service, Queensland Health
BSCAT	Building Safer Communities Action Team (Whitsunday)
CCPAT	Community Crime Prevention Action Team (Mackay)
ChIPP	Child Injury Prevention Project (Mackay)
DES	Department of Emergency Service
ED	Emergency Department
JCU	James Cook University
LGA	Local Government Area
MBH	Mackay Base Hospital
MCC	Mackay City Council
MWSC	Mackay Whitsunday Safe Communities
MWSC & SN	Mackay Whitsunday Safe Communities and Support Network
MVA	Motor Vehicle Accident
NDS-IS	National Data Standards for Injury Surveillance
NSG	Mackay Whitsunday Safe Communities Network Support Group

QH	Queensland Health
QISU	Queensland Injury Surveillance Unit
QPS	Queensland Police Service
QT	Queensland Transport
RAAG	Road Accident Action Group
SHOROC	Shore Regional Organisation of Councils, comprising Mosman, Manly, Warringah and Pittwater on Sydney's Northern Beaches
SLA	Statistical Local Area
SN	Support Network (of Mackay Whitsunday Safe Communities)
SPHTMRS	School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University
TPHU	Tropical Population Health Unit, Queensland Health
WHO	World Health Organisation
WSC	Whitsunday Shire Council