

# **Rural Health Equity: A Case Study**

by

**Lisa A. Caffery**

BA QLD, GCBU USQ, MPRL USQ

Thesis

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Associate Professor Olav Titus Muurlink

Professor Andrew W. Taylor-Robinson

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## Abstract

*Case study methods are a valuable tool in health services research...it is a serious and formal craft, not just an exploratory and informal tool (Yin, 1999, p. 1209)*

A health divide exists between regional and urban Australia, one which has deep roots in policy, people and place. About one third of Australians live in rural or remote communities. A significant and enduring issue for many of these residents is the lack of health care or medical services close to home. There is scant scholarly emphasis on health equity in small-scale, non-indigenous rural and remote settlements with a population of 2,000 people or less. This translational research project encompasses a community-based case study of applied health equity theory at work in a rural health setting. An interpretive approach using both quantitative and qualitative methods guided this investigation to map the rural health strengths and constraints of an atypical small-scale rural and remote district located in Central Queensland, specifically the area locally known as The Gemfields. The study explores the notion of health equity with reference to longstanding health disparities in the study area that encompasses the small towns of Anakie, Rubyvale, Sapphire and The Willows. The project aims to critically examine existing health care services and rural health determinants in The Gemfields in order to better understand why health inequalities stubbornly persist in this marginalised remote settlement. The study utilises a novel combination of community mapping, socioeconomic assessment and health equity audit tools to delineate health care service capabilities and capacities, while understanding how health equity can be realised in everyday praxis within a small-scale rural and remote settlement. The objective is to generate new insights into how to measure health equity within the rural and remote health context. Additionally, the project aims to create a new evaluation tool to rapidly assess health equity in small-scale rural and remote communities.

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## List of Abbreviations

Abbreviation	Explanation
ABS	Australian Bureau of Statistics
ACAS	Aged Care Assessment Service
AHPF	Australian Health Performance Framework
ASGS	Australian Statistical Geography Standard
BCHEP	Baseline Community Health Equity Profile
CAQDAS	Computer-Assisted Qualitative Data Analysis Software.
CACP	Community Aged Care Package
CHMHW	Central Highlands Mental Health & Wellbeing
COREQ	COnsolidated criteria for REporting Qualitative research
CQHHS	Central Queensland Hospital and Health Service
ED	Emergency Department
GP	General Practitioner
HEAT	Health Equity Assessment Tool
HEIST	Health Equity Individual Screening Tool
HELP	Health Equity Locale Profile
HACC	Home And Community Care
LARU	Local area Assessment and Referral Unit
MM	Australian Modified Monash Model
MPC	Multi-purpose centre
NDIS	National Disability Insurance Scheme
NP	Nurse Practitioner
OECD	Organisation for Economic Co-operation and Development
PHN	Primary Health Network
PTS	Patient Travel Subsidy
QAS	Queensland Ambulance Service
RACGP	The Royal Australian College of General Practitioners
RHR	Rural Healthy People
RIPERN	Rural and Isolated Practice Endorsed Registered Nurse
ROC	Rural Outpatient Clinic
SDG	Sustainable Development Goals
SEIFA	Socio Economic Indexes for Areas
WHO	World Health Organization

## Glossary of Terms

Term	Explanation
Case study	“The study of an issue examined in one or more cases within a bounded system such as a setting or particular context,” (Liamputtong, 2013).
Community	A shared geography – a place that unites a group of people
Context	The circumstances relevant to something under consideration and the circumstances or facts that surround a particular situation, event, etc. (Acar, Tarakci, & van Knippenberg, 2019; Macquarie Dictionary, 2017)
Disadvantage	“A term that is often used to describe inequity faced by people in poorer circumstances. It is socially constructed, imposed on people and limits their opportunities in life or health,” (Vilshankaya & Stride, 2003)
Equality	“The state of affairs that prevails when all individuals and/or groups of people are given equal treatment, regardless of need or outcome,” (VicHealth, 2015a).
Equity	<p>“Equity is concerned with how fairly resources are distributed throughout a group of people according to the needs of a population and not the individual. Equity is the principle of equal access to health care resources (use or quality) based on equal need,” (De Looper &amp; Lafortune, 2009, p. 3)</p> <p>“Health equity is the notion that all people should have a fair opportunity to attain their full health potential, and that no one should be disadvantaged from achieving this potential if it can be avoided,” (VicHealth, 2015c, p. 4).</p> <p>“Health inequities are the differences in health outcomes and their risk factors between social groups that are socially produced, systematic in their distribution, avoidable, unfair and unjust,” (Whitehead, 1992).</p> <p>“The state in which everyone has the opportunity to attain full health potential and no one is disadvantaged from achieving this potential because of social position or any other socially defined circumstance,” (VicHealth, 2015a, p. 14).</p> <p>“The absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically or geographically,” (World Health Organization, 2020a).</p>
Functional health	Health status is gauged by a capacity to perform basic daily activities such as participating in the workforce.
Health disparities	“Differences that exist among specific population groups in the attainment of full health potential. Disparities are differences in health or in the key determinants of health, such as education, safe housing, and discrimination, which adversely affect marginalised or excluded groups.

	Health disparities are the result of the systematic and unjust distribution of critical conditions,” (Brennan Ramirez, Baker, & Metzler, 2008, p. 8)
Health asset	“Any factor or resource which enhances the ability of individuals and communities to maintain and sustain health and wellbeing. This refers as much to mental, social and other resources as it does to material and physical resources, as factors that help build and maintain health and wellbeing,” (Hopkins & Rippon, 2015, p. 3).
Health equity	<p>“When everyone has the opportunity to attain their full health potential and no one is disadvantaged from achieving this potential because of their social position or other socially determined,” (Whitehead &amp; Dahlgren, 2006).</p> <p>Means that “everyone has a fair and just opportunity to be as healthy as possible. This requires removing obstacles to health such as poverty and discrimination, and their consequences, including powerlessness and lack of access to good jobs with fair pay, quality education and housing, safe environments, and health care,” (Country Health Rankings, 2021).</p>
Health inequality	<p>“Describes differences in health experience and health outcomes between different population groups according to socioeconomic status, geographical area, age, disability, gender or ethnic group,” (Goodrich &amp; Pottle, 2005, p. 2).</p> <p>A term often used interchangeably with ‘health inequities’. “Health inequalities are unavoidable and include biologically determined differences in health status between population groups. Health inequalities can lead to health inequity,” (World Health Organization, 2020b).</p>
Health inequities	A term that “designates the differences in health status between population groups that are socially produced, systematic in their unequal distribution across the population, avoidable and unfair,” (Whitehead, 1992).
Horizontal inequity	“Horizontal inequity indicates that people with the same needs do not have access to the same resources,” (Starfield, 2011, p. 15).
Implementation Science	“The scientific study of methods translating research findings into practical, useful outcomes. In a health setting it is the application of effective and evidence-based interventions, in targeted settings, to improve the health and well-being of specific population groups,” (Rapport et al., 2018).
Innovation	“The generation, development, and implementation of new ideas or behaviours. Innovations might be new products, processes or services, technologies, organisational structures or administrative systems, or new plans or programs,” (Damanpour, 1996, p. 694).
Levelling up	“Taking action to improve the overall health of the population, reducing the steepness of the social gradient,”(Whitehead & Dahlgren, 2006)
Partnership	“A purposive relationship between two or more parties (individuals, groups, or organisations) committed to pursuing an agenda or goal of mutual benefit,” (Berkowitz, 2000).

Primary Health Care (PHC)	It is “usually the first point of contact people have with the healthcare system. It provides comprehensive, accessible, community-based care that meets the health needs of individuals throughout their life. This includes a spectrum of services from prevention (i.e. vaccinations and family planning) to management of chronic health conditions and palliative care,” (World Health Organization, 2018b).
Rural and Remote Health	The definitions that are precise and have widespread consensus are difficult to obtain. This research project will, in part, aim to contribute the refining of ‘rural’ and ‘remote’ in the Australian context. In general terms, rural and remote health describes all geographic areas located outside Australia's major cities. This includes areas that are classified as inner regional (RA2), outer regional (RA3), remote (RA4) or very remote (RA5) under the Australian Statistical Geography Standard (ASGS) (Australian Bureau of Statistics, 2018a)
Small-scale rural and remote settlement	A community located in a geographically rural and/or remote area with a population of 2000 people or less
Salutogenesis	“Refers to the study of the origins and causes of health and wellbeing, including the mental, social and other resources that people draw on and that influence their wellbeing. Salutogenesis contrasts with and complements the more familiar pathogenic model, which emphasises the study of the causes and treatment of illness and disease,” (Hopkins & Rippon, 2015, p. 3).
Semi-structured interview	Interview based on questions with some probing if required
Social determinants of health	<p>“The conditions in the environments in which people live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks ,”(Baciu et al., 2017).</p> <p>“The social determinants of health inequities are the social determinants of health – or the health-influencing social conditions in which people are born, grow, live, work, play and age – and the social processes that distribute these conditions unequally in society,” (VicHealth, 2015c, p. 4).</p>
Social determinants of health inequities	“The social determinants of health and the social processes that distribute these determinants unequally,” (Solar & Irwin, 2010).
Social gradient in health	“The graded relationship between social position and health, whereby health outcomes progressively improve with increasing social position,” (Marmot, 2005).
Social innovation	“With reference to rural health, is described as a “new effective practice of delivering health services to an otherwise under-served remote or rural population,” (Mitton, Dionne, Masucci, Wong, & Law, 2011, p. 462).
Thematic analysis	“Identification of themes through analysis of data often described as an inductive method of data analysis,” (Liamputtong, 2013).

Triangulation	<p>“A process of analysis that seeks convergence, corroboration, correspondence of results from different methods. Comparing different kinds of data (e.g. numbers and text, narratives, images) and/or different collection methods, for instance survey, polls, document analysis and interviews) to see whether they corroborate one another,” (Thomas, 2015).</p>
Rurality	<p>“In general, definitions of rurality are based on: population size/population density; geography/spatial indicators including a measure of travel time; and population characteristics weighted to determine degree of rurality,” (Adams et al., 2003, p. 3).</p> <p>“The concept of rurality is a socio-cultural construct incorporates elements of reality, myth, and the effect of rural living. Rural identity therefore includes objective and subjective influencers and should not be viewed as a homogeneous phenomenon but rather a range of individual experiences,” (Cheesmond, Davies, &amp; Inder, 2019, p. 46).</p>
Rural determinants of health	<p>“A more specific expression of the social determinants of health, include issues of geography and topography in addition to the social, economic and political factors that result in the persistent disadvantage in health access and outcomes of rural populations,” (Reid, 2019).</p>
Vertical Inequality	<p>“Vertical inequity exists when people with greater needs are not provided with greater resources,” (Starfield, 2011, p. 15).</p>
Wicked problems	<p>In the specific context of this project, wicked problems may be considered as “those whose definition is contested and whose contours are ill-formulated and inherently complex; no matter how they are defined, the problem at hand can be viewed as a nested symptom of another problem...” (Brinkerhoff, 2014, p. 333).</p> <p>“A range of social issues so named because of their bedevilling complexities, suggesting that they are not able to be resolved through traditional service-driven approaches,” (Conklin, 2006).</p>

### **Candidate's Statement**

By submitting this thesis for formal examination at CQUniversity Australia, I declare that it meets all requirements as outlined in the Research Higher Degree Theses Policy and Procedure.

### **Statement of Authorship and Originality**

By submitting this thesis for formal examination at CQUniversity Australia, I declare that all of the research and discussion presented in this thesis is original work performed by the author. No content of this thesis has been submitted or considered either in whole or in part, at any tertiary institute or university for a degree or any other category of award. I also declare that any material presented in this thesis performed by another person or institute has been referenced and listed in the reference section.

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Signature:

Lisa.A Caffery

Date:

24 June 2021

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## Prologue

The provenance of this research is personal: I moved to the Bowen Basin region in the heart of Central Queensland in 2007. For the next three years, my family and I lived in the mining communities of Middlesbrough and Thyer. These are purpose-built towns, reminiscent of Canberra, as Australia's 'artificial' national capital is to the nation, but on a much smaller scale and more isolated: designed to house coal mine workers and their families. Although remote, they are self-contained villages and the multi-billion-dollar mining companies which own them provide all the amenities and services you could wish for within a well-maintained, orderly, town precinct. One weekend, we decided to visit the nearby sapphire fossicking area locally known as The Gemfields, which was about a 150 km drive away to the south west. This trip had a profound effect on me, and I still cannot shake my first impression of the area. I remember feeling like we had somehow left Australia and been transported into a parallel universe akin to a developing country. The difference between the affluent mining communities I had just come from to this sapphire mining area was stark. Towns like Middlesbrough are home to some of the highest paid workers in Australia and yet an hour and half down the road were people living in ramshackle tin sheds on a 30 metre by 30 metre plot of red dirt in the middle of the bush. There were no street signs or obvious town plan. From the 'outsider' perspective, most dwellings looked dilapidated and barely fit for human habitation. Who lives here? What are they doing? Why on earth do they choose to live here? How do they sustain themselves? How do they access the services they need? These questions would haunt me every time I would visit these unique and fascinating communities over the next decade. During this time, I have met hundreds of wonderful people who live, work at and visit The Gemfields.

The red dirt of The Gemfields left such an imprint on me that when the opportunity arose to enrol for a PhD I immediately thought of this special place. Since I lived in the neighbouring town of Emerald and was employed as a member of the regional hospital and health service board (CQHHS), I decided to combine my intense personal curiosity about The Gemfields with my professional interest in rural and remote health. No doubt my close physical proximity to The Gemfields and working in rural and remote health has helped me to: firstly, move between the worlds of 'outsider' and 'insider'; and secondly, given me rare access to people who lived and worked in the community. Managing bias was always at the top of mind and carefully managed in how the research project was designed, the frameworks were selected and both quantitative and qualitative data were included.

When I commenced my doctorate in January 2018, I was quietly confident in my ability to research and write but this voyage has been like no other and no matter how carefully my project was planned I could not have anticipated the twists and turns that followed. As Robert Burns (1908) so wisely wrote: “The best-laid schemes o’ mice an’ men, Gang aft a-gley”, meaning that things often unfold in unexpected ways...and such was the case with my thesis. The biggest disrupter to my research plan was a once-in-a-century pandemic commonly referred to as COVID-19. At the start of my third year of study, in January 2020, news began to emerge of a potential influenza coronavirus - the speed and severity of which rivalled the 1918 Spanish Flu. As a board member of the CQHHS it became apparent that this issue was a real threat to our health service and by early March 2020 my responsibilities as the Deputy Chair of the CQHHS Board and Chair of the Executive Committee began to escalate. By the end of March, it started to become more difficult to juggle family commitments, PhD workload and non-executive director board duties. Just before I was about to commence the critical phase of writing up my results, I was forced to take an extended period of leave to home school my two young children and manage my professional commitments. This inevitably affected my momentum and ultimately pushed back my planned completion date.

An additional fallout of the pandemic was the financial impact on Australia’s higher education sector due to border closures and the sharp decline in international students. Revenue shortfalls led to a range of hasty cost-reduction measures, which included forced job losses of some academic staff. This resulted in the redundancy of my secondary supervisor Professor Andrew Taylor-Robinson from his post at CQUniversity. The news of Professor Taylor-Robinson’s severance was devastating as we had developed an excellent working relationship and I found his mentorship invaluable. Thankfully, Professor Taylor-Robinson graciously took up an Adjunct Professor role at CQUniversity and I was able to continue as a PhD candidate under his expert guidance.

I am certain that the stress of COVID-19 and Professor Taylor-Robinson’s dismissal played no small part in the final impediment to completing my PhD. In September 2020, I became totally incapacitated with severe back pain and was diagnosed with two herniated disks in my lower back (L4 & L5/S1). This led to multiple specialist appointments thousands of kilometres away in Brisbane and a back procedure to block the nerve. A twist of fate meant that I was forced to walk in the shoes of a typical rural health consumer having to overcome travel barriers to access vital health care! Thanks to modern medicine, intensive rehabilitation and a standing desk I was able to recommence writing this thesis in December 2020. I share these personal insights to

disclose the key influences and impacts I have encountered during the course of this dissertation. It also serves to set the scene for the reader of this thesis and provide some background context to the origins of my interest in the research topic and the difficult path traversed to reach the finish line.

## First Declaration of Co-Authorship and Contribution

### Title of Journal-Article:

*Under the regulatory radar: unregulated rural healthcare in Bangladesh and Australia*

### Submitted (Under Review) in:

*Health and Social Care in the Community*

### Author Details:

Pratima Durga <sup>a, \*</sup>, Lisa A. Caffery <sup>b</sup>, Andrew W. Taylor-Robinson <sup>c</sup>, Olav T. Muurlink <sup>d</sup>

<sup>a</sup> School of Business & Law, Central Queensland University, Brisbane, Australia

<sup>b</sup> School of Business & Law, Central Queensland University, Emerald, Australia

<sup>c</sup> School of Health, Medical & Applied Sciences, Central Queensland University, Brisbane, Australia

<sup>d</sup> School of Business & Law, Central Queensland University, Brisbane, Australia

### Nature of Candidate's Contribution

Contributor	Statement of Contribution
Durga, Pratima	Designed and conducted the Bangladesh component of the research (100%) First author and main contributor (40%)
Caffery, Lisa A	Designed and conducted the Australian component of the research (100%) Second author and main contributor (40%)
Muurlink, Olav T	Editing the paper (10%)
Taylor-Robinson, Andrew W	Editing the paper (10%)

Note: The above co-author (Pratima Durga) is a research higher degree candidate and it is anticipated that this shared publication will appear in her thesis in due course.

### Candidate's Declaration

*I declare that the publication above meets the requirements to be included in the thesis as outlined in the Research Higher Degree Thesis Policy and Procedure.*

Signature: Lisa A. Caffery

Date: 24 June 2021

## Second Declaration of Co-Authorship and Contribution

### Title of Journal-Article:

*Social Disrupters: constructing a new way to deliver primary health services in a rural setting*

### Published in:

*Australasian Journal of Regional Studies, Vol. 27, No 2, 2021, p237- 257*

### Nature of Candidate's Contribution

Contributor	Statement of Contribution
Author: Caffery, Lisa A	Designed and conducted the research (100%) First author and main contributor (50%)
Muurlink, Olav T	Second contributor & editing the paper (30%)
Taylor-Robinson, Andrew W	Editing the paper (20%)

See Appendix 26 for a copy of the published journal article.

### Candidate's Declaration

*I declare that the publication above meets the requirements to be included in the thesis as outlined in the Research Higher Degree Thesis Policy and Procedure*

Signature: Lisa A. Caffery

Date: 24 June 2021

### Third Declaration of Co-Authorship and Contribution

#### Oral presentation relevant to thesis: 2020 Conference presentation

Durga, P., Caffery LA., Taylor-Robinson A., Muurlink O. 2020 Innovation from necessity: two contrasting cases of remote area health access. 17<sup>th</sup> WONCA World Rural Health Conference (WRHC 2020), Dhaka, Bangladesh. (Shifted to virtual conference due to COVID-19.)

#### Nature of Candidate's Contribution

Contributor	Statement of Contribution
Durga, Pratima	Designed and conducted the Bangladesh component of the research (100%)  First author, main contributor and presenter (40%)
Caffery, Lisa A	Designed and conducted the Australian component of the research (100%)  Second author and main contributor (40%)
Muurlink, Olav T	Editing the paper (10%)
Taylor-Robinson, Andrew W	Editing the paper (10%)

Note: The above co-author (Pratima Durga) is a research higher degree candidate and it is anticipated that this shared publication will appear in her thesis in due course.

See Appendix 28 for a copy of the submitted conference abstract.

#### Candidate's Declaration

*I declare that the publication above meets the requirements to be included in the thesis as outlined in the Research Higher Degree Thesis Policy and Procedure.*

Signature: Lisa A. Caffery

Date: 24 June 2021

# **1 Introduction**

*“Equity in health is not about eliminating all health differences so that everyone has the same level of health, but rather to reduce or eliminate those which result from factors which are considered to be both avoidable and unfair,” (Whitehead, 1990, p. 220).*

This chapter contextualises the thesis and provides background information on the value of researching the factors that contribute to health inequity in small-scale rural and remote areas. Rural and remote health disparities are a complex issue and could even be referred to as a wicked problem. In other words, an almost impossibly complicated problem that has many interconnected factors, are often multi-causal and have no clear solution (Brinkerhoff, 2014). For the eight million Australians who live in geographically isolated areas, equitable resource allocation and access to health services are not always determined by need (Australian Institute of Health and Welfare, 2017). An extensive review of scholarly literature found only limited published research done on health equity in small-scale rural and remote settlements with a population of 2000 people or less. This thesis seeks to fill in the gap in our knowledge by seeking to answer, and outline the scope, of potential research impacts and contribution to this subject.

## **1.1 Background to the research**

### **1.1.1 Purpose**

The purpose of this research is, firstly, to explore the notion of rural health equity at the settlement level (town or village), and, secondly, to illustrate how a cohesive and immersive approach to sociological and demographic health research can enhance our understanding of health equity in rural and remote communities. “Health inequity” is commonly characterised by a series of quantitative indicators. This narrow view ignores subtle situational anomalies hidden or absent from quantitative data sets. By integrating ‘outside’ quantitative health equity indicators with ‘inside’ qualitative data, this study endeavours to provide a balanced perspective on how place-based factors inhibit or enable health equity at the village level.

### **1.1.2 Study design**

O'Leary (2017) defines a case study as a comprehensive examination of a specific phenomenon within the boundaries of a defined space or situation. Generally, a case study can involve a detailed study of an individual, organisation, environment or event. In the case of this study, it involves a community (The Gemfields) and an environment (the health ecosystem). The case study research design is responsive to the status of current knowledge in this field. It is “a pragmatic, flexible research approach, capable of providing comprehensive in-depth understanding of a diverse range of issues across a number of disciplines” (Harrison, Birks, Franklin, & Mills, 2017). An explanatory case study was the chosen research methodology because it could use a number of data collection methods to triangulate new knowledge and bring new understanding to the medically under-served rural and remote community of The Gemfields, and thereby illuminate the problem of rural and remote health access more generally. This method takes a bottom-up approach to understanding and responding to the serious problem of rural health challenges. In other words, we will explore the real-life state of affairs of this small-scale remote community and provide an in-depth explanation of aspects of the community's rural health situation. The case study is a flexible methodology that integrates different types of data collection methods within a specific context. It also helps to depict complex real-life situations in greater detail. However, a potential disadvantage of case studies is the lack of academic rigour and the difficulty to make generalisations or explicit conclusions (Creswell & Poth, 2018).

## **1.2 Research context**

More than two-thirds of Australia is categorised as geographically remote (Australian Institute of Health and Welfare, 2018a). Three in every ten Australians, or approximately eight million people, live in territory that falls within this highly diverse category (Australian Institute of Health and Welfare, 2018a). More than a million of these residents have distinctly poorer access to basic medical care than those living in metropolitan Australia (Duckett & Breadon, 2013). That equity differential translates to significantly compromised health outcomes. People living in medically under-served areas tend to live shorter lives, experience greater incidences of disease and endure poorer access to health services compared to people who live in urban areas (Wakerman et al., 2008). For example, people who live in rural and remote areas experience higher death rates (1.3 times) than people living in major cities (Australian Institute of Health and Welfare, 2017).

Health disparities are often attributed to structural characteristics that are persistent and difficult to change (Beenackers, 2015). Previous research has identified a host of challenges associated with rural health inequity such as geographic spread, low population density, restricted mobility, limited resourcing, complex consumer health needs, as well as the higher costs of delivering rural and remote health care (Australian Institute of Health and Welfare, 2018a). Unfortunately, where one lives and proximity to an urban centre continues to be a significant social determinant of one's health status and health outcomes (McGrail & Humphreys, 2009). Despite decades of research and policy intervention, equitable access to health care remains an elusive aspiration for many people living in geographically isolated areas (Thomas, Wakeman, & Humphreys, 2015). Historically, approaches to rural and remote health have centred around a deficit model that tends to solely focus on system failures or drawbacks. Although deficit models are important to identify needs and priorities, consideration was also given to strength-based approaches and what works well in the defined study area. An 'asset model', which accentuates a community's ability to identify issues and activate solutions, endeavours to counterbalance the 'deficit model' approach (Hopkins & Rippon, 2015; Morgan & Ziglio, 2007; Van Bortel, Wickramasinghe, Morgan, & Martin, 2019).

From a health equity perspective, the need exists to reduce disparities in the delivery of health services to rural and remote communities in Australia and developing countries alike. However, the current research climate in this discipline area is constrained and mainly focuses on the identification of barriers rather than realistic, translational, evidence-based solutions (Mitton et al., 2011). There is a distinct lack of reliable empirical data about health equity in rural and remote communities in Australia (Australian Institute of Health and Welfare, 2018a). For this reason, the current project has undertaken to map health strengths and constraints in a detailed case study to better understand health equity in small-scale rural and remote communities. Principally, this investigation was constructed to determine the observed status of health equity in a small-scale, rural and remote town in the Central Queensland precinct of The Gemfields.

### **1.3 Research setting**

The case study was based in the rural and remote community known as The Gemfields, which is located 50 km west of Emerald in the Central Highlands region of Central Queensland, Australia. The closest large metropolitan centre is Rockhampton, which is a four hour drive east of the study area. The Australian Bureau of Statistics' Australian

Statistical Geography Standard (ASGS) Remoteness Area (ABS, 2018a) classifies The Gemfields' level of remoteness as RA4 – Remote. Such a level of classification is corroborated by the Australian Government Department of Health (2019a) under the Modified Monash Model, in which the level of remoteness is cited as MM6 – Remote. The Australian Bureau of Statistics' Social Economic Indexes of Australia (2016d), which ranks the level of advantage/disadvantage at a small area level based on census data, lists The Gemfields as one of the most socioeconomically disadvantaged areas in Australia (lowest 10<sup>th</sup> percentile). The Gemfields was chosen pragmatically due to its close proximity to the researcher (who resides in Emerald) and the absence of any academic research on the area or its health services as well as it being an extreme or unusual case that can illustrate important aspects of rural health inequity.

## **1.4 Aim**

Only a few papers have been published on applied translational social research within the small-scale rural and remote health setting. Translational research is defined as “the process of applying ideas, insights, and discoveries generated through basic scientific inquiry to the treatment or prevention of human disease” (Fang & Casadevall, 2010, p. 563). This study explores the antecedents of health equity in the rural and remote context from a distinct perspective: it explores what the people who live and work in the study area perceive to be the factors that inhibit or enable health equity at the settlement level. It asks health sector workers and local residents to explain why longstanding disparities in rural and remote health care services exist in the highly socioeconomically underprivileged rural area known as The Gemfields (Australian Government Department of Health, 2019a and ABS, 2016a). The intention here is to develop important insights that can be applied to a global context. Health inequities between urban and rural areas are not unique to Australia. Insights gained from this project may also be transferable to other rural and remote settings in both developed and developing countries.

### **1.4.1 Research question**

The research question that addresses the aim of the research is:

*How do place-based factors inhibit or enable health equity at the local area level in the rural and remote settlement of The Gemfields in Central Queensland, Australia?*

The key objectives of this research are to:

1. Enable a comprehensive mapping of the rural determinants of health including the community health assets and deficits evident in The Gemfields;
2. Delineate the existing health care service capabilities and assess current capacities to meet community needs;
3. Develop a tool to rapidly assess health equity in a small-scale, rural and remote settlement; and
4. Identify how health equity be realised in everyday praxis within a small-scale rural and remote settlement like The Gemfields.

## **1.5 Scope**

The defined research scope for this project is within the geographic boundary of Central Queensland, specifically the region known as The Gemfields.

## **1.6 Research gap and contribution to knowledge**

This research is important because there is a significant paucity of research on local area level health data for remote areas. For example, the ABS National Health Survey does not include very remote areas of Australia (Australian Institute of Health and Welfare, 2018a). This applied research project will contribute to the field of knowledge through the identification and analysis of place-based health equity factors in a small-scale, non-indigenous rural and remote setting. From a theoretical perspective, this project has applied socioeconomic development theory to rural health equity. This is a unique theoretical combination and an understudied field of research with limited existing literature. The critical review of literature has demonstrated minimal scholarly consideration of this combined area of interest. In practical terms, this research directly responds to the current realities facing health care consumers in small-scale, non-indigenous, rural and remote settlements. New knowledge developed from this process will provide policy-makers, service providers and health consumers with the practical evidence required to devise, implement, monitor and evaluate the equitable provision of health care in small-scale rural and remote communities throughout Australia and in other countries.

This investigation contributes to a larger body of knowledge relating to the complexities of formulating innovative and equitable health solutions for small-scale rural and remote communities in the world's developing countries. The outcomes of this research will prove pertinent for statutory health boards, government policy-makers, public health authorities,

local communities and health consumers, all of whom are contemplating how to reduce health inequities at a settlement level and thereby to improve the liveability of their small rural towns as places in which to live, grow and work. It is anticipated that the outcomes of this study will apply to health delivery in rural and remote communities globally. Hence, the findings will contribute to a larger body of knowledge about the complexities of formulating innovative and equitable health solutions for rural and remote communities in developing countries worldwide.

This project aligns with Central Queensland University's research strengths and research focus in *Health Service Delivery*, with a special emphasis on issues associated with health equity in rural and regional communities. This is an applied research study that actively engages with key stakeholders in Central Queensland, which is another key priority for the university.

## **1.7 Impact**

The Australian Research Council places significant emphasis on publicly funded research making a tangible societal impact (improving wellbeing) or economic contribution (increasing productivity) (Australian Research Council, 2020). Impact relates to how research can be adopted or adapted to benefit society outside of academia. The National Health and Medical Research Council defines the impact of research as “the verifiable outcomes that research makes to knowledge, health, the economy and/or society, and not the prospective or anticipated effects of the research” (National Health Medical Research Council, 2020, p. 1). Likewise, international organisations like the European Research Council seek only to fund research endeavours that “can form the basis of new industries, markets, and broader social innovations of the future” (European Research Council, 2020). Creating value from knowledge has recently entered public discourse in Australia with increased community expectations of research having societal and economic relevance. The Australian Research Council has developed a national report to measure research impact and highlight the beneficial consequences of funded studies (Australian Research Council, 2019). In accordance with the NHMRC impact framework, Table 1 provides evidence of the knowledge-based capital produced as a result of this study. The outputs from this study are examples of implementation science whereby research findings are translated into practical and useful outcomes (Rapport et al., 2018).

Table 1: Summary of research impacts

<b>Type of impact</b>	<b>Rural and Remote Health Equity</b>
Knowledge	<p>The study has demonstrated the development of new knowledge by:</p> <ul style="list-style-type: none"> <li>&gt; isolating four dimensions of rural and remote health</li> <li>&gt; creating bespoke new health equity metrics (both qualitative and quantitative)</li> <li>&gt; adapting existing socioeconomic assessment tools to create new knowledge</li> </ul> <p>Research impact was achieved through:</p> <ul style="list-style-type: none"> <li>&gt; the production of publications (articles and journals)</li> <li>&gt; international conference presentation</li> <li>&gt; the development of new research tools and techniques</li> <li>&gt; filling health equity knowledge gaps for small-scale, non-indigenous rural and remote settlements</li> <li>&gt; the development of new data capture approaches</li> </ul>
Health	<p>Research findings contributed to:</p> <ul style="list-style-type: none"> <li>&gt; the development of evidence-based recommendations to improve the health and well-being of specific population groups.</li> <li>&gt; implementation of evidence-based practices in a rural setting</li> <li>&gt; future potential collaboration with non-government sector (CQ Rural Health)</li> <li>&gt; research capacity building with community partners</li> <li>&gt; potential health policy input aimed at improving health equity in a small-scale, non-indigenous rural and remote settlement of The Gemfields</li> <li>&gt; opportunity for changed clinical practice</li> <li>&gt; opportunity to advance the national conversation about health equity</li> </ul>
Social	<p>Evidence of improving the health of society and the wellbeing of the end user and the community:</p> <ul style="list-style-type: none"> <li>&gt; contribution to social policy</li> <li>&gt; improved identification of rural determinants of health</li> <li>&gt; illuminating the complexity of a phenomenon</li> <li>&gt; greater recognition of potential community, economic, social and health strengths</li> <li>&gt; development of critical consciousness; partnership-building; lobbying; advocacy and relationship-building</li> </ul>
Economic	<p>Evidence of economic research impacts include:</p> <ul style="list-style-type: none"> <li>&gt; quantifying the economic benefit of local primary health care facility cost in a small-scale rural and remote settlement</li> <li>&gt; quantifying the cost of avoidable presentations to a rural hospital Emergency Department</li> <li>&gt; leveraging additional funding through the submission of a post-doctoral federal grant - Primary care Rural Innovative Multidisciplinary Models (PRIMM)</li> <li>&gt; challenging the status quo and current models of care</li> <li>&gt; potential for regional economic impact through potential improved health outcomes</li> <li>&gt; bridging economic divide between patients and regional health service centres with digital connectivity</li> </ul>

## 1.8 Thesis plan

The purpose of the introduction is to explain the thesis topic and provide background to the value of researching health inequity in a small-scale, non-indigenous rural and remote settlement. The literature review provides a critical evaluation of previous research on this topic and contextualises the thesis within the existing chain of research. A considerable proportion of this dissertation is dedicated to presenting the research design, methodology and a detailed narrative of the findings with reference to the research questions. The thesis concludes with a summary of recommendations and a process for future knowledge translation. The following table (Table 2) presents an overview of how the thesis is structured.

Table 2: Thesis chapter structure

Chapter	Content
1	Introduction and overview of the study
2	Literature review
3	Research design
4	Results: Baseline community health equity profile
5	Results: Semi-structured interviews
6	Synthesis and discussion
7	Recommendations and conclusions
	References
	Appendices

## 1.9 Chapter summary

This chapter has introduced the central questions of why health inequity continues to persist in a rural and remote community such as The Gemfields and what factors contribute to this ubiquitous problem. The overall study design, context and setting, scope and definitions were presented, which inform how this research endeavour will create societal value while also closing a knowledge gap that exists at the nexus of rural and remote health, equity and community development. Chapter 2 will review the relevant current and formative literature so that the progress of knowledge in this research area can be evaluated, and highlight any identified gaps.

## 2 Literature Review

*“Of all the forms of inequality, injustice in health care is the most shocking and the most inhumane,” Martin Luther King (1966)*

### 2.1 Introduction

The previous introductory chapter provided a *raison d'être* for this dissertation. Subsequently, a brief survey of a range of relevant published texts was conducted by the researcher in order to frame the research question and shape the research purpose statement for this thesis. Adler and Clark (2014, p. 89) describe a literature review as “the process of searching for, reading, summarizing, and synthesising existing work on a topic or the resulting written summary of the search”. Chapter 2 endeavours to identify the theoretical underpinnings relating to this field of study, critically analyse the literature, link existing synergies between different resources and synthesise this body of knowledge to build a conceptual framework (Leavy, 2017; Oliver, 2012). In particular, this chapter draws on literature from several disciplines to understand better what is already known about the current state of rural and remote health in Australia and beyond, with a specific focus on the social determinants of health and health inequity. The resulting literature review provides context for this dissertation, informs the design of the project and verifies where the knowledge gaps exist in the literature.

#### 2.1.1 Structure and scope of literature review

The literature review was constructed around the primary research question in conjunction with identified knowledge gaps of the researcher with regards to case study methodology and other qualitative research methods. In terms of scope, the literature review focused on three overarching themes which are listed here: (i) dimensions of rural and remote health; (ii) social determinants of health; and (iii) health equity.

Several approaches were harnessed to identify and locate relevant articles to inform this literature review as well as maintain a connection to new research as it emerged during the period in which the project was conducted:

- Key search words or terms included: ‘health equity’; ‘health inequality’; ‘social determinants of health’; ‘rural health’, ‘remote health’, ‘rural and remote health’ and ‘health equity audit’;

- Academic literature was supplemented with non-academic or so-called ‘grey literature’, usually taking the form of unpublished documents from government sources and online research centres;
- A process of chain-referral (also referred to as snowballing) originating from seminal articles;
- Monthly search alerts from Google Scholar and BMC Health Services Research (as per the key search words listed above);
- References were selected based on currency (published in the last 20 years), those written in English and articles that focus on the identified topics; and
- The resulting literature review contains a broad overview of the current health system in Australia, the dimensions of rural and remote health, health inequity in terms of the rural-urban divide, and community development in relation to rural and remote health.

## **2.2 The Australian health ecosystem**

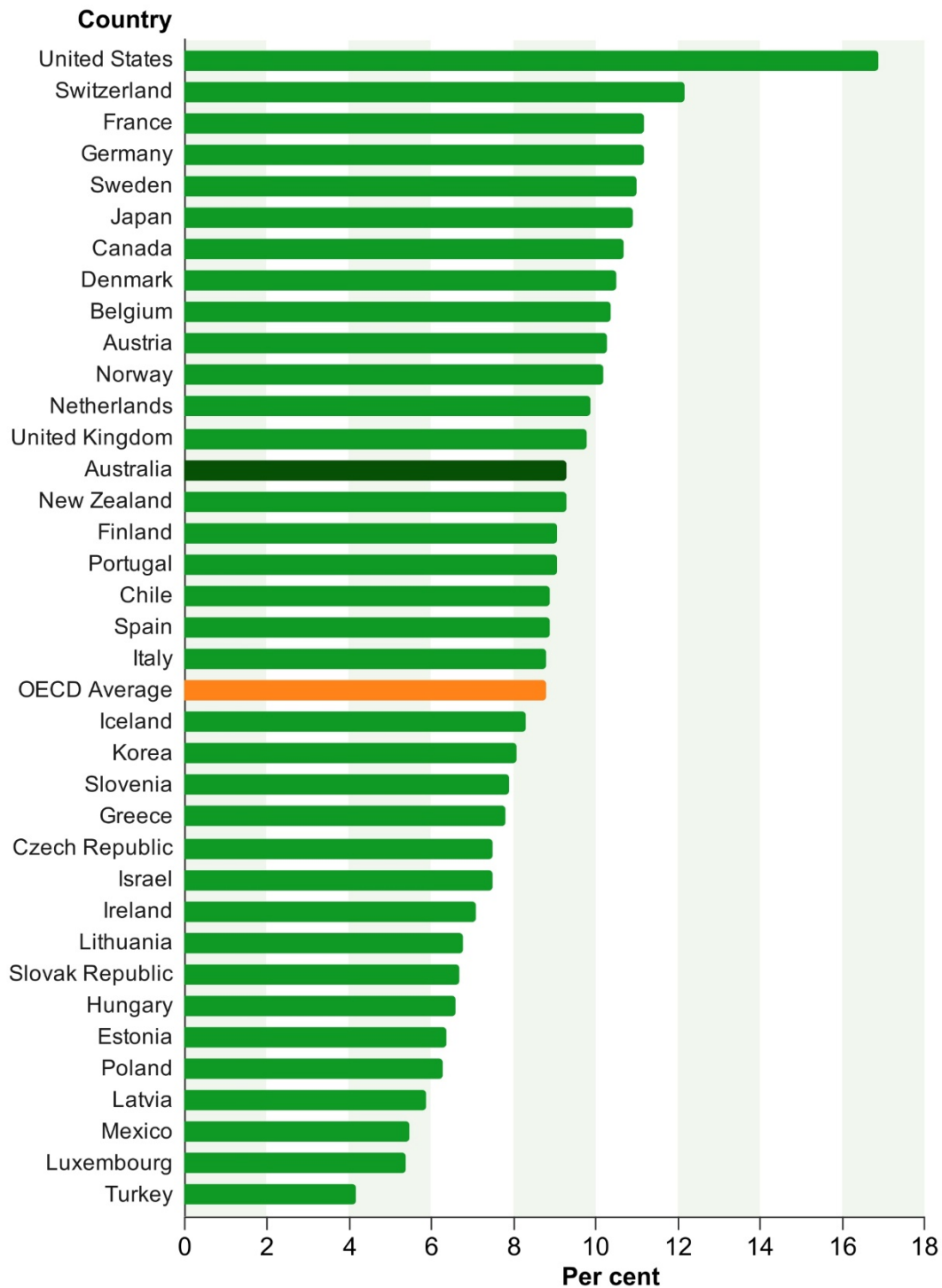
Health systems are highly contextual and vary in structure from country to country. The World Health Organization (WHO) suggests that a health system consists of all organisations, people and actions whose primary intent is to promote, restore or maintain health. This includes efforts to influence determinants of health as well as more direct health-improving activities (World Health Organization, 2007). The Australian health landscape is multi-tiered and involves a complex web of roles and responsibilities shared between public, private and not-for-profit providers. The nation’s healthcare system is organised as a networked model whereby all three levels of government have a shared duty of care for health services but with delineated roles and responsibilities (Biggs, 2013; Duckett & Willcox, 2015; PM&C, 2014). All three levels of government have agreed that the Commonwealth of Australia (the tertiary, federal level of government) has ‘lead responsibility’ for primary medical care (Swerissen, Duckett, & Moran, 2018).

The Australian Government is responsible for funding national programs such as universal Medical Benefits Scheme (MBS) and the Pharmaceutical Benefits Scheme (PBS), overseeing Primary Health Networks and regulating private health insurance. It also contributes funding to state and territory governments towards public hospital services. State and territory governments manage and partially finance public hospital services, as well as ambulance and community-based preventive public health services. Local government, the

level of government closest to the people, plays an active role in community-based health programs, food safety and other environmental health-related services (e.g. vector control and water fluoridation). Unlike the United Kingdom's National Health Service (NHS), this complex split of government roles means there is no single overarching governing body for Australia's health system. Consequently, many parts of the health sector are fragmented and not easy for end-users to navigate. The lack of coordination and connectivity between different health services can hinder the efforts of consumers with complex conditions or those who are socioeconomically or geographically disadvantaged (Curtis & Rees Jones, 1998; Pong & Pitblado, 2001; Regan & Wong, 2009). Although the Australian public health system is funded by taxation and is underpinned by the concept of universal access to all Australian citizens (Willis, Reynolds, & Keleher, 2016), access to services is not always equitable. This is relevant to a small-scale remote community like The Gemfields in Central Queensland, as the complicated structure of the healthcare system is not well understood by end users and access to many services (primary, acute or non-acute) is limited.

The World Health Organization (WHO) defines a high-performing health/medical system as one that can deliver effective, safe and high-quality care when and where it is needed (World Health Organization, 2017). Australia's healthcare sector is generally viewed as responsive, fair and efficient within the constraints of available resources and circumstances. When examining the grey literature, health care outcomes in Australia are some of the best in the world - high life expectancies, low mortality rates and high immunisation rates (Australian Institute of Health and Welfare, 2018a, p. 18). Australian's life expectancy is among the highest in the world – eighth highest for females (84.6 years) and fifth highest for males (80.4 years) when compared to other Organisation for Economic Co-operation and Development (OECD) member countries (Australian Institute of Health and Welfare, 2018a). Expenditure on health services (totalling AUD\$181 billion in 2016-17) as a percentage of GDP in Australia was around 10%. In other words, \$1 in every \$10 spent in Australia went to health. The average health expenditure as a proportion of GDP across all OECD countries was 9.0% (see Figure 1, below). The United States outspent all other OECD countries, spending 17.2% of GDP in the health sector.

Figure 1: Health expenditure as a proportion of GDP

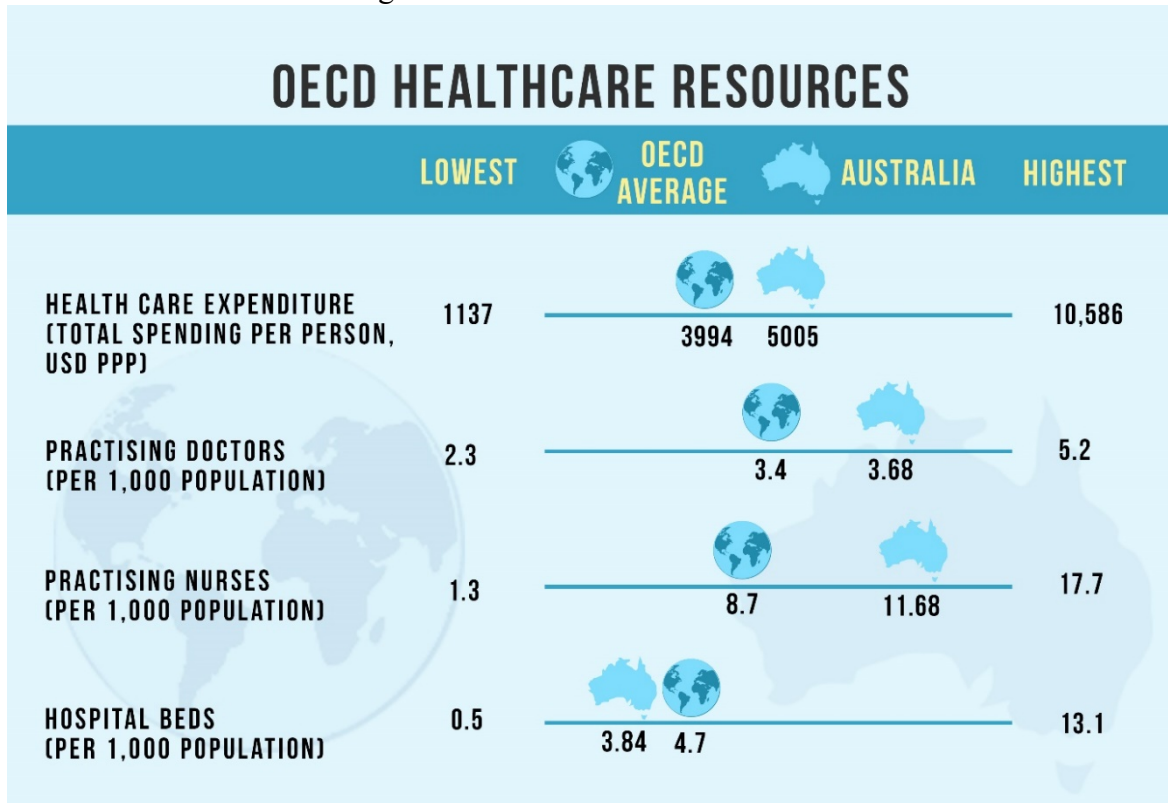


Note: Author created figure using the OECD System of Health Accounts, OECD Countries and OECD average, 2018 (OECD, 2019)

Human and infrastructure resources commonly serve as indicators to benchmark a country's healthcare performance. Healthcare expenditure (per capita) offers a relatively objective means of comparing the state of healthcare between one nation and another. Australia's performance is slightly above the average of comparable OECD countries, as illustrated in

Figure 2. Physical infrastructure, such as hospital beds per capita, is another quantifiable and categorical metric by which the health system may be assessed. However, in this instance, more hospital beds per thousand people is not necessarily an indicator of the overall integrity of a country's health system (Khan, Awan, Islam, & Muurlink, 2020; Phillips & Smallwood, 2010). For example, in a developed and affluent country like Australia effective preventative health services lead to fewer and shorter stays in hospital (hence less need for hospital beds). Population-to-medical/nurse practitioner ratios are another convenient way to determine access to health care services within a defined catchment area (Makuc, Haglund, Ingram, Kleinman, & Feldman, 1991). Australia performs above the average of comparable OECD countries in both practising doctors and nurses per thousand people. Whether Australia has too many or too few doctors continues to be in dispute (Duckett & Breadon, 2013; Murray & Wilson, 2017; Regan & Wong, 2009; Siewert, 2012; Thomas et al., 2015). However, what is undisputed is that the distribution of the health workforce throughout Australia is inconsistent and not evenly spread across the vast continent (Humphreys, 2009; Siewert, 2012). Duckett and Breadon (2013) report wide geographical gaps in the availability of primary care services in rural and remote areas of the country. The impact of health workforce shortages in regional Australia is well documented and access gaps to health services have persisted for generations (Harrison & Britt, 2011; McGrail & Humphreys, 2009; Mitton et al., 2011).

Figure 2: OECD healthcare resources

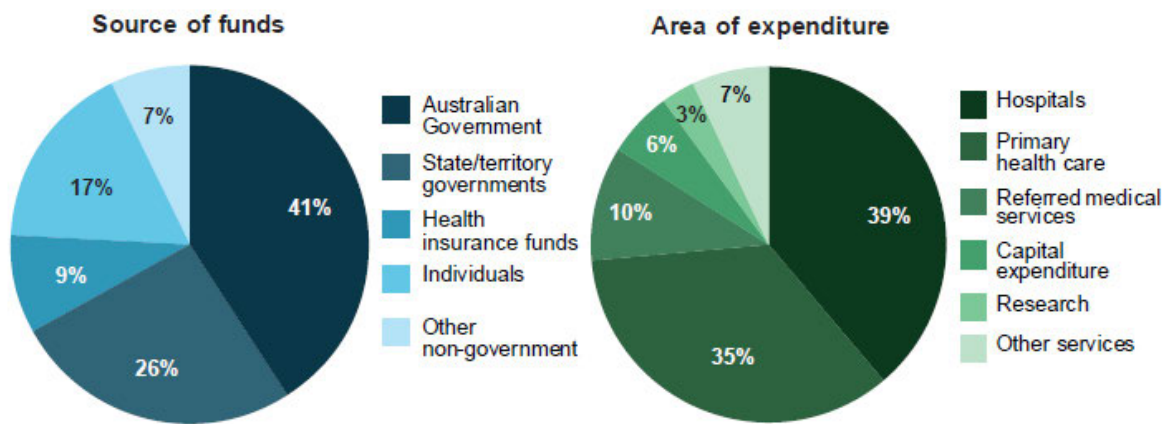


Note 1: Figure based on data collated from OECD data from 2018 (or nearest available year of data) that compares Australia's healthcare resources as one of the 35 OECD member countries (OECD, 2019)

Note 2: USD PPP = United States dollar purchasing power parities.

While government directs the overarching framework of the public health system and has a significant vested interest in this domain, the Australian healthcare system operates within a market-based economy. The delivery of health care across Australia is a mixed model that combines public, private and not-for-profit health services (Figure 3). Governments provide most of all health expenditure, funding two-thirds (67%), and non-government sources fund the rest (33%). Where does all this money go? The largest proportion of all health spending (39%) went towards operating Australia's 1,300 public and private hospitals, with public emergency departments responding to 7.8 million case presentations each year (Australian Institute of Health and Welfare, 2018b, p. 373).

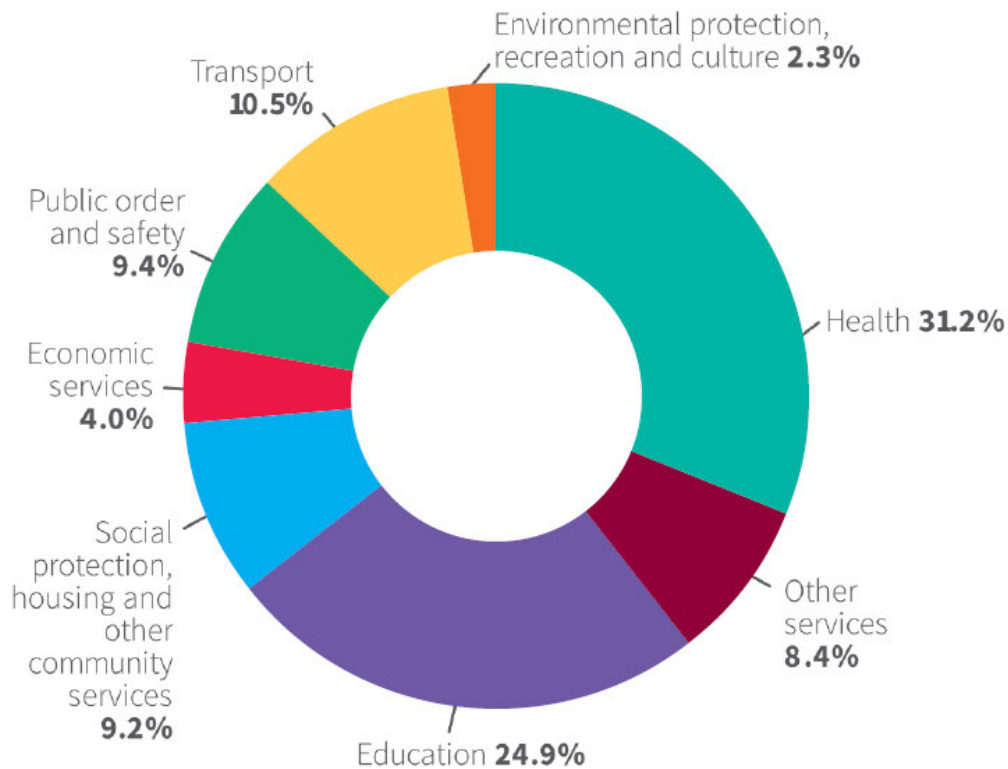
Figure 3: Healthcare expenditure in Australia



Note: Sourced from Australian Institute of Health and Welfare report on healthcare expenditure in Australia (Australian Institute of Health and Welfare, 2018b)

Although the public hospital system is free at point-of-use for all Australian residents, there are many aspects of the healthcare system that require a co-payment or full payment on a fee-for-service basis. For 2016-17, the Australian Institute of Health and Welfare estimates that the total annual expenditure on health averaged \$7,411 per person in Australia (2018a). That figure has grown by more than 50% in real terms over the past 10 years and there are no signs that this long-term upward trend will abate. Rising costs are being driven by an ageing population, and the rise of complex chronic diseases associated with people living longer. This growing public health burden weighs heavily on governments at all levels with spending on health making up a significant portion of the total budget. In Queensland, the total health budget for 2019-20 was \$19.233 billion (Queensland Government, 2019). As illustrated in Figure 4, this equates to 31.2% of the State's total expenditure for the fiscal year. Health is by far the largest expense for the Queensland Government – ahead of education (24.0%) and transport (10.5%).

Figure 4: Queensland State Budget Expenses 2019-2020



Note: Data sourced from the Queensland Budget 2019-2020 Expenses (Queensland Government, 2019)

The healthcare sector is Australia's largest employer. As of November 2018, more than 1.6 million people were employed in the delivery of health and social assistance services (Australian Government, 2019, p. 15). This accounts for 13.7% of the entire national workforce, a proportion that is projected to increase by a further 14.9% to May 2023. An ageing and growing population has driven much of the growth in this sector. The employment profile in this industry is skewed heavily towards older people. Twenty-three per cent of the health workforce are aged 55 years and older and almost 80% of workers are female (Australian Government, 2019, p. 15). All these data indicates a swift upward trajectory in government spending on health. What, however, is the impact of this trend and why does it matter in the context of this study? Growth in government spending is not unlimited as it cannot increase exponentially without restraint. It is highly unlikely that taxpayers will accept 50 per cent of the government's total budget spent on hospitals and health services. The time is fast approaching when this approach will no longer be feasible and innovative solutions will be required to find more cost-effective ways to deliver better and more sustainable health outcomes. There are also persistent and well-documented issues

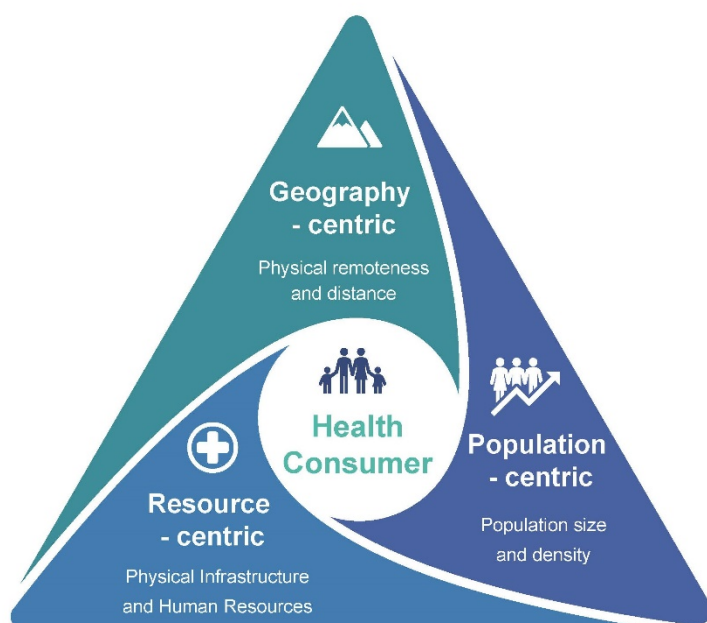
relating to health inequalities and variances in health status between different population groups, such as people living in rural and remote areas and metropolitan regions.

### **2.3 Dimensions of rural and remote health**

Understanding how rural and remote health is characterised in literature is important to this study because definitions shape services, influence funding and direct policy. ‘Rural’ and ‘remote’ health are contested terms and tend to be defined *ad hoc* to suit the particular geographical location or disciplinary background of the debate. ‘Rural health’ and ‘remote health’ as terms are often interchanged in scholarly literature and are used without a common meaning (Wakerman, Bourke, Humphreys, & Taylor, 2017). The United Nations Statistics Division (2017) acknowledges this lack of international standard for defining rural areas because of national differences in characteristics. In the research domain, experts suggest, health geography remains devoid of a strong conceptual base (Cheesmond et al., 2019; Reid, 2019) with theoretical concepts of rural and urban health inconsistent in ways that prevent an integrated understanding of health challenges (Pong & Pitblado, 2001). As such, these diverse perspectives have led to no common identity or agreed way to define ‘rural and remote health’.

For the past three decades the body of work exploring how ‘rural’ and ‘remote’ health (and the combined term ‘rural and remote health’) is defined has expanded substantially and reflects the growing social trend towards urbanisation and centralisation of the global population (O’Neill et al., 2017). An examination of the literature sought to evaluate how ‘rural’, ‘remote’ and the combined term are deployed and to identify any common themes that may emerge. Understandings of the terms ‘rural’ and ‘remote’ in the literature tend to include one or more of three variables: geography (distance/size); population (sparsity/density); and resources (human/infrastructure). Geographical approaches make use of spatial variables to define limits to access and are often combined with population approaches to try to define access in objective terms. The presence or absence of both human and infrastructure resources is a less common third approach, the use of which here included both categorical and continuous measures of remoteness/rurality. However, all three approaches underplay the consumer perspective that places them in a passive, often silent, role in key discourses. As illustrated in Figure 5 it also emerged that definitions can be operationalised as one of three distinct approaches: objective/subjective; categorical/continuous; and simple/composite.

Figure 5: Dimensions of rural and remote health definitions



Note: Original figure designed by the author

## Definitions of Rural and Remote Health

### Health Consumer

The forgotten factor relating to the functional health of an individual and their 'access signature'.

### Geography-centric concept

A definition based on the physical remoteness of a location and distance from metropolitan areas. This involves a categorical or continuous approach.

### Population-centric concept

A definition based on the population size or density of a place. This involves objective or subjective assessments.

### Resource-centric concept

A definition based on both human or infrastructure health resources. This involves both categorical/continuous approach and objective/subjective assessments.

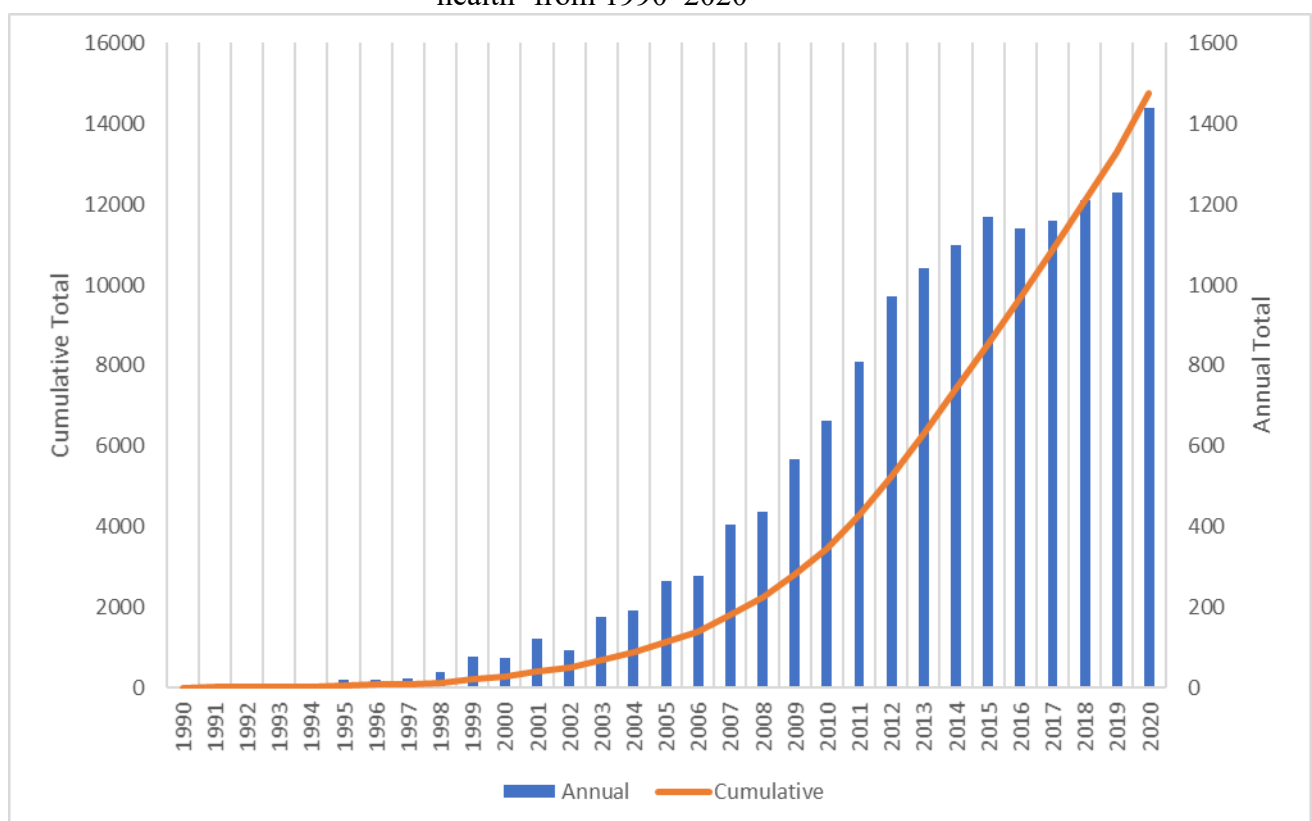
### 2.3.1 Growth in research interest

There is a substantial body of peer-reviewed evidence using the terms 'rural' and remote' in relation to health access, with the field becoming a research priority in Australia and other developed countries (Best & Myers, 2017; Gessert et al., 2015). In research terms, this is a relatively new phenomenon. In the 1980s, NASA began to explore the use of satellite capacity to promote access to educational and health services, sparking global interest in the potential of technology to bridge the gap between centralised health services and distant populations (Butrica, 1997). At the end of the 1980s, Hewitt (1989) released an influential book examining the impact of 'rural' definitions on health care access and policy in the US. In the early 1990s, rural voters in Australia began to voice their dissatisfaction with health services provision to small and isolated populations, and subsequently this issue gained significant political traction (Bourke, Taylor, Humphreys, & Wakerman, 2013). A Google Scholar search of the portmanteau term 'rural and remote health' illustrates this transition.

In response, Australian policy-makers created the new category of 'rural health' to describe the needs of resident populations located outside metropolitan or urban centres (Bourke et al., 2013). In 1994, the Australian Government released its first National Rural Health Strategy (Humphreys & Murray, 1994), giving impetus to the term 'rural and remote health'. The year 1994 also saw the launch of the now well-established journal *Rural and Remote Health*. While published in Australia, this has sections devoted to Africa, Europe and North

America, adding to the global dissemination of the term. Formal acknowledgement of rural populations and the introduction of this newly constructed category ensured that the combined term ‘rural and remote health’ started to appear in scholarly literature, registering 206 results in the last decade of the 20<sup>th</sup> century (1990–1999). With ‘rural’ and ‘remote’ now being bracketed together in policy discourse, the first ten years of the new millennium (2000–2009) heralded a surge in academic uptake of the term: ‘rural and remote health’ was used in 2,526 articles and scholarly reports (Google Scholar). In the ensuing decade (2010–2020) the trend continued: 11,271 published articles, a quadruple increase on the immediately previous decade. Figure 6 plots the dramatic rise in research interest in rural and remote health between 1990–2020 using the bracketed term.

Figure 6: Google Scholar annual and cumulative search results for ‘rural and remote health’ from 1990–2020



Note: Prepared by author based on data sourced from Google Scholar

### 2.3.2 Geography-centric concepts

Not surprisingly, narratives and definitions relating to rural and remote health frequently include a focus on spatial variables. Geographical taxonomies harness environmental parameters such as distance and territorial scale to define rurality, while also frequently building in population density (see the following section). Geographical definitions may be

broadly considered as taking one of two approaches: a categorical approach or a continuous approach. The categorical approach, which is more common in both literature and policy, frequently devolves into dichotomous groupings. Rurality and remoteness is thus often defined in contrast to ‘urban’ (Wakerman, 2004), with rural and remote defined in relatively uncomplicated terms as ‘non-metropolitan’ (Regan & Wong, 2009) or “outside the major cities” (Gregory, 2009; Wakerman & Humphreys, 2008). In Australia, this is the approach taken by the National Strategic Framework for Rural and Remote Health (Australian Health Ministers Advisory Council Rural Health Standing Committee, 2012), which assigns the combined term ‘rural and remote’ to describe all geographic areas located outside Australia’s capital cities. The Royal Flying Doctor Service of Australia also defines its sphere of operations in the same dichotomous way (Bishop, Ransom, & Lavery, 2017). This suggests a relatively clear-cut distinction between what is, and what is not, rural/remote.

The usage of this term extends beyond purely an Australian or Canadian context, where it is relatively common, to settings such as the much smaller Slovenia, in describing family medical practices (Klemenc-Ketis & Mitrovic, 2017), and Taiwan, where, by virtue of their distinct characteristics, ‘off-shore islands’ and ‘mountains’ are labelled as rural (Tan, Tseng, Chang, Lin, & Hsiao, 2005). Governments can simply assign a designation to administrative areas as ‘rural’ or ‘remote’ in a process that can seem artificial and convenient (Slifkin, Randolph, & Ricketts, 2004). Such approaches tend to obscure the fact that health access itself may operate on a continuum that relates to the degree to which communities are rural or remote, and are thus limited in policy or prognostic value. Continuous geographical approaches use the more flexible metric of distance, such as the number of kilometres by road or air from central health facilities. That is, measuring spatial proximity to a place or service. The benefit of using territorial units to describe rural and remote health is that it enables a direct and quantifiable measurement.

Turning to continuous approaches, geographical distance is a well-documented barrier for rural and remote consumers seeking health care services (Buzza et al., 2011; Cheesmond et al., 2019), and offers an objective and accessible metric for planners and scholars alike. The ASGS is an example of this approach (Australian Government Department of Health, 2019a). Developed by the Australian Bureau of Statistics, ASGS distinguishes ‘city’ from ‘country’ based on road distance to urban centres (Figure 7).

Figure 7: 2011 Australian Statistical Geography Standard (ASGS) remote structure  
Note: Migratory-offshore-shipping, and no usual address, are not mapped (ABS, 2016b;  
Bishop et al., 2017)



However, this structure is reassembled into a categorical geographical approach. Four broad categories of rural and remote are distinguished: inner regional (RA2); outer regional (RA3); remote (RA4); and very remote (RA5) (ABS, 2018a). Table 3 below displays Australian population data from the 2016 National Census according to ASBS remoteness area classifications.

Table 3: Area (and proportion) of Australian land mass, and population (and proportion),  
by ASGS Classification

Remoteness area	2016 population (ABS)	% of total
Major Cities of Australia	17,331,653	71.59%
Inner Regional Australia	4,341,032	17.93%
Outer Regional Australia	2,041,946	8.43%
Remote Australia	293,765	1.21%
Very Remote Australia	202,413	0.84%
TOTAL AUSTRALIA	24,210,809	100.00%

Note: Data collated by the author sourced from the Australian Bureau of Statistics (ABS, 2016c)

While recognising that the system is not without its flaws, Duckett and Breadon (2013) argue this is an objective way to classify different remoteness categories. It assumes that those

rural and remote areas grouped together are homogenous. Furthermore it underestimates the access issues emerging from small area variations within each region (McGrail & Humphreys, 2009).

### **2.3.3 Population-centric concepts**

As with geographical concepts, those that refer to population often devolve into dichotomies. The United States Census Bureau, for example, defines ‘rural’ as “any population, housing or territory NOT in an urban area”, proceeding to describe ‘urbanized areas’ as having a defined quantum of population (US Census Bureau, 2019). Also, like geographical concepts, population measures such as density that blend geographical and population elements offer relatively objective means of categorising a nation or state. However, such population-centric definitions are based on census data, which are collected at significant intervals of time— for example, every five years in Australia and every ten years in the US and United Kingdom. It is axiomatic that a census captures the population on one date, from which time onwards the data become gradually less accurate.

Nonetheless, such approaches offer planners some stability in terms of definition, at least until the following census. For example, the OECD defines a community as being rural if its population density is less than 150 inhabitants per square kilometre (OECD, 2011). This is a data-driven approach offering planners certainty, even if the cut-off is seemingly arbitrary. A more graduated consideration is provided by the Australian Modified Monash Model, which combines population size and geographical remoteness (Australian Government Department of Health, 2019b). This model has seven distinct categories ranging from ‘metropolitan’ to ‘very remote’. While 70% of the Australian population is categorised as living in a metropolitan area or major city (MM1 or ASGS-RA1), the remaining 30% resides in regional, rural and remote Australia (MM2-7 or ASGS-RA2-5). Table 4 lists example locations (in relation to this case study) using the Modified Monash Model.

Table 4: Comparison of Modified Monash Model, ASGC-RA Geographical Classification Systems

MM Category	Population Size	ASGC-RA	Description	Example location
MM1	All	RA1	Metropolitan areas	Brisbane, QLD
MM2	> 50,000	RA2	Inner & outer regional centres	Rockhampton, QLD
MM3	15,000 – 50,000	RA2/3	Large rural towns	Gladstone, QLD
MM4	5,000 – 10,000	RA2/3	Medium rural towns	Emerald, QLD
MM5	0 – 5,000	RA2/3	Small rural towns	Moura, QLD
MM6	0 – 5,000	RA4	Remote communities	The Gemfields, QLD
MM7	0 – 5,000	RA5	Very remote communities	Longreach, QLD

Note: Table created by the author (Australian Government Department of Health, 2019a)

Statistics Canada also continues to use a population-based definition of Canadian rural and small towns to identify the health needs of inhabitants of areas with fewer than 10,000 people (du Plessis, Beshiri, & Bollman, 2001; Pong & Pitblado, 2001). This refers to the population living outside the commuting zones of larger urban centres. The United States Census Bureau (2010) defines rurality by identifying the population of urbanised areas (50,000 or more people) or ‘urban clusters’ (at least 2,500 but fewer than 50,000 people). ‘Rural’ is once again defined as ‘other’ — defined in relation to not what it is, *per se*, but rather to what it is not.

### 2.3.4 Resource-centric concepts

The third, but least popular approach to defining ‘rural and remote’ (in terms of usage in the literature), is more prevalent when using these terms relative to health access. This defines isolation relative to health resources, both human and infrastructure in nature. Population-to-medical practitioner ratios are commonly used to express the ‘rural and remote’ dimension to health and are valued at least in part because of objectivity and convenience of calculation (Pong & Pitblado, 2001). This appeals to planners working outside the typical realm of ‘rural and remote’ medicine. Such ratios are used in relatively population-dense regions such as Taiwan (Tan et al., 2005). Once again, they afford the advantage of providing the relative sensitivity that comes from continuous as opposed to (relatively arbitrary) categorical measures of remoteness/rurality. The ratios do, however, still obscure underlying situational complexities. For instance, Pong and Pitblado (2001) argue that population-to-physician ratios do not take into account the mobility of either the population or the medical

practitioner. Residents and doctors are not constrained to artificial geographical boundaries and will, respectively, seek or deliver care in multiple locations. This limitation applies equally to other types of population ratio.

There are also methodological issues associated with defining rural and remote health in terms of patient/doctor ratios; calculation methods can vary, and they fail to identify the underlying reasons why an area may be underserved. Another example of a human resource approach to defining rural and remote health was proposed by Thomas et al. (2015). They used population thresholds to determine how best to deliver primary health care services to Australia's rural and remote communities. In other words, they estimated the minimum number of people required to live in an area in order for a health service or type of medical specialisation to be considered as viable. This kind of analysis often uses the notion of a 'catchment' to express access, and here a geographical and population calculation is implicit. The notion of 'catchment' is common in Australian health access thinking and communications but it is not unique to this country. Commonly defined as the "ratio of the number of physicians in a specified geographical area to the population within that area" (Makuc et al., 1991, p. 347), the concept of catchment pre-dates the surge of interest in remote and rural health access. Its origins can be traced to a long tradition of influential epidemiological work, particularly in the mental health arena (Karno, Golding, Sorenson, & Burnam, 1988).

An advantage of using population-to-population (human resource) ratios is that makes possible a ready comparison of catchment areas. A downside of defining rural and remote communities in this way, however, is that data are static whereas patients/consumers are not. Transient population sub-groups are often not reflected in population-centric definitions. Examples of this are mining communities, where there is a highly transient workforce (such as 'fly-in-fly-out' employees), and tourist towns that attract an influx of visitors during peak season(s). These populations are difficult to capture accurately in census data and their levels fluctuate from season to season and from year to year. Inter-census inter-catchment migration is once again overlooked, and it is assumed, often wrongly, that people will use the services within their defined geographical boundary as a default option. It also assumes some degree of consumer homogeneity within each catchment area.

A further, related source of definitions of 'rural' and remote' within the resource-centric spectrum of defining health access is the subjective rating of access/proximity that has been

established by medical professionals themselves. For example, in 2003 the Canadian Medical Association, the Society for Rural Physicians of Canada, the Canadian Pharmacists Association and the Canadian Nurses Association collaborated to develop a descriptive and subjective index of rurality that was based on what doctors, nurses and pharmacists thought defined rural and remote health (Adams et al., 2003). Peak professional bodies and medical associations in Australia also have taken an active role in defining terms for their own use. The Australian College of Rural and Remote Medicine (ACRRM), the Council of Remote Areas Nurses of Australia and the National Rural Health Alliance either have position statements, policy papers or parliamentary submissions outlining their members' perspectives on rural and remote health issues (Australian College of Rural and Remote Medicine, 2019; Council of Remote Areas Nurses of Australia, 2019; National Rural Health Alliance (Australia), 2013; The Royal Australian College of General Practitioners, 2019).

In 2014, the ACRRM defined rural generalist medicine as the “provision of a broad scope of medical care by a doctor in the rural context” (Australian College of Rural and Remote Medicine, 2019, p. 1). This definition encompasses such duties as comprehensive primary care, emergency care, hospital in-patient care and working as a multi-disciplinary team. The Royal Australian College of General Practitioners (RACGP) represents some 40,000 GPs, of which approximately 8,500 members (22%) are registered GPs who claim to work in rural and remote Australia. The RACGP Rural faculty defines ‘rural general practice’ as having a “great diversity in both the range of medical presentations and the facilities available to the practitioner due to geographic and demographic features of the rural and remote location” (The Royal Australian College of General Practitioners, 2019, p. 1). This assertion recognises the wide scope of skills required to work as a rural and remote health professional and also acknowledges the unique nature of the working environment.

From the standpoint of GPs, the degree to which each may self-identify as a ‘rural’ or ‘remote’ practitioner may relate to the extent to which they feel isolated from collegial support as well as infrastructure. Recognising this, Wakerman (2004, p. 210) argues that from a practitioner perspective, offering rural and remote health services represents “an emerging discipline with distinct sociological, historical and practice characteristics”. Correlates of this kind of practice, he argues, are social isolation, reliance on multidisciplinary health teams and the necessity to possess or develop advanced clinical skills across a range of specialities (e.g. public health or emergency). Working in a South African context, Couper (2003, p. 1) writes that rural and remote health is characterised by

a lack of “ready access to specialist, intensive and/or high technology care, and....resources, both human and material”. This is one of the few definitions that refers directly to the importance of infrastructure in defining the rural and remote case. Discussions of rural and remote access that do refer to consultation with medical specialists, as opposed to generalists, tend not to refer to the equipment the specialists utilise to conduct their practice. Insofar as infrastructure and specialist support are incorporated into thinking and research about rural and remote areas, this again leads to a categorical approach to considering access: either a medical professional has, or does not have, ready access to support services and to equipment.

### **2.3.5 The forgotten fourth dimension**

Of the broad approaches canvassed in this review, that which is the least represented – in either the scholarly literature or policy approaches – is the one that incorporates the subjective views of patients. Another way of looking at this tendency is that the individual perspective is lost in this debate. Common definitions of rural and remote health in scholarly literature tend to place the consumer or patient in a relatively passive, if not silent, role. In reality, however, patients need not be by definition passive or silent, and metropolitan hospitals are likely to see them as active consumers with implicit consumer choice. Furthermore, studies have shown that people living in rural areas value the opportunity to articulate their rural identity within a health setting (Cheesmond et al., 2019; Coyne, Demian-Popescu, & Friend, 2006; Gregory, 2009). However, despite this active role, Allan, Ball, and Alston (2010) contend that the voice of the rural and remote health consumer is habitually excluded from research processes and policy matters.

While the views expressed by the rural and remote resident may be largely absent from formal studies of the definition of ‘rural and remote’ health access, there is a small, discrete field examining rural definitions of *health*, rather than definitions of *rurality*, and Gessert et al. (2015) provide a high-quality review of this body of work. Rural and remote populations encounter systemic deficiencies in health care services and therefore, unsurprisingly, define health differently to their city-dwelling counterparts. It is common to assume there is an *actual* deficit in health in rural regions but the literature establishing this assumption is not settled. Indeed, rural people tend to rate themselves as being slightly healthier than urban-based populations do (Gheasi, Ishikawa, Kourtis, & Nijkamp, 2019).

Rather than a data-driven definition, this is a descriptor relating to the *functional health* of an individual. That is, health status is gauged by a capacity to perform basic daily activities such as participating in the workforce. People from rural areas often associate good health with the ability to work (King, Thomlinson, Sanguins, & LeBlanc, 2006), to engage in social interaction and maintain independence (Gessert et al., 2015). The concept of rural and remote health from a consumer's perspective can vary between different countries. For example, rural residents of the Canadian province of Alberta reported that the ability to work and function, regardless of indications of illness or poor health, is their definition of good health (Coyne et al., 2006). Such a pragmatic definition suggests that people in rural locations may place lesser value on the cosmetic, wellbeing or life-prolonging aspects of health.

A functional health definition may influence a rural health consumer's decision to delay seeking medical advice or health care, even in circumstances that urban dwellers might regard as extreme or emergency in nature (Cheesmond et al., 2019). Several lines of evidence suggest that rural and remote populations are less likely to seek health care for issues that they consider as non-urgent or not life-threatening (King et al., 2006; Slusher, Withrow-Fletcher, & Hauser-Whitaker, 2010). Previous qualitative research into defining health in rural settings (Arcury, Bell, Vitolins, & Quandt, 2005; Averill, 2003) indicated that the previously mentioned drive for autonomy may lead to individuals avoiding all contact with the healthcare system except as a matter of last resort. In rural USA, one study in Wyoming used the term 'cowboy up' to describe how people in that farming location chose to ignore perceived minor health ailments so as to not disrupt their work responsibilities (Morgan & Hart, 2009). In such contexts, health is often framed in terms of self-reliance, rugged independence, stoicism and fatalism (Averill, 2003). As active consumers, the rural dweller is choosing to disengage (Allan et al., 2010). It is plausible that having taken these choices, the rural health consumer may well define the health system itself differently to how the urban consumer does, seeing it less as a platform for maintaining good health than as an agency for its restoration from a point of occasional illness. The health system itself is not just geographically remote but also culturally remote to the ecology of what the consumer regards as 'home' (Best & Myers, 2017).

In an Australian context, Bourke, Humphreys, Wakerman, and Taylor (2012) endeavoured to fill a theoretical gap related to the absence of the individual voice and individual case by providing a new conceptual foundation to analyse specific rural and remote health factors.

The theoretical framework comprises six rural and remote health variables — geographic isolation, the rural locale, local health responses, broader health systems, social structures and power. This comes close to capturing the individual perspective that is missing from other conceptualisations of ‘rural’ and ‘remote’. Bourke et al. (2012) suggest that rural and remote health is about “spatial and social relations among local residents as well as the actions of local health professionals/consumers that are both enabled and constrained by broader health systems and social structures”. At a micro-level, understanding the local health response — experiences, actions, local actors and interactions with the broader health system (Bourke et al., 2012) — is a significant step towards providing a holistic and comprehensive understanding of what ‘rural’ and ‘remote’ means in terms of health access when defining rural and remote health.

Two relatively simplifying and well-researched notions — socioeconomic status and time — have largely been kept out of the debate on health access in relation to those living in regions designated as rural or remote. “Rural and urban taxonomies often do not discuss important demographic, cultural, and economic differences across rural places — differences that have major implications for policy and research”, according to one US analysis of rural definitions of health policy (Hart, Larson, & Lishner, 2005, p. 1149). Early in-depth discussions of ‘what is rural?’ or ‘what is remote?’ often avoid completely discussion of time or socioeconomic factors. Distance (common in geographical conceptions) is an easily quantifiable measurement — of lines on a map — that provides a universally understood ‘map’ that policy-makers can use when making decisions. Notably, Johnson-Webb et al. (1997), in their seminal US-focused ‘issues and considerations’ paper built on an analysis of definitions of rural to the date of publication, did not once mention or otherwise allude to wealth or its relationship to time, as limiting access to health.

The literature is replete with assumptions of economic homogeneity (Hart et al., 2005), yet also errs on the side of homogeneity in its deployment of the concepts of distance and time. In terms of ease of access to health care provision, a geographically remote island is no less remote than the outer suburb of a metropolitan centre if the island tenant owns a helicopter. One of the few examples in the literature where distance and travel time were considered in depth was McGrail and Humphreys (2009). While attempting to measure access to rural primary care services in country Victoria, Australia, McGrail and Humphreys recognised that a significant impedance to accessing available rural health care services was distance but more importantly time. Using Geographical Information System (GIS) data sets these

scholars calculated travel time (rather than road distance) to measure spatial accessibility. In this paper they raise the concept of ‘the golden hour’ which refers to the maximum catchment limit of 60 minutes to access primary health care in rural Australia. Any time impedance greater than one hour incurs a ‘distance delay’ and increases the access barrier. In short, rural populations are less likely to access a health service if it is located more than 100 minutes away. Thus, ‘rural’ (a term which implies a lack of density in housing that gives way to agriculture) is really a subset of ‘remote’ when it comes to health access. In this context, the key question to the consumer is how remote (to the individual) is the health service that they require?

In dividing nations into degrees of ‘urban’ and ‘non-urban’, of course the literature acknowledges the importance of time, either in definitions or in regard to health impact. Hays et al. (1994) for instance, characterised rural and remote in terms of a medical provider being located more than 300 kilometres from support services. As an exemplar of the latter, Baird, Flynn, Baxter, Donnelly, and Lawrence (2008) noted that cancer patients who have to travel more than three hours to their care facility end up spending significantly fewer days in care than do all other groups. The US Bureau of Health Care Delivery and Assistance uses time explicitly, in relation not to defining ‘rural’ or ‘remote’ but instead to the concept of ‘frontier areas’. The ‘frontier’ appellation requires that the “service area will be such that the distance from a primary care delivery site within the service area to the next level of care will be more than 45 minutes and/or the average travel time more than 60 minutes” (Hewitt, 1989, p. 38). The ‘frontier’ category also includes population density components. Time transcends geographical remoteness, population density issues, personal perceptions and even some of the accompanying medical system issues. For patients, time is a challenge, but for busy medical and healthcare professionals, time may be in even shorter supply, with the added cost in commuting time contributing to burnout and an unwillingness to serve in rural and remote areas.

There are exceptions to the paucity of debate on socioeconomic factors in ‘rural’ and ‘remote’ appellations. Essential to the notion of Bourke et al. (2012) of power and social structures is an understanding that the remoteness and rurality in which an individual seeking medical assistance finds themselves is heavily mediated by socioeconomic factors. In the USA, time/wealth appears in academic discussion of the Rural–Urban Commuting Areas that were developed with federal co-operation by the University of Washington Rural Health Research Center and the US Department of Agriculture Economic Research Service (Hart

et al., 2005). Therein, however, the focus still largely concerns a region's degree of remoteness in geographical terms. Rather, it should recognise that, in reality, an individual's 'remoteness' to health services may be a function of their geographical remoteness combined with their ability to bridge that distance. This insight is equally true for urban dwellers dependent on public transport, which may follow routes designed to optimise the needs of the office worker, rather than the needs of a consumer seeking access to health services. From the point of view of access, in particular for nations like Australia and Canada where high-quality universal healthcare is a societal 'given', the variable through which access flows is in fact time. In such settings, especially given the vast sizes of these two countries, in wealth lies the power of the individual to modulate the impact of time on access.

Understanding the terms 'rural' and 'remote' in relation to health access is not straightforward, noting that the definitions used by policy-makers and scholars alike differ in terms of subjectivity, nuance and multidimensionality. As described above, definitions tend to ignore the pivotal influence of time and socioeconomic status in determining what 'rural' and 'remote' mean to the individual health consumer. A review of existing literature reaffirms the central role of the individual consumer, and even of the individual health care provider, in determining how access plays out in non-urban regions. Policy is often instigated in urban settings, by urban dwellers. An unconscious form of urban bias can contribute to a poor understanding of the real health priorities and needs of rural locations (Bourke et al., 2012). It is possible to gauge the degree to which an individual is actually 'rural' or 'remote' by measuring the time they require to access particular needed facilities, and their capacity to take that time, or even to reduce that time. Creating an individualised 'health equity signature' for each consumer is not necessarily a difficult or complex task. The frequency with which each person accesses particular types of health service is likely to be closely associated with their individual health equity signature.

## **2.4 Social determinants of health**

Based on the principle of advancing equity, in 2015 the United Nations released the *Transforming our World: The 2030 Agenda for Sustainable Development* (United Nations, 2015) and set out 17 sustainable development goals (SDGs). Goal 3 relates to promoting the health and wellbeing of all people to ensure that 'the social determinants of health' do not prevent anyone from achieving good health (United Nations, 2015). According to the WHO, social determinants of health are described as "the circumstances in which people grow, live, work, and age, and the systems put in place to deal with illness. The conditions in which

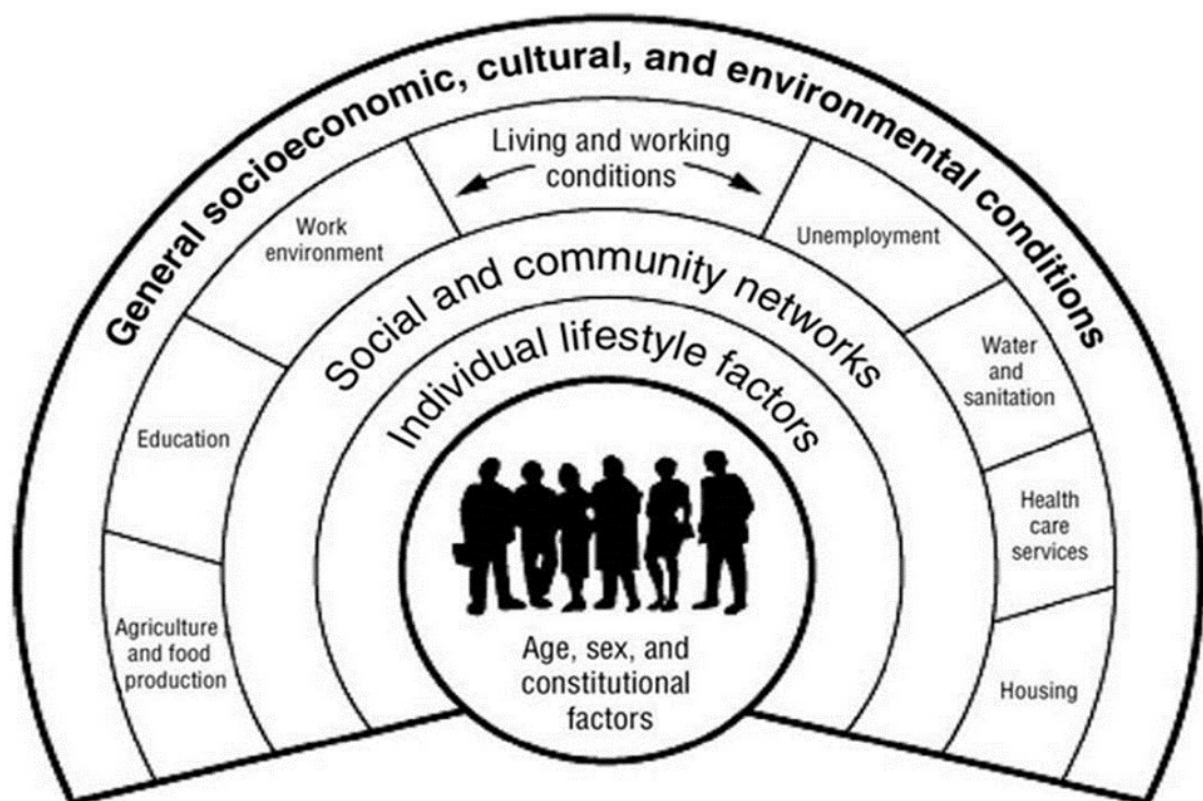
people live or die are, in turn, shaped by political, social and economic forces” (WHO, 2008). In essence, social determinants of health are linked intrinsically to the non-medical conditions that can either facilitate or impede a person’s ability to achieve good health.

Oldroyd (2019) discussed these factors in terms of indirect (upstream) or direct (downstream) impact. For example, an individual’s decision to smoke cigarettes has a known direct impact on their personal health status (i.e. smoking directly causes lung cancer). In contrast, indirect conditions are more complex and can have a cumulative or snowballing effect on an individual’s state of health. For instance, a person may have a chronic knee condition that prevents him or her from exercising and participating in the workforce. As a result, they are immobile, overweight, poor and cannot afford to access the health care that they need to remediate their knee. However, they cannot work or lose weight until they have surgery on their knee. This is a prohibiting cycle that indirectly affects a person’s health and wellbeing. Conceptually, social determinants of health can be apportioned into three categories that start downstream with the individual (biological determinants and health behaviours) and flow upstream to socioeconomic characteristics, for example education, unemployment, living conditions, health care services, etc., and then onto more broad features of society like culture, public policies, resources and media (Oldroyd, 2019). Dahlgren and Whitehead (1991) were the first to capture this biopsychosocial concept, as displayed in Figure 8. Here, they demonstrate the architecture of social factors extrinsic to medical care that have the potential to predispose how healthy or sick an individual or population groups can be. It exhibits the multi-level distribution of money, power and resources, while also recognising that societal conditions can lead to the unequal distribution of opportunity. A real-life example of these social contextual factors at play is food insecurity. Australia is widely recognised as one of the most food-secure countries in the world (Lindberg, Lawrence, Gold, Friel, & Pegram, 2015).

The ongoing COVID-19 pandemic has illustrated that national food consumption needs are abundantly supplied through domestic agriculture production with Australia exporting far more food (70%) than it needs (Hatfield-Dodds & Gooday, 2020). Yet, there is still a segment of the community (4%) which struggles to consistently access safe, affordable, and nutritious food (ABS, 2015). Radimer (2002, p. 861) described food security as “access by all people at all times to enough food for an active, healthy life”. The reasons why people can still experience food insecurity in a developed country like Australia relate to the social determinants of health such as: lack of access to food due to geographical isolation; lack of

transport to go shopping; high prices; and/or lack of awareness about the importance of eating a nutritious diet (Rosier, 2011). These types of barriers to good health can be structural or functional and are the root causes of health inequities (Liamputtong, 2019). Most of the research reviewed concluded that health, wellbeing and illness are social constructs and that, in due course, a person's socioeconomic position will influence their life chances/trajectories, including health status (Compton & Shim, 2015; Embrett & Randall, 2014; Friel, 2009; Raphael, 2006).

Figure 8: The main determinants of health.



Note: Reprinted from *Policies and strategies to promote social equity in health* by Dahlgren and Whitehead (1991).

## 2.5 Health equity and the rural-urban divide

Rural-urban disparities are a global phenomenon and there is growing academic interest in the correlation between place and health (Liaw & Kilpatrick, 2008; Pong, DesMeules, & Lagacé, 2009). Place-based health equity is an issue of increasing importance on the political agenda in Australia (Fisher, Baum, MacDougall, Newman, & McDermott, 2016; Friel, 2009; Van Eyk et al., 2017). A crucial starting point of any research is a scholarly shared understanding of fundamental terminology. Academic literature describes *health equity* as the notion that all people should have a fair prospect of reaching and maintaining their full

health potential, and that no one should be deprived of realising this goal (Beenackers, 2015; Goodrich & Pottle, 2005; Mason, Barraket, Friel, O'Rourke, & Stenta, 2015). 'Equity' is often used interchangeably with the term 'equality' but they are not the same. Health equality is a descriptive that relates to equal opportunity (all people are given equal treatment) regardless of need or outcome. In contrast, health equity means giving people what they need in order to achieve good health.

Inequalities become unfair and avoidable when poor health outcomes are the consequence of the unjust allocation of resources (social determinants of health). This distinction is best exemplified by Braveman et al. (2018, p. 7) when they stated "...equity is not the same as equality. Those with the greatest needs and fewest resources require more, not equal, effort and resources to equalize opportunities". Figure 9 illustrates this point clearly. Three people of different heights are given the same-sized hay bale to look out at the iconic 'Aussie' rural view. In this case, the wide-open space represents good health and the people's height symbolises the unequal distribution of social determinants of health within a population group. By treating everyone equally we distribute the same-sized hay bale to each person regardless of height but only the tallest person can see over the fence to get a good view (or achieve good health). In order to achieve health equity, each person would be given as many hay bales as they need to fully appreciate the view.

Figure 9: Health equality vs health equity



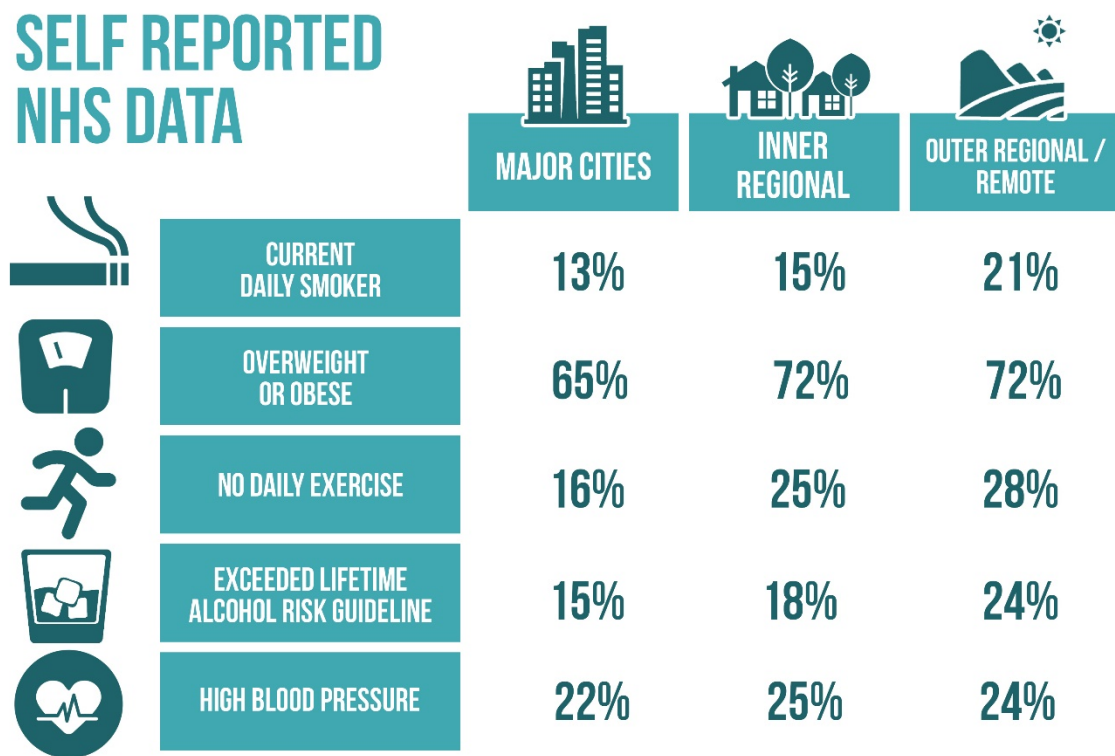
Source: Figure created by the author

Equity can be thought of as a process, whereas equality is the coveted outcome of that process. In other words, an equitable approach to health aims for more equal health outcomes. *Health disparities*, on the other hand, are the systematic differences that prevent specific population groups from maintaining their full health potential (Baciu et al., 2017). Quantifying reductions in health disparities is often used to measure progress toward achieving health equity goals. As such, addressing health disparities can also be viewed as a social justice issue. Within the health context, social justice refers to the “fair distribution of advantages and equal sharing of burdens while focusing on those most disadvantaged” (Compton & Shim, 2015, p. 421).

Health equity is gaining greater traction across the political landscape as governments endeavour to promote wellbeing and improve health systems. In Australia, federal government policy dictates that all citizens should have adequate and timely access to quality health care services based on their needs, regardless of their financial situation or their postcode (Australian Health Ministers Advisory Council Rural Health Standing Committee, 2012). However, the practical reality for many people living in rural and remote areas is starkly different, as Figure 10 depicts. Variations in health status between rural and urban areas in Australia are well documented. For example, compared to city dwellers, very remote Australians such as those living in The Gemfields are (ABS, 2018b):

- **6 times** more likely to have kidney and urinary diseases
- **3.2 times** more likely to have endocrine disorders
- **2.5 times** more likely to die from an avoidable death
- **1.7 times** more likely to be a current daily smoker
- **1.7 times** the rate of total burden of disease (expressed as disability-adjusted life years – DALYS)
- **1.6 times** more likely to die prematurely
- **1.5 times** more likely to exceed lifetime alcohol risk guidelines

Figure 10: Comparative self-reported health data



Note: Graphic produced by author using data from the 2018 National Health Survey showing the rates among adults in major cities, inner regional and outer regional/remote areas, based on self-reported data (ABS, 2018b)

Poverty is often linked to health disadvantage – that is, there is a socioeconomic gradient in health status. The existing body of literature has established a causality between poverty and ill health. The two are closely interlinked and run in both directions; poverty sustains poor health, and poor health intensifies poverty (Draper, Turrell, & Oldenburg, 2004; Marmot, 2005; Wagstaff, 2002). In Australia, the poorest residents, many of whom live in rural and remote Australia, often have the poorest health status (Dixon & Welch, 2000). Mackenbach and Kunst (1995) considered socioeconomic inequalities in health status as “differences in the prevalence or incidence of health problems between individual people of higher or lower socioeconomic status”. A small but targeted qualitative study by Allan et al. (2010) explored the perceptions and health expectations of socioeconomically deprived residents living in rural Australia. It was found that participants living in this marginalised rural setting had very low expectations of their personal health and of the healthcare system.

A structural inequity existed where poor health was normalised within this rural context of disadvantage. There was a major disconnect between health service providers (who had high

expectations for good health outcomes) and the population they served (who had low confidence in achieving good health). Within the group, it was reported that individual autonomy was limited and the concept of personal choice was meaningless due to financial limitations. Allan et al. (2010) concluded that escaping an unhealthy destiny was a lifetime challenge for poor and disenfranchised rural and remote residents. These results are similar to those reported by Raphael (2006), who found that an individual's perception of their place in society shapes their susceptibility to poor health. Based on this evidence, it may be concluded that place of residence and socioeconomic health variations continue to contribute towards health inequalities in rural populations. Put simply, disadvantaged rural and remote groups systematically experience worse health than do more socially advantaged urban groups. An understanding of socioeconomic impact on health is of central importance when considering rural-urban health disparities.

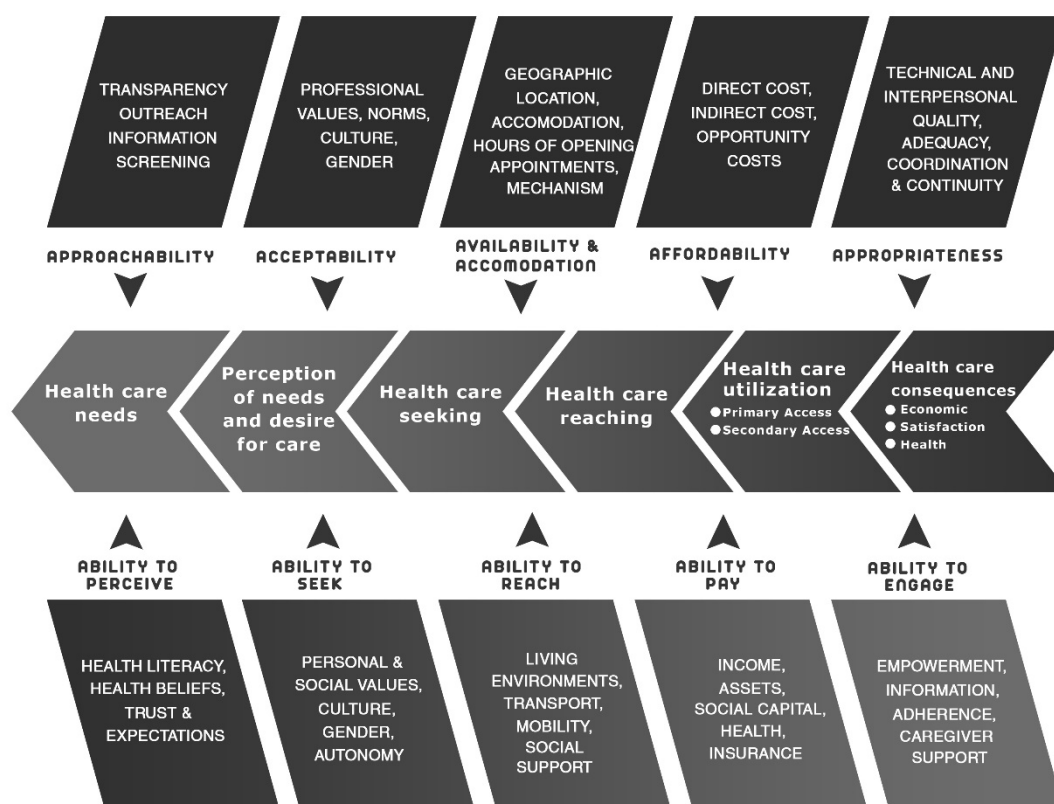
The barriers facing rural and remote health are wide-ranging, well-documented and ubiquitous. A range of studies have revealed how geographical, economic and social inequalities influence access to primary healthcare (PHC) services and population health status (Bell, Wilson, Bissonnette, & Shah, 2013; Bishop et al., 2017; Tan et al., 2005). Bolin et al. (2015) investigated empirically the state of health in US rural communities and benchmarked these data against previously established nation-wide health priorities. The Rural Healthy People (RHP) 2020 study found that community priorities in rural America had not changed in the previous ten years (Bolin et al., 2015). Access to quality healthcare was identified as the single most important rural health priority for one third of all respondents. The study also provided additional evidence that there is a strong link between rural health inequality and geographical (rural) disparities in health care. This research highlighted rural-specific agendas and priorities for local-level rural communities, which had not been reported previously in the United States and which have relevance in an Australian setting.

McGrail and Humphreys (2009) also endeavoured to evaluate *rurality* as a health disparity but within the Australia context, for which they developed a quantitative method to measure access to primary health care. A new spatial accessibility tool was designed called the *Index of Rural Access* that included four distinct rural health access categories – availability, proximity, consumer health needs and mobility. The study focused on Victoria, Australia, and used Geographical Information System (GIS) to map the location and number of primary care services (as offered by General Practitioners) across the state as well as to

record the size of the population at each site. Travel time, rather than distance, was used to measure access to primary care services within a maximum catchment of 60 minutes. The study identified three key indicators of mobility that directly impact a rural population's ability to overcome distance barriers. There are: households without a car; low personal mobility; and public transport availability – each considered to be a significant barrier to primary health care in rural settings. These are valuable insights when considering rural health disparities in this project's case study community.

Etymologically, the Macquarie Dictionary (2017) defines the term *access* as a way, means or opportunity to approach. Within a rural and remote health setting, therefore, access would relate to how easily a consumer or community can reach, use or visit health care services proportionate to need (Whitehead, 1992). Health care access is linked intricately to (and arguably used as a proxy for) health equity. Levesque, Harris, and Russell (2013) built on published literature to conceptualise a new framework that integrated both the demand and supply side of health access. As illustrated in Figure 11, the supply side refers to the structural dimensions of the health system and service providers such as approachability, acceptability, availability, accommodation, affordability and appropriateness. The demand side features population characteristics and process factors that describe how individuals access services.

Figure 11: A conceptual framework of access to health care



Note: Figure recreated by the author (Levesque et al., 2013, p. 5)

Thomas et al. (2015) examined equity of access to health services in rural and remote Australia. This research focused on how best to deliver core primary health care (PHC) services across a range of different-sized communities that are geographically isolated and dispersed across Australia. The basic premise of their argument was that rural and remote communities can be categorised into six distinct types based on population size. It was concluded that essential PHC services (i.e. ‘care of the sick and injured’, ‘maternal and child health’ and general public health, etc.) in communities with small populations (501–1,000 people) are best delivered by a resident health worker. On the other hand, non-essential PHC, such as allied health, rehabilitation and oral/dental services, requires a larger population to economically sustain a resident health worker (i.e. 1,000+ people). Furthermore, population thresholds for remote communities were much smaller when compared to rural communities due to the twin challenges of geographical isolation and long distances to larger centres. Although this study sets the ideal population thresholds required to deliver specific health services, unlike *The Index of Rural Access*, the method used considers neither specific consumer needs and priorities nor the important role these play in community health planning processes. However, in the literature a method could not be identified to analyse

all of these geographical, socioeconomic, access, consumer and availability factors in one place and to rapidly assess the specific health care barriers, needs and priorities of a small-scale, rural and remote community – an important gap this study will endeavour to address.

An examination of grey literature uncovered the Australia Institute of Health and Welfare's *Australia's Health 2018* report (AIHW, 2018a), which covers a range of comprehensive topics, notably in this context a narrative on the current state of the country's population health status and the use of health services including those in rural and remote Australia. It ascertained these important measurements by using a national indicator methodology called the Australian Health Performance Framework (AHPF). The report concluded that, in general, Australians enjoy good health and Australia maintains an effective health system but these positive results are not necessarily distributed evenly across all populations and communities. For example, there are still significant health disparities experienced by people living in non-urban areas, which include higher hospitalisation and increased mortality rates (AIHW, 2017). Wakerman et al. (2008) detailed how rural residents face numerous health disparities compared to their urban counterparts. These significant health disadvantages continue to compound due to a long list of enduring factors such as medical workforce shortages, population density, levels of remoteness, lack of continuity of care and population mobility issues (Wakerman et al., 2008, p. 276). Bourke et al. (2012, p. 496) concur with this assessment and describe the current state of rural health services in Australia as 'reactive...and lacks comprehensive understanding'.

An in-depth review of GP shortages in rural Australia by Duckett and Breadon (2013) concluded that new responses were required to fix a very well entrenched problem — in the language of social innovation, social innovation solutions are required for the wicked problem of geographical health inequity (Muurlink, 2018). Their report identified that the most pressing problem in the primary healthcare system in Australia is the proliferation of geographical gaps in GP services. The problem of GP access in rural and remote areas has persisted for generations and Duckett and Breadon (2013) go further than to just identify and describe the issue. They propose that it is time to do more than simply tinker with the system and instead the focus should be on innovative solutions that will help rural people receive the crucial types of care they need as close to home as possible. Duckett and Breadon (2013) singled out the practical value of conducting applied research that focuses on new effective and sustainable ways to deliver primary health services to otherwise underserved remote or rural communities. This is a view that closely aligns with the purpose of

the research described herein and reflects an interest in identifying the factors that contribute to health inequity in rural and remote areas. In summary, there is an unacceptable health divide between rural areas and urban counterparts that should not exist in such a wealthy country as Australia. A review of the literature prompts two important questions: firstly, how do place-based factors influence health inequity?; and secondly, can the places where we live, work and play impact a person's health equity signature?

## **2.6 Measuring health equity**

This part of the literature review investigates the methods for measuring health equity in rural and remote communities. In this instance, health equity aims to “reduce and ultimately eliminate disparities in health and in the determinants of health that adversely affect excluded or marginalised groups” (Braveman et al., 2018, p. 3). This has informed the development of a new rapid health *equity* assessment tool for rural and remote communities and the framework for the semi-structured interview questions. The WHO has identified the reduction of health inequities as a global public health priority (Marmot et al., 2008). As previously discussed, health inequalities arise from the unequal distribution of determinants of health, which do not relate merely to biological factors (Garasia & Dobbs, 2019).

Previous literature has established that there is a health gradient that runs throughout the socioeconomic spectrum from top to bottom and that this social continuum affects everyone (WHO, 2008). In Australia, as evident in all countries, there is a strong association between a person's health outcomes and their social status (VicHealth, 2015a). That is, the higher a person's social position, the better their health outcomes and vice versa. Additionally, Starfield (2011) argued that health inequity does not only occur vertically, as the WHO proposes, but also horizontally. She postulated that *horizontal inequity* implies people with the same needs are not able to access the same healthcare. This contrasts with *vertical inequity*, which denotes people with greater health needs are not allocated greater resourcing. Hence, achieving vertical health equity means providing people with the health care that they need based on different circumstances. It acknowledges the necessity to treat people with distinct health care needs differently (proportionate to those needs). Furthermore, horizontal equity would require people in similar circumstances to receive equal treatment. Therefore, in an ideal world, population groups with equal health status are treated the same, whereas those with a poorer health outlook receive more.

The rationale for conducting a health equity assessment is to ensure researchers, planners and policy-makers consider adequately the socioeconomic elements of health equity (both horizontal and vertical) in the planning and policy development process. Ensuring that the allocation of quality health services and resources is proportionate to need is critically important to address the inequity gradient and subsequently improve people's health. In 2008, the WHO called for collaborative action when assessing the distribution of health plans and for these to inform good decisions made about health and practice (Marmot et al., 2008). In most countries, distinct population groups have different socioeconomic circumstances that result in avoidable disparities in health, wellbeing, wealth and life expectancy. From the existing body of research, it has been shown that most socioeconomic determinants of health sit beyond the realm of the health sector (Dixon & Welch, 2000; Marmot, 2005; Ndumbe-Eyoh & Moffatt, 2013). Therefore, the health and wellbeing of a population requires intersectoral engagement and participation. The goal of health equity assessments is to bring together disparate information from a range of sources to assess fairness and opportunities for better health. However, in practice there remains a lack of consensus as how best to measure health inequities at the local level (Cohen et al., 2018). There is also limited national data on how to measure health equity in small-scale, rural and remote communities. Nevertheless, evidence suggests that the healthcare system struggles to systematically recognise and consider health equity at any level, as Sheridan et al. (2011) stated a decade ago. How to measure health and reduce health inequities in disadvantaged health populations, such as rural and remote communities, remains a challenge.

Equity-focused health impact assessments (health equity audits) are used to identify and address the social, economic and environmental determinants of health in a specific population group. The literature suggests that this is a powerful method to help bring about much needed change in the health equity space (Goodrich & Pottle, 2005). Health equity audits focus on "how fairly resources are distributed in relation to the health needs of different groups" (Hamer, Jacobson, Flowers, & Johnstone, 2003). It is an approach used to gather evidence on health inequities (i.e. causes of ill health, and access to effective services) for a defined population in order to inform health planning, policies and practices. Identifying health inequities and their drivers is paramount to achieving health equity in rural and remote communities. The overarching goal of these audits is not to allocate resources equally, but rather to need. This may (or may not) result in adjustments to health care investment or service delivery to promote equal opportunity to the social determinants of good health. Six potential instruments for rapidly measuring health equity were examined

in detail as part of this literature review. These measures were: the *Health Equity Assessment Tool* (HEAT) from New Zealand (Signal, Martin, Cram, & Robson, 2008); *Health Equity Indicators* from Canada (Ontario Public Health Association, 2013); *Health Equity 2020 Toolkit* from the European Union (Beenackers, 2015); the United Kingdom's *National Health Service Health Equity Audit* (Goodrich & Pottle, 2005); *Promoting Health Equity* resource developed by the US Centers for Disease Control and Prevention (Brennan Ramirez et al., 2008); and *VicHealth Framework for Health Equity* from Australia (VicHealth, 2015b). The WHO's *Health Equity Assessment Tool* was excluded from this investigation because it explores inequality at the national level using disaggregated data but without the functionality to drill down to a local level small-scale population such as a rural and remote districts (WHO, 2018a).

Health equity is embedded in New Zealand's national policy and the country has a solid history of proactive action in this field (Sheridan et al., 2011). In 2008, New Zealand developed HEAT (Signal et al., 2008), modelled on a health inequality tool first developed in Wales (Bro Taf Authority, 2000). This is a strategic planning tool designed to tackle health inequalities by assessing health initiatives, policies or programs within the mainstream health delivery services. It focuses on building equity considerations (such as equity principles and organisational capacity) into the planning cycle. There are 10 questions in total but only Part 1 (questions 1–3) are relevant to this study. HEAT can be used as either a rapid assessment tool or an in-depth plenary instrument (i.e. a template to guide strategic planning). It provides an overarching framework that can be applied to the examination of the status of health experienced by different population groups. However, a national study of New Zealand health districts found that although HEAT was used for strategic planning purposes, it was not undertaken systematically at the lower level (Sheridan et al., 2011). This study observed that although equity was embedded in policy for Maori people, frequently it was not a consideration for other disadvantaged population subgroups. For example, despite recognised need within the community, implementing HEAT in hard-to-reach places (geographically remote) or for underserved non-Maori ethnic groups was difficult and not common practice.

*Ontario Public Health Association* developed five health equity indicators to measure health inequities and inequalities at the local public health level. The stated goal of these indicators was to strengthen local health service capacity to achieve health equity action (Cohen et al., 2018). This is a high level organisational self-assessment tool that produces a descriptive

report. It requires operations to identify and plan for priority populations, to conduct health equity assessments, with reported findings incorporated into policy development, strategic planning and operational health service delivery. There were several limitations to utilising this tool, such as the use of dialectal terminology that was exclusive to Ontario and thus confusing to anyone operating outside of this province. For example, constant references to the ‘board of health’ that would translate to ‘the local public health agency’ in other organisations or countries. Moreover, the Ontario Health Equity Indicators are strongly focused on the governance level of the organisation (management board) and provide a high-level assessment tool to review operational-wide compliance but do not provide any guidance on local level or grassroots health equity indicators in rural communities. This gap is consistent with Dixon and Welch (2000, p. 259), who raised the question: “What is it about rural places or the rural experience that contributes to differential health outcomes?”. In short, the Ontario Health Equity Indicators do little to tease out the various dimensions of rurality, place and health equity.

The *Health Equity 2020 Toolkit* was developed for European Union member states to take a coordinated approach to addressing health inequalities across their regional network (Beenackers, 2015). Previously, most efforts to tackle socioeconomic health inequities in the EU had taken place in isolation and were ‘intuitive’ rather than based on a vigorous evidence-based approach (Mackenbach & Bakker, 2003). Beenackers (2015) offered a four-phase approach to the development of effective strategies by: identifying the primary drivers of health inequalities (phase one); assessing health resource capacities (phase two); using this scoping information to determine potential intervention entry points (phase three); and conducting an impact assessment of selected actions (phase four). The final output of *Health Equity 2020* was the product of evidence-based health equity action plans ready for operationalisation. The *Health Equity 2020 Toolkit* provides policy-makers and practitioners with the tools needed to assess the current situation, identifying what indicators are required and which data to collect. Beenackers (2015) recognised that obtaining quality secondary quantitative data sets is often difficult at a regional level and the collection of primary qualitative data may be required. This is a practical ‘how to’ guide that provides a ‘big picture’ approach to improving health equity at the national level. Elements of this resource assess health inequity at a small-scale, local level in a rural and remote community setting, which are relevant to this study and thus can be incorporated (particularly into phases one and two). However, phases three and four of the *Health Equity 2020 Toolkit* extend beyond the scope of this thesis as it incorporated tools to implement mechanisms for actions.

Health equity audits are not new. The UK's National Health Service was an early adopter of monitoring health inequities throughout its public health system and supporting actions to identify and reduce inequalities (Hamer et al., 2003). The *National Health Service Health Equity Audit* offers expert guidance on how to develop an equity profile that helps to identify the key factors that are driving health inequalities at the local grassroots level. It aims to integrate the health equity assessment process into mainstream planning as a performance improvement tool rather than to make it a one-off exercise. In doing so, the process helps to inform decisions on a range of matters such as service planning, commissioning and delivery of new services, and investment allocation. An integrated systems approach to health planning means that health resources are not necessarily distributed equally but rather relative to health need. In this resource, Hamer et al. (2003) identified four key characteristics of the NHS health equity audit:

- A tool for resident populations;
- Focus on a defined local population;
- Primary aim of improving health outcomes for disadvantaged communities;
- Encompasses the wider social determinants of health.

The NHS model aims to achieve the highest health gain for investment and the highest impact on inequalities. It takes a pragmatic approach to prompt users to consider issues across the whole local health ecosystem, including patient care pathways. In turn, it narrows the gap in health outcomes between social classes or geographical areas or vulnerable/disadvantaged groups. The development of local area strategic partnerships was also a key feature of the NHS equity audit model. The fostering of partnerships was seen as a way to ensure that resources, both human and financial, are efficiently allocated toward tackling inequities. The importance of local level buy-in and participation in the process was also emphasised, which is relevant to this study.

As indicated by its title, *Promoting Health Equity* is a resource designed to help public health practitioners in the US address social determinants of health in their local communities (Brennan Ramirez et al., 2008). This guide recognises that systematic disadvantage within the U.S. is “large, persistent and increasing” (Brennan Ramirez et al., 2008, p. 6). Furthermore, it states that marginalised people are further unduly affected due to health disparities caused predominantly by factors such as socioeconomic status, geographical

location, race/ethnicity, gender and disability status. Eight social determinants by population are used in this tool, namely: access to care; insurance coverage; employment; education; access to resources; income; housing; and transportation. This resource provides a range of case studies at three different levels – large-scale program and policy initiatives, traditional public health program and policy initiatives, and small-scale program and policy initiatives (the last of which are most relevant to this study). The manual provides a seven-phase framework, based on a cumulative knowledge base, to assess social determinants of health in a specific population group. Sections 1-4 are relevant to this study. Collaborative partnerships are fundamental to this approach. This resource provides critical questions for mapping relevant stakeholders and partners, as well as providing a potential method to assess different types of social determinants of health.

Mapping community assets and creating an inventory of the resources already available in the area is an important step that was not mentioned in any other literature. Assets not only include physical resources such as infrastructure but also human capital such as skills, capacities and experiences of community members. Brennan Ramirez et al. (2008) discussed the concept of ‘insiders’ and ‘outsiders’ when considering different stakeholder views on specific inequities in the social determinants of health. In relation to this study, negotiating insider/outsider perspectives of participants is an essential aspect of this investigation. Understanding whether or not research informants classify themselves as belonging to the community (an insider or native to the area) or not belonging (an outsider or ‘seagull’, flying in and out of the community) (Drew, 2006) will help to clarify personal motivation for participating in the research and to identify potential differences in ‘voice’ of these somewhat diametrically opposed positions. Six approaches to influence or creatively solve local problems in order to alter health inequities are identified: consciousness raising; community development; social action; health promotion; media advocacy; and policy change. The *Promoting Health Equity* resource is a useful framework for analysing health equity strengths and problems, in order to encourage a level of cooperation that produces meaningful improvements in a community. Elements of this document are used herein to inform the development of a rapid health equity assessment tool specifically for rural and remote communities.

The Victorian Health Promotion Foundations adapted the work of the WHO Commission on the Social Determinants of Health (Solar & Irwin, 2010) to produce *The VicHealth Framework for Health Equity* (VicHealth, 2015b). It is a practical planning tool to encourage

evidence-based actions that can address the social determinants of health inequities. The VicHealth framework focuses on the three different layers that influence health inequities: socioeconomic, political and cultural contexts; daily living conditions; and individual health-related factors. It has been designed to prompt users to build health equity into the planning process and provides a pathway to identify the different layers of influence that impact social determinants of health. This framework acknowledges that health inequity is a complex and wicked social problem. Reflecting on these complexities, Solar and Irwin (2010) proposed health equity as a potential solution to transform people's lives and to address the conditions that systematically influence key *social determinants of health*. Appendix 27 provides a comparative summary of the six health equity tools evaluated as part of this literature review. These findings are recapitulated in the next two sections.

### **2.6.1 Tool Evaluation - Strengths**

In the previous section, six health equity tools were evaluated. Although each tool was considerably different, some consistent elements were evident. These strengths will be incorporated into the development of a new rapid health equity audit tool that is designed specifically for applying to small-scale rural and remote communities. Distinct social determinants of health differed slightly between instruments but broadly included social, environment and cultural conditions (Davison, Ndumbe-Eyoh, & Clement, 2015). Recognised strengths across the six health equity tools that were examined here include:

- A clearly defined goal of health equity;
- A focus on a defined local population (geographical area or specific group);
- An incorporation of multi-stakeholder participation and cross-sectoral partnerships;
- The identification and recognition of contextual factors (primary drivers of health inequalities);
- An assessment of health resource capacities and capabilities;
- A function to map community assets and to create an inventory of the resources (infrastructure and human capital);
- The use of both primary quantitative data and secondary qualitative data;
- The identification and assessment of social determinants of health relevant to the study group
- Consideration of insider and outsider perspectives; and
- Reflection on proactive and creative solutions to solve wicked local problems.

### 2.6.2 Tool Evaluation - Constraints

In reviewing the literature, it became evident that there was no single ‘perfect’ tool suitable to measure health equity at the small-scale, local level in rural and remote areas. Half of the six health equity instruments examined were based on strategic or national level considerations, but did not explore the nuances or unique characteristics of heterogeneous sub-regions or population groups. Three health equity tools, namely *VicHealth Framework for Health Equity (Australia)*, *Promoting Health Equity (USA)* and *National Health Service Health Equity Audit (UK)*, endeavour to explore the root cause of health inequity at the local or regional level. However, these tools tend to default to a ‘deficit’ lens on health equity, which means that each tends to concentrate on identifying problems within a population group (Brooks & Kendall, 2013). Although assessing needs and priorities is important, there are drawbacks to this approach as it tends to define communities in negative terms and ignores the positives and what is working well. The risk of focusing solely on deficits is that individuals and communities are deemed to be merely passive participants in the health system, which can be disempowering and self-defeating.

Contrastingly, a ‘strengths-based’ or ‘asset-based’ approach to health equity audits aims to identify and to accentuate the positive attributes of community (at individual, community and organisational levels) (Van Bortel et al., 2019). Adopting an asset-based approach fundamentally shifts the emphasis from ‘what makes us ill’ to ‘what makes us healthy’, thereby promoting positive healthcare rather than concentrating only on poor health. Mapping health assets that make up a community builds an inventory of existing capabilities and capacities. A balance is required between identifying health needs (deficits) and recognising salutogenic resources (assets) that aim to support human health and well-being. In this instance, *Salutogenesis* literally means the ‘origin of health’ – ‘salus’ is Latin for health and ‘genesis’ is Greek for origin – and refers to the study of the origins of good health and wellbeing (Hopkins & Rippon, 2015).

## 2.7 Research gap

A survey of scholarly sources, as evidenced in the discussion above, demonstrates that the existing body of research relating to the dimensions of rural and remote health is extensive and quite rich. However, gaps in the literature remain. Specifically, there is a lack of agreement on how rural and remote health as a term is defined and operationalised. This is relevant to this study because establishing a common meaning is important when endeavouring to assimilate an understanding of health assets and challenges within a defined

population group. What also remains unclear from the literature is how place-based factors contribute to health inequity within the rural and remote health context. There is a paucity of detailed preliminary research specifically relating to measuring health equity at a local settlement level, especially for disadvantaged or vulnerable population groups. Much of the reviewed literature provided high-level, strategic or operational-wide guidance to tackle health inequity, yet failed to transmute these tools for researchers, practitioners or policy-makers working in small-scale or medically under-served rural and remote communities.

An ability to collect and present local area level baseline social determinants of health data (qualitative and quantitative) for remote areas will address a current gap in national statistical practices. For instance, the ABS National Health Survey does not include very remote areas of Australia (Australian Institute of Health and Welfare, 2018a). In seeking a thick description, it is recognised that small village-based research presents challenges for both quantitative and qualitative methods. The quantitative record, as this thesis shows, tends to be incomplete at the “village” level. Furthermore there are only a few published papers on health equity applied research in practice within the rural health setting. This critical review of the literature demonstrates limited scholarly consideration of this combined area of interest. These are important knowledge gaps that this study endeavours to address. In the chapters that follow, this thesis attempts to apply a case study approach, with aspects of ‘dirt research’, to rural health equity by combining quantitative, qualitative and observational field work.

## **2.8 Chapter summary**

Health equity in rural and remote Australia is a topical issue on the political agenda at national, state and territorial levels. Interest is increasing about how people living in geographically isolated areas can reach and maintain their health and function at their best. The preceding literature review has presented a synthesis of the current body of knowledge regarding the dimensions of rural and remote health, including the somewhat overlooked factor of rural and remote health from a consumer’s perspective. This has introduced broad concepts of health equity and social determinants of health and reflected upon the architecture of social and economic factors outside of medical care. The evidence has shown that place of residence and social factors do contribute to poorer health outcomes in rural populations (Allan et al., 2010; Raphael, 2006). More specifically, a social health gradient exists throughout the socioeconomic spectrum from top to bottom and this social continuum touches everyone. However, what is less clear is how place-based factors contribute to health

equity in small-scale, non-indigenous rural and remote communities. This review of existing literature reveals a scarcity of studies relating to measuring health equity at the grassroots level in a rural and remote health setting. Chapter 3 provides a detailed framework for the investigation including the selected methods, the rationale for utilising these methods and approaches to ensure methodological rigour.

### **3 Research Design**

*“Research is formalised curiosity. It is poking and prying with a purpose,”*

*Zora Neale Hurston (1942)*

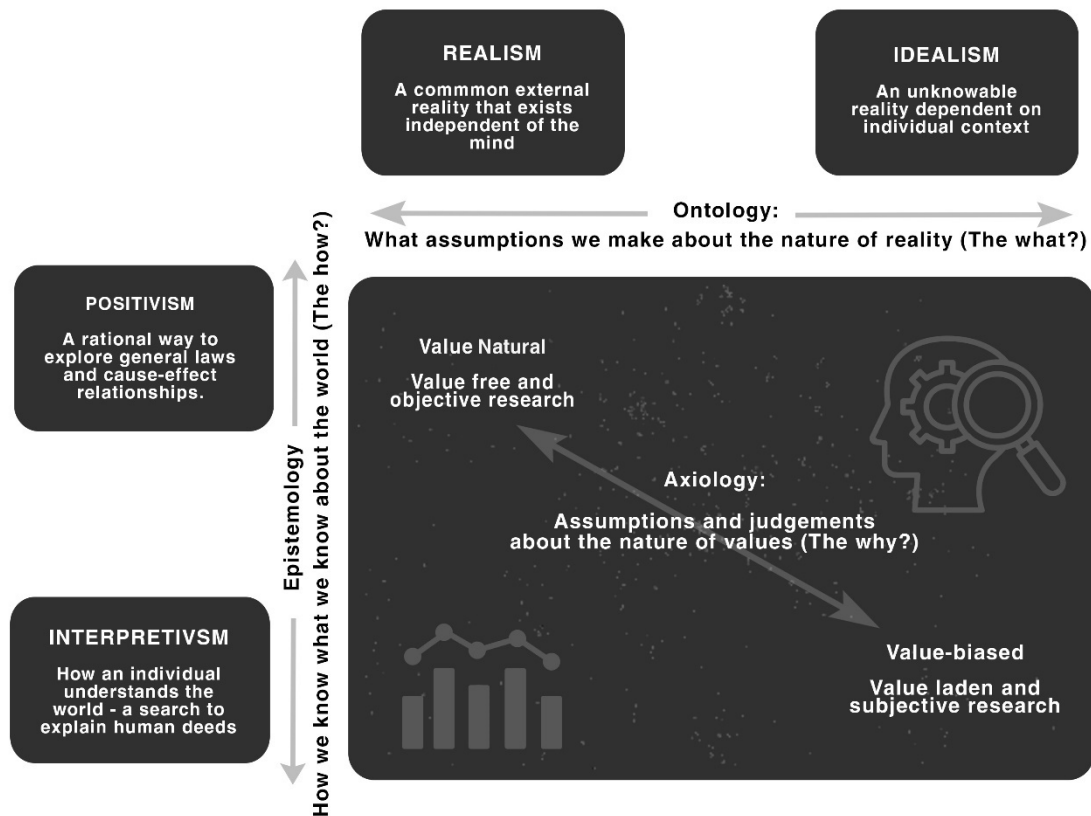
#### **3.1 Introduction**

This section explains the overall research approach taken to this project, including why the methodology was chosen and how it was applied. It demonstrates how the research design is integrated with the stated research goals and connects the specific research process (or “how to”) to the broader research objectives (or “why to”). Theoretical assumptions are explored within a health equity inquiry framework and take into account the researcher’s position in a rural community. Finally, this section describes an introductory strategy that guides the data collection and analysis phases.

#### **3.2 Research philosophy**

Leavy (2017) states that philosophical assumptions (ontology, epistemology, axiology and methodology) are rooted within a theoretical paradigm. An inquiry framework or philosophical view forms the foundation of this research and is considered to be the set of beliefs shaping the project. Several paradigms have been taken into account, as illustrated in Figure 12 which captures the broad spectrum of ontological, epistemological and axiological assumptions and approaches of a research project.

Figure 12: Dimensions of research philosophy



Note: Figure recreated by the author (adapted from Lu & Sexton, 1990, p. 736)

### 3.2.1 Axiology

The term axiology refers to a branch of philosophy that focuses on the role of a researcher's own value system throughout the entire research process (Hallebone & Priest, 2009). On an axiological assumption, this thesis explores longstanding health disparities in The Gemfields from the perspective of various people. Project participants and the researcher will bring a range of constructed realities. Consequently, the research is value-laden and in this instance, the researcher played a significant role in judgements about value. For example, personal assessments determined what was valued when conducting interviews and what was valued in research findings. This study encompasses both qualitative and quantitative data and the researcher made subjective decisions about what information or findings were worthy of reporting. In this instance, the researcher possessed an interpretive philosophy and recognised there are multiple ways of interpreting the world. Therefore, wherever possible, in order to ensure methodological integrity, the researcher endeavoured to have an open and inquiring mind and thereby avoid a closed concrete mindset. This was especially relevant when conducting interviews with participants so as frame questions in such a way that they were not leading or showing either conscious or unconscious bias.

### **3.2.2 Ontology**

Ontological suppositions denote the philosophical belief structure belonging to the nature of the social world (Leavy, 2017). A simple way to describe a personal ontology is that which an individual thinks is real or the nature of their reality. Ontology is a system of beliefs that reveals an individual's interpretation about what constitutes a fact (Creswell & Poth, 2018). Every researcher has his/her own perception of reality and therefore it is essential for a research project to acknowledge ontological assumptions. It is also critical for researchers to have an innate awareness of their own ontological perceptions in order to define how best to engage with their project.

An idealism viewpoint informed this project's ontological position. Idealism values subjective experiences and can use an amalgamation of techniques in order to answer research questions (O'Leary, 2017). This ontological position recognises that there are many different ways to interpret the world and search for explanations of human capacity. Idealism purports that reality is only comprehensible through the human mind and socially-constructed meaning (Leavy, 2017). In this sense, knowledge is both built and based on authenticity and real-world experience. The researcher's motivation was to illuminate our understanding of the complex and enduring social phenomena of rural health inequity in The Gemfields. It was the researcher's intent to understand the issue in a real-life setting. From this ontological assumption of different people's perspectives, this research seeks to understand the place-based factors that positively or negatively influence health equity in The Gemfields. For this reason, the reality was predominantly unknown and constructed individually by the participants.

### **3.2.3 Epistemology**

In simple terms, epistemology is about how the researcher knows what they know, how they perform their role and how they interact with research participants. That is, epistemology focuses on the general assumptions about what we know to be true (Leavy, 2017). When considering epistemology, it is essential to understand how we acquire and accept knowledge about the world around us. This project is embedded from the constructivist perspective of a rural health researcher. Having a rural identity means the researcher's personal background influenced the research inputs and outcomes (Farmer, Munoz, & Daly, 2012). For example, the researcher's rural positionality meant that they possessed a conscious and unconscious understanding of social dimensions, activities and language in rural settings. Being more attuned to rural and remote life, compared to an urban-based

researcher, helped the researcher gain authenticity with participants and help them ‘fit-in’ with social system nuances. Knowing the rural way of life was positively deployed to access key stakeholders within the community and easily comprehend research findings about rural people, places, or services. In this way, the researcher and reality depended on each other. This epistemological position suggests that as human beings it is not possible to conduct value-free research.

On the epistemological assumption, the study is concerned with the causal agency between place and inequity in a defined rural and remote setting. This ‘rural and remote setting’ is firmly connected to intersubjective behaviours of individual participants and the researcher. Therefore, the interpretative approach was deemed to be the best one for this analysis because it recognises the personal positionality of the researcher and close-knit nature of participants living in the small rural and remote setting of The Gemfields community. It is this social constructivist basis that guides the research design and methodology.

### **3.3 Methodology**

Methodology is the researcher’s step-by-step plan that outlines different elements of the research process and overall research strategy (Leavy, 2017). Researchers wield direct influence over what methodology they choose for their project and the decision is influenced by certain epistemological, axiological and ontological assumptions and/or beliefs (Creswell & Poth, 2018). This section outlines the research design and describes the overall research process, tests the validity of this research and justifies the units of analysis, sampling strategy and case study approach.

#### **3.3.1 Methodological approach**

Selecting the right research methodology is one of the key factors that can determine the success or failure of a research project. Harrison et al. (2017) have described methodology as the lens through which a researcher makes considered judgements about the investigation. A researcher’s worldview, which incorporates axiology, ontological and epistemological perceptions as described above, has informed the selected methodological approach (Grix, 2010). Underpinning any research process is the orientation of philosophy and methodological approach with the research aim and methods employed. A case study methodology was embraced in order to obtain an in-depth understanding of the place-based factors that may inhibit or enable health equity in a rural and remote community.

Innovation in the health services arena is common, but the question of how these innovations are diffused, adopted and sustained within an organisation or community is not well understood. In health service research, Rapport et al. (2018) forecast that future health care developments will be driven by scientific methods able to translate research findings into practical outcomes, and in this way generate positive change. Case study research is one such category of social science research that provides a framework for an in-depth process of inquiry which systematically records rich descriptions of one entity (Crowe et al., 2011; Mills, Durepos, & Wiebe, 2010). Silverman (2017) and others have described the case study as the presentation of intensive, in-depth, multi-faceted, complex issues in real-life settings. They are particularly useful when a researcher wishes to examine a 'case' or example to gain insights into the whole (Crowe et al., 2011).

Case study research is a form of sociological enquiry that Yin (1993) influentially notes is used to explain how or why a situation or event happens in its natural setting. According to this author "the all-encompassing feature of a case study is its intense focus on a single phenomenon within its real-life context" (Yin, 1999, p. 1211). Green and Thorogood (2018, p. 284) described a case study as an "in-depth study undertaken of one particular 'case', which could be a site, individual or policy". A key aspect of the case study is a clearly identified pre-defined boundary that specifies the social group, organisation or geographical area under investigation (Crowe et al., 2011; Miles & Huberman, 1994). As Liamputtong (2013) noted, case studies usually operate within a 'bounded system', which are interconnected with an explicit time, place, event or activity. For this reason, the scope of the case study (nature and time period) is detailed with a clear beginning and end, and is a unique aspect of an individual example grounded in the real world. The literature suggests it can be both the process and end product of inquiry (Creswell, 2009; Luck, Jackson, & Usher, 2006; Stake, 1995). The term 'case study' is derived from the Latin noun *casus* – meaning 'individual object'. Interestingly, within a health setting patients or consumers are often referred to as 'cases', which is a practical example or real-life application of the term.

In the health sector, insights from case study research reveal this approach can be deployed as a teaching technique or for instructional purposes in an education setting (Baker, 2011), record keeping (Gillham, 2010) and as a problem-solving strategy (Harrison et al., 2017). For example, there is a long-standing tradition of the 'case report' or 'grand round' in the medical profession, which is the formal cross-disciplinary educational meeting to discuss the clinical 'case' of one or more patients (Crowe et al., 2011). Both Crowe et al. (2011) and

Baker (2011) note the value of case study research and the many advantages of employing this methodological approach in health care research. Yet, they also agree that the case study strategy of inquiry is an under-utilised evidence-based practice in this sector. One strength of case studies is that they can present the novel aspects of quality improvements in healthcare for wider diffusion. However, there is a chasm between what works in one healthcare setting and implementation of these practices in another setting (Crowe et al., 2011). This is a result of a complex and variable operational environment where it is difficult to advance widespread adoption of worthwhile practices.

How a case study is selected is important. Robert Stake, in his seminal book *The Art of Case Study Research*, first characterised case studies into three categories: *intrinsic*; *instrumental*; and *collective* (Stake, 1995). Yin (2009) contended that an intrinsic case study is exploratory in nature and is often selected based on its uncommon attributes or uniqueness within a real-life setting, an assertion supported by Crowe et al. (2011) and Gray (2013). On the contrary, Silverman (2017) argued that it is the ordinariness of the intrinsic case study that peaks the genuine interest of the researcher. The intrinsic case has its shortcomings, as detailed by Yin (1999), because there is often an intense focus on understanding a single phenomenon without any attempt to generalise or theorise beyond it. However, he also noted that such concerns about generalisability can be alleviated by combining qualitative and quantitative measures of populations and purposive sampling (Silverman, 2017). For example, a case study of a single remote general practice medical clinic (the ‘case’) may include quantitative evaluation about Medicare bulk-billing rates (i.e. in Australia when a medical provider ‘bulk bills’, the government pays for the service and it is free for the consumer) and qualitative analysis of a patient’s perception of medical consultation costs. This is done in order to draw conclusions about the affordability of health services in a rural setting.

An *instrumental* case study, alternatively, takes a broader approach and selects a ‘typical’ case that enables the researcher to gain insight into a particular issue. In this situation, although analysed in depth, the case study is not the main focus but rather the issue under investigation. Academic publications about case studies suggest it is possible for an intrinsic case study to develop into an instrumental one by generating findings that are transferable to other contexts (Crowe et al., 2011). *Collective* cases refer to the simultaneous or sequential selection of multiple case studies that investigate a general phenomenon. Debate in the literature was apparent about whether to use single or multiple case studies. A single unit of investigation was presented as providing a more in-depth analysis of a phenomenon,

whereas others have asserted that a multiple case study approach builds a better empirical base for theoretical insight (Baker, 2011; Ketokivi & Choi, 2014). Yin (1993), a seminal scholar of the case study approach, argued the situation whereby a single case is appropriate when the case:

- a) presents a significant setting to test (i.e. verify, question or extend) an existing theory;
- b) has exceptional or extreme characteristics; or
- c) the researcher has the opportunity to observe or examine a phenomenon not previously accessible to scholarly investigation.

As discussed above, regardless of which typology is undertaken case study research can be valid, reliable and vigorous provided that potential risks are identified and managed. Furthermore it is essential that the research study design is well-considered using proven protocols (Gray, 2013; Liamputtong, 2013; Somekh & Lewin, 2011; Yin, 1993).

In order to ensure research validity and reliability the design of the case study is crucial. Gray (2013) argued that the success or failure of this *strategy of inquiry* hinges on a well-defined unit of analysis. That is, the set of objectives (or object of study) the research focuses on rather than how many case studies are examined, is crucial. Employing multiple sources of proof to build a ‘chain of evidence’, when combined with purposeful linkage to theoretical models, will ensure greater methodological rigour. This may include a combination of structured or semi-structured interviews, participatory or direct field observations, archival analysis and document searches (Gillham, 2010; Liamputtong, 2013). The literature also suggests that triangulation, the aggregate assessment of data derived from various contexts, may improve the reliability of a single case (Liamputtong, 2013; Yin, 2009). Therefore, the ability to interpret data through different lenses requires a broad variety of data collection techniques from multiple sources. In essence, data triangulation occurs in situations in which different data intersect to reveal contextual knowledge.

The researcher’s role in case study research is well recognised in the literature. Mills et al. (2010) reminded researchers to consider their position within the research site and the identity that they assume (i.e. labels such as ‘insider’, ‘outsider’, ‘expert’ and ‘observer’). Acknowledging the researcher’s perspective is imperative in order not to intentionally or unintentionally sanction or silence particular points of view. When conducting case study research, Mills et al. (2010) provided three parameters to ensure high-quality output: nurture

multiple perspectives; proceed systematically; and solicit authentic feedback. It is important to consider how different epistemological approaches to case study research may result in unintended consequences, which are inherently hard to explain. Crowe et al. (2011) cautioned researchers on how their own assumptions and personal position may influence findings. Such influences are hard to eliminate and scholars have argued the validity of this type of study is potentially compromised due its subjectivity and a bias towards verification of preconceived notions (Creswell, 2009; Flyvbjerg, 2006). In other words, there is a propensity for researchers to insert their own interpretations onto results, which may limit analytical rationality.

Consequently, the case study methodology is not without its detractors and is resisted by some social researchers (Pratt, 2008; Silverman, 2017). A common reproach levelled at case study research is that it tends to generate a large volume of data that requires a significant amount of time and effort to manage, analyse and interpret (Crowe et al., 2011; Thomas, 2015; Yin, 2009). Luck et al. (2006) argue that the single case approach in particular has a number of limitations relating to theory, reliability and validity. Firstly, the development of one case study limits the degree of generalisability relating to models, theories or conclusions. Further limitations relate to the results from a single case being integrated inappropriately and lacking precision. Others are adamant that case research has limited scientific value and is only viable to use as a pilot method or as the first stage of a total research process (Flyvbjerg, 2006; Thomas, 2015). However, these assertions are strongly rejected as academic misconceptions by others (Baker, 2011; Flyvbjerg, 2006). Pratt (2008) proposed that many complaints levelled against case research relate to the assumption that all research output must seek formalisation, abstraction and generalisation. However, Ketokivi and Choi (2014) rejected outrightly this premise and argued strongly that the formal and the abstract pertain to research policy and not methodology. They asserted that one critical implication of a propensity towards this negative default position is the potential to repudiate the value of situational groundedness. Taken as a whole, traditional criticisms of the case study (such as lack of rigour, limited generalisability and being prone to bias) are becoming less widely accepted as research design strategies are strengthened and constructed coherently using both qualitative and quantitative paradigmatic positions (Luck et al., 2006).

Setting aside these scepticisms, the literature indicates continuing strong support amongst scholars for a case study approach as a process of academic discovery about the ‘how’ and

‘why’ of a particular phenomenon (Baker, 2011; Gillham, 2010; Mills et al., 2010; Yin, 1993, 2009). It is the inclusion of context within a case study that enables social researchers to view a situation in its entirety and to consider the scenario as a whole (Gray, 2013; Liamputtong, 2013; Thomas, 2015). The use of different methods and sources of data facilitates a ‘thick description’ of the social reality in its natural state (Stake, 2008). As described by Ketokivi and Choi (2014), case studies offer methodological diversity when it comes to how a study is framed and analysed. Proponents of the case study maintain that it is a form of context-dependent knowledge valuable for learning more about an understudied phenomenon in real-life scenarios (Liamputtong, 2013). Studying a novel type of case offers the opportunity for open disclosure and lucidity of reasoning with an ultimate goal of the creation of knowledge. Additionally, the selection of a single case study may also be used to exemplify an extreme and unusual situation.

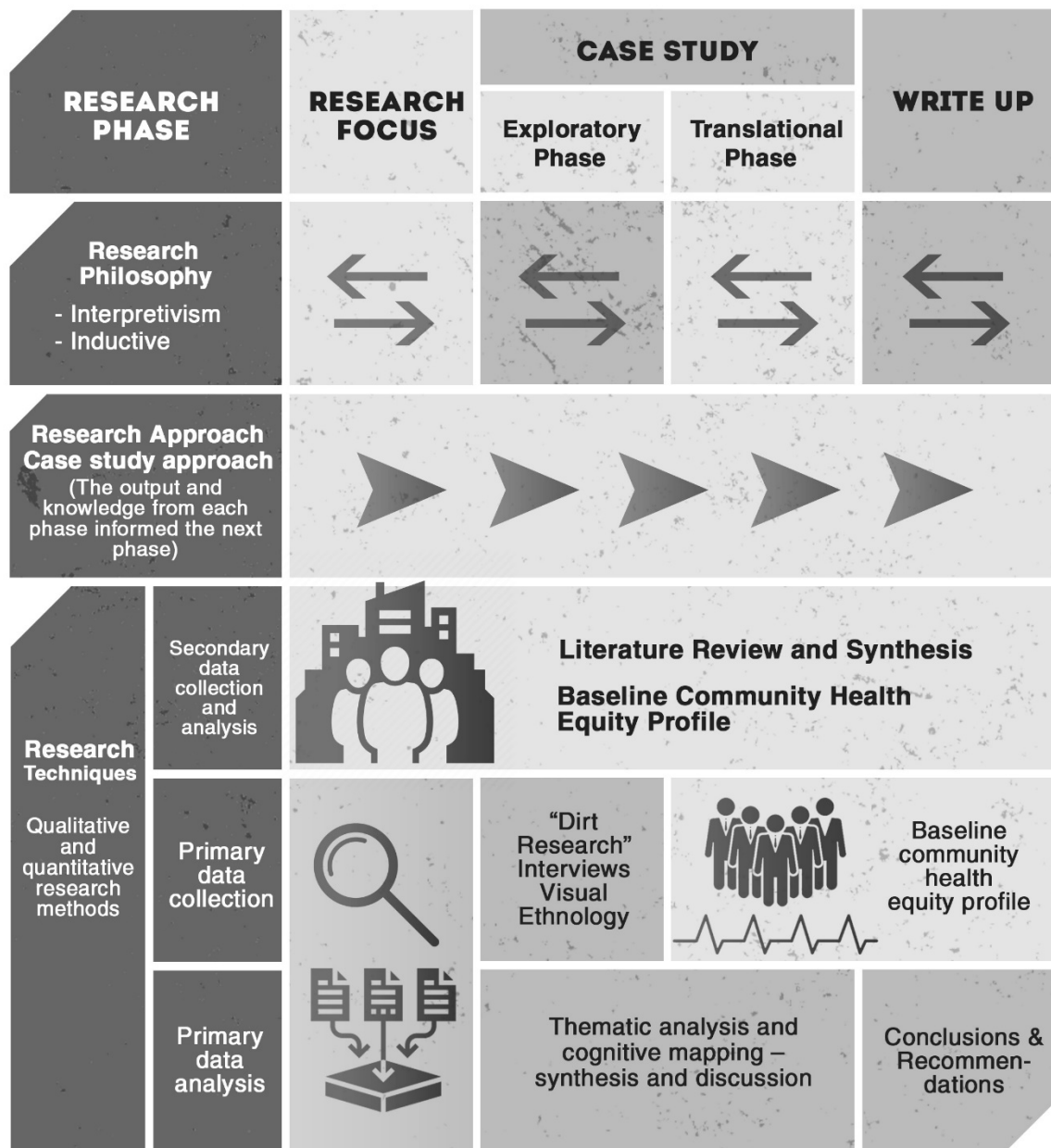
It is the rareness of an ‘extreme’ case study that makes the case of value (Seawright & Gerring, 2008; Yin, 1993). In summary, the case study continues to be recognised as a reliable and valid research methodology (Creswell, 2009). However, Baker (2011) and Luck et al. (2006) indicated that although case study research is an established practice in organisational research, it has not been embraced fully in health disciplines. Although the literature suggests case study research is under-utilised in health-related settings (Crowe et al., 2011; Liamputtong, 2013; Luck et al., 2006), it does lend itself well to this type of ambiguous, complex and unpredictable environment. While far from straightforward, Crowe et al. (2011) argued that this type of experimental design can yield compelling insights into many facets of health and healthcare delivery and hence should be more widely considered by researchers. As Liamputtong (2013) adroitly concluded, research of a case study is not intended to ‘represent the world’ but rather to make a case to understand the world better.

As previously stated, the case study is a valid and reliable research methodology provided the case design applies a rigorous approach and uses proven protocols (Thomas, 2015; Yin, 2009). A case study is well suited to academic exploration when seeking answers to ‘how’ and ‘why’ questions (Liamputtong, 2013). A distinguishing characteristic of the case study methodology is its interpretive paradigm. The approach was chosen because the topic is under-researched and the current views of the population of interest were unknown (Creswell & Poth, 2018). This study involves the unique combination of case study research, dirt research and ethnographic mapping within a rural and remote health setting. The

reasoning for utilising the methods and measurement tools employed in this research study are outlined further in this chapter.

The research aims were realised through three study phases: research focus phase; case study exploratory phase; and case study research translation phase. The output and knowledge from each phase provided advance focus for the next, as illustrated in Figure 13 (based on Sexton & Barrett, 2003, p. 624). First, the research focus phase laid the conceptual foundation through secondary data collection and analysis within the literature review. Second, the exploratory phase systematically produced insights about the novel and complex aspects of the case study through primary data collection in the form of ‘Dirt Research’, which included in-depth semi-structured interviews and visual ethnology, i.e. the generation and analysis of new information to answer the research question (O’Leary, 2017). Finally, the translational research phase used key findings from the exploratory phase to analyse and map content and develop a new health equity audit tool for small-scale rural and remote communities.

Figure 13: Overall research process within a sequential explanatory design



Note: Figure created by the author (adapted from Sexton & Barrett, 2003, p. 624)

An inductive methodological approach, or inductive reasoning, was implemented throughout this case study (Gray, 2013). Taking a ‘bottom up’ approach, the case commenced with a specific focus on the topic of interest (health equity in The Gemfields). Next, data were collected at the grassroots village level using ‘outside’ quantitative data sets and ‘inside’ qualitative data sets (Dirt Research). From this set of integrated and immersive studies, data were analysed and patterns identified (content analysis, thematic analysis and cognitive mapping). Regularities (or irregularities) in experience (premises) were observed to reach conclusions (generate applied/translational research output). In order to ensure methodological rigour, a framework for investigation was adapted from Baker (2011, p. 134)

and details the validity, reliability, representativeness and generalisability of the case study design as documented in Table 5 below.

Table 5: The tests for validation of this research

Test	How it was achieved
<b>Validity</b>	
Construct validity (Data collection)	<p>Data collection triangulation</p> <ul style="list-style-type: none"> <li>&gt; In the research focus phase, understanding was developed through the conduct a literature review (see Chapter 2) and baseline community health equity profile (see Chapter 4)</li> <li>&gt; In the case study exploratory phase, data was collected via multiple means including archival data, interview data, participatory observation, direct observation and visual representation (see Section 3.4)</li> <li>&gt; Interviews were targeted directly on the research topic and insightful (original and illuminating)</li> </ul> <p>Research Protocols</p> <ul style="list-style-type: none"> <li>&gt; Interview transcripts and thesis drafts were reviewed by supervisors</li> <li>&gt; A clear chain of evidence is provided (see Section 3.4)</li> <li>&gt; A clear explanation of data-collection circumstances is provided (see Sections 3.4 and 3.5)</li> <li>&gt; A clear explanation of data analysis procedures is provided (see Figure 13)</li> </ul>
External validity	<p>Research design</p> <ul style="list-style-type: none"> <li>&gt; Rationale for case study selection is provided (see Section (see Section 3.3.3)</li> <li>&gt; Details on case study context is provided (see Section 1.2 and 1.3)</li> </ul> <p>Documentation</p> <ul style="list-style-type: none"> <li>&gt; Stable (available for review), unobtrusive and exact</li> </ul>
Internal validity (data analysis)	<p>Research design</p> <ul style="list-style-type: none"> <li>&gt; The research framework was explicitly derived from literature (see Table 8)</li> <li>&gt; Theory triangulation (different theoretical lenses used for interpretation)</li> </ul>

Test	How it was achieved
<b>Reliability</b>	<p>Case study protocol</p> <ul style="list-style-type: none"> <li>&gt; The use of semi-structured interview protocol using the same questions to 45 participants enhanced the reliability of the exploratory phase (see Section 3.4.4)</li> </ul> <p>Case study database</p> <ul style="list-style-type: none"> <li>&gt; Interview transcripts are available upon request</li> </ul> <p>Study area identification</p> <ul style="list-style-type: none"> <li>&gt; The actual name of the study area is explicitly provided in the thesis.</li> </ul>
<b>Representativeness</b>	<p>Sampling strategy</p> <ul style="list-style-type: none"> <li>&gt; The use of a sampling strategy (sample size and selection) to select interviewees enhanced the representativeness of the data (see Section 3.4.3)</li> </ul>
<b>Generalisability</b>	<p>Case study design</p> <ul style="list-style-type: none"> <li>&gt; Although a single case study (intrinsic) was selected, the interviewee sampling strategy and study area context (rural and remote non-indigenous community) facilitates generalisability (instrumental) in other developed and developing countries (see Section 3.3.2)</li> </ul>

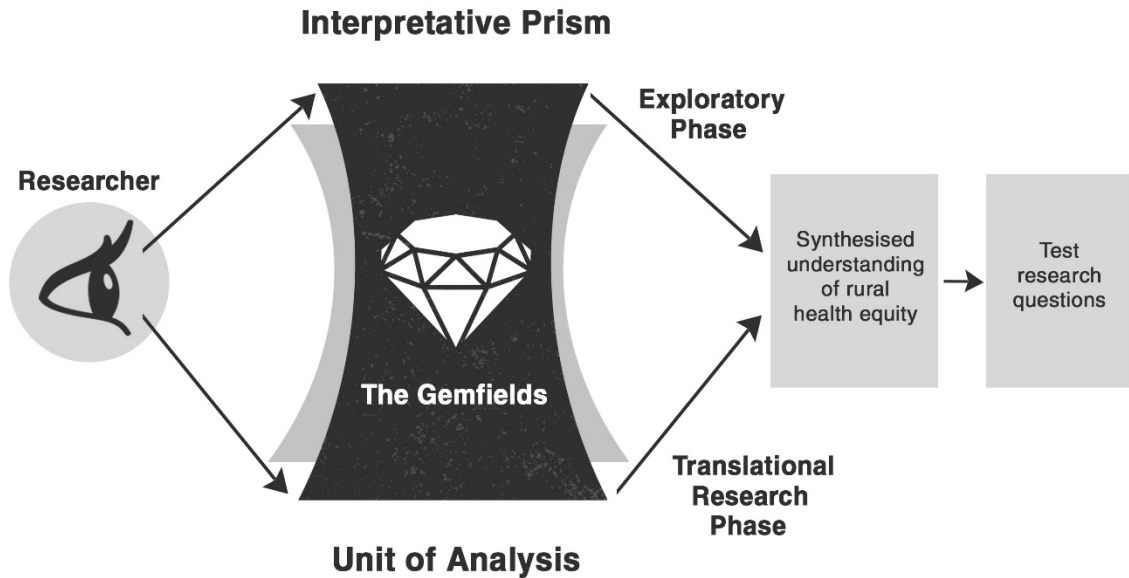
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Note: Table created by the author and adapted from Baker (2011, p. 134)

### 3.3.2 Unit of analysis

The seminal work by Miles and Huberman (1994, p. 25) noted that a unit of analysis is a ‘phenomenon of some sort of occurring in a bounded context’. This observation influences the way in which an initial research question is defined (Yin, 1993, p. 22). The unit of analysis in this research is taken to be ‘health inequity’ (see Figure 14), which was investigated through an ‘interpretative prism’ of The Gemfields. The exploratory phase and the translation research phase helped to inform and synthesise insight into health equity in The Gemfields and subsequently scrutinise the research questions and objectives.

Figure 14: The unit of analysis within the case study



Note: Figure created by the author

### 3.3.3 Case study strategy

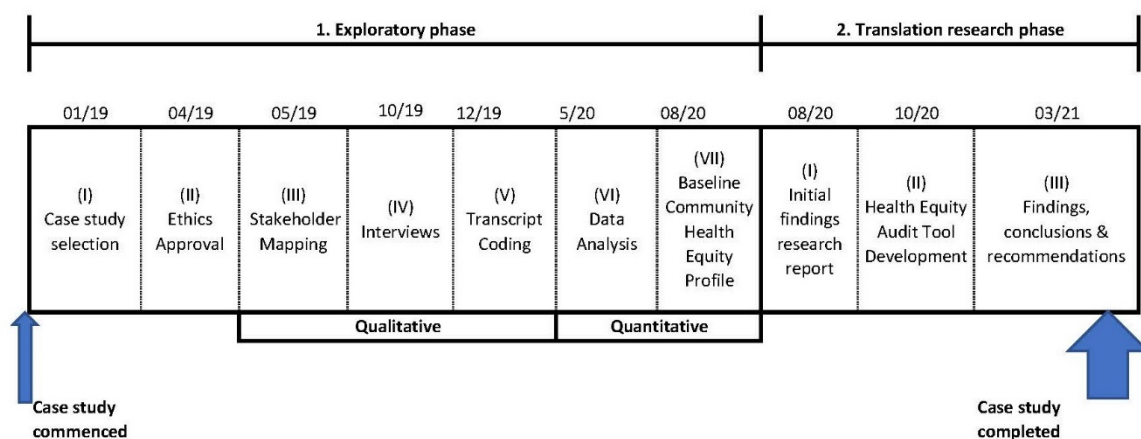
A single case was selected to provide a comprehensive process of inquiry that holistically analysed one phenomenon (Mills et al., 2010). The scope of the study comprised the geographical area commonly referred to as The Gemfields, in Central Queensland, Australia. This is a novel rural and remote village setting that presents exceptional characteristics not usually evident in non-indigenous communities in developed countries. In fact The Gemfields may even be considered an ‘extreme’ case, as described by Yin (1993), due to its rareness. The unitary exploration of this topic was driven by a desire to know more about the uniqueness of the case as well as the opportunity to gain special access to the site that had not otherwise been scrutinised by other researchers. A location such as The Gemfields with unique and complex factors is what Stake (2008) describes as an intrinsic case study. The uncommon attributes of The Gemfields lend themselves to an intrinsic case study as they facilitate an intense exploration of distinctive and multi-faceted issues within a real-life context (Crowe et al., 2011; Liamputtong, 2013; Silverman, 2017). While learning about the richness and complexity of the study area (intrinsic), the researcher was also able to generalise from within (instrumental). The identified sample case contributes to an in-depth analysis of health and place in a highly disadvantaged, non-indigenous (predominantly white), small-scale rural and remote community in Australia. It examined critically the existing social, economic and environmental ecosystem to understand better why health

inequities stubbornly persist even in a wealthy, economically developed nation such as Australia.

A sequential exploratory design was implemented as a way to adequately observe the full depth, scale, and intricacies of this intrinsic case study (Gillham, 2010). As previously described, a considered review of literature indicates that a case study methodology, using qualitative and quantitative data, can help illuminate inconsistencies and problems in health status or to categorise social determinants of health (Baker, 2011).

Figure 15 outlines the case study research activity over a 27-month period. The research project took place between January 2019 and March 2021. There were two main research phases in this project: the exploratory phase and the applied/translational research phase, both of which are explained in detail in Table 6 and Table 7.

Figure 15: Case study phases and research activities



Note: Figure created by the author

Table 6: Exploratory phase of research activities (January 2019 to August 2020)

Phase		Duration	Case study research activity	Outcome
I	Case study selection	January 2019	Solidified research proposal with supervisors	The Gemfields selected
II	Ethics approval	January – April 2019	Developed ethics proposal (and associated collateral) for submission to CQUniversity Human Ethics Committee	Ethics approval given on 8 April 2019 (ID: 21425)
III	Stakeholder mapping	May 2019	Identified key health services and personnel in The Gemfields	Stakeholder map of The Gemfields produced (Appendix 1)
IV	Interviews	June – October 2019	Refined interview protocol (consent form, information sheet, introductory emails, flyers). Arranged initial interview schedule over a nine-week period.	Conducted 45 face-to-face interviews across the four villages in The Gemfields
V	Transcript coding	August – December 2019	Digitally transcribed each transcript. Checked accuracy. De-identified participants. Manually reviewed and coded transcripts.	Transcribed and coded 538 pages (177,145 words) of interview transcripts
VI	Data analysis	January – May 2020	Content and thematic analysis of transcripts	Level 3 – 30 codes Level 2 – 20 categories Level 1 – 5 themes
VII	Baseline Community Health Equity Profile (BCHEP)	June – August 2020	Qualitative and quantitative data used to develop baseline community health equity profile of The Gemfields	Baseline community health equity profile of The Gemfields developed

Table 7: Translation phase of research activities (August 2020 to March 2021)

Phase		Duration	Case study research activity	Outcome
I	Initial findings research report	August 2020	Collate initial findings and develop a report to discuss with supervisors	Initial findings report utilised to support a community not-for-profit funding application for The Gemfields
II	Health equity tool development	September – October 2020	Translate knowledge gained from research into a rapid Health Equity Audit Tools for use in small-scale rural and remote communities	Rural Equity Locale Profile (HELP) developed. Health Equity Individual Screening Tool (HEIST) developed.
III	Synthesis and discussion  Recommendations and conclusions	November 2020 - March 2021	Writing of final two chapters of the dissertation	Research knowledge synthesised. Translational/ applied research recommendations developed. Opportunities for future research identified.

### 3.4 Methods

This section outlines the methods, or procedures and techniques, employed in this study (O’Leary, 2017). That is, it explains how data were collected, analysed and used in the creation of new knowledge and why these research methods were chosen. An integrated and immersive approach was taken to this sociological and demographic health research project.

In order to improve the quality of the data, the researcher combined multiple qualitative and quantitative methods (mixed methods) during the data collection process. This approach enabled a symbiotic and mutually informative assessment of the research question being asked. These techniques included survey methods (stakeholder interviews), qualitative data collection methods (interview data, archival data, participatory observations, direct observations, and visual representation), and quantitative data collection methods to inform the baseline healthy equity profile.

### **3.4.1 Dirt Research**

From the mid-1920s, Canadian historiographer Harold Adams Innis pioneered a radically new approach to field research that he described as ‘dirt research’ (Innis, 2001). This type of direct field work involves intensive empirical and personal engagement within a defined locale with the aim of validating existing quantitative data. Innis wanted to study the interior fur trade in Canada, so he traversed the inland water, rail and road routes of early traders to collect first-hand observations and thereby gain a deep personal understanding of how the industry operated (Acland, 2014). He travelled extraordinary distances to witness and experience the inner workings of rural and regional economies in Canada and in so doing ground truth in quantifiable evidence (Stanbridge, 2014). Rather than analysing a phenomenon from a distance, this type of method enables the researcher to develop a deep knowledge of a place from the local inhabitant’s perspective. Stanbridge (2014) described Innis’s ‘dirt research’ method as a form of extreme ethnography.

The term ‘dirt research’ neatly captures the idea of providing a thick description of a situation or event that is usually represented only by quantitative data (Peters et al., 2018). It involves linking a range of different qualitative and quantitative data sources and observations in order to see beyond the obvious to create a complete picture (Ponterotto, 2006). Historically, such research has featured principally within economic and political studies (Bradbury, 1979; Dahms, 1995), yet Innis’s unconventional method can be applied to a broad range of sociological and demographic studies within rural and remote settings (Peters et al., 2018; Stanbridge, 2014) and is instructive to this study. Limited access to quantitative data in the study area resulted in the researcher spending an extensive amount of time ‘on the ground’ to fill information gaps – research endeavours that shared many characteristics with ‘dirt research’.

The aim of this intensive field work was to validate existing quantitative data by personally engaging within the defined locale of The Gemfields. Incomplete public demographic records and other information voids were the main drivers behind the decision to employ this research tactic. This important component of the case study field work involved visiting villages and observing everyday life in the small-scale, non-indigenous rural and remote settlement first-hand. This unconventional form of community-level research was required to provide additional context and a thick description of life in the different villages and on the mine fields. The researcher included several qualitative methods to validate existing quantitative data. These included engaging in informal conversations with locals and visitors, self-guided walks, ‘windshield tours’ or drive-by investigations, and social mapping. Rather than observing the community from a distance, the researcher was able to witness and experience up-close-and-personal and better understand the local inhabitant’s perspective. All of these endeavours help to inform and enrich the formal semi-structured interview process and create a complete picture of the study area. As a long-term resident of the neighbouring town of Emerald, the researcher was in a unique position to gain rare access to the people who lived or worked in The Gemfields. Having a direct line of communication with residents and health workers was extremely useful when trying to decipher the complex issues that were not necessarily obvious at face value. Hence, the dirt research ‘style’ of endeavours undertaken included examination of not-so-obvious data to gain a deep personal understanding of life on the mine fields and the inner workings of this unique small-scale, non-indigenous rural and remote district.

### **3.4.2 Community Mapping**

Community mapping has long been recognised as a useful tool to research rural community development (Fuller, Guy, & Pletsch, 2002; South, Giuntoli, & Kinsella, 2017) but less so as a means to address rural health inequity. Community mapping is a socioeconomic development practice that involves the compilation of a comprehensive inventory of existing resources at the individual, group and institutional level within a community or village (Foot & Hopkins, 2010). This inventory can comprise of both assets and deficits. The UCLA Center for Health Policy Research defines community assets as “anything that improves the quality of community life” (2018). Community assets are each of the built, social, economic, natural, service and human resources that already exist within a defined area. A health asset can be defined as “any factor or resource which enhances the ability of individual, communities and populations to maintain and sustain health and wellbeing. These assets can operate at the level of the individual, family or community as protective and promoting

factors to buffer against life's stress" (Foot & Hopkins, 2010, p. 7). In other words, community health assets help communities help themselves. Within a rural context, assets can be concrete objects like physical buildings or they can be intangible constructs such as community spirit. Health deficits, on the other hand, are the differences that exist among specific population groups attempting to attain their full health potential. These differences are the result of the systematic and unjust distribution of critical conditions or key determinants of health (Brennan Ramirez et al., 2008, p. 8). Previous research has shown a strong causal link between social conditions and communities' health sustainability (Marmot, 2010; McKnight & Kretzmann, 1993; Shahid, Vaska, & Turin, 2019).

In simple terms, community mapping is a type of resource stocktake. In the context of this study, this may include health professionals (individual level), clubs, peer support groups or not-for-profit organisations (group level), or libraries and medical centres (institutional level), as well as physical assets such as parks, pools and gyms (Shahid et al., 2019). Shahid et al. (2019) identified asset mapping as a useful tool to assess health-related needs, disparities or gaps within a locale. Asset mapping within a community health context is frequently associated with a needs-driven approach that focuses on deficiencies or what is missing (South et al., 2017). However, McKnight and Kretzmann (1993) were possibly the first to present the case for a capacity-oriented asset mapping process that concentrates on its strengths rather than its weaknesses. In other words, taking a glass-half full approach rather than half-empty one. Baker et al. (2007) argued that identifying and mobilising existing community strengths and resources can help build social capital and in turn improve population health. Asset mapping can be a positive way to identify existing resources and provides an inventory of how these resources can contribute towards addressing needs.

An asset-based approach builds on the notion of helping communities to help themselves, which is in stark contrast to a deficit-only approach that focuses merely on problems. However, both approaches (assets and deficits) are valid when considering rural health equity and there is a requirement to strike a balance between the two. Health equity solutions are often rooted in local circumstances so the combination of an asset and deficit approach can help to take stock of all of the positive attributes of the community (i.e. its unique features, special characteristics and valued aspects) while also acknowledging the barriers and gaps. This research draws on the review of health equity audit tools (see Appendix 27) conducted as part of this research while additionally building upon a community mapping tool commonly used in the resource sector - SEAT: Socioeconomic Assessment Toolbox

(Anglo American, 2015). The outcome of this synthesis is a new Baseline Community Health Equity Profile, which is discussed further in section 3.4.8.

### **3.4.3 Participant sampling**

The COnsolidated criteria for REporting Qualitative research (COREQ) checklist, developed by Tong, Sainsbury, and Craig (2007) was employed in this study to strengthen the quality and validity of the project. COREQ includes a 32-item checklist, as shown in Appendix 2, and subsequently employed in this project. As noted in the COREQ checklist, there were two participant groups. The first comprised health sector workers ( $n = 15$ ) who worked in the study area. Health worker informants came from a wide range of professional disciplines including paramedics, pharmacists, general practitioners, registered nurses, enrolled nurses, allied health practitioners and community health support workers. Meanwhile the second consisted of local residents ( $n=30$ ) who lived in one of the four villages (Anakie, Sapphire, Rubyvale or The Willows) that make up The Gemfields. Participants were selected using a purposeful and non-randomised sampling technique. Due to small geographical size of the study area, non-probability purposeful sampling was employed to select health sector workers, whereas non-proportional quota sampling was used to recruit residents from the four villages.

In more difficult, hard to reach/engage villages, a snowballing technique was applied when a key community leader or influencer was identified, or someone was suggested for interview based on the study's purpose. The method of approach was initially a combination of face-to-face conversations, a telephone call or email. However, a customised poster was also used in each locality (see Appendix 3). All participants were provided with a detailed written explanation (Participant Information Sheet – Appendix 4) concerning what the project was about, confidentiality issues, the risks associated with participating in the study, how their data would be used and stored and that participation was voluntary. There were no refusals to participate or withdrawals from the study. Each interviewee was also asked to read and sign a study consent form (Appendix 5) in order to formally record their agreement to take part. Participants were also asked if they needed assistance to read the written material but no informants required this support.

### **3.4.4 Interviews**

Interviews are a flexible way to gather qualitative data and are especially useful for complex and multilayered situations. Face-to-face interviews, in particular, generally provide wide-

ranging and detailed insights across a variety of disciplines and themes (Leavy, 2017). Semi-structured, individual, face-to-face interviews were conducted *in situ* with all 45 participants to explore their view of what was being investigated. This method was considered to be the best approach for a complex situation, an effective way to scope human experience and gain insights in a subjective manner (Kumar, 2019). The semi-structured interviews, which combine structured and unstructured questions, enabled greater flexibility and allowed for a broader and more comprehensive line of questioning (see Appendices 6 and 7 for interview questions). An advantage of this approach was that the researcher had direct control over the rhythm and flow of the process, making it possible to follow-up on any new information or perspective the respondent provided. Limited notes were made at the time of interviews (with participant permission) as attentive listening and focus was required, but general observations were mostly noted after the interviews. Due to the close-knit community, careful consideration was given to interview timings, physical setting and participant anonymity and/or confidentiality. Interviews were conducted during work hours in a public place to ensure the safety of the interviewer (see further details in Section 3.5). Such places included the public bus shelter opposite the main fuel station in Sapphire (Figure 16), a community hall in The Willows and Anakie, and the local library in Rubyvale.

Figure 16: Public bus shelter in Sapphire – one interview location



Note: photo by author

A slight disadvantage of the semi-structured interview method is the longer length of time required to complete each session (on average 45 minutes); hence the time required to transcribe and check each interview was prolonged. In this instance, interviews with informants were digitally audio recorded, digitally transcribed, and converted to Microsoft Word documents. In order to ensure informant anonymity, identities were removed at the transcription stage and interview participants were allocated an alias. At the time of transcription each interview was given an individual case identifier with HR indicating health worker and GR indicating Gemfields Resident. This process resulted in the generation of 538 transcript pages, which equated to 177,145 words to review. Data collection, transcription and preliminary data analysis was conducted concurrently in order to monitor for data saturation, which was achieved when no new information or topics emerged. When collecting primary data, consideration was also given to the evaluation of the six health equity tools examined as part of this study's literature review.

### **3.4.5 Visual Ethnology**

Pictures, accompanied by text, and video recording (aerial drone imagery) have been utilised in this thesis to add a depth of understanding that is distinct from narrative written production. The inclusion of visual knowledge in this study produces objective evidence to understand better the case, while framing the work as a socially constructed praxis (MacQuarrie, 2012). Images were chosen on the basis of enhancing the flow of information, building representational rigour and contributing to the objectives of the project. Visual expression presented herein enables the researcher to communicate thoughts and findings in a way that language alone could not deliver adequately. That is, pictorial representations provide an alternative way to analyse reality that cannot be easily expressed or translated through words. The use of visual research methods in the field also provides crucial context for the reader and a deeper appreciation of the unique study area.

The purpose of the visual ethnology was to capture and express the perceptions and social realities of people who live in The Gemfields (Given, 2008). The researcher visited the respective case study villages many times over the course of the project. The first visit included a "windshield survey" during which the researchers became acquainted with the village and its environment, collecting initial evidential photographs (Hunt 2012). The purpose of the initial field visit was also for the researcher to develop a "skilled vision" (Grasseni, 2007; Pink, 2007). Photographs were taken to document visual representations of village life at different times of the year and build a narrative of the village's visible

demographic and socioeconomic experiences. In order to maintain privacy and confidentiality, all images included in this thesis are of public places or non-identifiable infrastructure and does not include images individuals.

#### **3.4.6 Content analysis**

Content analysis is a qualitative research tool that condenses unstructured text into meaningful units as determined by the researcher (Somekh & Lewin, 2011). Conceptual content analysis served to determine the frequency of responses in a text, which involved quantifying (counting) selected categories occurrence in the data. Due to the large volume of data, content analysis was initially performed manually and supported by a computer-assisted qualitative data-analysis software (CAQDAS) tool (NVivo) as a secondary step.

#### **3.4.7 Thematic analysis**

Thematic analysis is a form of pattern recognition within qualitative data. In other words, the researcher is identifying, classifying and connecting patterns or themes in relation to the research questions. The Framework Method was the technique utilised to manage and analyse qualitative data in this study, as competently described by Gale, Heath, Cameron, Rashid, and Redwood (2013). This method has been successfully used for over 25 years and has been recognised in health research as an effective way to examine important issues (Gale et al., 2013). This approach was chosen due to its flexibility while still ensuring rigour and transparency through the use of a logical structure to analyse data. In this instance, the matrix method was customised to suit the needs of this study and provided a step-by-step process to analyse the large data set. Implementing this systematic approach to the coding process provided a rich, complex account of data as recommended by Braun and Clarke (2006) and Creswell (2009). The Framework Method aligned with an inductive data-driven approach whereby the themes emerged from the data itself (Silverman, 2017). The final output of the entire qualitative data set consisted of interpretive concepts or themes. The following seven-phase procedure for analysis was undertaken in this study:

Phase 1: Transcription

Phase 2: Familiarisation with the interview (read and re-read data, noting initial ideas)

Phase 3: Coding (generate initial codes)

Phase 4: Develop a working analytical framework

Phase 5: Applying the analytical framework

Phase 6: Charting data into the framework matrix

## Phase 7: Interpreting the data

Table 8 provides an overview of how each phase was applied as part of this research project. Qualitative analysis of the large volume of interview data was managed using a CAQDAS tool. In this case, NVivo software was chosen to organise, code and interpret the collected qualitative data.

Table 8: The Framework Method – qualitative data analysis

Phase	Application in research project
1. Transcription	Interviews were digitally recorded and digitally transcribed using a third-party transcription service. Final output was a Microsoft Word Document. All transcripts were reviewed by the researcher for errors and ensured data was de-identified (listened back and read simultaneously).
2. Familiarisation with the interview	Once transcribed, a hard copy of each interview was printed out and read by the researcher. Key terms and initial impressions were identified and highlighted as comments in each MS Word Document.
3. Coding	Transcribed and de-identified interviews (MS Word documents) were uploaded to NVivo software as an individual data file (see section 5.3). The researcher coded each file using an initial set of codes (Level 3) with a brief definition. Following the first attempt at coding, a set of 30 codes (Level 3) formed the initial analytical framework. A second review of interviews was completed, at which point it was determined that some codes were conceptually related and were thus grouped together into similar categories (Level 2).
4. Developing a working analytical framework	The process of applying and refining the analytical framework continued until the final framework was clustered into five themes (Level 1). A code book was developed to explain how higher-level node groupings were applied with a brief explanation, how choices were made, and examples of what elements might be included and/or excluded. See Appendix 8 to view the code book.
5. Applying the analytical framework	The final analytical framework was applied to each case using the CAQDAS software NVivo version 12. Once applied, data for each Level 2 factor was extracted into a separate MS Word document.
6. Charting data into a framework matrix	After applying the analytical framework, extracted data was summarised into a matrix using Microsoft Excel. A separate spreadsheet was used for each category. This framework provided a structure for the researcher to manage the vast amount of data collected from interview participants.
7. Interpreting the data	Interrogation of the matrix helped the researcher to make connections within and between codes. This process involved the generation of ideas and possible explanations of what the data set was displaying. This interpretation stage enabled the identification of five themes (Level 1 factors).

Note: Adapted from Gale et al. (2013)

### 3.4.8 Baseline community health equity profile

Assessing a community's health-related needs, disparities, inequities and assets requires baseline data collection. A community health equity profile is a key element to any social assessment of health determinants in a rural and remote community. A summary of important demographic and economic characteristics of a community's social environment is used to guide health services and resource allocation. Secondary quantitative data informed the development of a baseline health equity profile of the study area. Collating and analysing existing data sources helped to establish a baseline understanding of the area under investigation. This approach is useful when secondary data exist. However, national or state level data sources (i.e. ABS) do not always exist for small-scale rural or remote communities. In this instance, secondary data were sourced directly from the community (i.e. service providers or businesses). However, a form of 'dirt research' was required to fill the information gaps where quantitative data were not available. This process is an important step when trying to delineate the existing service capabilities and capacities of an area of analysis. The traditional needs-driven approach (i.e. 'What is missing in the community?') was combined with a strengths-based assessment of existing community health assets. The development of a baseline community health equity profile facilitates the mapping of health assets and deficits within a study area, in this case The Gemfields. Preserving confidentiality within small, connected rural and remote communities can be challenging, so an abstracted, de-identified, population-related data set was used at all times.

## 3.5 Ethics and data management

### 3.5.1 Ethics

Ethics refers to the branch of knowledge that deals with moral principles. Leavy (2017) notes that the term *ethics* originates from the Greek word *ethos* or *character*. It incorporates a system of moral values and fundamental principles of civilised human conduct. A person's ethical standards will direct how they behave. From a research perspective, ethics are vital to ensure that study outcomes are true and are reported correctly. Ethics are also important when considering issues such as co-authorship, copyright, data protection and privacy. Gaining ethical clearance for this project was an integral part of the research journey.

This research project follows the principles outlined in the *National Statement on Ethical Conduct in Human Research* ('National Statement') (2007) (Updated 2018), which consists of a series of guidelines made in accordance with the *National Health and Medical Research Council Act 1992*. This guide is intended for use by any researcher entering into a project

with human participants. These guiding principles on ethical conduct in human research provided an overarching ethical framework when designing, reviewing and conducting this study. When considering the *National Statement*, this study would be classified as ‘negligible risk research’ in which there is no foreseeable risk of harm or discomfort; and any foreseeable risk is no more than inconvenience to participants.

The study required approval from Central Queensland University’s Human Research Ethics Committee (HREC), which was granted as project approval numbers 21425 and 22602 (see Appendix 17 and 18). An ethics exemption was obtained from Central Queensland Hospital and Health Service to access de-identified, archival, secondary data (see Appendix 9), which also provided a letter of support for this project (see Appendix 19). This research was conducted predominantly in rural and remote Central Queensland and took into account the following ethical considerations at every stage of the study:

- Maintaining respect for all research participants
- Not subjecting research participants to any harmful or dangerous situations
- Gaining full and informed voluntary consent from each participant prior to commencing the study. Furthermore, respecting a participant’s right to withdraw from the study at any time (see Appendix 5)
- Ensuring the protection of privacy for each research participant and operating within appropriate privacy rules
- Safeguarding research data and ensuring a high level of confidentiality
- Preserving the anonymity of individual or organisational participants, when required
- Adhering to any relevant laws
- Considering and declaring any potential conflicts of interests or affiliations
- Communicating with honesty and transparency in relation to the research
- Refraining from the use of any offensive or discriminatory language or behaviour
- Upholding the highest level of objectivity during discussions with stakeholders and when analysing results (while balancing the researcher’s epistemological position)
- Retaining precise records and a systematic chain of evidence throughout the entirety of the project in order to ensure the ethical veracity and accuracy of the research outputs (Harrison et al., 2017).

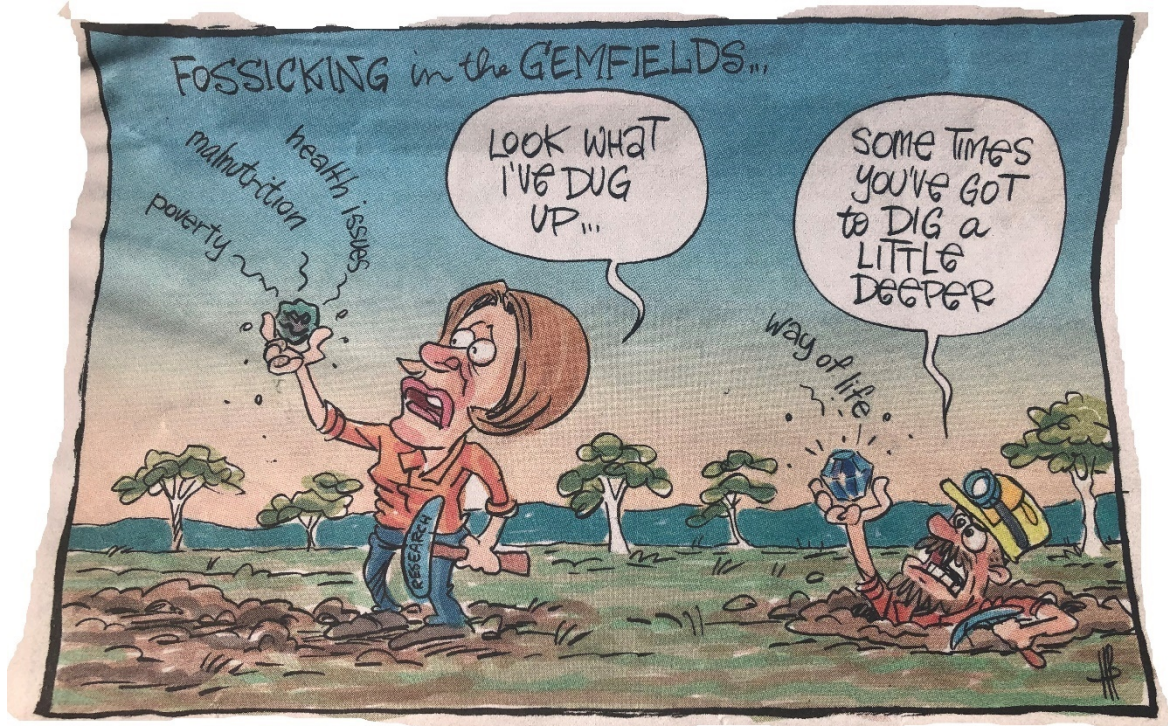
### 3.5.2 Data management

Research data were managed in accordance with Central Queensland University (CQUni) Data Management Policy. In this instance, data management refers to materials (artefacts, sound recordings and video), metadata and specific research data. A data management plan (Appendix 10) was completed to summarise the process of collecting, curating, archiving, and sharing research materials and documents relating to this thesis. This plan considers the storage locations of original and reformatted data sets, software and equipment used to create/collect/manipulate/analyse data and how data was organised and structured. This plan aligns with best practice principals as outlined in the *Australian Code of Conduct for Responsible Research* (NHMRC, 2018). Digital data collected as part of this research, which was frequently accessed and modified, was securely stored behind CQUni firewalls, and backed up using the Australia's Academic and Research Network's (AARNet) Cloudstor service. As detailed in Appendix 10, data will be retained for the minimum retention period of five years post-last use.

### 3.5.3 Special consideration for confidentiality

In addition to the measures prescribed by the Human Research Ethics Committee during their review processes, alterations were made to the protocol in terms of how the data is presented in this thesis. Additional measures to preserve anonymity were required due to a number of unusual factors that emerged unexpectedly during the research process. After data collection was completed, achieved without any complaints or concerns, an article (see Appendix 11) published by the candidate in *Partyline* (Caffery, 2020a) was followed by a series of radio interviews (see Appendix 12) by the Australian Broadcasting Commission (Caffery, 2020b). This brought the project to the attention of a wider audience, which sparked controversy in the local print and social media (Appendix 13). A cartoon of the researcher and the study even featured in the local newspaper (Figure 17). While the print stories misrepresented significantly both the research methodology and its findings, this created additional anxiety and confusion in this small community regarding media exposure. In the following analysis, additional measures have been taken to increase anonymity. Gender references are removed, and 'they' is used where required to refer to an individual. A full correction and apology to the researcher was issued subsequently by the local newspaper for inaccurate information contained in the publication (Appendix 14).

Figure 17: Cartoon representation of the researcher



Source: (Frykberg, 2020)

### 3.6 Chapter summary

Understanding the issue of health inequity in a real-life rural and remote setting was a core aspiration of this study. The rationale for undertaking an intrinsic single case study methodology, as explained in detail in this chapter, was to interrogate holistically the data in order to distinguish patterns in viewpoints and themes. In doing so, this project has considered the dimensions of research philosophy, including the ontology, epistemology, axiology and methodology. This is unapologetically a value-laden research project that considered a range of constructed realities. That is, an interpretive philosophy was adopted from an idealism ontological position where subjective experiences were valued. Considered methodical judgements were made; for example, the constructivist perspective of a rural health researcher clearly informed the research design, as too did the close-knit nature of participants living in the small rural and remote setting of The Gemfields community.

The overall research process involved a three-phase approach within an explanatory sequential design. This process involved a 'bottom up' approach using inductive reasoning. Proven protocols were incorporated into the research design, such as the use of a framework for investigation adapted from Baker (2011, p. 134), to ensure the case study's validity, reliability, representativeness and generalisability. Both qualitative and quantitative methods were used to collect and analyse data. Quantitative data were managed using Excel

spreadsheets and qualitative data were managed using the CAQDAS tool NVivo. In order to safeguard the quality and validity of the project, participant sampling followed the COREQ checklist.

Interviews, visual research methods, content and thematic analysis, and baseline socioeconomic data collection were the techniques employed to gather and analyse data. The Framework Method was applied to provide a coherent and systematic structure with which to analyse data (Braun & Clarke, 2006; Creswell & Poth, 2018; Gale et al., 2013). This approach was chosen owing to its practical step-by-step procedure and ease of application. The Framework was critical in assisting the researcher to formulate contrasting and comparative links between abstract concepts relating to place-based factors that impact health inequity in the rural case setting of The Gemfields.

## 4 Baseline community health equity profile: The Gemfields

*“Communities have never been built upon their deficiencies. Building communities has always depended on mobilising the capacity and assets of people and place,” (McKnight and Kretzmann, 1993, p. 5.)*

### 4.1 Introduction

This chapter presents the results from a desktop review of secondary data of relevant *rural determinants of health* (geographical, demographic, social, economic and environmental factors) within the study area combined with ‘dirt research’ findings. The collation and analysis of these existing data sources facilitated the development of a baseline community health equity profile of The Gemfields. This study was informed by the literature review and contributes directly towards achieving two research objectives of this project. Firstly, to delineate the existing service capabilities and capacities of the area of analysis. Secondly, to map the health assets and deficits within The Gemfields. The subsequent inventory of socioeconomic assets in The Gemfields pertain to the collective socioeconomic and health characteristics of Gemfields population and are assigned to the area and not to individuals. By mapping a community’s resources and assets within a spatially defined geographical boundary (Figure 18), it is possible to illuminate its strengths, gaps and potential solutions in order to improve a community’s level of health equity.

Figure 18: Entrance sign to Rubyvale township



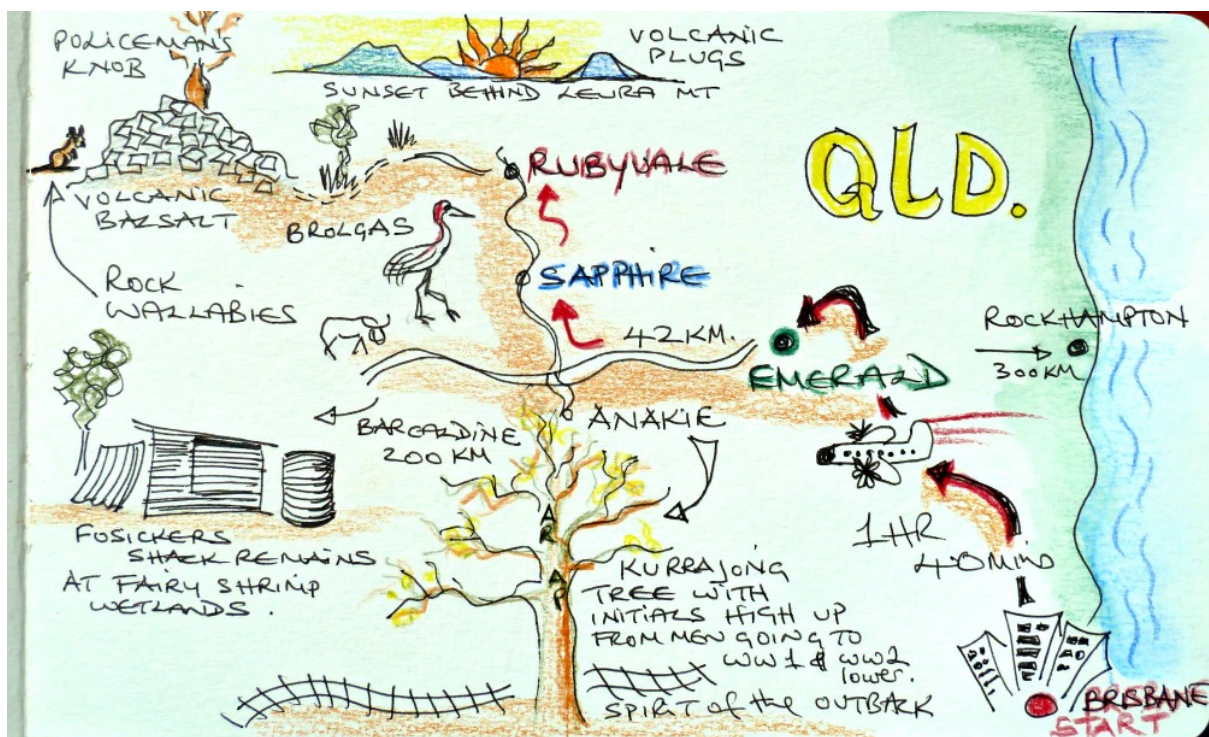
Note: photo by author

## 4.2 Results

### 4.2.1 Geographical and Historical Context of the case study location

The Gemfields area is geographically located in the centre of Queensland on the Tropic of Capricorn (south of the terrestrial equator – latitude 23.5 degrees). It comprises a cluster of four, separate, small villages called Anakie, Sapphire, Rubyvale and The Willows, which are dispersed across a 1181 km<sup>2</sup> area along either side of the Capricorn Highway. The Gemfields is part of the Central Highlands Regional Council and is 50–80 km (dependent on starting location) west of the main regional service centre of Emerald (see Figure 19). The closest large metropolitan centre is Rockhampton, which is a four-hour drive east of the study area. The Australian Bureau of Statistics' ASGS Remoteness Area (ABS, 2018a) classifies The Gemfields's level of remoteness as RA4 – Remote. Such a level of classification is corroborated by the Australian Government Department of Health (2019a) under the Modified Monash Model, in which the level of remoteness is cited as MM6 – Remote. The Gemfields is a long way to tertiary or specialist healthcare services. Residents have to travel to Rockhampton (car or bus) or travel to the Queensland capital city of Brisbane (900 km south) by air, train, bus or car.

Figure 19: Hand-drawn map of The Gemfields



Note: Sourced online (Fairbairn, 2021)

Non-indigenous people first settled in the area in the mid-1870s when Queensland government workers surveyed the east/west railway line from Rockhampton to Longreach (Reid, 2001). The assistant surveyor, Archibald Richardson, was the first person to discover Central Queensland's sapphire deposit in 1875 and the township of Anakie was gazetted in 1887 (Reid, 2001). Each of the four villages sprung up around sapphire fossicking areas ('fossicking' is an Australian term for recreational prospecting for precious stones). Anakie initially emerged as The Gemfield's civic centre with the establishment of a primary school, cemetery, community hall and pub but this shifted to Sapphire when basic services such as the health centre, ambulance station, pharmacy (see Figure 20), fuel station and grocery store were established there.

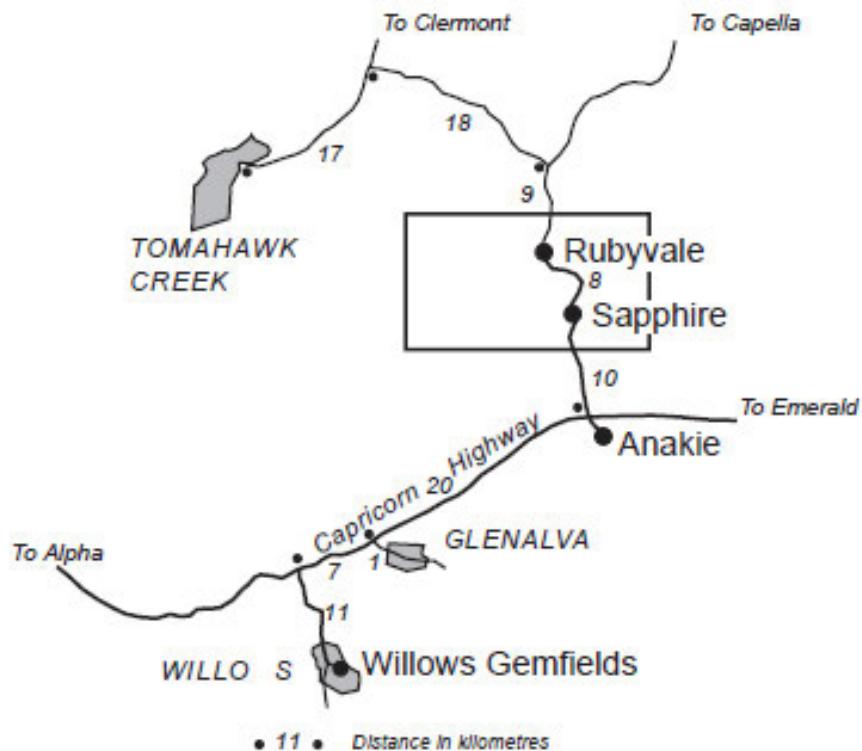
Figure 20: Gemfields pharmacy located in Sapphire



Note: photo by author

Sapphire has the advantage of being geographically at the centre of the four villages (see Figure 21). Using Sapphire as a geographical marker, Figure 21 illustrates the travel distances between each village: Sapphire to Rubyvale is 8 km; Sapphire to Anakie is 10 km; and Sapphire to The Willows is 50 km.

Figure 21: Map of The Gemfields region



Source: Queensland Government Department of Natural Resources and Water

The Gemfields is one of the last remaining Miners Common in Australia and is still recognised as one of the largest sapphire-bearing areas of the world. A Miners Common is a unique land title that allows people to mine, fossick for gems, build temporary dwellings and keep livestock within the designated area (where recreational prospecting is permitted) (Queensland Government, 2009). Cattle, horses, camels and other stock are permitted to roam freely in the Miners Common (see Figure 22). The Gemfields is also a tourist mecca. The population can triple in the winter months as the lure of fossicking for sapphires in the warm tropical weather of Central Queensland attracts significant numbers of what are in Australia referred to as ‘grey nomads’ (retired seniors) wanting to escape the southern cold. One local historian described The Gemfields as ‘more of a tourist centre than a serious mining proposition’ (Reid, 2001). Nowadays, the precinct accommodates casual fossickers, tourist fossickers, registered leasehold claim miners and in some cases squatter fossickers (unregistered miners).

Figure 22: Cattle roam freely on Miners Common



Note: photo by author

#### 4.2.2 Demographics

The Gemfields has an official population of 1,449 permanent residents as of the last census (ABS, 2016a). Anakie, once the main civic centre, is now the smallest village with only 93 recorded residents. The most remote community is The Willows with a registered population of 144 people. Rubyvale has the largest recorded residential population with 640 people. While Sapphire is the central ‘capital’ of the district, and hosts the majority of community services, it has the second largest registered population with 572 people. Based on existing secondary data, population density in The Gemfields is sparse at around 1.2 people per km<sup>2</sup> of land area. However, census data may not reflect the actual population of the region as hundreds of people live ‘off the grid’ on bush mining claims. These sites are not located in one of the four established residential villages and they are difficult to reach as there are no gazetted roads or official addresses in fossicking areas. Temporary residents who visit The Gemfields during the autumn and winter months (approximately between April to September) and live for ‘free’ in caravans in the bush or on mining claims, also increase the population for half of the year. The non-official resident population of The Gemfields is said to be closer to 4,500 people during the peak tourism season.

The resident population in The Gemfields is predominantly white, poor and old with complex health needs, the majority of whom experience age-related decline or live with a disability. Sixty per cent of Gemfields residents are aged between 55 and 75 years old. The median age of The Gemfields population captured by the census is 56 years. Men (55%) outnumber women (45%) with a high proportion of males living alone (32% of total). In 2016, the census recorded 490 separate houses and 101 temporary dwellings across the four villages (see Figure 23). Grassroots feedback suggests that this figure is grossly under-reported, especially in regard to temporary dwellings. Nevertheless, based on the available data, 206 dwellings are home to a single male occupant.

Figure 23: Temporary dwelling (container living) on mining common



Note: photo by author

Each of the four villages has been assessed against the Socioeconomic Indexes for Areas (SEIFA), which ranks areas in Australia according to the relative level of advantage or disadvantage. It uses variables from census data relating to income, education, employment, occupation, housing, and other social indicators, to construct the indexes. All areas are divided into 100 equal groups and are ranked from the least advantaged (1) to the most advantaged (100). The Gemfields is one of the most socioeconomically disadvantaged areas in Australia (Australian Bureau of Statistics, 2016d). The Index of Relative Socioeconomic Disadvantage (IRSD) rates Sapphire in the 3<sup>rd</sup>, Rubyvale and The Willows in the 4<sup>th</sup> and

Anakie in the 12<sup>th</sup> lowest percentile in Australia. These low scores indicate a high proportion of relatively disadvantaged people in The Gemfields.

#### **4.2.3 Economic conditions**

Access to economic resources in the four Gemfields villages is limited. The Index of Economic Resources (IER) shows Sapphire (7<sup>th</sup>), Rubyvale (8<sup>th</sup>) and The Willows (9<sup>th</sup>) in the lowest 10 percentiles in Australia, with Anakie (23<sup>rd</sup>) in the lowest 23 percentile. These low scores indicate limited access to economic resources when compared to other areas with higher scores. The main economic drivers for the district are tourism and small-scale mining and fossicking. The 2016 Australian census records only 26.2% of the total population actively employed in the labour force. The majority of working-age people were either unemployed or did not participate in the labour force (70%). Those who did work were predominantly employed as machine operators, drivers, technicians, trade workers or self-identified as managers.

In November 2016, around the same time as the 2016 census collection, the average weekly ordinary time earnings for full-time adults in Australia was \$1533.10 (ABS, 2017). In The Gemfields, the reported average weekly ordinary time earnings was 73% less than the Australian average rate at \$412 per week (ABS, 2016a). This difference is predominantly due to the high proportion of people of working age who do not work (70%), the high proportion who qualify for the Age Pension (31%) and the high percentage of people who either receive a disability support pension (12%) or receive a carer allowance (6%). It is difficult to precisely quantify due to data collection gaps but anecdotal testimony from local health professionals suggests that up to 70-80% of the population possess a healthcare card and receive some form of government assistance through the age pension, disability pension or unemployment benefits. For Gemfields residents, they seek sapphires not just to make their fortune, but because of the savings they can make by living here extremely cheaply (see Figure 24). Living in The Gemfields is inexpensive compared to other Queensland rural and remote towns. A simple one-bedroom permanent structure rents for approximately \$100-200 per week. A long-term powered site at the caravan park is \$200 per week for 2 people.

Figure 24: Example of cheap living on mining claim using solar panels



Note: photo by author

For those who want to ‘live off the grid’, an established mining claim lease of a 30-metre by 30-meter site can be purchased for \$15,000 - \$40,000 (Facebook, 2020). This type of claim usually comes with the lease on the claim (up to 10 years), some form of temporary accommodation (tin shed, caravan, bus, carport, shipping container), water tank, and possibly solar power. An even cheaper option is to peg out a new 30x30m anywhere within a designated fossicking area (i.e. physically mark out the boundary of a new claim). The application fee for a new mining claim is \$401.60 (exclusive of GST) payable to the Queensland Government for a 10-year lease (Business Queensland, 2020). There is no annual rent payable or other outgoings such as rates, insurance, electricity, water, sewerage, hence the low cost of living (see Figure 25).

Figure 25: Aerial view of an active mine claim with temporary accommodation



Note: photo by author

In terms of economic conditions, data is not available at Statistical Area Level 1 for the number of residents who hold private health insurance. ‘The candidate’s own inquiries and research in the field suggests that 10-15% of residents (predominantly those in full-time paid employment) pay into a private health insurance scheme. The Gemfields is serviced by a public Rural Outpatient Clinic (ROC), which is free to Australian citizens. Those people who rely on government support and those on low incomes qualify for bulk-billed medical services at private GPs, so no direct out-of-pocket medical costs are incurred. However, indirect out-of-pocket medical costs may include fuel to travel to access medical services (up to 150 km round trip locally) and for prescriptions.

#### **4.2.4 Health care environment**

In The Gemfields, the population-to-doctor ratio (based on census population data) is one physician per 1500 population and two nurses per 1,500 population (in non-tourist season) but this ratio worsens during the peak internal migration period (Autumn and Winter) when the population can triple to 4500 people with no additional doctors or nurses assigned to the area. With 168 hours in a week, this solo GP is available to see patients for a total of 24

hours, which equates to 14 per cent of the time. This means that for most of the week, or 86% of the time, residents do not have access to a local doctor. It is therefore reasonable to categorise patients in The Gemfields district as being chronically under-serviced.

With restricted GP coverage, archival non-identifiable secondary data sourced from Queensland Health shows that The Gemfields Rural Outpatient Clinic (ROC) is an extremely busy service and demand continues to rise. Figure 26 illustrates the total episodes of care delivered at The Gemfields ROC over a six-year period. From 1 July 2014 to 30 June 2020, there was a 51% increase in the total number of health consultations and services provided to Gemfields residents and visitors. In the financial year ending on 30<sup>th</sup> June 2020, the three-person staff delivered 9403 individual episodes of care (see Appendix 24). In this instance, an episode of care (also known as an occasion of service) is defined as an “examination, consultation, treatment or other service provided to a patient” (Australian Institute of Health and Welfare, 2015b). Assuming the ROC is open 48 weeks per year, this suggests 196 occasions of service are delivered on average each week or, in other words, 40 patients (on average) attend the clinic every working day. Considering the GP is only available to see patients for 24 hours per week, a high proportion of this workload falls to the Registered Nurse and Enrolled Nurse who each work five days per week. Presentations to the ROC GP equate to 30% of the total occasions for service. The remaining 70% of presentations are for the Registered Nurse clinic, dressing clinic, home visits, pathology and telehealth.

Based on official population data the total occasions of service would equate to 6.2 visits per person per year, which would be significantly above the Australian average of 5.6 times per year (Australian Institute of Health and Welfare, 2015a). Then again, if the unofficial peak population data of 4,500 people were used this figure would significantly fall to 0.5 visits per person per year, which would signal a massive under-servicing of the area. However, both these ratios are purely approximations and calculating an accurate GP visit rate in The Gemfields is difficult due to limited information and population data anomalies. Quantitative investigations revealed there was no data available to provide a detailed picture of how often individual residents visit their GP or who are ‘frequent GP attenders’ in The Gemfields. Future analysis of how often and which Gemfields residents visit the ROC would be of interest to health system managers and clinicians in order to identify those patients with the greatest need, their use of health and hospital services, the cost to provide these services and how health care services can be coordinated more effectively.

As Figure 26 shows, there was a significant increase in occasions of service at The Gemfields ROC between 2018–19 and 2019–20. This abrupt rise can be attributed to the GP increasing their consultation availability from one day to three days. The COVID-19 pandemic also made it more difficult for Gemfields residents to travel outside of the area to seek care and they had few alternative options and consequently, they were more likely to use the local GP rather than travel to Emerald. Informally, the candidate also gathered evidence that many regular ‘part-time’ residents relocated to The Gemfields to escape the pandemic by hiding out on their mining claims, thus increasing the permanent population for an extended period of time.

Figure 26: Total occasions of service by financial year at The Gemfields ROC (2014 – 2020)



Note: Figure created by the author sourced from CQHHS data (Queensland Health, 2021c)

The impact of limited primary health care services in The Gemfields is additional pressure on emergency department presentations at the nearest hospital in Emerald. A high number of presentations at emergency departments (particularly non-urgent and low acuity cases) often indicates either unmet primary health needs or an inability or unwillingness for patients to pay a gap fee at private GPs (Liotta, 2020). In Australia, GPs can choose to accept the government Medicare rebate (bulk-billed) and get paid less for their services or add an additional fee (gap fee) in addition to the Medicare rebate, which the patient is required to pay. Interestingly, a small but steady downward trend in the number of patients from The

Gemfields presenting to the Emerald Hospital Emergency Department was observed between 2014 and 2020 (see Appendix 22). As illustrated in Figure 27, the first noticeable drop in emergency department presentations came in 2016/17 when the Central Queensland Hospital and Health Service (CQHHS) commenced a regular outpatients GP clinic in The Gemfields one day per week. The next noteworthy fall in ED presentation numbers coincided with the expansion of this GP service in The Gemfields from one day to three days per week in 2019/2020.

Figure 27: Emergency Department Presentations by The Gemfields Residents (2014 – 2020) by financial year

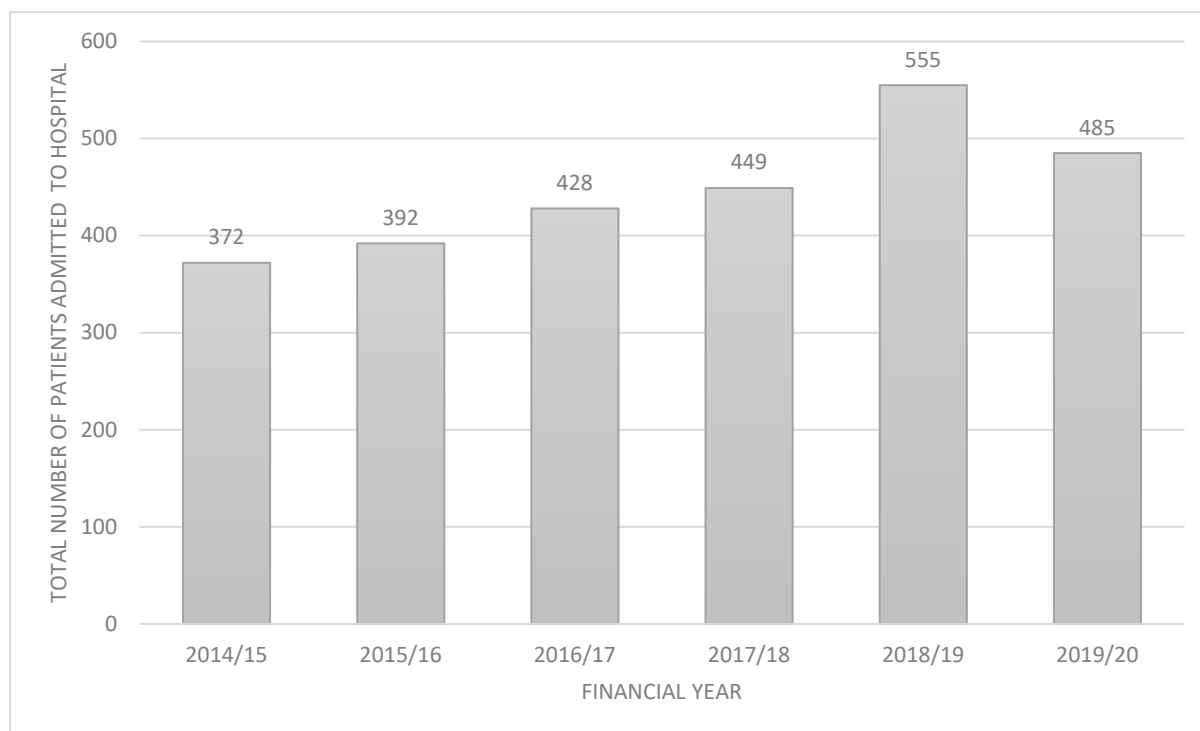


Note: Figure created by the author sourced from CQHHS data (Queensland Health, 2021b)

However, the inverse trend was true for the number of patients who presented at the Emerald Hospital and subsequently admitted as inpatients. Despite the total number of emergency department presentations from Gemfields residents reducing, the proportion of these patients being admitted to hospital was slowly increasing, as shown in Figure 28. The reporting of national data indicates that 32% of ED presentations are admitted to Queensland hospitals (Independent Hospital Pricing Authority, 2021) but, interestingly, this proportion is much higher for Gemfields residents. In 2019–20, 66% of Gemfields residents who presented to the Emerald Hospital ED were admitted. This is a 26% increase on ED hospital admissions in 2014–15 and double the state average. The high percentage of ED presentations from The Gemfields who are admitted to hospital indicates that these patients required immediate

medical intervention, which is another quantitative marker of a population with a complex and chronic health profile – fewer people were presenting to the ED but a higher proportion of them required hospital admission.

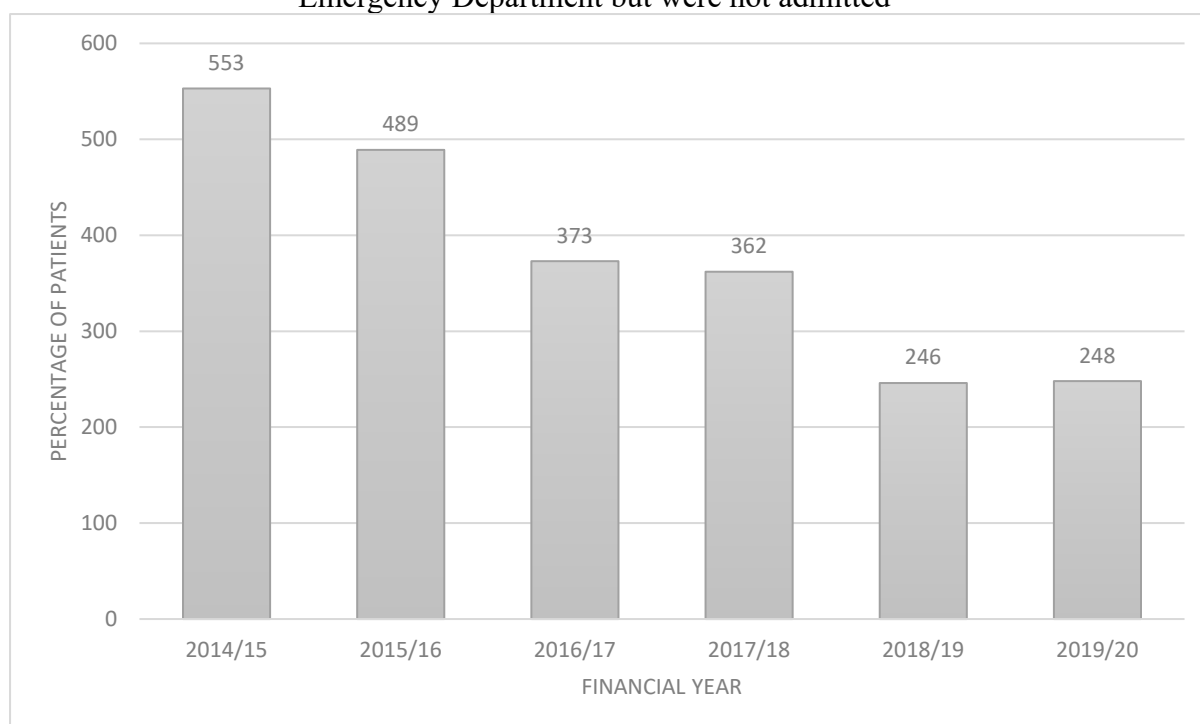
Figure 28: The Gemfields residents admitted to Emerald Hospital after emergency department presentation (2014-2020) by financial year



Note: Figure created by the author sourced from CQHHS data (Queensland Health, 2021a)

Running parallel to the reduction in Gemfields residents presenting to the Emerald ED was a significant decrease in the number of people who were not admitted to hospital after presentation (see Appendix 23). Figure 29 tracks data from 2014 to 2020 and shows a 55% reduction in ward admissions post presentation. This suggests that the number of Gemfields residents presenting to the emergency department with avoidable, low urgent or less serious health concerns more than halved over this reporting period. The downward trend interestingly corresponds with the expansion of local GP services in The Gemfields. That is, the more days a GP is available to see patients in The Gemfields, the fewer presentations to the Emerald Hospital ED. These figures are a further indicator that there is still a proportion of ED presentations by Gemfields residents that could be managed locally in the community by a GP or community health services if they were available, thus reducing avoidable ED presentations and freeing up stretched rural hospital resources for more urgent care.

Figure 29: Total number of Gemfields residents who attend the Emerald Hospital Emergency Department but were not admitted



Note: Figure created by the author sourced from CQHHS data (Queensland Health, 2021a)

The Independent Hospital Pricing Authority collect public hospital cost information across Australia. Pricing data from Round 23 of the National Hospital Cost Data Collection (NHCDC) report is presented in Table 9 and Table 10 for the estimated costs associated with non-admitted and admitted presentations at the Emerald Hospital Emergency Department for Gemfields residents in the years 2014–15 and 2019–20, respectively (Independent Hospital Pricing Authority, 2021). When comparing data from the two periods there was a significant decline in the total number of presentations at the Emerald Hospital. This reduction in total episodes in care correlates with an increase in the level of primary health care service provided locally at The Gemfields ROC. Fewer ED presentations at the Emerald Hospital by Gemfields residents resulted in an estimated saving of \$85,237 in ED expenditure to the Central Queensland Hospital and Health Service (excluding out-of-pocket travel expenses for Gemfields residents) when comparing 2014-15 to 2019-2020 data.

Table 9: Total estimated cost for emergency department care at the Emerald Hospital for The Gemfields residents in the 2014/15 financial year

	<b>Total Episodes of Care</b>	<b>Average Cost</b>	<b>Total Estimated Cost</b>
Non-admitted ED Presentation	553	\$667	\$368,851
Admitted ED Presentation	372	\$1046	\$389,112
	<b>925</b>		<b>\$757,963</b>

Note: Author created table from data sourced from NHCDC (2021) and Queensland Health (2021b)

Table 10: Total estimated cost for emergency department care at the Emerald Hospital for The Gemfields residents in the 2019/20 financial year

	<b>Total Episodes of Care</b>	<b>Average Cost</b>	<b>Total Estimated Cost</b>
Non-admitted ED Presentation	248	\$667	\$165,416
Admitted ED Presentation	485	\$1046	\$507,310
	<b>733</b>		<b>\$672,726</b>

Note: Author created table from data sourced from NHCDC (2021) and Queensland Health (2021b)

It is generally the case that whether in Australia or other countries, medical practitioners and health professionals do not want to live in isolated remote communities. This is the case in The Gemfields with the solo general practitioner driving in and out from the nearest regional centre (50km east in Emerald) whenever on shift. When the doctor is not on duty, Gemfields residents turn to other registered local health professionals, such as the ambulance paramedic, pharmacist, and nurses for their immediate medical care. These auxiliary health practitioners are university educated, highly trained and registered health professionals in Australia. The greatest medical coverage is provided by the Queensland Ambulance Service. A highly skilled ambulance paramedic is on call 24 hours a day, 365 days a year. A pharmacist is also available during standard work hours five days each week from Monday to Friday (excluding public holidays).

Community health providers in The Gemfields are sparse. The Gemfields Community Support Centre Inc., locally referred to as the ‘Multipurpose Centre’ or MPC, is a not-for-profit organisation that provides basic in-home personal care and domestic support through the Home and Community Care (HACC) program and is a registered Community Aged Care Package (CACP) provider. It also offer a Meals on Wheels service (an Australian service where food is delivered to the doorstep of those in need) three days a week and limited transport (minibus) to medical appointments or shopping on a fee-for-service basis to members only when the bus is operational. In order to access these facilities CACP residents must first be assessed in person by an Aged Care Assessment Service (ACAS). The nearest ACAS is located 350 km away in regional ‘capital’ of Rockhampton. As of June 2020, there was a two-year waiting period to be assessed for this program.

Physical health infrastructure in The Gemfields is basic. The study area has very limited access to primary, non-acute or acute health services. State government investment in local health care infrastructure is critical otherwise there would be no primary health care services whatsoever. At the time of the study, the Queensland government operated a small ROC, comprising of a small primary health clinic with four consultation rooms. The annual operating budget for this facility was \$300,000 per annum, which equates to \$200/resident/annum based on official population figures, or \$67/resident/annum based on unofficial population data. There is a chemist retail shop and the Queensland Ambulance Service station. There were very limited and irregular visiting health services to the area, such as by mental health counsellors and allied health practitioners. There are no hospitals, private clinics, diagnostic centres or specialist services in The Gemfields.

All non-acute and emergency health services are provided 50–80 km away in the nearest town. Travel outside the region to a major city centre is required to access any acute care services such as medical or surgical specialties as they were not available within the region. There is a dedicated ‘telehealth room’ at the ROC where patients link with their treating physician via video conference. A nurse is always present in these sessions to help the patient navigate the technology, decode any medical terminology and facilitate communication and understanding. Prior to the COVID-19 pandemic this service was provided mainly for follow-up discussions and not initial consultations. However, the telehealth service proved invaluable during the COVID-19 pandemic when travel was restricted, and face-to-face specialist services were suspended across the state.

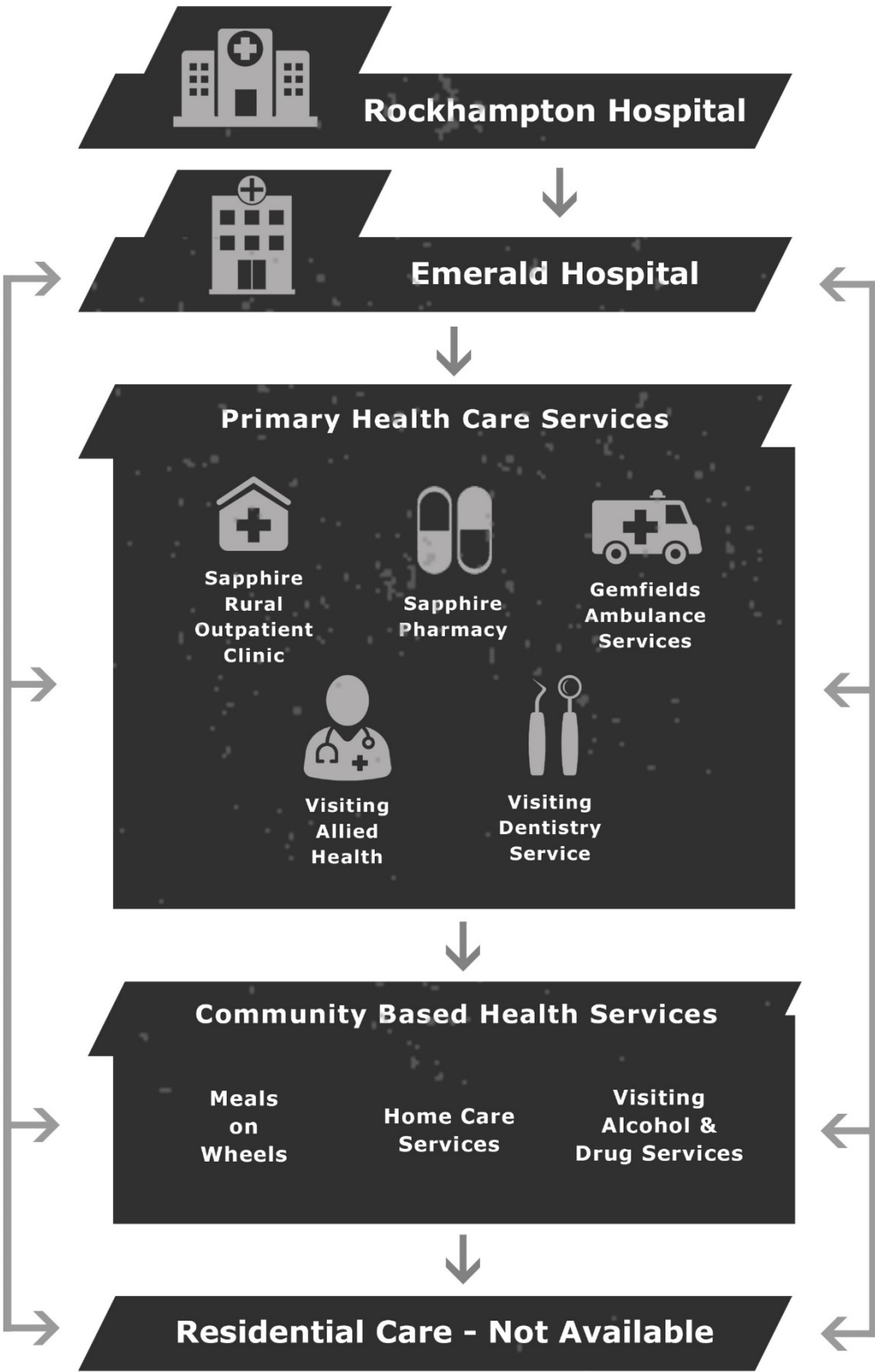
Adapting the Typology of Rural and Remote Models (Wakerman et al., 2008), Table 11 illustrates the five broad categories of service types within the study area: Discrete Services; Integrated Services; Comprehensive Primary Health Care Services; Outreach Services; and Virtual Outreach Services. Furthermore, Figure 30 provides a visual representation of how these services link within the regional healthcare setting.

Table 11: Typology of rural and remote health care services within a Central Highlands Context

Category	Health Service Model	Rationale	Proximity to study area
<b>Discrete Services</b>	Public hospital using rural generalist GPs	Sustainable medical workforce model	Emerald Hospital (50-80 km distance from study area)
<b>Integrated Services</b>	Queensland Health Rural Outpatient Clinic using the Medicare (19) 2 exemption  Queensland Ambulance Service	State government operated health services - filling the gap in private primary health services	Gemfields Rural Outpatient Clinic (ROC) (located in the Sapphire village)  Gemfields Ambulance Station (Sapphire)
<b>Comprehensive Primary Health Care Services</b>	Privately-owned and operated GP Clinics  Social Enterprise GP Clinic  Privately-owned and operated pharmacy	Focus on <i>in situ</i> primary health care	Priority Health Clinic Emerald  Ruby Street Medical Centre Emerald  Emerald GP Super Clinic Sapphire Chemist
<b>Outreach Services</b>	Visiting/periodic services  Hub and spoke service models  Drive-in-drive out and Fly-in-fly out	Access to a service that the community is too small to support full-time	Live Better Dietician Emerald service in The Gemfields  Breast cancer screening bus  Royal Flying Doctors dental service
<b>Virtual Outreach Services (Telehealth)</b>	Telehealth clinic located at the Rural Outpatient Clinic in Sapphire	Use of IT to increase access and availability of service	Telehealth appointments for Gemfields patients predominantly with specialists in Rockhampton/Brisbane

Note: table created by author

Figure 30: Mapping of The Gemfields health care services



Note: Figure created by the author

#### **4.2.5 Education**

By Australian standards the levels of education attained by people who live in The Gemfields are very low. A significant portion (78%) of the population did not complete Year 12 or equivalent (final year of secondary education). The Index of Education and Occupation (IEO) indicates Sapphire (1<sup>st</sup>), The Willows (2<sup>nd</sup>), and Rubyvale (3<sup>rd</sup>) are in the lowest 3% in Australia in regard to people without qualifications, without jobs or with low-skilled jobs. However, these very low rates differ in Anakie, which ranked in the 24<sup>th</sup> percentile. In the 2016 Census, 46% of adult males said they had completed a post-secondary certificate level qualification but 36% of men did not state their level of education at all. Women in The Gemfields were more likely to hold a Bachelor level qualification (26 people) than men (4 people). The main language spoken in The Gemfields is English.

Educational infrastructure in The Gemfields is again very limited, especially for children under school age (0–5-year-old) and high school students (12+ years) as there is no crèche, childcare, kindergarten or high school in the district. Children must travel to Emerald (50–80 km) to receive pre-primary (kindergarten and childcare), secondary and tertiary education. The majority of children who do live in the region use the daily school bus to and from Emerald, which takes approximately 45 minutes to an hour one-way. This is also the case for TAFE or university level students. The Anakie State Primary School caters for Preparatory to Grade 6 students. Enrolment hovers around the 110 mark but this fluctuates from year to year due to the transient nature of the population.

#### **4.2.6 Physical environment**

It is fair to say that The Gemfields contrasts sharply to other communities in Queensland. Two of its most distinct characteristics are that it is the last remaining Miners Common in the State and one of the world's largest sapphire-bearing areas. A Miners Common is a unique land title that allows people to mine, build temporary dwellings and keep livestock within the defined common title boundary. This means people can 'camp out' on designated fossicking areas – permits are required but some people are known to illegally 'squat'. A typical "mine shack" has no running water, no mains power (electricity), no sewerage, a dirt floor and an outdoor camp kitchen with an open fire for cooking (see Figure 31). Living standards in The Gemfields are poor by Australian standards. 'Living rough' in the manner that is customary in The Gemfields is an outlier in terms of Australian home life and is in many key respects similar to the domestic conditions of the rural poor in developing countries. At least fifteen per cent of permanent residents live in improvised or temporary

dwelling such as humpies, caravans, decommissioned buses or shacks (ABS, 2016a). However, locally, this figure is said to be significantly higher.

Figure 31: Aerial view of temporary accommodation in one section of Miners Common

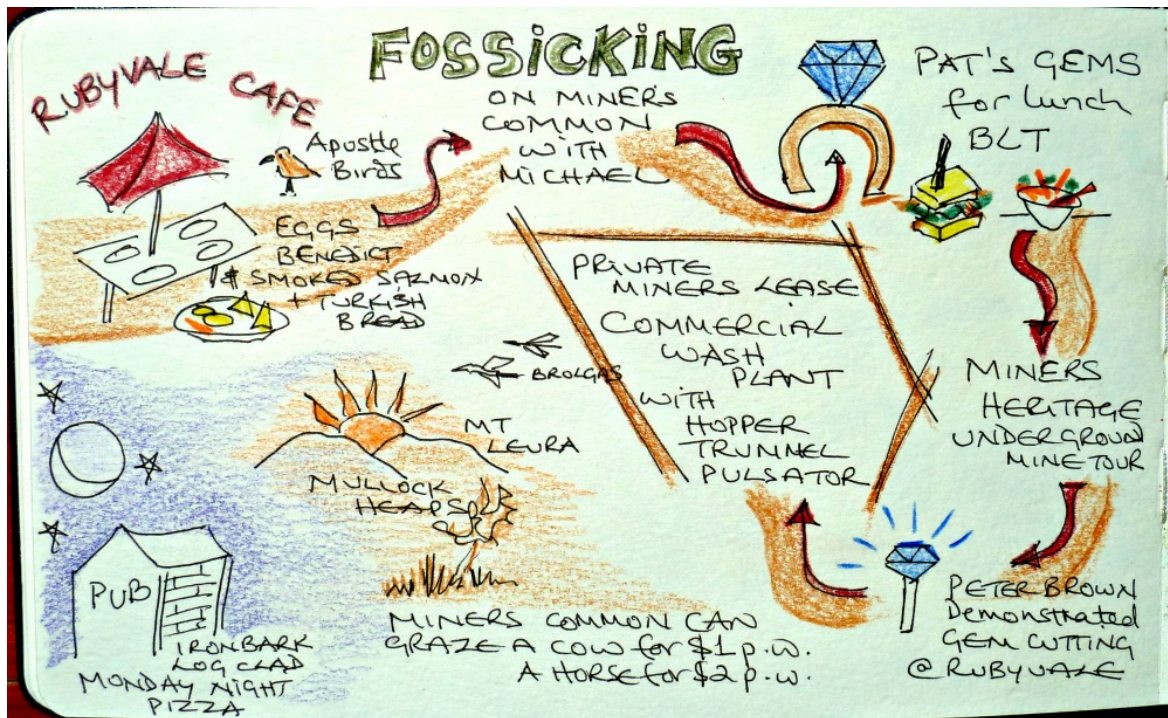


Note: photo by author

Permanent ‘normal’ housing is mainly located within the four village boundaries and are often simple structures that may or may not be connected to public services such as the electricity transmission network and town water supply. The exception to this situation is the residents living in The Willows who must rely exclusively on rainwater tanks as there is no town water supply. Permanent dwellings in the four villages are on a variety of land titles such as leasehold or freehold. There are no government water or sewerage treatment plants servicing the area. Those dwellings in the villages that have flush toilets use individual septic sewage systems. There is also no formal waste collection in The Gemfields and residents must remove their own rubbish to the waste transfer station that is located in Rubyvale.

As a ‘frontier district’ that, by and large, has a history of existing outside the reach of government rule, the villages in The Gemfields have grown organically with very limited town planning until recent years (see Figure 32 for an artist’s impression of the area).

Figure 32: Hand-drawn map of the fossicking areas in The Gemfields



Note: Sourced online (Fairbairn, 2021)

Although the main streets within each village are made of sealed bitumen, there are no footpaths anywhere throughout The Gemfields (with the exception of the Rubyvale main intersection). Outside the village centres most other roads are dirt or unsealed gravel tracks with no street signage (see Figure 33). Navigation beyond the main villages is difficult without having a ‘mud map’ or receiving detailed directions from a local.

Figure 33: Example of dirt track in Miners Common



Note: photo by author

The Gemfields is also a tourist destination during winter months. For a short period (between April and September), the population can be tripled by amateur miners (known as ‘fossickers’) searching for sapphires. Tourists either pay to stay in one of the four caravan park facilities, the Rubyvale hotel or ‘free camp’ within the designated fossicking area. This surge in population puts a significant strain on local health services.

In many ways The Gemfields is a place of dichotomies. The summer heat is oppressive and can reach temperatures of up to 40 degrees Celsius. Contrastingly, winter nights “would freeze the ears off a brass monkey” (Letts, 2014, p. 4). Furthermore, there is a small percentage of very wealthy people who have made their fortune in The Gemfields and live in large comfortable homes. Yet, at the other end of the spectrum there are people living in absolute poverty squatting in makeshift dwellings. Just like the weather extremes, how people associate with the physical environment in The Gemfields can, metaphorically speaking, be poles apart.

#### **4.2.7 Social living conditions**

In mining circles, an uncut sapphire is referred to as a ‘rough’ (Letts, 2014). ‘Rough’ is also an apt description of life in The Gemfields. People are attracted to the area for the fossicking (a phenomenon known colloquially as ‘Gem Fever’), the frontier lifestyle and the cheap cost of living. As mentioned previously, a significant proportion of residents live ‘off the grid’ (see Figure 34) and are not only disconnected to government utilities but many are disconnected from the outside world. Social disengagement is a common lifestyle choice across the district. There is a culture of ‘keeping to yourself’ in The Gemfields. Privacy and anonymity are highly valued. Hence, staying connected is not considered a high priority. Thirty-seven per cent of dwellings do not have internet access (ABS, 2016a). However, the use of mobile phones is more common across the region. Residents have access to the 3G mobile network and its coverage across the area is fair to good. The more remote areas require an additional external antenna to boost the signal.

Figure 34: Example of living ‘off the grid’ on the mining common



Note: photo by author

A digital communications audit of the region showed the deployment of fixed wireless internet in Rubyvale and Sapphire (CHRC & CHDC, 2017). Residents reported that the network worked well in Rubyvale but not well in Sapphire due to the topography of the area. Locals reported that the existing mobile network does not work well during the winter tourism season when the population triples. Anakie and The Willows have no fibre infrastructure and poor mobile coverage (CHRC & CHDC, 2017). High level data released from the Queensland Police service on an annual basis indicates that The Gemfields does have some crime issues predominantly related to drug (36 per cent) and traffic (30 per cent) offences (Queensland Police Service, 2020). The high rate of traffic offences is particularly interesting when 21 per cent of the population report no access to a motor vehicle (ABS, 2016a) but it should be noted that there is no public transport in The Gemfields and the only way to travel within the region is by car. As described earlier, walking or cycling is not a practical option due to no dedicated footpaths or cycleways, dirt roads, high temperatures in summer and long distances between each village. There were a total of 101 offences in the district between 2019-2020, which equates to a rate of offences by population of 7 per cent (Queensland Police Service, 2020).

People's access to fresh, nutritious food is challenging in The Gemfields. There is no major supermarket retailer (i.e. the three leading Australian brands of Coles, Woolworths and IGA) located in the district and residents must travel 50-80 km to Emerald to shop at these stores. There is also no butcher, delicatessen or bakery shop. Rubyvale residents have the closest access to food, with a small, privately-owned Friendly Grocery store located in the village. This shop provides a basic range of essential items and, as a small convenience store, is typically more expensive than major retailers. Residents living outside of Rubyvale must travel 8-50 km to purchase goods at this store. Rubyvale is also home to the only restaurant in the district – The Rubyvale Hotel, which is open seven days a week. Sapphire offers two convenience store/fast food options – one at the Blue Gem Tourist Park and Service Station and a second called the Trading Post. Both stock essential grocery items such as bread, milk, hot takeaway food and cold drinks. Both these stores also sell ice – also considered an essential item in The Gemfields as many residents do not use refrigerators and rely on an esky (portable cooler) with ice to keep fresh food cold. In the winter months the community hosts weekly markets in Sapphire – locals sell handmade goods, bric-a-brac and a limited number of food items and home-grown fresh produce. A fruit and veg van from Bundaberg (a city located 650km to the south west) attends the Sunday markets once a month and this is when many local residents stock up on fresh food.

#### **4.2.8 Community assets**

This section examines those community skills, capacities, resources and experiences within the study area that can help to address the rural health situation and determinants, as described by Brennan Ramirez (2008, p. 58). In a rural context, assets can be physical or material things such as places or buildings or they can be intangible concepts like community spirit. Key findings included a highly engaged Community Reference Group which brings together a collective of like-minded locals who are passionate about creating positive change in The Gemfields. This group meets on a regular basis every two months. Meetings are facilitated by the Central Highlands Regional Council with an elected local government councillor chairing the group and secretariate support provided.

Hopkins and Rippon (2015) have written about health assets in terms of factors or resources that help to build, maintain and sustain health and wellbeing. Another local not-for-profit incorporated organisation with the express aim of enhancing individual and community health and wellbeing is Central Highlands Mental Health & Wellbeing (CHMHW), which has an active hub located in The Gemfields. The hub is run by volunteers and offers activities

and workshops to enhance existing knowledge and skills that are centred around physical and mental wellbeing. It also utilises The Wheel of Wellbeing (WoW) – a framework informed by international research and positive psychology to help individuals, groups and communities to increase their capacity for happiness.

Although physical community and health assets were usually limited to one or two key buildings (i.e. library or community hall) in each village there were ample signs of exceptional human capital across The Gemfields. Local health professionals and auxiliary support workers who reside and regularly work in The Gemfields were viewed as critical community assets. Where certain skills, capacities or resources were missing within the community, there was an underground culture of good Samaritans filling these service or resource vacuums. There were only a small number of formal community or recreational groups that provided a place for communal activities and social connections.

#### 4.2.9 Summary: Baseline Community Health Equity Profile

The Baseline Community Health Equity Profile has been developed using a combination of key findings from reviewing health equity audit tools in the literature review (see section 2.6) and a social impact assessment tool commonly used in the resource sector – SEAT: Socioeconomic Assessment Toolbox (Anglo American, 2015). SEAT is a survey instrument that was originally developed by Anglo American to provide a baseline snapshot of existing communities and was used to analyse, monitor and manage any social change that may result due to resource projects. The SEAT methodology has been adapted for this project to provide a baseline summary of existing health ecosystem in a small-scale rural and remote settlement. To the best of the author’s knowledge this is the first time the SEAT framework (Table 12), has been adapted for use within Australia’s health sector.

Table 12: Baseline Community Health Equity Profile (BCHEP)

<b>Location:</b> The Gemfields, Central Queensland, Australia <sup>1</sup>		
<b>A: Geographical and Historical Context</b>		
Where is the community located? When and how did it develop? How is it positioned in relation to regional and metropolitan centres?		
A1	Locality Name:	The Gemfields

A2	Town / Village Names:	Anakie, Rubyvale, Sapphire and The Willows
A3	What is the age of non-indigenous settlement area?	140 years
A4	<p>How did the settlement area develop?</p> <p>The first sapphire was discovered in the Anakie region in the mid-1870s while Queensland government workers were surveying the railway line from Anakie to Alpha. The four villages that make up The Gemfields district sprung up around sapphire fossicking sites.</p>	
A5	<p>Unique settlement patterns or features:</p> <p>The Gemfields is one of the largest sapphire-bearing areas in the world. The four villages that make up the district, commonly referred to as The Gemfields, have very limited town planning and operate under a unique land titled called a Miners Common. This allows residents to 'peg out' a claim site (30 x 30 m) for a small annual fee payable to the State government, build temporary dwellings and mine for gems within the defined boundary. Sapphire, which is geographically positioned in the centre of the four villages, has emerged as the main precinct for services and amenities.</p>	
A6	Degree of urbanity/rurality:	<p>Remote</p> <p>ASGS: RA4</p> <p>MMM: 6</p>
A7	Name of nearest rural centre:	Emerald
A8	Distance to nearest rural centre:	50-80 km
A9	Travel time to nearest rural centre:	40 minutes – 1 hour
A10	Name of nearest regional centre:	Rockhampton
A11	Distance to nearest regional centre:	350 km – 400 km
A12	Travel time to nearest regional centre:	<p>Driving: 3.5 hours – 4 hours</p> <p>Bus: 3.45 hours (from Emerald)</p> <p>Train: 7 hours (from Emerald)</p> <p>Air: Not available</p>
A13	Name of capital city:	Brisbane
A14	Distance to capital city:	900 km – 925 km
A15	Travel time to capital city:	Driving: 10 hours – 10.5 hours

		Bus: 11 hours (from Emerald) Train: 15.5 hours (from Emerald) Air: 1.25 hours (from Emerald)		
A16	Local Government Area:		Central Highlands Regional Council	
A17	State Government Electorate:		Gregory	
A18	Federal Government Electorate:		Flynn	
B: Demographics				
What are the population characteristics of the study area? Who are the vulnerable groups? Are there any interesting population trends?				
B1	Population size:		Anakie: 93 Rubyvale: 640 Sapphire: 572 The Willows: 144 Total: 1449	
B2	Area:		1181 square kilometres	
B3	Population density:		1.2 person per square km	
B4	Gender ratio:		Males: 55% Females: 45%	
B5	Median Age:		56	
B6	Age Profile:			
	0-19 years	20-49 years	50-69 years	70-89 years
	210 persons	328 persons	660 persons	259 persons
	14.4%	22.5%	45.3%	17.8%
B7	Ethnicity:		64% Australian born 4% Indigenous	
B8	a. Approximate number of households in study area	Separate house: 490 Temporary: 101*2 Total: 644	b. Average household size (population/households)	2.25

B9	Relative poverty (Index of Relative Socioeconomic disadvantage)	Highly disadvantaged Anakie: 12 <sup>th</sup> lowest percentile in Australia Rubyvale: 4 <sup>th</sup> lowest percentile in Australia Sapphire: 3 <sup>rd</sup> lowest percentile in Australia The Willows: 4 <sup>th</sup> lowest percentile in Australia		
B10	Potential vulnerable groups in the community (e.g. women, children, religion/ethnicity/race)			
	Group Description	Why is this group vulnerable	% of total population	
	Disabled	High burden of disease	<ul style="list-style-type: none"><li>▪ 12% receive Disability Support Pension</li><li>▪ 11.4% provide unpaid assistance to a person with a disability</li><li>▪ 6% paid government carer allowance</li></ul>	
	Veterans	<ul style="list-style-type: none"><li>▪ Complex health needs</li><li>▪ Disengaged with government services</li></ul>	Department of Defence data indicate up to 50 veterans and their dependents list their permanent address in The Gemfields; however, this figure is likely to be higher as many ‘hide’ in the bush but maintain a permanent address elsewhere (see Appendix 20)	
	Unemployed, Pensioners, People not participating in workforce	Low income, limited personal financial means	<ul style="list-style-type: none"><li>▪ 70% of working aged population do not work</li><li>▪ 31% of population qualify for Age Pension</li><li>▪ 6% receive carer allowance</li></ul>	

			<ul style="list-style-type: none"> <li>9% paid job seeker</li> </ul>
	Children / Youth	Poverty, food insecurity, limited access to paediatric health services	14% of population aged 19 years or under
	Elderly	No palliative care, no residential aged care, limited in-home-care services, no public transport	31% of population aged 65 years or over
<b>C: Economic Conditions</b>			
What are the local economic factors that may impact on health outcomes in the study area? What do residents do for work?			
C1	Labour participation	<ul style="list-style-type: none"> <li>26.2% employed in labour force</li> <li>Majority of population are unemployed or do not participate in labour force (70%)</li> <li>70-80% receive Department of Social Security payment (unemployment, disability, carer, age pension, jobseeker)</li> </ul>	
C2	Main skills	<ul style="list-style-type: none"> <li>Machine operators and drivers</li> <li>Technicians and trade workers</li> <li>Managers</li> </ul>	
C3	Median income	\$412/week	
C4	Cost of living	Living in The Gemfields is cheap – permanent housing is inexpensive to purchase or rent. Temporary housing has low associated expenses due to no electricity, rates, insurance or rental costs.	
C5	Private health insurance	Data not available at Statistical Area Level 1. Estimate of 10-15% of working population hold private health insurance.	
C6	Medical bills	Primary health care is free to all concession card holders (70-80% of population) utilising the local Rural Outpatient Clinic (ROC). Access to	

		the public health service and hospital in Emerald is also free to Australian residents.
C7	Main economic drivers (main industries)	Tourism Mining
C8	Access to economic resources (Index of Economic Resources)	Low access to economic resources Rubyvale: 8 <sup>th</sup> lowest percentile in Australia Sapphire: 7 <sup>th</sup> lowest percentile in Australia The Willows: 9 <sup>th</sup> lowest percentile in Australia Anakie: 23 <sup>rd</sup> lowest percentile in Australia
<b>D: Health Care Environment</b> What are the current health care capacities and capabilities in the community? What contributes to good health? What contributes to poor health?		
D1	Geographical access to health services	Number of doctors/1,000 citizens: 1 Number of nurses/1,000 citizens: 2 Number of hospital beds/1,000 citizens: 0
D2	Provider availability	Public GP provider: 1 (24 hours per week) Private GP provider: 0 Public RIPERN Nurse provider: 1 (38 hours per week) Public Enrolled Nurse: 1 (38 hours per week) Ambulance Paramedic: 2 (7 days on /7 days off rotating roster – 365 days/year) Pharmacist: 1 (40 hours per week)
D3	Quality of care	The Gemfields ROC has National General Practice Accreditation (NGPA) and adheres to the Royal Australian College of General Practice (RACGP) <i>Standards for general practices</i>
D4	Total episodes of care for Gemfields residents per annum (2019/20)	Gemfields ROC: 9403 Emerald Hospital ED: 733 Percentage of ED presentations admitted to Emerald hospital: 66%

		Rockhampton Hospital Admissions: 140		
D5	Estimated Annual Operational Costs for Queensland Health (2019/20)	Gemfields ROC: \$300,000 Emerald Hospital ED Presentations: \$672,726 Rockhampton Hospital Admissions: \$146,440 Total Cost: \$1,119,166		
D6	Mortality Rates	Data not available at small-scale settlement level (SA1)		
D7	Chronic Disease Profile	Data not available at small-scale settlement level (SA1)		
D8	Community Health	<ul style="list-style-type: none"><li>• Gemfields Multipurpose Centre provides Meals on Wheels, and a free hot lunch on Fridays to members</li><li>• OZ Care – in home nursing care (service currently suspended)</li><li>• Anglicare – mental health/counselling</li><li>• Palliative care – not available</li></ul>		
<b>E: Education</b>				
What education assets are available locally and regionally? Can you identify any gaps?				
E1	Index of Education and Occupation 2016	Very high proportion of people without qualifications  Rubyvale: 3 <sup>rd</sup> lowest percentile in Australia  Sapphire: 1 <sup>st</sup> lowest percentile in Australia  The Willows: 2 <sup>nd</sup> lowest percentile in Australia  Anakie: 24 <sup>th</sup> percentile in Australia		
E2	Education level	14% of population finished Year 12 or equivalent		
E3	Main language spoken	English		
E4	Educational care facilities and infrastructure in the study area / district.			
	Facility Type	Number of Facilities	Location / Distance	Description

	Playgroup	1	Sapphire	Meets weekly for parents and pre-school aged children
	Crèche / Kindergarten	0 – Gemfields 4 – Emerald	50-80 km to Emerald	Parents who work in Emerald may access childcare or kindergarten in Emerald.
	Primary School	1	Anakie	Prep to Year 6 110 students from four villages
	Secondary schools	0 – Gemfields 4 – Emerald	50-80 km to Emerald	Students travel to high school by bus
	TAFE College	0 – Gemfields 1 - Emerald	50-80 km to Emerald	CQUni TAFE
	University	0 – Gemfields 1 – Emerald	50-80 km to Emerald	Central Queensland University operates a campus in Emerald

#### **F: Physical Environment**

What are the daily living conditions like in the local area? Are there any key physical environment factors unique to this area?

F1	Housing quality	<ul style="list-style-type: none"> <li>15.2% of occupied private dwellings were classified as ‘other dwellings’ (caravan, cabin, improvised home)</li> <li>Temporary dwellings not connected to main water, sanitation or electricity supply</li> <li>Permanent dwellings on lease or freehold land in village centres are often simple structures</li> </ul>
F2	Housing Occupancy	<ul style="list-style-type: none"> <li>32% of males are ‘lone person’ in household</li> <li>19.3% of women are ‘lone person’ in household</li> </ul>
F3	Transport / Mobility	<ul style="list-style-type: none"> <li>21% residents have no motor vehicle</li> <li>No public transport within the district</li> </ul>
F4	Walkability	<ul style="list-style-type: none"> <li>No footpaths anywhere throughout The Gemfields</li> </ul>

		<ul style="list-style-type: none"> <li>• Sealed bitumen roads into villages</li> <li>• Predominantly dirt or gravel unsealed tracks off main roads and outside the village centre</li> <li>• Poor walkability</li> </ul>
F5	Postcode / Geography	Due to an administrative anomaly The Gemfields postcode (4702) is the same as Rockhampton (400 km to the east), which is problematic when sourcing district specific data
F6	Electricity	Each village is connected to the electricity transmission network. Permanent dwellings usually connect to the mains power; however, residents living in temporary dwellings on mining claims generally rely on generators, solar power or do not use electricity.
F7	Water and sanitation	<ul style="list-style-type: none"> <li>• Town water supply in Anakie, Rubyvale and Sapphire are by shallow bores using a sand filtration system.</li> <li>• There is no town water supply in The Willows – residents use rainwater tanks.</li> <li>• There are no Council water treatment or sewerage plants servicing the area.</li> <li>• Flush toilets are only available for permanent residents living in villages and using septic sewage systems.</li> <li>• Residents on mining claims living in temporary dwellings do not have access to running water.</li> <li>• Makeshift outdoor showers or baths are commonplace in The Gemfields.</li> <li>• There is no public laundry facility in The Gemfields, however, the Blue Gems Caravan Park may allow residents to use the laundry for a fee upon request/approval.</li> </ul>
F8	Waste Collection	There is no formal waste collection in The Gemfields. There is a waste transfer station located in Rubyvale that

		is open three mornings per week. Residents must take their own rubbish to the waste transfer station.
F9	Neighbourhood design	Town planning across The Gemfields is limited to within the boundaries of each village. Outside the village centre, mining claims are random and change location. There are no formal maps of roads or tracks outside the main villages as these change regularly as well.
F10	Weather	Minimum temperature: 4°C Maximum temperature: 39°C Annual rainfall: 425.4 mm
<b>G: Social living conditions</b> What percentage of the population group has access to the internet? Is there social connectivity within the community? What are the crime statistics for the area?		
G1	Social support / social isolation	A significant proportion of residents live 'off the grid' and are disconnected from government utilities and services.
G2	Social cohesion	There is a culture of 'keeping to yourself' in The Gemfields. Privacy and anonymity are highly valued.
G3	Physical working conditions (exposure to noise or sun or physical strain)	<ul style="list-style-type: none"> <li>• Sun exposure in summer</li> <li>• Cold exposure in the winter</li> <li>• Noise exposure (mining)</li> <li>• Heavy lifting such as manual labour work in privately owned mines</li> </ul>
G4	Safety	<ul style="list-style-type: none"> <li>▪ A total of 101 offences in the district between 2019-2020</li> <li>▪ Rate of offences by population is 7%</li> <li>▪ 36% drug offences</li> <li>▪ 30% traffic-related offences</li> <li>▪ 8% weapon-related offences</li> </ul>

G5	Connectivity (Internet)	<ul style="list-style-type: none"><li>▪ 37% of dwellings do not have internet access</li><li>▪ 3G outdoor mobile coverage across the area is fair to good</li><li>▪ Fixed wireless service in Rubyvale and Sapphire</li><li>▪ Poor mobile coverage in Anakie and The Willows</li></ul>		
G6	Food security: Markets, shops, grocers, and food outlets in the study area / district			
	Type	Number	Location / Distance	Description
	Supermarket Chain Store	0	None in the study area	Residents drive 50-80 km to Emerald
	Grocery Store	1	Rubyvale	Friendly Grocer shop open 7 days a week and provides fresh, tinned and cold produce
	Convenience Store	1	Sapphire	Sapphire Trading Post – basic grocery items
	Fast Food	1	Sapphire	The Blue Gem Caravan Park and Petrol Station sell takeaway fast food
	Café/Restaurants	1	Rubyvale	The Royal Hotel Rubyvale – pub meals
	Markets	1	Sapphire	In winter, the markets are held weekly on Sunday morning and there is limited fresh produce
H: Community Assets				
Map the community health assets within the local area.				

H1	People	<p>~ Local health professionals who reside in The Gemfields are held in very high regard and are considered to be valuable human capital.</p> <p>~ Good Samaritans who care for neighbours, friends and relatives</p> <p>~ ‘Lift givers’ and licensed drivers who provide shared transport options</p>
H2	Services	<p>~ Multipurpose Centre (MPC) / Meals on Wheels</p> <p>~ Sapphire Pharmacy</p> <p>~ ROC primary health care clinic</p> <p>~ Sapphire Queensland Ambulance Service</p> <p>~ Salvation Army Store</p>
H3	Resources	Council owned accommodation: Fossicker’s Retreat –small, self-contained dwellings for independent living for pensioners
H4	Places	<p>~ Rubyvale Public Library</p> <p>~ Public toilet and showers in Sapphire and Rubyvale</p> <p>~ Sapphire swimming pool (plunge pool)</p>
H5	Physical Assets	<p>~ Roy Day Park – sporting grounds</p> <p>~ Kangoulu Park Sapphire – Children’s playground</p> <p>~ Sapphire Gemfields Wetland Reserve – 14 hectares of walking and cycling tracks</p> <p>~ Four-wheel-drive tracks (2,500 hectares of bush tracks)</p>
H6	Exchanges	<p>~ Monthly Saturday Markets in Rubyvale</p> <p>~ Monthly Sunday Markets in Sapphire</p> <p>~ Informal Men’s Group in Anakie</p>
H7	Private business	~ Yoga classes at Kangoulu Park every Saturday

		~ MPC – laundry (for clients)
H8	Not-for-profits / Community Organisations or Groups	~ Gemfields Community Reference Group – a volunteer committee of highly engaged community leaders and vocal community champions. This group is facilitated by the Central Highlands Regional Council ~ Sapphire Returned Service League (RSL) Club ~ CHMHW & Wheel of Wellbeing Hub ~ Gemfields Clay Target Club ~ Gemfields Rifle Club ~ Gemfields Lapidary and Craft Club ~ The Willows Gemfields Recreation Club (social club) ~ The Willow Pottery and Craft Club ~ There were also Community Halls in all four villages

Source: Tabled adapted from Anglo American, 2015

Notes:

1. Data reference are not included in the table (for design considerations) but all available references are located in section 4.2.
2. Census collection does not reach all residents living in temporary dwellings in the study area and data results may be lower than actual.

### 4.3 Chapter summary

This chapter set out to document the community assets and problems that were linked to the health and wellbeing of people living within the spatially defined geographical boundary of The Gemfields. An in-depth assessment of overall community health assets and needs has helped to develop a better understanding of relevant rural determinants of health in the study area. This process made it possible to delineate an analysis of the existing service capabilities and capacities of the area, and to map the health assets and deficits within The Gemfields. The above inventory of community-wide features provides a summary of collective socioeconomic and health characteristics of The Gemfields population as a whole rather than

at the individual level. The mapping of a community's resources, strengths and deficiencies provides the reader with a solid understanding of what is or what is not present within The Gemfields. Furthermore, it establishes a firm grounding for further evidence-based research.

## 5 Results: Semi-Structured Interviews

*“Inequalities in health arise because of inequalities in society – in the conditions in which people are born, grow, live, work, and age are responsible” (Marmot, 2010, p. 39).*

### 5.1 Introduction

This chapter provides a critical summary of the qualitative primary data collected from residents and health sector professionals living and working in The Gemfields. The purpose of conducting semi-structured interviews was to turn to participants to get their understanding, perception and wisdom, as opposed to engaging in a top-down investigation motivated by *a priori* hypotheses. Conducting interviews allowed the researcher to ask specific questions about social determinants of health and enabled participants to share their lived experience in the study area. This immersive process also helped the researcher to test ‘outside’ quantitative health equity indicators against ‘insider’ qualitative data. The integration of these two methods sought to account for any subtle situational variances that may be hidden or absent from existing quantitative data sets.

### 5.2 Interview Participant Profile

The researcher interviewed forty-five people across five sites – Anakie, Emerald, Rubyvale, Sapphire and The Willows. The summary of interview participants by gender and location is shown in Table 13. The participant gender split of more women than men (64% female to 36% male) does not reflect the population demographics in The Gemfields – the inverse is true with significantly more men than women living in the area. The most common place of interview was Sapphire, perhaps predictably as this is the central village where all health services and shopping amenities are located in the region.

Table 13: Breakdown of the 45 interview participants by gender and place of residence

	Anakie	Emerald	Rubyvale	Sapphire	The Willows
<b>Male</b>	2	2	3	11	3
<b>Female</b>	3	0	9	6	6
<b>Total</b>	5	2	12	17	9

Note: table created by author

The number of study participants from each village (as a percentage of the total population of The Gemfields) aligned somewhat with the census population data (excluding Emerald), as shown in

Table 14.

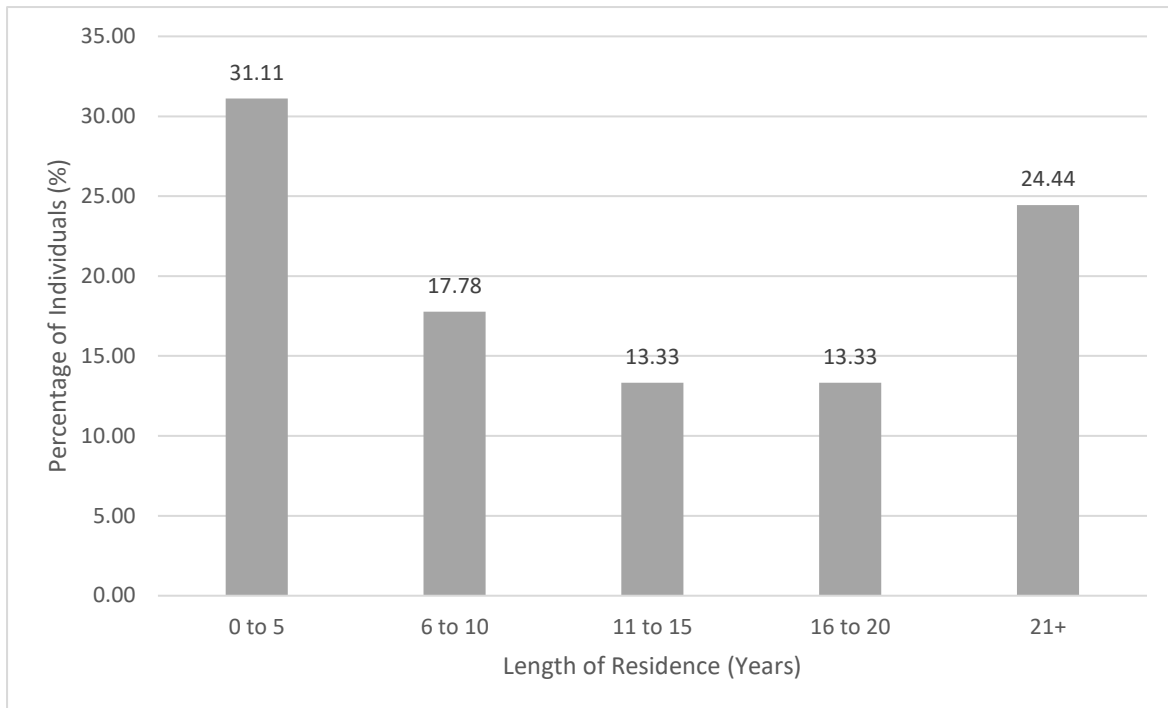
Table 14: Interview participants by location as a percentage of the total Gemfields population vs Census data

	Anakie	Emerald	Rubyvale	Sapphire	The Willows
<b>Participants</b>	11%	N/A	27%	38%	20%
<b>Census</b>	6.5%	N/A	44%	39.5%	10%

Note: Census data sourced online (ABS, 2016a)

With an ageing population, unsurprisingly the majority of interview participants (71%) were 50 years and older. Only 13 participants (29%) were under 50 years of age and no participants were younger than 30 years old. Figure 35 shows that just under one-third of participants (31%) have lived in the area for five years or less. Similarly, a little over a third of participants (38%) have called The Gemfields home for 16 years or more. These outcomes reflect the divergent nature of The Gemfields population – at one end of the spectrum is a proportion of the population which is quite transitory and at the other end of the continuum is a very stable and settled cohort of residents.

Figure 35: Percentages of participants' length of residence



Note: figure created by the author

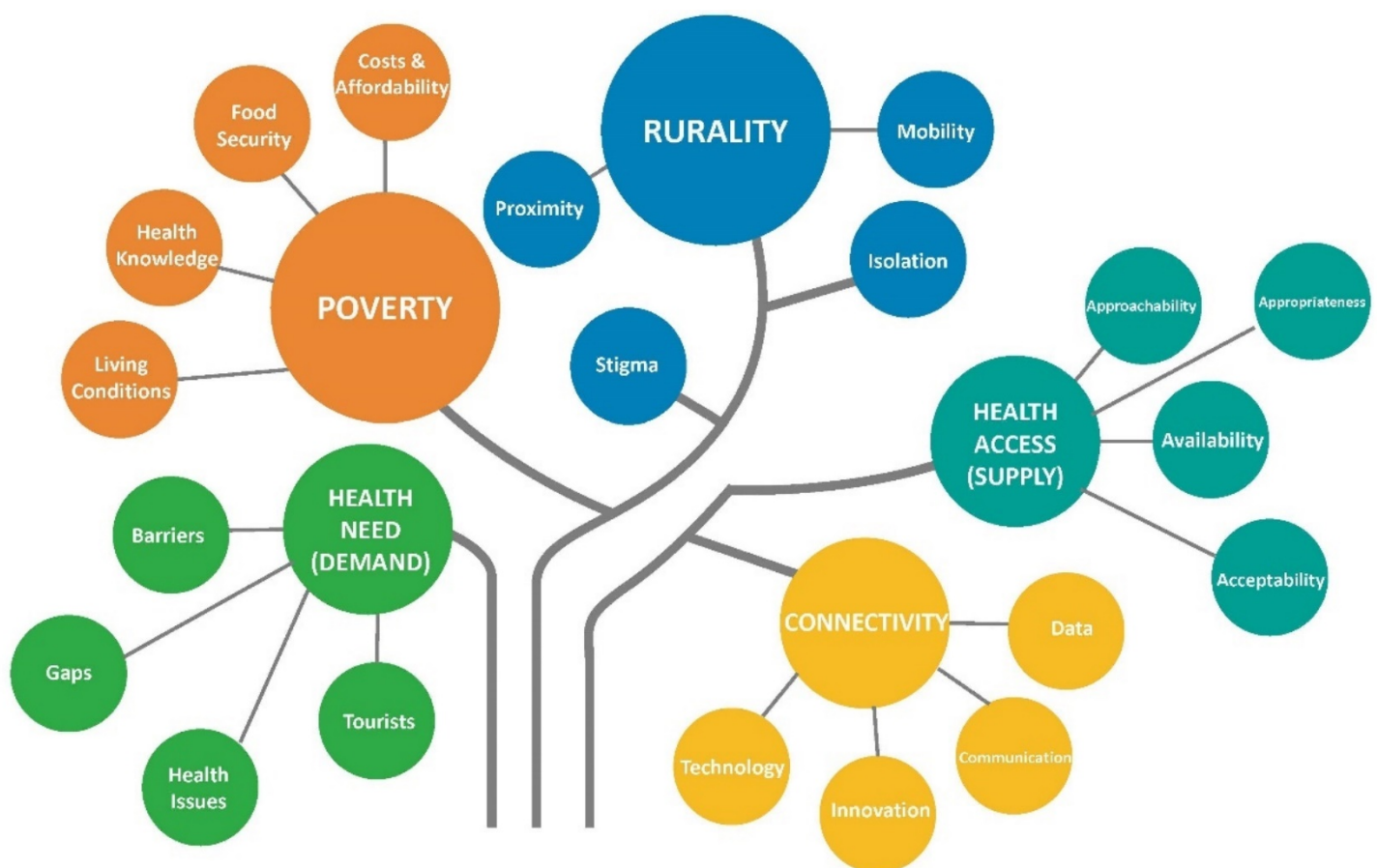
### 5.3 Coding

At the initial stage, a hard copy of each interview transcript was printed so the researcher could review the documents in detail and become better acquainted with the data set. A digital version of each transcript (MS Word document) was uploaded in NVivo resulting in the creation of 45 data files. The researcher made multiple attempts at coding the data. At first, an initial attempt was made to code the narrative text using the traditional social determinants of health categories, as formatively defined by Whitehead (1990). These broad factors encapsulate social, economic, environmental and cultural conditions that contribute to health inequity. However, it became evident that this structure did not address specifically key geographic aspects of health differences such as rurality, transport and mobility. The next attempt to code the data utilises the priorities set out in *Rural Healthy People 2020* (Bolin et al., 2015). It soon became apparent that this framework was heavily predisposed toward physical health status outcomes of participants, but did not take into account broader rural health disparities like poverty and geographical differences within a rural healthcare setting.

Added to this, an attempt was made to code data using the *Index of Rural Access* categories, which was expertly developed by McGrail and Humphreys (2009). This indicator uses a combination of spatial accessibility (availability and proximity) to primary health care with population health need and mobility. The *Index* was designed to identify health access issues

within a small-scale community setting such as The Gemfields. Although the *Index of Rural Access* was systematic and data-driven, the four categories were insufficiently broad to capture several of the unique socioeconomic and environmental drivers relevant in The Gemfields. All three of these initial attempts resulted in inconsistencies and made analysis of the data difficult. This process demonstrated that measuring health inequity is a complex and challenging task. Finally, following these three unsuccessful attempts, Leveque, Harris and Russell's conceptual framework of access to health care was included. A decision was made to apply a fusion of approaches based on Bolin et al. (2015), McGrail and Humphreys (2009), Whitehead (1990) and Levesque et al. (2013), resulting in the conceptualisation of a new assessment framework that incorporates the missing variables. A total of 30 initial codes were identified in the data set. These 30 codes (Level 3 Factors) were streamlined into 20 categories (Level 2 Factors) and finally conceptualised into five overarching themes (Level 1 Factors). Figure 36 illustrates this framework as a mind map. This structure is based on the health experiences and resistances described by interview participants.

Figure 36: Conceptual assessment framework of rural health equity place-based factors



Note: figure created by the author

Figure Key:

<b>Level 1 Factors</b>	<b>Poverty</b>	<b>Rurality</b>	<b>Health Need (Demand)</b>	<b>Health Access (Supply)</b>	<b>Connectivity</b>
<b>Level 2 Factors</b>	Cost & Affordability	Proximity (Distance/Time)	Health Issues	Approachability	Data
	Food Security	Mobility (Transport & Travel)	Tourists	Appropriateness	Technology
	Health Knowledge	Isolation (social & geographical)	Barriers	Availability	Communication
	Living Conditions	Stigma	Gaps	Acceptability	Innovation

Note: table created by the author

## 5.4 Content Analysis Results

This section presents the systematic coding and categorising of interview data in NVivo to determine numerical trends. As described in section 5.3, narrative text was analysed and NVivo has assigned quantitative ‘counts’ of each code. The content analysis provides a useful tally of the number of times a code was assigned within the interview text (Table 15). Initial coding identified a total of 30 initial categories (Level three factors) in the data set. High reference frequency may indicate greater importance but may also simply reflect participants’ willingness to discuss the topic at length. By far the most frequently referenced category in the interviews was ‘travel and transport’ with 174 mentions by 36 participants. The categories that were mentioned least were ‘navigating the health system’ with four mentions by three participants and ‘innovation’ with seven mentions by six participants. This may indicate less importance or could also reflect participants’ unfamiliarity with the topic and/or their inability or unwillingness to discuss these subjects. While the quantification of data provides an overall summary of the reference rate, the real power of qualitative data is in the analysis and interpretation of the actual stories, as detailed in section 5.5 which follows below.

Table 15: Level three factor codes used for content analysis

Category Name	Files	References
Travel or Transport	36	174
Access to health care	34	128
Living environment or Living conditions	33	117
Barriers	29	115
Disease	33	108
Health care utilisation	32	104
Ambulance	28	98
GP	34	91
Health care needs	34	90
Gap	26	87
Potential solution	22	85
Health knowledge	25	74
Mental Health or Suicide	20	66
Tourists	18	65
Costs and affordability	27	59
Technology	20	53
Keeping to yourself Anonymity / Fringe Dwellers	22	50
Geographical isolation	21	47
Stigma	14	33
Approachability	18	32
Strengths	15	28
Data	13	26
Drugs	17	26
Palliative care	14	25
Communication	15	23
Nutrition	12	21
Hospital	9	15
Private health insurance	8	10
Innovations	6	7
Navigating health system	3	4

Note: table created by the author

## 5.5 Thematic Analysis Results

This section details the final output of the entire qualitative data set in the form of interpretive concepts or themes. It presents the results and thematic analysis of interviews conducted with health sector workers and residents throughout The Gemfields region. The purpose of these interviews was to qualify the existing quantitative data sets with the people living and working there. There are multiple realities of life in The Gemfields and this

research aimed to understand this complex community from each interview participant's opinion or perspective, and to explain how different factors help or hinder health equity at the settlement level. Thematic analysis is purely a qualitative account of the collected data and aims to provide insights into the whole phenomenon interpreted through different lenses. The COREQ checklist created by Tong et al. (2007) was employed to ensure a rigorous and transparent qualitative research process.

In order to strengthen the quality and validity of the project, the 32-item COREQ checklist was applied to this research study and documented, as detailed in Appendix 2. Additionally, the computer-assisted qualitative data-analysis software (CAQDAS) tool NVivo served to manage and categorise the large volume of interview data. The Framework Method, as described by Gale et al. (2013) was also applied to this investigation to ensure a systematic approach to the coding process and support the validity, reliability, representativeness and generalisability of the qualitative data that were collected. These techniques delivered a rich, detailed and complex account of the data and resulted in five overarching themes (Level 1 Factors) – poverty, rurality, health need (demand), health access (supply) and connectivity. This section presents the themes in a descriptive manner, with in-depth synthesis and discussion taking place in following chapters. Statements elicited from interview participants are used to illustrate the themes.

### **5.5.1 Poverty**

Poverty and poor health are inextricably linked. As outlined in Section 4, the publicly available archival quantitative data indicated that The Gemfields was a socioeconomically poor settlement and people's access to resources was limited. A high proportion of the population receive some type of government benefit in the form of an aged, disability or unemployment pension. The quantitative data suggested that relative poverty (Index of Relative Socioeconomic disadvantage) across the study area was high. The qualitative data collected as part of this research validate the quantitative data, with interview participants confirming the high level of disadvantaged that is experienced by a significant cohort of the population. However, interview results elucidate this issue further and uncovered a strong relationship between health equity and poverty in The Gemfields. This is predominantly due to four factors: cost and affordability; food insecurity; health knowledge; and living conditions.

### 5.5.1.1 Cost and affordability

In relation to poverty, cost and affordability were inseparable when discussing access to health services in The Gemfields. This research does recognise that some residents “have the wherewithal to provide for ourselves,” (GR04), but the overall consensus garnered from interviewees was that low-income residents experience significant health access disadvantage because they are in dire straits.

*Most people say they are getting a government pension. They'll be getting either disability or aged care pension. There's some people who work, but there are probably half a dozen people who actually work and have a job and the rest are here because they're mining or they've been here for a long time or whatever. Some of them get money from their sapphires and things and they're actively mining. But, the majority people haven't got a job. (Health Worker 02)*

One interview participant described this cohort of disadvantaged residents as “financial refugees” (HW02), meaning there was an economic imperative for them to move to The Gemfields since living on a mining lease is very cheap. Residents who qualify for a single age pension reported receiving \$472 per week for a single person or \$712 for a couple (as of August 2020). They said that this amount of money could be made to stretch quite a long way in The Gemfields if one lives on a mining claim and does not have to pay for rent, rates, mortgage, electricity or utility expenses. One resident of The Gemfields confirmed their personal motivation for choosing to live there was due largely to the low cost of living. They said, “I couldn't afford to go and live in Emerald, I couldn't afford to go and live in the city and pay rent” (GR15). The cost of basic utilities such as water was also cited as a barrier to basic personal health and hygiene such as regular bathing:

*Because they are on mining claims with no water and their water is spaced out to showering probably only twice a week if that. Some of them. I know one that doesn't even shower full stop. And there is a lot that they just use the wipes, the baby wipes. They don't use up water for any bathing at all. They won't waste the water like that because it just cost them money. (Health Worker 14)*

Household expenditure on health care was limited, especially among the poor. The qualitative data showed a significant difference in health care utilisation across different socioeconomic groups. These differences are generally considered to be down to an ability and willingness to pay out-of-pocket payments. A small minority of residents reported having private health care and the financial capacity to fund their personal medical expenses. However, the story is very different for low-income earners many of whom will “always try to find a bulk billing doctor” (GR14). “Bulk billing” is a term used in Australia to describe when a patient does not have to pay for medical services because they accept the government Medicare benefit as full payment. The cost of fuel was identified as a prohibitive factor to accessing health services (GR07). One resident recalled having to spend a week in Brisbane for a medical procedure. Some accommodation costs were covered by Queensland Health Patient Travel Subsidy (PTS) but there was still a \$30 gap per night payable by the patient or, in other words, a total bill of \$210 for the week’s accommodation. This sum equates to just under 30% of the couple’s total pension income for a week:

*So, when my husband was in hospital, I think I had to pay \$30 a night [out of pocket]. That does become a strain because, you know, I'm not complaining. We manage, on the pension. Okay, but yes, \$30 dollars a night is a lot.*  
(Gemfields Resident 12)

A hidden medical cost and a barrier to access in The Gemfields is public transport. If a resident is taken from The Gemfields to the nearest public hospital in Emerald by ambulance, then they must find their own way back home upon discharge. The only 24-hour transport service in the region was a taxi. A one-way trip in the taxi can range from \$60 to Anakie to \$100 to The Willows. Gemfields Resident 24 said, “We can always get the ambulance on the way down. Getting back is the problem. Taxi costs are too high and some people couldn't afford it, especially if you're on a pension”.

More broadly, an inability to pay for medical-related expenses was a recurrent topic. One health worker stated that patients from The Gemfields were sometimes not able to pay for basic medication. They recall a patient saying: “I won't get the money until pension day Monday. I can't afford any antibiotics or Panadol” (HW03). The cost to see a dentist was also named as a being prohibitive and so residents “just opt out...the whole dental side of things gets left behind” (GR01). Another interview participant revealed, “we didn't go to see a rheumatologist for quite a while because we couldn't afford to go. We're not the only ones

in that position” (GR14). It was evident that opting out of the health system due to poverty was not always by choice:

*I think they want to be helped but they don't want to pay. A lot of them can't afford or don't want to pay. The majority are on pensions. I would say 98 per cent of people at The Willows are on a pension. So, they don't really want to pay. Every penny is watched. But at the same time, some are really generous [in other ways]...but most of them are watching most pennies. (Health Worker 09)*

Cost and affordability also relate to the provision of services to vulnerable residents. Another consequence of poverty was that some vulnerable residents could not afford in-home services such as Meals on Wheels. Rather than allow these people to go without or fall through the cracks, a small group of dedicated community members fundraise to source money to cover these cost gaps. Gemfields Resident 10 said, “Meals on Wheels is sometimes done through the back door. It's not funded [by the individual]. It's funded by the community”.

Surprisingly, cost is also an inhibiting factor for the small group of ageing but financially secure residents in The Gemfields region. One health worker said that they had struggled to help a dementia client living on a rural property access affordable in-home respite. Self-funded retirees living in a rural and remote area are disadvantaged in a different way as they do not qualify for federally funded home care packages, but it is not easy to source affordable fee-paying services. “Trying to find a service that does in-home respite in a rural area [is difficult] and it doesn't seem like it exists” (HW09).

#### **5.5.1.2 Food security**

Poor nutrition is closely associated with poverty. There was limited quantifiable data available on food security at the small-scale settlement level. However, results from qualitative interviews found segments within The Gemfields community who struggle to consistently obtain affordable and nutritious food due to high levels of persistent situational poverty. Five contributing factors to food insecurity were identified in The Gemfields – limited transport, geographical isolation, lack of refrigeration, poor knowledge about nutrition, and cost.

A lack of transport options is a recurring barrier for some people to access food in the study area. Baseline demographic data analysis in Chapter 4 reported a significant cohort of residents (21%) having no access to a motor vehicle. In-depth interviews confirmed a high level of personal immobility in The Gemfields, a situation which is further exacerbated by a lack of public transport. Those with access to personal vehicles may also struggle to pay for fuel or for other standard on road costs such as insurance, registration and maintenance. In turn, this greatly compromises the quality of their diet:

*Their diet is not the best because they're, you know, the access to services is reliant on whether or not you've got a motor vehicle or petrol to put in it this week. (Health Worker 04)*

One research participant noted, “for a lot of people getting food without a car is problematic, they don't have transport so they can only carry the food that's in the bag that they get from the shop” (HW15). Another interviewee reported community members using the high school bus to travel to Emerald, the nearest regional centre 50 km away, to do their shopping but then they have to stay in town all day until they can catch the bus back when school finishes. They said, “They can't buy like frozen food because it's thawed out by the time they get back home at half past four in the afternoon” (HW12). Limited access to transport was magnified during the COVID-19 lockdown when large retail supermarkets in Emerald stopped all remote home delivery services for up to two months due to an inability to guarantee supply. These grocery home delivery services had previously been utilised by people living in the villages of Anakie, Sapphire and Rubyvale who could afford the delivery fee but were not available to residents of remote mining claims.

Geographical isolation is widely accepted as just a part of life in The Gemfields and interviewed residents generally accepted the fact they have to travel long distances to shop for food. This was especially true in the most geographically remote settlement of The Willows, a trip which entailed an 83 km drive one way to the closest large retail supermarket in Emerald.

*People mainly do their grocery shopping in Emerald. So, they have to go into Emerald to stock up. Most of us only go once a fortnight. It's a cheap way of living actually because you have to plan what you need for a fortnight. And*

*you haven't got a shop to go and get extra if you can't be bothered cooking.  
Which is what you do if you lived in town. (Health Worker 11)*

Safe storage of food is also problematic in The Gemfields and is a contributing factor to poor food security. A cohort of residents in the study area choose to live in temporary or makeshift dwellings such as caravans, tin shacks, shipping containers, decommissioned buses or humpies on their mining lease and were not connected to government services such as public reticulation of electricity, water and sewerage. Study participants said that these residents use solar power but more often than not do not have a fridge and could not freeze anything. Consequently, a diet comprising mainly tinned food is typical in the community:

*Also they say they've got no fridge. So they've got no storage. So they can't freeze anything. They've got no fridge to put it in. Maybe an esky with a bit of ice. A lot of ice is sold in The Gemfields. And that's because it's going to people who are only on solar power or whatever. (Health Worker 15)*

Participant feedback during interviews indicated a lack of awareness about the importance of eating a nutritious balanced diet and the need to buy fresh fruit and vegetables. One health worker reported visiting a client who did not cook, had no fridge and was living on chips and dips (HW08). Poor knowledge about nutrition is seen as a contributing factor to making poor food choices. Health workers reported an urgent need for nutrition education programs and access to dietetic support services, especially for people affected by chronic health conditions such as diabetes, obesity, cancer and heart disease:

*Half the people out here wouldn't know what an orange was. People are eating takeaways... I've seen so many people that are so sick and in the takeaway shop getting a bloody big burger or something. We need nutrition [education]...dietician guy. Because a lot of people are diabetics here in town and we don't have one of those diabetic ladies [educators].  
(Health Worker 10)*

Further compounding a general lack of knowledge about nutrition is economic disadvantage – buying fresh, nutritious food was viewed by some as expensive and a luxury. While there is a small convenience grocery store located in Rubyvale (the most north west village in settlement area), which provides a modest range of fresh fruit and vegetables, this shop is

not located within easy access for those living in other villages or on mining claims. In the words of one health worker, “Yeah, food is expensive, and a lot of people just choose unhealthy [food]” (HW03). An incidental impact of poor nutritional knowledge was reported as children often going to school without taking anything for lunch. Interview participants reported children saying, “Mum didn’t pack a lunch, we had no food” (HW10). Children attending school without lunch was reported as being a regular occurrence and the local primary school would always have pre-prepared sandwiches in the freezer. After major community events, such as Gemfest, there are often left-over bread rolls that are donated to the local primary school for this purpose. “They butter up a heap of the bread rolls and put Vegemite on, then freeze them for the kids. If they come to school and they’ve got no lunch they can just pull out a bread roll” (GR11). Substance abuse was one reason given as to why some parents could not afford to purchase food for their children. Gemfields Resident 11 went on to suggest that “some of the parents, well, single parents, they’ll be too stoned...they can afford to buy their weed but can’t afford to buy food for the kids”.

Food insecurity is especially difficult for people living in extreme poverty in The Gemfields. For example, one interviewee spoke of a “guy who lives down on the river...under bits of tin” (HW15). They said he lived in a “three-wall sort of hut. No power, no running water”. In such overt cases of poverty, interview participants said the community would very quietly and discreetly endeavour to provide food relief. For example, local shop staff might tactfully offer this person fresh food or milk “that is nearing its used by date” at no cost (HW15) or deliver home cooked meals after work hours when no one will see (HW12). Local good Samaritans inconspicuously check upon vulnerable residents to make sure they have fresh water to drink – another commodity in short supply especially in times of drought. These acts of kindness and community spirit were referred to as ‘looking after our own’. However, there are limitations to this charity model – the vulnerable person must be willing to accept the donations and community members must also be willing and financially able to provide food relief at their own cost.

Yet, not all residents are fortunate enough to be on the receiving end of such community goodwill and do fall through the cracks. The real-life consequences of food insecurity in the remote study area are malnutrition and poor health outcomes. In the ominous words of one health worker, “I have to say, the most disturbing thing I’ve seen was an elderly gentleman who was so malnourished, filthy dirty and dying in front of us” (HW03). The same health professional described this particular person as looking like a starving man who had stepped

out of East Africa – “skin and bones, ribs sticking out, filthy dirty hair, long scraggly hair. Just appalling” (HW03). Several weeks later the researcher heard through informal means that this same gentleman died in hospital grossly underweight and malnourished weighing only 30 kg. Health professionals from across a multitude of sectors agree that undernourishment is a common consequence of food insecurity in The Gemfields.

#### **5.5.1.3 Health Knowledge**

Health literacy concerns the functional skills and conceptual competencies needed for an individual to access, understand, appraise, apply and communicate health information in the context of everyday life (Kanj & Mitic, 2009; Sørensen et al., 2012). Health literacy is a key determinant of health and research evidence persistently shows a relationship between health literacy and education levels (Sørensen et al., 2012). Higher education attainment is associated with a better ability to appraise health information and navigate the healthcare system (Jansen et al., 2018). However, it is well documented that the inverse is true for people with lower educational attainment (Van Der Heide et al., 2013). Ultimately, poor health literacy adversely affects people’s health. Baseline quantitative data collated in Section 4 of this thesis showed that 78% of The Gemfields population did not complete Year 12 or equivalent, which indicates a very low educational attainment level by Australian standards. The Gemfields also ranked in the lowest three percentiles on the Index of Education and Occupation (IEO).

In The Gemfields, this research found a strong connection between poverty, low education and health literacy. Analysis of the qualitative interview data confirmed that low levels of health literacy were prevalent across The Gemfields. The level of health literacy in the settlement area was described as “probably poor” (HW02), “not good” (HW10) and “low”(GR24) and that consumers have “poor access to health information” (HW07). Interview participants identified people’s cognitive capacity to read, process and act on health-related information as a limiting factor for many residents of The Gemfields. Health workers reported having to help consumers with basic tasks such as reading health-related personal mail, doctor’s scripts, medicine labels and understanding written or oral medical appointment instructions. For example, one health worker recalled a consumer saying: “I’ve got this letter in the mail. What does it mean? Can you ring these people for me? Can you sort this out for me?” (HW02). One resident acknowledged their difficulty in comprehending health information especially understanding what medical professionals were saying. They

found using a social worker or a support person to help them communicate and interpret health information invaluable (however, such support was found to be in short supply in rural and remote settlements).

*I've got to have someone there because I can't understand the doctors over that thing [telehealth]...I find it hard to get across to them what I'm trying to tell them...I can't understand them. So, the nurse is always here...I don't know what I would have done without their help. (Gemfields Resident 12)*

Low levels of health literacy meant that performing important health-related tasks such as registering for the National Disability Insurance Scheme (NDIS) or liaising with other government health agencies was beyond some consumers' cognitive capacity. Health workers reported having to call up the NDIS for clients and advocate on their behalf (HW03). Trying to improve consumers' access to information was also difficult due to poor literacy standards within the community, as illustrated below:

*I don't know where and who's space it is to educate communities in relation to all the funding streams that are out there... I mean, the literacy levels are quite low. There's a lot of illiterate people [in The Gemfields]. So, there's no sense putting it in the local newsletter is there? (Health Worker 04)*

During the collection of interview data, one health sector worker retold a conversation they had with a 50-year-old male who was illiterate. Although he had his driver's licence, he was not able to read. He was worried about having to travel to Rockhampton for a medical appointment. He was concerned about how he was going to navigate the situation. The health worker reflected on this conversation and said, "There's quite a few people actually who can't read. So, literacy and health literacy. Big problem" (HW15). Hence, poor health literacy also influences an individual's ability seek out health services. In the words of one resident of The Gemfields who was describing a personal health episode, "I didn't know what to do. I knew there was people to talk to you, but I had no idea who they were, what they would tell me...honestly, I didn't even know what help I could get" (GR24).

Another resident also remarked on low levels of health knowledge locally but was unsure how residents could access better health information, observing that "no one's very knowledgeable because nobody tells them anything. Where do you get any information

about health stuff?” (GM07). There was an element of frustration among some interview participants that a segment of The Gemfields residents were reluctant to be personally accountable for their health needs and outcomes.

One respondent commented that “nobody here [in The Gemfields] takes responsibility for their health because they either don't want to or they can't” (HW03). Some were resigned to the fact that people make a conscious choice not to take care of themselves or take preventative measures to improve their health (HW09). Others were more compassionate and understanding of real-life struggles while still acknowledging the need for individuals to take control of their personal health behaviours to ensure great self-efficacy.

*Yeah, great community, good people, interesting people who are sick and just need some encouragement or some understanding of how to access health care. People have to be accountable for their own health care in some ways.*  
(Health Worker 05)

Better access to health education was seen as a way to improve community capacity and empower people to “better self-manage” their health (HW07). Study participants also identified some of the consequences of weak health literacy competencies, including an inability to take medication correctly, failing to attend scheduled health appointments, poor self-care at home and ultimately adverse health outcomes.

*He just takes whatever [medication] he thinks he should take. Even though it's all regimented and it's all set out for him, he just doesn't take the scheduled dose. They don't realise that they lack the cognitive skills to self-care for themselves. It's like basically spoon feeding a child.* (Health Worker 06)

The WHO asserts that literacy levels are a strong predictor of an individual's health status (World Health Organization, 2013). Interview data corroborated the assertion that low health literacy was associated with poor health outcomes within some segments of the community. One anecdote that illustrates the consequences of low health literacy pertained to a resident of The Gemfields who thought for a long period of time that they had a sty in their eye. In their mind, such a minor medical ailment did not warrant a visit to the doctor, so they delayed seeking medical advice. When they finally did make an appointment with a doctor it was

identified as “a cancerous thing” (GR25). An individual’s ability to comprehend basic service eligibility and health system processes was identified as another impediment for some resident’s ability to make informed decisions about medical issues:

*One guy...lives alone in a humpy. He’s an Australian citizen. He’s got no teeth. Why don’t you get some new teeth? And he said, ‘I’ll have to save up for them’. I said, ‘No, if you’ve got a health care card, they’re free’. And he said, ‘I can’t cope with going through all the paperwork’. It’s too overwhelming for them. (Health Worker 15)*

Greater community education about health funding streams, program packages and eligibility criteria were cited as possible solutions to low health literacy levels in The Gemfields (HW04). However, it was also acknowledged that education alone may not be sufficient when the constellation of an individual’s cognitive skills was very low. Interview participants recognised that the most disadvantaged members of the community may require more personalised one-on-one assistance to help them understand fully their rights (HW09) through the assistance of consumer health advocates, health coaches or nurse navigators.

#### **5.5.1.4 Living Conditions**

Interviewees described The Gemfields as a friendly, supportive, and tranquil community where people kept to themselves. Interviewees portrayed the lifestyle as “casual and there’s no pressure” (HW11). Many said they moved to the area for the fossicking, the quiet lifestyle and the good climate, even though it gets very hot in the summer. Despite only being a small settlement, the population’s living conditions were widely segmented which is often connected to an individual’s level of advantage or disadvantage. The Gemfields was described as a “blend of planets”, “a blend of different people”, “factional” (HW15), and “the wild west” (HW01). One interview participant said that people came from “all walks of life” (HW04). Another interviewee described The Gemfields more harshly and likened it to ‘deliverance country’ (HW02). This was a pop culture reference to the 1972 horror movie *Deliverance* about four big-city men who venture to rural Georgia in the US, for a fishing trip and were terrorised by some local ‘crazies’. In the movie, the local population were portrayed as deviant, ignorant, backward, redneck hillbillies. Another interview participant made a more recent and endearing pop culture reference to the recent US fantasy drama television series *Game of Thrones*:

*I don't know if you've seen Game of Thrones, but I was sitting at the markets the other day and the amount of variety of people and I just thought...it just came into my head...We're in Wildling Country. But I mean, I love them because they're all grounded. They're down to earth. Well, most of them are, anyway. (Health Worker 06)*

Residents were separated into loose 'groups' by locals based on when they arrived in the area or how they chose to live. For example, 'old timers' were long-term residents who moved to the settlement in the 1960s, '70s and '80s and set up their life around small-time sapphire mining. 'Generic folk' were described as middle-income earners (workers) or professionals (doctors, lawyers, engineers) or businesspeople who 'do nine-to-five', were gainfully employed, live in established and comfortable homes, finished high school or have a trade or have a university degree, and their children are well educated. The 'generic folk' easily function and interact in the community and wider world. 'Farmers' are actively engaged in the agricultural sector and live on substantial rural properties around the periphery of the settlement areas. 'Miners' are individuals (and sometimes their partner or families) who fossick for sapphires and other precious gems. They lease a small-scale 30m x 30m mining claim from the State government. Some miners reside in Council-approved permanent housing in the village precincts and only visit their claim to dig. Others erect temporary dwellings on their claim and live there permanently or during the winter months when they visit the area. 'Townies' are people who live in the villages and do not work or mine. A large proportion of 'townies' were identified as being elderly, retired, and either on some form of government benefit or unemployed. Interview participants reported a "real continuum of people living well under the poverty line....and there's a little bit of absolutely everything in between. I've never lived anywhere like it" (HW15).

Those who were interviewed highlighted the dichotomous nature of living conditions in the community. There was a sharp division between those who resided in 'real' houses in the villages and those who in 'shacks' or temporary dwellings on mining claims. One interviewee claimed that some people were "living in the houses but that's rare" (HW07). They described living conditions as "quite dirty" with people living in "tin sheds or caravans" without "floors, running water or showers" (HW07).

*I think there's two very clear different sets of people out at The Gemfields, people who either have their own business out there or they work in Emerald.*

*They live in a real house. And then there are the people who live on mining claims that maybe got a caravan or, you know, an old bus or whatever. Don't necessarily have power. And I mean, it sounds awful in this day and age, but people who don't have hot and cold running water, or people who don't have electricity. And some people actually want to live that way completely off grid. And that's absolutely fine. We shouldn't discriminate against them because that's their idea...there's a number of people who actually prefer to live off grid and, you know, just light the fire in winter for warmth and whatever. (Health Worker 04)*

Poverty and poor living conditions were closely interconnected in The Gemfields. A recurrent description of living conditions on a mining claim was that “a lot of people don't have running water. They don't have electricity. They still got outhouse loos, they might have a shower that's outside” (HW2). One Gemfields resident encouraged the researcher “to get up into some of these places where these claims are, there's no running water, no electricity, and it's like a third world slum” (GR11).

Living ‘off-the-grid’ was a recurrent expression describing the cohort of ‘miners’ who chose to live in temporary dwellings on their claim. Some claims were well established with occupants making their temporary dwellings as comfortable as possible. However, in extreme cases, the living conditions were akin to developing countries where people were “living in a house which is hardly a house”, domestic waste was “piled up to the ceiling” and there were “no washing facilities” (HW03).

*The humpy...it is horrific is all I can say. It's a tin shed. It is their main living area, like their bed is their lounge chair. The dining room table is where they watch TV. They've got that humpy and then they've got a caravan. I mean it's a 22-footer, something like that and that's where they put their kitchen. The only thing they're cooking on is a little gas stove. She didn't have power at all. So she was reliant on solar. But in the middle of summer! [The heat] it's gonna be a killa. Like the caravans got no roof over the top or anything. (Health Worker 13)*

Being poor, isolated, and living in very poor quality housing was identified as exacerbating discomfort, safety, and potential health risks during extreme weather events and

environmental exposures. Vulnerable residents were more likely to suffer risky health problems from weather-associated events such as heat waves or cold snaps. The lack of power, air conditioning, limited fan use and inability to travel to cooler public spaces (such as libraries) were identified as barriers to staying cool in the summer. Interview participants reported that housing characteristics combined with a lack of cooling strategies in the summer increased vulnerable residents' susceptibility to serious adverse heat-associated health effects.

*The summer is bad. Summer heat is an issue. No one has air conditioning. So, they all live out there dealing with all the heat-related problems. So, people that are just sick, that live out there [on a mining claim] with nothing, dealing with 45 degree plus heat in a tin shed and with poor medical histories. (Health Worker 05)*

Additionally, but to a lesser extent, the inverse was reported in the winter whereby susceptible populations may experience cold-related health impacts. The temperature on The Gemfields can drop below zero in the winter months. Temporary dwelling structures on the mine fields are not constructed with insulation or have any internal electric heating source. Interviews confirmed that many mining residents relied on open outdoor fires for a source of heat and for cooking. This style of heating requires the person to be physically able to source and cut firewood as the main fuel source in order to stay warm and to eat.

*They've got no heating [in winter]. They've probably got old slow combustion stoves. And then they've got to chop wood. Then they get disabled and cannot chop their wood. (Health Worker 02)*

Interviewees speculated that a sizeable number of people living on mining claims were single men, which correlates with the quantitative data collated in Section 4 of this dissertation. This segment of the population was described as “fringe dwellers” (HW02), “eclectic types of people” (HW05) and some “misfits” (GR01) who actively chose to “live completely off the grid” (HW04). It emerged that some of these people “just don’t fit in” to society – they either “can’t do it or do not want to” fit in (GR01). Another resident of The Gemfields said it was ‘a really interesting place’ and suggested that this cohort of marginalised people have “just given everything up and they're doing the simple life because

things got too hard” (GR11). It was described that some people deliberately come to The Gemfields to run away from society or hide both metaphorically speaking and literally.

One interview participant revealed that, “it can be quite challenging finding people that just live on mining claims because we don’t know where people are living” (HW05). In particular, it was how the settlement area was set up combined with the fact there was no real mapping system; the roads were just tracks and people can move anywhere at any time. Reasons given for the population imbalance or more men than women were “marriage break ups”, “mental health”, “drug and alcohol dependency”, “cheap living” and Post Traumatic Stress Disorder (PTSD) for veterans. The Gemfields mining claim area was described as “not a real nice place for women to live permanently” (HW02), however, personal circumstances were driving some women to relocate to The Gemfields. Poverty is a relative concept but is generally used to describe vulnerable or marginalised people who have to make difficult choices about basic life activities (like putting a roof over one’s head) that most people take for granted:

*We're seeing a lot of people between the ages of 50 to 65, especially single women, they've raised their kids. They've got no money. They've got no super. They've been living in rental, and they just can't afford the rent anymore. So, they might have a bit of money in super and then they buy a modern little mine claim, and then they have to live in a little humpy or there's cheap rent here. (Health Worker 02)*

Poverty and poor living conditions have the potential to endanger people’s health. A lack of clean water and sanitation means the fundamental practice of showering was optional for some Gemfields residents. One interviewee said there were a lot of children “doing it really tough” and they “go to school dirty, no shower, dirty clothes from the day before” (GR11). The health consequences of poor personal hygiene can be minor in the short-term but over a prolonged period of time it can badly affect one’s health status:

*Most people here shower probably twice a week if they shower at all. They don't think it's important to shower. I would have to say the majority of population have their clothes really dirty. They're not washed. Their skin is terrible. Their feet are terrible. And I think it's just a case of neglect in some*

*cases. Cleanliness is right down in people's list of priorities. (Health Worker 02)*

As described in Section 5.5.1.1, the main motivation cited for people to live on their mining claim in basic temporary dwellings was “cheap living” (GR05) or also described as “free living” (GR22). One interview participant summed it up, “we don’t have power, so we don’t have a power bill” (GR21). So, this type of living was especially attractive to low-income earners, pensioners and people receiving government benefits or living below the poverty line. Another interviewee confirmed that there was a large number of elderly people living on mining claims because it was an affordable way of life (GR29). An interviewee who identified as a ‘pensioner’ confirmed they could not afford to pay rent and said, “if you play your cards right, it can be cheap living not paying rent” (GR15). Another interview participant described his living arrangements as “the ultimate man cave” after originally setting up an old caravan and tarps; he now has “power, Wi-Fi, air conditioning and a big screen TV” (GR22). The description of living conditions in the mine fields consistently referred to residents actively choosing to disconnect from public reticulation services such as electricity, water, waste management and sewerage and prefer to rely on “solar panels and a generator” (GR30). For example, The Willows was described as “just a town with no services, really. Water is often a crisis when it doesn't rain because they have no town water. I know a lot of them have a tank or that type of thing,” (HW09).

*You're not supposed to put up a permanent structure which suits most of them because it's a very cheap way of living...no water, no electricity. So, they cart water while they can. As they get older, they can't cart water anymore. And electricity, well, they usually set up with solar. They have a solar fridge running and that sort of stuff. Never have I seen anything like this before. (Health Worker 14)*

This way of life was described as a “beautiful lifestyle” (GR09), “a nice place to pull up stumps” (GR23) and “an ideal spot to live with very little regulation” (HW08). However, interviewees also said this “loose community” (HW08) also attracts undesirable residents, who turn their claims into “junkyards” (GR09), or “squatters” who live illegally on unregistered mining claims (GR29) and have “dicey living arrangements” (GR10). Unsanitary living conditions such as excessive dirt, filth or squalor were presented as a ‘lifestyle choice’ by some research participants:

*There was one man he was a diabetic with a cardiac condition. But he chose to live in this dreadful house. He never actually let me in. He always met me at the front door. And after he passed away, I went in and I was a bit horrified by the circumstances he lived in with his two dogs. And he passed away there, and no one found him for a couple of days. He had chronic disease, but he just chose not to do anything, really. (Health Worker 09)*

As previously noted, the remoteness of some mining claims and designated villages impacts on the availability of public reticulation services such as water, waste management, sewerage, electricity, or gas. Often, the more remote a place, the fewer utility connections that are available. Reduced access to sufficient, safe, reliable, affordable, and accessible public reticulation services means in parts of The Gemfields that locals find alternative solutions to meet their basic domestic needs. For instance, in The Willows there was no town water and residents rely on water tanks: “Most people have got a good supply of rainwater. And we've got a couple of town dams here that we've got pipes and pumps to pump up, to use” (HW11). These living arrangements were equated to “sort of like living on your own rural property” (HW09).

The aged community in The Gemfields (particularly in the rural, remote and isolated areas) were identified as a vulnerable subset of the community who struggle to live independently as they “get older, have health problems and got no other family” (GR14). However, members of this group of people are fiercely protective of their independent living arrangements and “don’t want to move into dependent living, they just want to die in their own dwelling” (HW12).

*He lived in a three metre by three metre garden shed. Inside he had a potbelly stove, his bed, a couple of cupboards that somebody gave him. He cooks on his potbelly stove in a tin shed. Without ventilation. There's no flooring. He peed in a bottle and kept the bullets inside the bed. This is normal for older people who are isolated and have no family. They don't want to go to town. They don't want to live in town. That's why they live out here. (Health Worker 08)*

One health worker admitted that they “feel like sitting down and crying” after visiting some elderly residents in the study area (HW12). Challenging living environments made in-home end of life care near impossible. Another interviewee recalled visiting an elderly couple who were dying of cancer and living in a little tin hut. They were lying on a foam mattress on the ground. It was fifty-five degrees outside, they refused to go to hospital and were just “toughing it out. They hate hospitals. They just want to stay home, which is their right” (HW09). This was not an isolated incident. Research results from this study suggest that elderly people choosing to live and die in primitive conditions was accepted as just part of life in The Gemfields. A similar confronting scenario was recited by another health worker:

*There was a bachelor. He's about 80 years old. He lives in a shipping container with no running water, no electricity. He has a solar panel and a wind turbine, a kerosene fridge. He baths in a bucket. He lives like that by choice. He is unable to drive. He has mainly canned foods because he's got no refrigeration. And you can imagine in summer his shipping container. No air conditioning because he's got no electricity. I think he has a fan in summer that runs off the wind turbine. (Health Worker 09)*

### **5.5.2 Rurality**

There are distinct factors related to living in a rural and remote area that impact health equity. In this paper we summarise these factors as ‘rurality’. As detailed in the Chapter 2, rurality has many diverse dimensions that relate to geography (distance/size); population (sparsity/density); resources (human/infrastructure) and the individual consumer. The idea of rurality in The Gemfields relates to a functional concept of time, place, space and a way of life that is dichotomous to urbanity. There is an underlying socio-spatial distinctiveness the presence of which suggests isolation, frontier and territorial inequity. Interview results revealed a strong connection between health equity and rurality with four distinct sub-themes emerging: proximity, mobility, isolation and social stigma.

#### **5.5.2.1 Proximity (Distance)**

Proximity relates to ‘nearness’ in terms of space, time and place. Interview participants reported that geographic proximity to health services was a factor when seeking medical treatment and accessing services. Time travelled and distance were interchangeable concepts when referring to rurality and geographic closeness. Participants used quantifiable territorial units (kilometres) or time (minutes and hours) to explicate personal opinions and

experiences about distance. For instance, the location of the local community health centre was considered close if you lived in the village precinct of Sapphire (5-minute walk down the road) or Rubyvale (10-minute drive). However, the health centre was considered a long way away if you lived in The Willows (50 kms), especially if you do not drive. Interview results confirmed that “there’s no medical services” in The Willows and that residents “can’t do anything without a car...it’s just too far” (HW09). Residents from The Willows may carpool with neighbours and coordinate fortnightly or monthly trips ‘into town’ with other tasks such as shopping, medical appointments, accessing government services and other essential errands.

*You try and arrange when you go to see the doctor or anything in town around a shopping day because it's 83 kms from where we are to [Emerald].  
(Gemfields Resident 28)*

Away from the main village settlement areas, territorial scales and road distances were more difficult to quantify due to the extensive labyrinth of non-gazetted dirt tracks and gravel roads. The large proportion of people who are elderly residents was cited as a reason why distance contributes to health inequity in the area because “they are not of an age or capacity to travel” (GR01). Road distances to the Emerald Hospital (50-85 km) or Rockhampton Hospital (350-400 km) were also considered a long way away (GR30) and another confided that “the distance does get to you” (GR04). Interview participants said although Emerald might only be a short drive away, some individuals were not able to bridge that distance due to personal circumstances such as age, health conditions, disability, or transport access issues. This was also the case when required to travel further distances to regional or metropolitan centre for health care:

*It's an 8-hour trip there and back - it's a long way. And then you got to sit there waiting to get in and you don't know anyone there and then you've got to come home again at night; it's a bit rough. It's a big day and it's not cheap to drive that the way now and the price of fuel is high because you're living in the sticks. (Gemfields Resident 08)*

Distance was a relative concept at The Gemfields. One health worker did not view it as remote “compared to three quarters of the world” (HW03). However, proximity to the closest regional centre of Emerald was identified as a barrier to health treatment during times

of emergency when “back up is a long way away” (HW05). For instance, interview participants reported having to wait for an hour or two for Emerald-based emergency services to travel to The Gemfields to provide support when locally based staff were unavailable or needed extra help. Local knowledge of the area was cited as being essential to navigate the complex maze of unsigned dirt tracks throughout the mining fields. A unique dimension to the concept of proximity in The Gemfields was that distance was nearly impossible to comprehend in the fossicking areas since there were no official maps or navigation tools (see Appendix 29 for an example of a hand drawn map used by health sector workers).

One interview participant recalled an elderly friend dying on his claim at Washboard. The ambulance was called but they could not find his claim because the ambulance driver was from Emerald: “They hadn’t been here before and didn’t know where to go” (GR09). This issue was compounded further by a bureaucratic blunder made several decades previously, whereby The Gemfields region was allocated the same postcode as Rockhampton. The four separate villages are one ‘bounded locality’ that appears on emergency services maps as The Gemfields rather than four distinct villages. As one participant observed, “when you say you’re from Sapphire or Rubyvale, they don’t know. They don’t come up on the screen” (GR09). This means that the separate villages do not appear individually, which was identified as a ‘big problem’ in the event of a health emergency or even with natural disasters such as fires and floods.

Distance also created a strong perceived disconnect between the policy decision-makers or “someone in a suit and tie” (GR01) and Gemfields residents. Brisbane or Canberra-based bureaucrats were viewed with fierce contempt for their lack of understanding about spatial accessibility issues in the bush especially when it came to health care. One Gemfields resident said that “it’s not easy getting someone to drive out from Rockhampton to come and service clients or from Emerald to service clients. You can’t do that” (GR09). Urbanites living in capital cities were viewed as not understanding The Gemfields’ rurality and remoteness (GR09). There was a definite sense of ‘us and them’, meaning policy-makers and officials in the city versus people who live and work in The Gemfields:

*The government thinks the world ends 100 kms the other side of the capital city. And we hear those stories up here. You might as well be in a different*

*country, in a different state when entering north Queensland. I think everything ends in Brisbane. (Gemfields Resident 14)*

As previously mentioned, a high proportion of The Gemfields population are elderly, frail or disabled. Additional hardship arises when these people can no longer care for themselves in their own home and they have to be sent away to receive the care they require. As there are no residential aged care services in The Gemfields people must leave the area. One health worker said, “some people have to move away when they get too old or sick” (HE11). Proximity to appropriate residential aged care becomes an issue. The closest facility was located in Emerald, but interview participants said you had to be ‘lucky’ to get into it. One Gemfields resident said that distance burdens were particularly distressing for those who had to unwillingly relocate outside of the region, “Many have to go out to Longreach, which is even more traumatic” (GR10). Some choose to relocate to a residential aged care facility outside of the region because it was close to family. However, interviewees reported it was hard if residents did not have any family or suffered from health conditions that required special care facilities, such as dementia (HW11). The closest secure residential facilities for people with dementia were Longreach (400 km to the west), Rockhampton (350-400 km to the east) or Biloela (400 km to the south east). In this instance, study contributors suggested that rurality and proximity were inhibiting factors to accessing equitable health services.

#### **5.5.2.2 Mobility**

Qualitative results found that interview participants often decoded rurality in terms of mobility. In this study, mobility was the ability for people to travel safely and affordably in order to connect with the health services they required. If they had the means to connect easily to health services, through a functioning car for example, then the issue of remoteness was backgrounded. The issue of mobility was a complex conundrum in The Gemfields and was discussed in terms of economic resources and physical capabilities. In regard to economic resources, health and wellbeing were indissolubly linked to the social determinant of transportation. Transportation was required to overcome the hurdle of space – distance, time, effort, and topography. It was a critical factor to maintaining good health as well as managing chronic illnesses for people living in The Gemfields. For example, a person requiring chronic disease management needs treatment plans, specialist visits, pharmacological services, and access to other regular medical services. Therefore, transportation was viewed as a basic but fundamental resource that is essential to accessing

health care. That is, access to health care could not take place in The Gemfields without some form of transportation and the mobility it provides to health consumers.

Mobility often refers to having access to an array of quality transport options but in The Gemfields this range was significantly reduced due to transportation gaps. Different paradigms of mobility were disclosed during the interview process and included autonomous, shared, and unconventional transport solutions. The Gemfields was a community exclusively supported by private motoring (the exception being the school bus). Dependence on the car was absolute in the study area. Air services of any formal, scheduled nature were absent. However, access to a privately-owned vehicle was not universal. Qualitative results confirmed quantitative data showing a significant proportion of residents did not have access to private transportation. One health worker suggested that “a lot of people need transport, they haven't got a car, they can't drive. I don't know how they can get into town” (HW05). The study confirmed a chronic lack of transport options in The Gemfields. Transport was not necessarily an issue for those people who were employed, financially secure, owned a car and might travel to and from Emerald for work each day. However, for vulnerable populations in The Gemfields vehicle ownership was often prohibitive. Access to reliable private transport was limited for a cohort of residents which proved an inhibiting health equity factor in the study area. The cost to purchase, register, maintain and insure a vehicle was outside the financial capacity of many residents on low incomes.

The lack of personal transportation was often linked with poverty – “people have no money, they don't have a licence, they've lost their licence (taken away), they don't have a car or they don't have the money to put fuel in their car” (HW15). In particular, participants identified senior residents as being one of the most disadvantaged groups in the community as they were less likely to drive. Geographical isolation was further compounded if residents were elderly, frail or their personal circumstances changed whereby their transport option stopped. In one instance, one interviewee (HW08) recalls several elderly female friends in the study area never qualified for a driver's licence but were forced to learn how to drive after their husbands had died. These women had a car in their garage, but they no longer had a driver. Under such circumstances there was a strong reliance on others to help meet their transportation needs. Consequently, many turned to friends and family for assistance with mobility and transportation needs. Informal ‘lift-giving’ was a common practice in the study area. One study participant noted, “there are a lot of older people up here or people that don't

drive. They have to rely on others to take them in” (GR13). Other elderly people “haven’t got their licences anymore’ because ‘the doctor won’t allow them to drive” (GR24). The consequences of not being permitted to drive in The Gemfields were profound and resulted in a loss of independence and mobility. An extreme example of this scenario was revealed about an elderly couple who had not left Sapphire for the past 30 years because “the husband was sick, and the wife hasn’t got a driver’s licence” (HW03).

Within The Gemfields district, car dependence was a particularly acute concern because travel between the four settlement areas was not walkable, bike-friendly, or transit-oriented. As one Gemfields resident stated frankly, “well, there's no public transport out here” (GR03). Thus, research participants identified a strong asymmetry between car ownership, rurality and health equity, and, in turn, poverty and isolation:

*I think there are a lot of people in The Gemfields who are in that very low income bracket...even though the community does have the outreach clinic in Sapphire, just the difficulty for some of them to get to the clinic if they don't have a vehicle or it doesn't start this morning or they can't afford petrol to put in this fortnight or whatever. (Health Worker 04)*

The study observed high mobility demand due to habitat dispersion and significant distances between settlement areas. Qualitative results confirmed a lack of transportation infrastructure both internally between the four villages and externally between The Gemfields and Emerald and beyond:

*People here can never get to hospital cause "my car doesn't work. It's broken down"; "I can't I don't get paid till next week"; "I've got no money for fuel". So, they call the ambulance because they've got no other way to get there. (Health Worker 03)*

Interviews confirmed that a designated school bus transports children between The Gemfields and Emerald during the week. It departs at 7.30am from Sapphire and returns a little after 4pm Monday to Friday. Although some research participants identified the school bus service as a public transport option, others voiced their concerns about adults utilising this service due to child safety issues as well as infection control (if the adult was unwell or infectious and used the bus to travel into Emerald to access medical treatment). The local

Multipurpose Centre (MPC) does own a 20-seater bus but when the interviews were conducted it was out of service and had been for some time. Also, residents were required to be a paid up member or client of the MPC in order to use the bus. One respondent reported that it was possible to order a taxi from Emerald, however, it cost nearly a hundred dollars one way (HW10). Good Samaritans would reportedly drive their neighbours and friends who could not drive to Emerald. Yet, it was more difficult to source transport if appointments were further afield in Rockhampton (4-hour drive) or Brisbane (10-hour drive). One respondent said he knew of a fellow in Rubyvale who would regularly take his mate to Rockhampton hospital for appointments. “He’s ill - he can drive locally but there is no way he can drive that far or travel by bus to Rockhampton” (GR14). Relying on other people for mobility was a common practice across the study area, notably when venturing outside it:

*I think the worst thing for most people here is having to go to Rockhampton. I mean, they can do the trip to Emerald pretty quick or you can get a neighbour to drive them. But to get someone to physically drive you to Rockhampton, if you need a carer or you don't drive, to get someone to take you that is a real challenge. We know in suburbia we have a lot of community transport organisations that will do that sort of thing but out here, it's so vast an area...it is quite a challenge. (Gemfields Resident 05)*

Daily mobility plays an essential role in health and wellbeing. The strong lack of public transport in The Gemfields was diametrically opposed to the high mobility needs of residents. In an area where ageing and poverty were combined with the disadvantages of the habitat, immobility led not only to social exclusion but also to exclusion from health services:

*They wanted us to go to Rocky. And he wasn't even in a position to go...he'd stand up and could soil himself. He wasn't in a position where he could travel that distance. He couldn't walk from his room to the outside without stopping for a break. He was a mess. (Gemfields Resident 01)*

It was a common occurrence for residents not to show up for their appointments either locally or outside the region. Physical immobility due to pain was a commonly cited reason for non-attendance. For example, one interviewee confessed “it’s getting too hard for both of us to travel and get in and out of the car” (GR19). Another resident said the “bumpy

country road” and the “physical pain of actually driving, having the physio and then driving back” (GR13) was prohibitive. Residents expressed concern for their health and safety when travelling long distances to Rockhampton or Brisbane with a medical condition. “It was too far to travel by car. The train was too rough, and he was now not allowed in an airplane. So, we have to stay put” (GR12). If residents were unable to travel to their health care provider they missed crucial assessments required to monitor medication or treat chronic disease or even delay interventions. The QAS was described as a quasi-GP (HW05) because of a resident’s inability to physically travel from their home to the local medical clinic or further afield to specialist appointments. Failure to attend regular healthcare appointments meant clinical conditions would deteriorate unchecked until a visit to the emergency department was required.

An obscure but prevalent mobility issue in the study area was the inability of some patients to travel back to The Gemfields after an emergency trip to Emerald in an ambulance. One resident said people “would rather suffer in the middle of the bush than go to Emerald and be stuck there” (GR09). Respondents described being ‘too scared’ to call the ambulance and it being a ‘big worry’ because they did not have family or friends to bring them home (HW14). Residents reported being “afraid of getting stuck in Emerald” because “they don’t have anyone to bring them home” (GR15). This was especially true after hours:

*If we get sick, then we're stuck in Emerald until somebody can come and pick us up. This is like two, three o'clock in the morning and I'm not going to phone my family up and say, come and pick me up at three o'clock in the morning.*  
(Gemfields Resident 15)

An inability to make the return journey back to The Gemfields after a visit to the emergency department in Emerald resulted in either delays in discharge from hospital (GR26), or being admitted to hospital (HW15), or staying on the streets until someone can get them (HW01) or in extreme cases hitch hiking home (GR30). Furthermore, although there was universal high praise for the local QAS service, many Gemfields residents expressed their frustration that the ambulance drove back empty to The Gemfields, questioning why they could not provide a return service and take residents back home (as they had no passengers). There was a lack of understanding within the community that the QAS was an emergency response service. The vehicles were on call at all times and not permitted to give people lifts back home. If the vehicle was returning to The Gemfields and they were called to another job,

they could not just leave a returning passenger on the side of the road to attend to another emergency. Collective support for a patient transit service between The Gemfields and Emerald was unanimous among residents and health workers alike:

*The thing for The Gemfields that I would like to see improve from a community perspective would be a bus or some sort of transport system to get people back home. (Health Worker 05)*

Personal mobility was also restricted due to the road conditions. The gazetted main roads in The Gemfields were bitumen and sign posted but once you leave the central villages it turns into a maze of badly corrugated unmarked dirt tracks. Study participants said it was difficult driving terrain that takes a toll of any vehicle. During the wet season, the tracks turn to mud and are often impassable. Residents were “driving older vehicles, so they got no suspension” (GR10). Treacherous road conditions intensified from dusk to dawn when free roaming animals such as kangaroos could randomly jump in front of a vehicle at any time. Driving in the dark was described as “too dangerous” (GR15). The roadway design in The Gemfields often meant the bitumen roads had no shoulders or footpaths. Most often, with the exception of the main street in Rubyvale, there was no guttering and there could be steep drop offs. Local residential roads were most often constructed of gravel or dirt. For the elderly, disabled and/or immobile, mobility scooters were not an option due to the poor road conditions and lack of footpaths (GR18). The level of personal immobility within the community was a persistent problem. The following personal recount captures elements of the challenges experienced by some vulnerable residents:

*My dad had a stroke. After he got back from the hospital in Rocky, I needed to drive him in to Emerald for weekly physiotherapy. After a period of time, because of his age, he decided he just didn't want to have to do it anymore. I think if the appointments were across the road that wouldn't have happened. The 45-minute drive into town, the treatment and then the 45-minute drive home was a really big day for him. So, he stopped going. It was too much. There is an element of country folk who go 'nah – she'll be right' or 'I'll be ok'. They'd rather not have to travel because they see it as one hurdle too many. Whereas if these services were within our community, I think we'd all save in the long run. I think if it was a community-based program it would take a lot less money. (Gemfields Resident 01)*

Pressing mobility needs of the settlement area were raised throughout the interview process. However, it was noted that there was little willingness or ability to pay for fee-for-service transport services. The Gemfields residents rely on reimbursement for transport expenses through the Queensland Government Patient Travel Scheme (PTS). Nonetheless, respondents complained about the excessive and complicated paperwork. “The patient travel process wasn’t easy because we had to have all these forms” (GR04). Another barrier to patient travel was that people have to pay the travel costs out of their own pocket first before they were reimbursed. For people living on a pension or living day-to-day this upfront cost prohibits mobility. One health workers said “people lack the funds to go. Because they don't have the capabilities to travel, they don't go” (HW06). Overall, transport was of fundamental importance in the study area and the research found that a lack of viable and reliable transport options negated Gemfields residents’ ability to access health care services.

#### **5.5.2.3 Isolation**

During the interview process, isolation in the rural and remote settlement was examined in two ways – physical (geographic) and social isolation. This dissertation has described in detail the geographical remoteness of study area in terms of distance to other communities. However, there was a less obvious layer of geographical isolation that was somewhat unique to The Gemfields that relates to physical inaccessibility. In short, The Gemfields was described as frontier country that was exceptionally difficult to navigate. In the fossicking fields there were no actual gazetted roads – they were all tracks. So, the main challenge for emergency services and outreach health service providers was finding people. Modern day navigation tools such as GPS or digital mapping systems do not work in the mining fields. “There’s no UBD [a brand book of a book of maps formerly available in Australia for major cities and centres] or Navman. Those don’t work at all really at The Gemfields” (HW05). Therefore, the study area was very much off the radar – literally. Professionals in the health sector have developed their own hand-drawn mud map of the area that they update regularly as dirt roads change and mining claims move. One health worker said it was ‘bloody hard’ to find your way around The Gemfields because it was a dynamic environment that constantly changes (HW13). Another observed, “we really are in the middle of nowhere” (HW05). There were no residential addresses on the mining common. Locals verified that “there are a lot of places that are really hard to find out here” (GR15). Direction-finding in the fields was performed by identification of landmarks:

*One direction they've got this week was you go past the short wheel based old [Land] cruiser and turn right at the old yellow water tanker and I'm just there. That's the address. It's just a matter of getting to know your way around a bit. (Health Worker 14)*

Trying to find some residents on the mining fields was described as “trying to find a needle in a haystack” (HW05), there was a lot of “mucking around” (GR04) and it takes ‘a long time for them to work out where we are’ (GR09). A recent community initiative asked residents on the mining common to place an identifiable reflective sign at the front of their dwelling to make it easier for emergency services to find people. To give a geographical comparison, The Gemfields was likened to the small outback town of Lightning Ridge in north-western New South Wales, Australia (HW09) and the remote North Queensland community of Laura. Lightning Ridge and Laura are commonly known as places you go to ‘get away’ or isolate yourself from the world, which is not dissimilar to The Gemfields:

*I really think people are hiding. Especially on claims, they are hiding from people and hiding from life. Like what they do up at Laura, up top on the way to Cooktown. I think a lot of the guys are coming out here to get away from stuff – they've had marriage break ups and everything else and they just come and get away from everybody. (Gemfields Resident 15)*

The insular lifestyle on The Gemfields was an attractive proposition for many residents. Being physically isolated or cut off from other people was an active choice. It was evident that residents were inwardly happy and satisfied to live alone and/or physically isolate themselves from the rest of the community. There were also residents who chose to physically isolate on the mining fields for medical reasons. One participant disclosed that her husband contracts pneumonia very quickly at their home in suburbia. Accordingly, they relocate to The Gemfields in the winter so they can be physically isolated from other people. “I can keep him away from people that have got a cold or any infection so he's not picking up anything because his immune system is right down” (GR05). During the COVID-19 lockdowns, many temporary visitors flocked to The Gemfields to ride out the pandemic and stay away from sick people. Consequently, this form of physical isolation does offer fertile ground to foster social isolation.

Although parts of The Gemfields were rich in social capital with strong private social networks for those who want to connect, ‘hiding’ or social isolation was also commonplace across the study area. Generally, human beings are social creatures but in The Gemfields rurality has led to a high levels of social disconnectedness. In this instance, social isolation is defined in terms of the quality and quantity of social relationships an individual has at a personal, settlement or societal level. For instance, the availability or frequency of social contact with neighbours, friends or the broader community. Rural social isolation has received widespread attention as a public health problem as it is linked with increased health care costs (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). Social isolation can also have detrimental consequences for an individual’s general health and wellbeing, quality of life and mental health. Qualitative evidence from this study found that people were “escaping society” (HW09), “escaping from real life” (HW03), “running away” (HW11), “don’t want to be seen” (GR30) or “don’t want to be found” (GR11). One health worker said there “are people who are well and truly hiding from the world” (HW05). This indicates that the desire and capacity for human contact was very low. In short, there was a general disinclination to socially connect:

*Just peace and quiet. Get out of town. We love it. I think if you want to keep to yourself, you can keep to yourself, but you can also connect in if and when you want to. A lot of people like to kind of keep to themselves out there pretty much. (Health Worker 04)*

The absence of social relationships and lack of contact with other people was openly acknowledged in The Gemfields. “A lot of people, especially older men, come out here and withdraw from society” (HW06). For example, the only human contact some residents in the study area have was with Meals on Wheels, which visits three times a week (GR09). Another health worker confirmed they would be the only visitor each week for their clients because “they are quite reclusive and keep very much to themselves” (HW09). In general terms, health workers described some local residents as “odd balls” (HW01), “fringe dwellers” (HW02), “social refugees” (HW08), “hermits” (HW03) and “very independent” (HW14). Residential health workers have a unique ‘insider’ perspective on social isolation in The Gemfields.

*It [The Gemfields] is private for people. It's one of the last frontiers where you can just go and be whoever you want to be. People never ask you where*

*you went to school, who you related to, what car you drive. They're not interested in materialism. Even the wealthy people, you don't know they're wealthy. They've got a pair of shorts on with holes in them and thongs and they could have 50 million in the bank, but they don't flaunt it because that's actually not their purpose of being here. It's very accepting of different cohorts of people, more so than other places I've ever lived.*  
(Health Worker 15)

It was acknowledged by residents and health workers alike that although a large proportion of residents have deliberately isolated themselves from the outside world, this choice can have negative physical and mental health consequences. People with existing health and/or mental issues were more susceptible to “just want to drop off the radar and go off the grid” (GR21). Health professionals reported coming across more episodes of depression, dementia, Alzheimer’s, and declining cognitive skills due to social isolation (HW06). Disassociation from society or a decision to disconnect from social networks was also linked to increased alcohol and drug use (HW06).

*It's a bit of a Wild West thing with some people out here. It's a bit on the fringe. A lot of people very mainstream, you know, everyone's very friendly. But yet, it can be a bit like oh she'll be right. I'll drink and I'll smoke and if I die when I'm 65 so be it. So, a lot of pretty unhealthy sort of habits and not looking after themselves when they could do better.* (Health Worker 01)

Solitude, “keeping to yourself” or “hiding in the cracks” (HW09) were reoccurring topics when describing social connectedness in the rural setting of The Gemfields. It was reported that many residents did not feel like they fitted into normal society. However, The Gemfields was a place where they would not be judged, and personal choices were respected. Residents could choose to be a hermit or become part of a little community (HW03). As summed up by one health worker, “you will find someone who will take you in or be your friend...like you'll find someone that matches you and you'll just fit in” (HW09). Although formal social participation was limited, informal socialising occurred through everyday activities. For example, residents would mingle in informal settings such as at the petrol station when buying fuel, at the health clinic when seeking medical treatment, at the markets when buying local produce, or at the pub when having a counter-served meal. Despite a lack of social contact, loneliness was not raised as an issue by any interview participants.

#### 5.5.2.4 Stigma

Rurality in The Gemfields did not relate to the conventional notion of rolling countryside populated by agricultural farmers who are ‘salt of the earth’ people. In fact, this traditional idyllic concept of rurality is significantly at odds with life on The Gemfields. The fossicking fields present a totally different proposition consisting of small-scale independent mining claims scattered throughout rugged scrubland. It was a hot, dry, dusty, and harsh lifestyle. Study results found that The Gemfields’ deviation from the supposed Australian rural idyll had given rise to a form of geographical and social stigma. Stigma is a social process typically characterised by exclusion, devaluation, or an adverse social judgement about an individual or group of people.

Qualitative enquiry found that people who chose to live in The Gemfields were often marked as outcasts or social castaways. The mark of the outcast was apparently first conceived in ancient Greece with the branding of slaves to prevent their escape or to return runaways. Slaves were tattooed with a sharp instrument that made a mark called a ‘stigma’ (Falk, 2010). Interestingly, the Greek word for ‘to prick’ is *stig*. In The Gemfields, the word ‘stigma’ denotes a mark of marginalisation, devaluation, and social judgement. People living in The Gemfields were ‘marked’ by outsiders for their perceived unacceptable differences and were often unkindly labelled as rednecks and hillbillies. These derogatory terms generally applied to poor white unsophisticated people with limited education who may choose to reside in one of the four settlement areas that make up The Gemfields, including the mining common. This stigma may have originated because a cohort of local residents “don’t look after themselves as well out there” (HW01). In-depth interviews revealed a subjective awareness by both health workers and residents of the stigma associated with rurality in The Gemfields:

*I know from personal experience and from other people's experience, I know locally we're regarded lowly, like we're not considered the same as say people living in Emerald or elsewhere. We sometimes get a bit of a bum rap when it comes to community services or, other things like that. Like we're regarded as 'Gemmy Scum'. (Gemfields Resident 01)*

This environment of stigmatisation has led to a ‘normal versus abnormal’ and ‘insider versus outsider’ dynamic within the community and beyond. That is, ‘outsiders’ looking into The Gemfields view the lifestyle and the people who live there as ‘abnormal’. However, people who live and work in The Gemfields or ‘insiders’ view the community as ‘normal’. A

stereotypical view of people who live in The Gemfields emerged in the qualitative results that cannot be seen by simply analysing quantitative data. Being 'labelled' by outsiders as a "germy gemmie" (GR01), "gemie scum" (GR29), "stinky gemmy" (HW14), "feral perils" (HW12) and "scum of the earth" (GR15) emerged as systemic across and beyond The Gemfields when describing residents. Stereotyping the person linked them to undesirable characteristics such as being dirty, not showering, living in a humpy, not having access to reticulated amenities and being cognitively deficient. Gemfields residents (insiders) felt that 'outsiders' sneered at them due to their residential location. One Gemfields resident reported that "as soon as you say you live at The Gemfields, they say, huh, you're just nobody" (GR06).

*All the patients know what The Gemfield stigma is. Everybody calls them Gemmies. But the way some people say it - it is not said in a nice way. I think that there is that stigma from society...it's not just a health issue. It's a society problem. (Health Worker 07)*

An 'us and them' narrative emerged, and The Gemfields residents felt they got "screwed" (GR09) because of where they chose to live. Overt or direct discrimination resulted when a negative label was applied to a resident of The Gemfields. This was particularly evident within a health care setting. Stigma in The Gemfields related to the feeling of being excluded, devalued, and judged. Several interview participants reported disturbing incidents of discrimination that resulted in them not being able to receive the care they needed. For instance, being forced to shower before being admitted to hospital because it was assumed they were dirty:

*A few years ago now, when I was admitted to Emerald Hospital, I had an ulcer. First thing the nurse said to me was, 'we'd better get you in the shower'. And I said, 'Excuse me?' I said I did have a shower before I left home. Oh, yeah. But how long is it since you've had one? Just because I live out here does not mean I don't shower and I'm not clean. It's like saying you're a Muslim, so you're a terrorist. And that's not true. (Gemfields Resident 06)*

In extreme cases, Gemfields residents were refused care in the neighbouring town of Emerald. Respondents reported trying to make a medical appointment but the clinic did not taking their booking as soon as the patient identified themselves as living on The Gemfields.

“It’s like sorry, fully booked. So, we are targeted...we were just considered to be a little less deserving or whatever” (GR01). Another study participant recalled a story of a resident of The Gemfields being told “to go to the GP clinic around the road where all the other Gemmies go” (HW07). Another resident also described being barred from the healthcare system and unable to access critical diagnostic testing:

*I had to go to the doctor and he referred me to the Emerald hospital because I had a blinding headache for about two weeks. And it was really, really, really, really bad. So he said, ‘Well, you better go and get a C.T. scan on the head’. Doctor said for me go to the emergency department to get those scans. I got there and they turned me away. You know why... gemmy germ. (Gemfields Resident 29)*

It was identified that some ‘outsider’ health workers from Emerald and farther afield held prejudicial beliefs about people who live in The Gemfields and were reluctant to work there or treat patients from the area. For example, one student nurse was reported as being very reluctant to work with supervisors in The Gemfields as part of her placement and acted “as if she were going to Deliverance country” (HW03). ‘Insider’ health sector workers substantiated The Gemfields residents’ perception of discriminatory social judgements made against them in the health care setting. It was suggested that the medical creed of delivering care without judgement or prejudice was not universally applied to people from The Gemfields (HW03). One health worker said The Gemfields residents were made to ‘feel like second-class citizens’ and they were professionally “deeply disappointed about that blatant discrimination...and it was blatant from medical and nursing staff in actual fact” (HW15). Another health worker reported clients crying because of the way they had been treated by health professionals in Emerald (HW12). There was a sense of resignation among residents about them being stigmatised, but they would not complain for fear of being refused treatment in the future.

Locally, there was a stigma associated with accessing mental health services. One health worker reported a reluctance of residents to seek counselling or call the mental health line for a referral due to stigma – the shame associated with having a mental health issue (HW03) and not wanting other people to judge you. “A lot of people live in denial” (GR11) and “they don’t want people knowing that you’ve gone to the doctor”:

*So, if you have cars parked at the medical clinic on a Thursday afternoon everyone knows why you're there [visiting the mental health service] and there's such a stigma about it. (Gemfields Resident 09)*

There was a form of geographical judgement made about this unconventional settlement that has led to The Gemfields earning a reputation as being backward and primitive. The stigma associated with living there was likened to Aboriginal communities:

However, one non-indigenous Gemfields resident who has a great-grandson of Aboriginal heritage disputed the comparison. “My 16-year-old grandson tells me, Grandma, if you were my Aboriginal grandma this would never have happened,” (GR06). The social stereotyping and geographical judgement of The Gemfields is unique and an unfortunate but enduring feature of this rural community.

*The stigma carries over to the health system, of course it does. It is a unique lifestyle. It's been called a unique community. I've been called by a funding body and for people to understand it [as a general comparison] I'd say it [The Gemfields] has the same stigma that an Aboriginal community would get. (Health Worker 14)*

### **5.5.3 Health need (Demand)**

The concepts of health need and consumer demand are complex in The Gemfields and research results detected a combination of factors that discouraged care-seeking behaviours. Barriers to obtaining and keeping good health in The Gemfields were both structural and functional in character. That is, the demand side of the health access equation featured both direct (downstream) impacts such as population characteristics and indirect (upstream) broader resource and social factors. Salient functional aspects of population characteristics included two things: the complex and chronic disease profile of the residents; and the rising demand placed on local health services by tourist fossickers (temporary/transient population) during the winter months. Structural obstacles facing consumers in The Gemfields were discussed in terms of processes and health service barriers or gaps.

#### **5.5.3.1 Chronic and Acute Health**

Complex chronic and acute health conditions are prevalent in The Gemfields. Without exception, each and every one of the 30 residents interviewed for this study reported either having a chronic health problem or caring for a partner or friend who had been diagnosed

with a serious medical condition or experienced an acute illness. Chronicles of strokes, heart disease, cancer, diabetes, substance abuse, and mental health issues featured repeatedly when residents were asked to explain why they would seek out health advice or services. This observation was confirmed by all of the health sector workers interviewed as part of this study, one of whom willingly provided this succinct general synopsis.

*The biggest thing would be the chronic disease like COPD, diabetes, wounds, cancer and heart stuff. But cancer's massively disproportionate here (from my observation) and so is COPD. So, it's a high smoking population. And then there's the mental health stuff. (Health Worker 15)*

One reason given for this high disease burden in such a small settlement was the demographic profile, specifically the ageing population (HW01). The Gemfields residents were very much aware of their complex health issues but it was evident that most had made a conscious choice to live in a remote location with limited access to health services, as the story below illustrates:

*I've been in The Gemfields for nearly 20 years. I came up here after my husband had a bad heart attack and survived that and we decided we'd take our retirement and be done with it. I am a Type 1 diabetic and I had suffered with depression. Before I came here, I spent almost a complete 12 months or more time in hospital, then out of hospital with depression. I've had a lot of trouble over the years with my diabetes, with different ulcers and things. Last year I had a really bad experience and I got an infection on the under sole of my foot and I lost four toes. (Gemfields Resident 20)*

Although the frontier lifestyle was viewed as an attractive escape upon early retirement, generally there was a *c'est la vie* attitude towards poor health and ageing. Participants who were interviewed conveyed a quiet resignation that poor health was just part of life in The Gemfields. As such, chronic health conditions were simply normal in this population. Interviews with residents elicited a distinct matter-of-factness about their health. More frequently, participants appeared to have very low expectations of their current chronic health problems and sickness was perceived to be out of their control. Many respondents would discuss major illnesses such as a 'burst bowel' or a 'brain bleed' in the same way as having a cut finger (GR12). We found Gemfields residents would commonly describe their

current health concerns like they were reading off a long shopping list. For example, “I’ve got a form of rheumatoid arthritis. I’ve also have acquired spinal nerve injury from workplace accident in 2000 and had two spinal surgeries, which has left me with residual nerve damage in my legs and muscle problems and the weakness in my left leg” (GR14). Consequently, chronic health conditions combined with the isolated small-time mining lifestyle and unexpected accidents resulted in a melange of health emergencies, as divulged by one interview participant:

*Well, in the last 12 months, I’ve had to call the ambulance out here on numerous occasions. Stroke for one man. Another bloke sliced the muscle off the bottom of his arm. And another one had an axe through his foot. And a couple of epileptic seizures that weren’t good. The last one, a lady who we couldn’t stop the bleeding on her ankle. (Health Worker 11)*

However, another interviewee pointed out that the prevalent nonchalant mindset about health “starts to bite them on the bum” (HW14) as residents get older. Poor lifestyle choices start to “catch up with them” (HW14) and it becomes more difficult to manage complex (chronic) diseases:

*I think the complex health needs comes after the fun of starting to live here because it’s the lifestyle out here. You’re all of a sudden free from the chains of society in town. You’re in the bush. You’re on a nice little claim that you can afford. You’ve got no money worries. All of a sudden you are happy. You drink more, you start smoking more. (Health Worker 14)*

Another health worker concurred that “there are so many sick people here because they don’t manage themselves as well as they could – poor compliance with their health regimes or because of drug and alcohol issues” (HW01). Additionally, poor self-care and unwillingness to engage with the public health system emerged greatly contributing to high health service demand (HW05).

*A good chunk of people have lots of comorbidities, lots of social issues, alcohol abuse, drug abuse and those sort of things, just low level sort of stuff, but just ultimately comes down to it. They can’t look after themselves, they’re 55, but can’t look after themselves very well. (Health Worker 01)*

The everyday consequence of this high burden of disease, low expectations and poor health management was premature death. Interviewees suggested that deaths among people aged under 75 years were commonplace in The Gemfields. One interview participant recalled knowing about 20 people who had died in the last two years from respiratory illness or cancer (HW15). Another respondent said, “A lot of people have cancer. It's like they go there to die. There was 4 or 5 people alone last year who died of cancer. And they were in their 60s,” (HW10).

Quantitative baseline community health results found that 25-30% of the population either live with a disability or care for someone with one. However, the qualitative interview findings suggest that more Gemfields residents were disabled, which goes some way to help explain the high burden of disease in the community. One health sector worker provided this stark assessment:

*I would say 75 per cent of this population is disabled. There are very few people who don't have a disability. They can't walk. They can't see. They can't hear. They've got chronic health problems. They're intellectually challenged because they've probably been intellectually challenged all their life.*  
(Health Worker 03)

One unforeseen chronic health challenge in The Gemfields was wound management. Accidents, injuries, illness and poor living conditions contributed to a high prevalence of wounds. The local health clinic may have up to 50 patients on the books at any one time requiring assistance with dressings and wound care management as a result of surgery, trauma, or chronic wounds (venous/arterial or pressure ulcers). Interview participants reported that nurses spent most of their time treating wounds in The Gemfields, which matches the quantitative data from CQHHS. For example, in the 2019/2020 financial year, The Gemfields ROC registered 1,280 episodes of care specifically for wound management (Queensland Health, 2021c). Although wound management was free in the health service, it was viewed as a major drain on local healthcare resources: wound dressing materials were expensive and the cost to assess, treat and manage wounds were not adequately funded under the Medicare Benefits Schedule (MBS) in a general practice setting. One interviewed person said wound care was not funded because there was no Medicare line item for it: “It is an expense...that does not get reimbursed from the federal government” (HW12). Hence, the

delivery of wound care in The Gemfields represented a significant financial and human resource challenge for care providers. The high local demand for wound care treatment cannot be understated. In one extreme case the researcher had a first-hand encounter with an elderly resident who had a maggot infested wound. The wound was so rotten that it was becoming necrotic at their leg.

One clandestine problem was simmering under the radar in The Gemfields was substance use and misuse. Interview participants confided that drugs were “prolific” (GR10), “a problem in town” (HW10) and “were everywhere” (GR12 & GR17), especially out on the mine claims where “a lot of them say they are dealing with chronic pain and they are addicted to painkillers” (HW10). This qualitative finding of a high use of illicit and prescriptive drugs aligns with quantitative data presented in the baseline profile, highlighting the number one law and order offence being drug offences (36%). Alcohol, tobacco, marijuana, stimulants, and opioid use as well as prescription drug misuse were mentioned by both health workers and residents alike. At least a quarter of the interviewed residents admitted to being long-term users of synthetic prescription pain relievers such as oxycodone (Endone) and Fentanyl. One elderly person confessed to “taking up to six Endone tablets a day for months and months”, which became “very, very addictive” (GR29). The main reason given for using opioids was to manage pain. One elderly participant gave a candid account of their personal addiction:

*I am basically a drug addict. Who cares if I'm addicted to drugs, I'm 79, for God's sake and if I didn't take them, I can't walk because of the pain. We had to travel so I could get a script. I know I'm addicted to these patches, but if I don't put them on every three days, I get terrible side effects. And I know I can't cope with the side effects. So I get really anxious when the scripts are delayed because it's got to be run through the book to get permission.  
(Gemfields Resident 07)*

The reference above to travelling to get a script relates to an inability for The Gemfields residents to seek opioid prescriptions at the local ROC where the public health facility closely monitors opioid scripts and refuses to overprescribe (especially when there was no palliative diagnosis). Instead, clinic staff actively encourage patients to try alternative non-pharmaceutical approaches to pain relief. One study respondent disclosed that “just prescribing medication is not good because a lot of them get too addicted to it and then they

demand more and more of it” (HW10). Interview data revealed that a long-term opioid user’s personal schedule would revolve around doctor shopping and filling their scripts. For this cohort of respondents, it was common for them to discuss needing to travel out of town regularly every three or four weeks to see a doctor and get new scripts for pain medication. They actively avoided using the public health facility as they knew their requests for opioid scripts would be vigorously queried and most likely denied. It was evident that those participants who were long-term users of opioids were not open to reducing or stopping analgesic prescriptions or trying other methods to control pain:

*There are quite a few people on large doses of opioids and there's a lot of reluctance to come off them despite the evidence suggesting that they're not good to use for more than a few days. (Health Worker 07)*

One health worker described this group of patients as being “really sick because of their long history of abuse” (HW05). Further complicating the situation in The Gemfields was the circulation of so-called ‘ice’ (crystal methamphetamine) and fentanyl on the black market. Interview participants spoke of a police drug raid in 2018 where six people were charged with a range of drug offences including the production, supply, and possession of dangerous drugs. It was also suggested that some locals were selling their fentanyl patches to the drug syndicate as a way of making some extra cash:

*We have had a lot of problems with drugs here in town. We recently had a raid in town. Someone was getting the fentanyl patches and they were using that liquid in there and making it into ice. That's why I think the people are getting addicted to fentanyl. They're gonna get their script to sell their fentanyl. (Health Worker 10)*

Unsurprisingly in a rural setting, absent from the interviews were any discussions about the availability of extra local support for drug- or alcohol-addicted residents, such as specific behavioural health or detoxification services. However, one demand that was consistently mentioned was mental health issues – another potential contributing factor to the reported high rates of drug and alcohol usage. A kaleidoscope of biopsychosocial factors and their complex interactions were described in detail by one interview participant:

*There are a few that I know personally that have mental problems. They can't function in a normal society, can't function where they have to be a certain way or behave a certain way. A lot of them are alcoholics or drug addicts or sometimes they're both. They try, but they just can't kick whatever it is that is the demon. I've met a couple of people who have been very wealthy and have lost all their money in gambling or whatever or family problems. And they just come out here just to survive, because they can just dig away, find a few sapphires, sell them at the pub and survive on the dole or whatever. Some of them aren't even on the dole because they really are off the radar.*

*(Health Worker 08)*

It was regularly stated that much of the mental illness in the community was undiagnosed with residents wanting “to hide in the cracks” (HW09) and not want treatment. This hidden or invisible burden of disease consequently impacted the true health demand for services:

*Well out here in the Gemmies there's a lot of people who...come out here for the quiet life. And they just want to live on their claim to get away from the hustle and bustle. Probably the percentage of people with mental health and or that sort of issues out here would be a lot higher. Because people do come out here for the quiet life. (Gemfields Resident 11)*

Male returned service personnel were identified as a particular group of people who struggle with mental illness in The Gemfields but who “don’t know how to bring themselves out of the hole they’ve gotten themselves into,” (GR10). The partner of one veteran agreed that this cohort of people would not want to admit to having mental health issues, confiding that her “husband won’t even admit it,” (GR16).

#### **5.5.3.2 Tourists**

Compounding the extremely high health needs of The Gemfields community was the annual injection of an additional (and unaccounted) population in the form of transient residents or tourist fossickers. Generally referred to as ‘grey nomads’ or ‘baby boomers’ these pensioned wanderers arrive in the minefields in early autumn to escape the southern cold and “hibernate up here” (GR28). They stay in their caravans at the local tourist parks or free-camp in the bush. Alternatively, they ‘pull up stumps’ on their leased mining claim for the winter months. Interviewees said there were four or five popular caravan spots just between

Rubyvale and Sapphire and they were “chock-a-block full of grey nomads” (GR13) every year. This was an annual ritual for many retired visitors who have been travelling to the area for the past 20 years.

*So, tourists can come out in their caravans and park their caravan on one of the many areas that you can do fossicking on and stay there for six months. These people come from all over the country and they generally have medical issues - they're retired and digging stones all day. (Health Worker 05)*

Some interview participants described their annual pilgrimage to The Gemfields like a medical holiday – “we try to arrive in April and then leave again in September to avoid the flu” (GR26). Although the transient surge in population provides a boost for the local economy, interview participants reported that winter fossickers also place a significant strain on local health services. The transient residents we spoke to were predominantly retirees (self-funded or pensioners) and described their cohort as facing a multitude of relatively complex health challenges ranging from blood cancer, breast cancer, kidney failure, COPD and bladder cancer (GR05, G13, GR25). A list of their complex chronic health issues mirrors the local population profile. Health workers confirmed that this cohort of visitors has an increased burden of disease:

*The tourists are coming here sick, and they've probably heard there's a free service, there's a free doctor, there's a free nurse who is there from 9 to 5 Monday to Friday. They just think that they're entitled because they're a grey nomad. They are a huge, huge overburden on this already stressed community. (Health Worker 03)*

Travelling to a remote rural area with limited primary health services and no tertiary care was fraught with danger for elderly travellers, especially as medical care was not always assured. However, the travellers we spoke to did not seem to care and were happy to run the gauntlet. “It’s in the back of my mind” or “it’s not something that I worry about” (GR05) or “I just hope that nothing goes wrong while I am here” (GR27) were commonplace comments. One health worker retold a story of a Gemfields tourist presenting at the local hospital saying he was not feeling well – he couldn’t breathe and his ankles were swollen. After a long intake interview the health worker eventually found out that the patient had received a heart transplant just two months previously. “Anyone who works in a rural area

with the grey nomads will tell you they keep going to see how far they can get” (HW09). Transient travellers to The Gemfields had also gained the reputation as being ‘medical tourists’ and could be very demanding. Several health workers said many of the interstate grey nomads have a “shopping list of health issues,” (HW15):

*When they come up, they bring a list of things they want the doctor to do. Like they want an MRI, they want X-rays. It's all free in Queensland. It's bulk-billed. A lot of the procedures interstate aren't bulk-billed. The caravan parks are full of people with their medical shopping list. (Health Worker 12)*

The regular travellers are well-informed and organised. Interview participants reported that the grey nomads would ring in advance and make appointments at the local ROC. They would also take advantage of any visiting outreach services such as the dental van or breast cancer screening van. In fact, it is fair to say that some travellers ‘work’ the health system to their advantage. They use Google and other grey nomad social media groups to discover which locations have a bulk-billing doctor and the opening hours for other medical services such as pharmacies. They know what public health services are free for pensioners in Queensland (such as ambulance, dental or podiatry) and the towns where they can get their medication. One interview participant described having to ‘plan ahead’ to buy their medication in the same way they would refill their car with fuel (GR14).

Locals expressed resentment toward the winter fossickers for monopolising their limited health resources. One resident of The Gemfields complained they had to book a doctor’s appointment three weeks in advance during the peak tourist season because there were so many visitors (GR15). This was a problem familiar to locals:

*They come up here and they're up here for a couple of months. They come up and they book their appointments for the whole time they're here. So the locals can't get in. (Gemfields Resident 13)*

Health workers also confirmed that transient tourists placed additional pressure on an already resource-constrained environment. They described The Gemfields ROC as “really busy in the winter” (HW15), with demand for health services doubling and the holiday season impacted the health of residents because local services were “always booked out,” (HW13).

### **5.5.3.3 Barriers**

Results from this study strongly reinforce findings documented in other literature concluding that health, well-being, and illness were social constructs reflecting a person's socioeconomic circumstances (Compton & Shim, 2015; Embrett & Randall, 2014; Friel, 2009; Raphael, 2006). As highlighted in the previous section, the socioeconomic nature of The Gemfields emphasised a high burden of disease among residents, but some significant barriers were also exposed. When asked what barriers or challenges The Gemfields residents encounter when accessing health care, common responses related to proximity, mobility, and isolation (see section 5.5.2) but there are also other barriers unique to the study area. These obstacles are both structural and functional and were often described akin to life's roadblocks.

One example of a structural barrier to seeking and reaching health care is that of clinic hours at the ROC. The clinic is open Monday to Friday 8.30am to 3.30pm. However, these hours preclude children who catch the bus to school from ever seeing the doctor without having to take the whole day off. As previously described, the local school bus departs at 7.30am from Sapphire and returns a little after 4pm Monday to Friday – outside clinic operating hours. Parents admitted they do not take their children to the doctor unless they were really unwell. Another parent reported their child missing three consecutive Thursdays off school (the only day the doctor used to visit The Gemfields) to attend medical appointments at the local ROC. “That impacts schooling because they have to have the whole day off just to have a 10- or 20-minute appointment” (GR30). Contacting emergency services was also highlighted as a structural obstacle to health care. Residents complained that they could not call the local ambulance station directly and had to ring Triple Zero instead. This was deemed problematic as the phone call was diverted to Brisbane, but many Gemfields villages and fossicking areas do not appear on call centre maps. When faced with an urgent medical condition one resident recalled calling Triple Zero because their partner's heart was “playing up” and told them the home address. The operator responded, “there is no number XYZ Hilltop Road” (HW10). This resulted in a two hour wait for the ambulance to arrive because the centralised call centre in Brisbane could not ‘find’ the address on the system. However, the interview participant believed this delay in treatment would not have occurred if the call was transferred directly to local ambulance officers who know the local area well.

An unusual functional obstacle observed in The Gemfields is social disconnection and distrust. Gemfields residents were highly suspicious, very wary, sceptical and distrustful of

outsiders. Mistrust of the healthcare system and the ‘outside world’ runs deep among locals. A broad distrust of authority was confirmed by one health worker:

*I think there's two components of people: there's people who basically, for want of a better term, are perhaps a bit traumatised from things in life, and they are very distrustful of bureaucracy and health services and they actually delay seeking treatment or health interventions or they've been products of the system, particularly around mental health, who've been placed here for want of a better term. (Health Worker 15)*

This innate distrust of government and government services proves problematic, especially when ‘normal’ market-driven health care solutions are not viable in small-scale settlements like The Gemfields. Specifically, there are not the economies of scale, population density or demographic profile to justify establishing a private fee-paying clinic - the type which is commonplace in Australian regional or metropolitan centres. Consequently, there is a heavy reliance on the government to provide public health services free of charge. In the words of one interviewee: “They would never get this healthcare unless the Queensland government were delivering it because no private company could afford to travel out there and provide the care that they need” (HW07). For example, a hearing aid technician from Rockhampton was considering starting a visiting service to The Gemfields due to the apparent high demand. However, they were ‘put off’ because they “didn’t realize how far out of town” The Gemfields was (HW14).

#### **5.5.3.4 Gaps**

During interviews, participants were asked if there were any health care needs or services that were unmet or should be addressed in The Gemfields. By and large, the most pressing gap in service provision is a full-time GP at the ROC. Both Gemfields residents and health care workers alike viewed this as a critical disparity. At the start of this study in 2018, a doctor visited the ROC once a week. This increased to three times per week at the time interviews were conducted in 2019. Although the improvement in GP availability was viewed as a positive step, interviewed people were adamant that shorter doctor hours continued to be a problem and “we really could do with a doctor five days a week,” (GR15). The lack of a full-time, permanent GP was said to ‘make it hard for the oldies to access’ the clinic (GR14). This issue went hand-in-hand with long appointment waiting times for

routine health care issues. Despite the increased doctor hours, interview participants still reported delays in accessing health care:

*I think it's the lack of services that has been the main problem, because when we first came here, there was only a doctor available one day a week and you couldn't get in to see him. On that day, you had to make appointments and wait for six weeks before there was a vacancy. (Gemfields Resident 14)*

Front-line health professionals in The Gemfields voiced concerns over perceived restrictions on autonomy due to very tight regulations on their scope of practice. Non-GP trained health professionals believed improved workforce flexibility, an expanded role and integration between local health practitioners would improve health care access and outcomes in The Gemfields. There was a general consensus that a modest extension in scopes of practice for auxiliary health professionals in rural settings would fill service gaps, and especially for coverage afterhours, on weekends and when no doctor was located in town. For example, highly trained health professionals like paramedics, nurses and pharmacists were not permitted to prescribe antibiotics or administer other emergency medicine without a medical practitioner's approval or an authorised extended scope of practice. However, the Queensland Ambulance Service (QAS) was unofficially plugging service gaps in the primary healthcare system on The Gemfields by responding to a significant volume of low acuity cases (often on weekends and after hours).

This study found there was a substantial move away from the 'red and blue lights' model of the QAS only attending acute emergency situations. In fact, due to an increased number of emergency 000 calls for non-life-threatening injuries in Queensland, the QAS has introduced a new *Local area Assessment and Referral Unit Training Program* (LARU) for staff. The purpose of LARU is to train paramedics to provide a low acuity ambulance response that frees up ambulances for critical care and treats non-urgent cases such as minor medical problems, lacerations or injuries that require referral to a GP or health centre. At the time of interviews, the LARU program had only been introduced in urban areas to free-up emergency vehicles. However, it was suggested that this model of care could be adapted for rural and remote settings.

Additionally, a general lack of access to visiting allied health professionals was also identified as a major gap in services. Like many rural and remote areas allied health

specialities such as podiatry, occupational therapy, physiotherapy, dentistry, exercise physiology, psychology and diabetes education were flagged as areas of unmet demand. For example:

*I think the other big one out here is the dentist. It's like it's a major, major one. Like you see a lot of people with just lack of care where they just don't bother going because they just think it's gonna cost too much...I see some people in a world of hurt, you know, with some teeth missing.  
(Gemfields Resident 01)*

Gemfields residents expressed difficulty in having to travel to Emerald to access these services. One resident was required to see a physiotherapist in Emerald but was in too much pain to drive and reported calling the ambulance on three occasions for assistance (GR14). Other residents, simply forgo the treatment:

*We have had difficulty accessing podiatry because the podiatrist doesn't come out to Gemfields anymore. Getting an appointment in Emerald is hard cause she is just flat out, she's only part-time. I couldn't get an appointment so haven't really tried to again (Gemfields Resident 14)*

Demand on the solo part-time doctor's limited time, the high rate of complex chronic health conditions and the lack of referring health services meant that the ROC were just "plugging holes" (HW07) and not able to implement GP management plans:

*I found out that the doctor here doesn't do management plans. So in an urban setting, if you have a mental health issue, you will then go in and they'll give you a mental health plan. And that's... then what are these referring to? You've got your doctors coordinating your care and referring you out to then a psychologist or maybe an O.T. or to another allied health specialist. They do not do them here because there's no way to refer people to Emerald to access exactly the service. (Gemfields Resident 09)*

Interview participants reported a massive void in relation to visiting mental health outreach services: "Basically nothing – no mental health services. Bugger all" (GR11). Interview

participants reported that The Gemfields residents were not able get “the help they needed because there’s no one here to help. We haven’t got anyone. No, we don’t get help” (HW10).

*Got nothing. Nothing [visiting services]. Because we're a mining town. I look at it as we're nothing to anyone. We're just a town out in the middle of nowhere. (Health Worker 10)*

In The Gemfields, there was some evidence that residents turn to unregistered or retired health practitioners for medical assistance, but this is purely as first responders in an emergency situation while awaiting an ambulance. Such stop-gap servicing was not undertaken brazenly but only *in extremis*.

#### **5.5.4 Health access (Supply)**

Previous research has explored the supply-side-factors of health access pertained to the structural dimensions of the health system and service providers such as approachability, acceptability, availability, and appropriateness (Levesque et al., 2013). In The Gemfields, these supply-side factors, as hinted in the previous sections, have the ability to make health equity possible or discourage the best health equity outcomes and thereby create obstacles.

##### **5.5.4.1 Approachability**

In the health care setting, approachability often refers to the ability of consumers to identify and reach a service (Levesque et al., 2013). However, this study found approachability related to respect, trust and other associated factors that helped to bridge the health equity gap in the community. In particular, the dedication of health professionals to their work and patients was tangible. Health workers at the ROC were described as “exceptional” (HW07), “fantastic” (HW05), and they “work like absolute galley slaves” (HW03). As the majority of Gemfields residents relied on income support, they also relied on public sector healthcare. For this reason, the ROC was deemed an essential service that “a lot of people rely on...it’s very important to this community” (HW08).

*The clinic here is amazing. That's a very good asset and does fill a lot of the holes here - the gaps. (Health Worker 01)*

Despite being heavily under-resourced and with a high burden of health needs, the skeletal formal health sector in The Gemfields was known to push boundaries in order to meet local

needs. High levels of staff dedication often manifested in the form of after-hours work or 'clocked-off health care'. In other words, staff performed additional duties outside normal working hours and on weekends (off-the-clock) to ensure essential tasks were completed. One health worker confided that they "do a lot of home visits out of hours because I haven't got time to do it during work" (HW12). Another example of 'clocked-off- health care' was a local formally-trained health provider describing a case whereby the patient declined to transfer out of the region and chose to exit the formal health system:

*One resident who died recently, had end stage oesophageal cancer and was pal [palliative] care. So, for the last three weeks of her life it was basically just us popping in. No job generated, but just going in and maybe topping up some fluid or just sort of holding a hand for an hour a day and that sort of stuff. (Health Worker 01)*

By 'no job generated', the practitioner was referring to the fact that the individual was being serviced outside the normal hours of work without their formal registration as a patient. The idea of 'clocked-off health care' was also apparent when it came to treating malnutrition within the community. As previously described in Section 5.5.1.2, nutrition and food distribution were problematic in The Gemfields. Once again, this study indicates that health professionals filled the service void in their own time, with their own money and resources once they have 'clocked off' work. For example, consider this real-life scenario:

*He lives under bits of tin and someone helped him put a floor in it. So, he's got like a three-wall sort of hut and he lives in there. No power, no running water.... he's got really severe schizophrenia... he's lost so much weight...we take him water and we cook food at our home and deliver it to him on our days off. He's put on seven kilos now. (Health Worker 12)*

In another case that illustrates how this level of dedication extends to actual medical care, a retired but formally-trained provider of health care described how they had worked on a large ('plate-size') ulcer on a friend: "It took me five years to heal that bloke's ulcer by being persistent, five years, because he kept mucking it up and start again and whatever, but we gradually got it" (HW11).

Gemfields residents reserved their highest praise for local QAS staff. Patients' opinions of the emergency response service were very high across the board: "The ambulance service here is tops – 100 per cent," (GR07). Of particular note was the paramedic's ability to gain the trust of the typically suspicious and guarded local residents. A unique blend of respect, local knowledge, and community spirit helped to formulate widespread commendation for the QAS staff. Firstly, because they "just treat you with real respect" (GR08). Secondly, they are local and were viewed as insiders and not outsiders (GR29). Thirdly, by living within the community paramedics gained an intimate knowledge of the tricky geography of the area so they "know where to come" (GR15) and "they are fast cause they're local" (HW09). Finally, the QAS staff were viewed as "helpful" and "nice" (GR08). The ability of QAS staff to build long-term and mutually respectful relationships was at the heart of their approachability, as portrayed by one resident:

*They are brilliant. The Sapphire Ambulance Service is the best I've ever come across. They have some terrific people and are very caring people. (Gemfields Residents 25)*

However, dedication of staff was not the sole domain of the public health sector but also extended to the private and not-for-profit sector. The community placed great value in having a local pharmacy in Sapphire. Not having to travel 50-85 km to Emerald, the nearest regional centre, to fill scripts has described as "a bonus for the Gemmies" (HW09):

*The pharmacy is absolutely magic. No, really good. Very good, indeed. And they can get anything for you. Good advice as well. (Health Worker 09)*

The local not-for-profit community based Multipurpose Centre (MPC) were also deemed to play an "important role in The Gemfields" (HW15) and residents commented that "they do a terrific job" (GR25) but there was also recognition that "money only goes so far" (GR01). Community goodwill and dedication was all that kept operational some services such as Meals on Wheels. For example, "there's a lady out there that all she does is she sells raffle tickets at the markets every weekend raising money for Meals on Wheels" (GR10). Another formally trained practitioner explicitly referred to 'the system' requirements and the importance of community and building relationships:

*It's the stuff that happens at a human level, I think it works quite well... despite the system. It's only because of the individuals, the people on the ground... otherwise there would just be a roadblock. But because we're in a small town, you know that those relationships will happen. (Health Worker 01)*

#### **5.5.4.2 Appropriateness**

In order to achieve health equity, Braveman et al. (2018) suggest that those with the greatest needs and fewest resources require more. That is, giving people what they need to achieve good health. Therefore, appropriateness in a health care setting denotes ‘the fit between services and client needs’ (Levesque et al., 2013). However, qualitative results suggested that The Gemfields operated in a low health equity setting whereby although it was a place with greater health needs, it had not been allocated greater resourcing to meet these needs. In The Gemfields, there was evidence of both horizontal and vertical health inequity, as described by Starfield (2011) in Section 2.6. The appropriateness of health care supply in the settlement was poor due to the high burden of disease but low level of funding. Health workers suggested that The Gemfields falls in between funding cracks because of its demographic profile, and it does not fit neatly into a government funding bucket for health:

*And then therein lies your next problem... if this was totally indigenous or I had a big indigenous community, we would have every service possible. We'd have lots of money thrown at us and because we don't, we've only got a couple of indigenous families, therein lies the problem. (Health Worker 03)*

The same health worker went on to say that, “for a non-indigenous community” they were “overwhelmed by the enormity of the chronic disease in this population” (HW03). The cost of delivering health services in The Gemfields was also said to be prohibitive. The Australian healthcare system operates within a market-based economy with mainly private sector health care providers delivering primary care services. However, due to the high reliance on government income support in The Gemfields, the standard free market response does not work and the State Government had to step in to fill this void. As stated by one interview participant, The Gemfields is “a low socioeconomic community...they would never get this healthcare unless the Queensland government were delivering it because no private company could afford to travel out there and provide this care that they need” (HW07).

The nature of government funding cycles means rural and remote health services are fragmented and operate in silos. Interview participants reported that there are a lot of impediments and there are things that could be done better if all agencies - public, private and not-for-profit - worked together. As one respondent remarked: “It’s a bit like hitting your head against a brick wall” (HW01). To avoid fragmented services, another health worker suggested that a different model of care was required in The Gemfields that incorporated a multidisciplinary team that combined Queensland Health, QAS, federally funded agencies and non-government groups to work together.

Funding parameters were also said to change all of the time. For example, there would be a service delivered in The Gemfields (e.g. counselling) and then the funding would change or be cut, and the outreach service would stop even though the community needed the service. Similarly, federal government funding managed through the Primary Health Network (PHN) is allocated on a 12-month basis. There is no long-term funding certainty, which makes it difficult for health care providers to maintain services and plan ahead:

*Funding reallocation happens right at the end of each financial year...so we can only contract our allied health staff for 12 months because we've only got funding for 12 months...I lost three staff this year because I had no news as to whether or not we've got the funding back. (Health Worker 04)*

Another health worker reported a large amount of service duplication between different agencies and the federal and state government. “It seems very confusing and disjointed. There's a lot of services doing duplicate things” (HW02). To resolve this problem, one local resident strongly advocated for joined-up, place-based funding that was community led:

*I think if more money was actually in the community and used at the community level as opposed to an office somewhere in Brisbane where people are signing off on things, you know, that disconnect us...that money should be spent here. The only politician I've seen here is when it's very close to the election and they've driven through. No one who's making the decisions is actually living within this space. No one's staying in this space, no one's spending enough time in these areas to actually get an idea of what it is that we require. (Gemfields Resident 01)*

#### 5.5.4.3 Availability

Availability denotes the physical capacity to provide a service whether in terms of productive facilities or human resources. In other words, to actually fulfil the need for health care services in a specific location. However, health care access can be restricted when availability of these supply-side-factors are not available or not adequate. Interview participants reported that the availability of health services in The Gemfields were stretched. Qualitative findings aligned with quantitative data that reported 9403 presentations to The Gemfields clinic in the 2019–2020 financial year. As one health worker succinctly summarised: “There are good services in The Gemfields, but they probably can be overwhelmed” (HW01). For example, the local ROC was staffed by one part-time GP, one full-time registered nurse (RIPEN endorsed), one full-time enrolled nurse and a part-time administration officer. The sheer volume of work (up to 40-50 patients per day) meant both physical space and human resources were at times overextended. Health workers and Gemfields residents interviewed for this study both described the ROC as an “incredibly busy clinic” (HW03) and the surgery was “very, very full” (GR29). It was also suggested that the ROC was “probably a little bit understaffed” (HW09). One veteran remote health care worker, with more than three decades’ experience, who worked in The Gemfields ROC as a locum, admitted:

*I have to say, in a non-indigenous community, this is one of the busiest clinics that I have ever worked in, in all those years. (Health Worker 03)*

Understaffing under these circumstances worsens availability because a lack of staff led to longer waiting times and delays in obtaining an appointment and receiving appropriate care. As one Gemfields resident said, “Yeah, good luck getting an appointment. There was about a six week wait to see the doctor” (GR04). Limited availability of human resources in turn places greater pressure on existing staff workloads:

*Sometimes I feel so overworked that I can't provide appropriate care like chronic disease care because I've just got limited time. (Health Worker 12)*

However, staff shortages are not limited to the primary health care setting. Sourcing health care professionals to work in or provide visiting services in The Gemfields is not a simple task and staff shortages are a common phenomenon across the public, private and not-for-profit health sectors:

*Very difficult to get staff. Very difficult because experienced staff (the ones that have moved here for a different lifestyle) they don't want to work full-time anymore. They've already partly retired. (Health Worker 14)*

In the study, health sector workers reported “drowning in bulk amounts of work” and “not being able to keep up” (HW02) and an inability to backfill staff who were due to take annual leave (HW09). One health worker reported that “allied health professionals like podiatrists and OTs have a huge caseload and wait list” (HW04). Interview participants identified that a lack of staff compromised the quality of care provided and staff having to settle with just doing the minimum. Additionally, another flow-on effect was that services were just not available and patient needs went unmet:

*One of the difficulties at the moment is when OT does a home assessment. I'm trying to find a builder to go ahead and do the home modifications. So, even trying to source a builder at the moment is difficult. (Health Worker 04)*

An inability to employ staff was also a deterrent factor in the ability to provide services such as in-home care. For example, as at the time of this study, the local MPC were only allowed to accept clients on level one and two home care packages (basic and low-level care needs) because they did not have the qualified staff available to provide higher level care services. Furthermore, qualitative results from the interview process uncovered that there were up to 70 Gemfields residents who were entitled to NDIS support. However, there were only 15 Gemfields residents currently receiving services in the region because the NDIS provider did not have the carers available to provide that level of support there (HW12), or residents were not aware of the different funding streams they were eligible to receive (HW04). Hence a health provision vacuum has emerged in The Gemfields.

#### **5.5.4.4 Acceptability**

Acceptability reflects the fit between the services supplied and the care needs of the community. Different groups may judge the acceptability of services differently. That is, available services may be deemed acceptable to some and unacceptable by others. For example, medical coverage was considered a contentious point concerning service acceptability:

*Having a doctor here three days is good but a lot of them [residents] needed a doctor here 24/7, partly because a lot of them are so sick that they can't get to Emerald. (Health Worker 10)*

Professional values and norms, such as regulatory requirements or personal beliefs associated with the medical system, contribute to individual and group acceptance of different aspects of a health service. Despite The Gemfields being a long way from the Queensland state and Australian national capitals, Brisbane and Canberra respectively, health services are still subject to legal regulations such as health provider accreditations, professional credentialing and scope of practice restrictions. Qualitative investigations confirmed that legal regulations were adhered to in The Gemfields with health sector workers required to operate within delineated boundaries. Interestingly, from a clinical point of view, local auxiliary health workers in this rural and remote setting felt somewhat constrained by their scope of practice especially when there was no medical doctor in town or residents were on a long wait list for a GP appointment. For example, a case was made that there was a need to increase the scope of practice for rural pharmacies and allow chemists to prescribe antibiotics or other medication to fill service gaps especially afterhours, on weekends and when there was no doctor in town.

Similar contentions were put forward for other frontline rural and remote health professionals such as paramedics and nurses. Greater integration and multitasking between local health practitioners was seen as a way to bridge the gap between the services supplied and the population's care needs. Non-GP trained health professionals viewed greater workforce flexibility and an expanded scope of practice as a way to improve health care access and acceptability. Decreased role demarcation in rural and remote settings was viewed by non-GP trained health workers as one way to increase professional autonomy but concurrently enhance health care outcomes in The Gemfields. Study results found that The Gemfields exemplifies where remoteness offers an opportunity for innovations in supply and models of care.

### **5.5.5 Connectivity**

In this study, connectivity relates to the ease with which information can be accessed, processed and interpreted, and how people in The Gemfields communicate with each other. Additionally, it involves how individuals (i.e. health consumers or health workers) connect with other individuals (in-person and digitally) or how systems (i.e. health systems) connect

with other systems. Four sub-themes emerged during qualitative data collection – data, communication, technology and innovation – all of which impacted on the safe and effective delivery of healthcare services in The Gemfields.

#### **5.5.5.1 Data**

The collection of and access to reliable and accurate data have far-reaching consequences on the supply-side of health equity in the study area. The SA2 is the smallest area for the release of ABS non-Census and Intercensal statistics, including the Estimated Resident Population and Health & Vitals data. SA2s generally have a population range of 3,000 to 25,000 persons. As a small-scale rural settlement, The Gemfields population falls outside of the SA2 band and sourcing population data for this area is difficult. Qualitative results suggest that data can be inconsistent or entirely absent in The Gemfields, which in turn can lead to unfair differences in healthcare resource allocation and supply. Interview participants reported a lack of precision in measuring even basic data such as the area's population, which was a critical challenge for the region. Although Gemfields residents participate every five years in the Australian census, locals were adamant that the true population was far greater than the registered population. Interviewed participants implied that the under-reporting of population was due to several factors including geographical isolation and people 'hiding out' in the bush on mine claims not wanting to be found:

*This is going back probably 10 years ago. I knew a fellow. He was a war vet WWII and didn't appear on any list anywhere. Like, he didn't receive his pension. Oh no, he might have received his war pension, but he didn't appear on any census. He never filled out a census paper. He just lived in the bush in his little caravan out the back. And that's where he stayed. He dug a few Gems and sold a few Gems. (Gemfields Resident 10)*

Calculating a remote settlement's actual population is important when it comes to the distribution of scarce health resources. Based on current census data The Gemfields population is approximately 1,500 people (Australian Bureau of Statistics, 2016a). However, interview participants suggested the actual permanent population was potentially twice this figure:

*My friend was a census collector for two years and knows that place intimately, like all the little roads and tracks and whatnot. They said, there's*

*a lot of people that don't want you to even know that they are there so they don't appear on the census. Somebody said to me, there are fifteen hundred people that live at The Gemfields. Double that. There's people here that they don't fill in the census. They've got history. They don't want people to know where they are. Nobody ever tells you their last name ever. And you never ask someone's name until I tell yours. (Health Worker 15)*

The market disparity between unofficial and official population data has significant ramifications when considering health resource allocation in the study area. Population data is often used by health planners and decision-makers as a method to allocate funding and health resources. Clearly, however, there are limitations to this approach if data accuracy is contested, as shown in The Gemfields:

*There's so many people out there that they must be missing. I remember a few years ago when we had a particular policeman, he was telling me about the population. They say it's 2000 in the town but he said it's far beyond that. There's a lot of people that don't want to be seen. (Gemfields Resident 30)*

Furthermore, The Gemfields community experiences a significant surge in population in the winter months when amateur fossickers and tourists descend on the area seeking their fortune. For six months of the year, transient population numbers can add an additional 2,000 to 3,000 people in the area at any one time. As one Gemfields resident suggests: “When tourist season is on the population expands, doubles, maybe triples” (GR29). Hence, the use of population variables to operationalise health services in The Gemfields was deemed an imprecise science fraught with issues. Consequently, the sole use of quantitative population statistics for health planning or budgeting measures was seen as contributing to unfair differences in healthcare access in The Gemfields.

#### **5.5.5.2 Technology**

Information technology in health can potentially connect patients and providers in rural and remote areas, and improve the delivery of services. Health information technology (HIT) is used to securely store and retrieve sensitive health data electronically across the healthcare system and within community settings. However, qualitative investigations observed that fundamental components of digital health technology are not widely employed in The Gemfields. For example, the ROC still use paper records for all patients and have not

upgraded to a digital clinical practice management software system as used in most other Australian primary care practices. All documentation used to track health conditions, prescriptions, pathology reports and test results are stored on-site as a hard copy.

Electronic prescribing and medical decision support systems are also absent. There is a general willingness among health sector workers to embrace this technology. However, insufficient funding for modern technologies and a perceived lack of digital infrastructure to support cloud-based systems were reasons given for the antiquated practices. Health workers also cited unrelenting work pressures made finding the time to implement or complete training in new software or systems prohibitive. Further compounding the lack of digital medical records is an inability to address long-term health concerns of patients or implement GP management plans because staff “don’t have time to do the paperwork and there is no electronic system” (HW07). A drawback to this digital operational vacuum is an adverse impact on continuity of care for patients.

When asked what role technology played in the delivery of health care in The Gemfields, interview participants were openly supportive of the implementation of electronic health records as it would enable their medical file to be digitally linked with the new national health information portal called My Health Record. This was especially true for grey nomads who could see the value of having a portable medical record when travelling across Australia:

*Well, I tell all these folks in these travellers, these caravan people, the old nomads, I tell them all. Don't be stupid. Sign up for My Health Record.*  
(Gemfields Resident 27)

One technological innovation that emerged as an attractive option for the supply of health services in The Gemfields was telehealth. There was a dedicated ‘telehealth room’ at the ROC where patients linked with their treating physician via a video conference call with a nurse in attendance to assist with technology and communications. During the COVID-19 pandemic, regulation of formal health care channels loosened perceptibly, with face-to-face specialist services suspended and telehealth emerging rapidly as a default option. The interviews documented a good level of patient satisfaction with telehealth services in The Gemfields, particularly by those residents who had restricted mobility or were geographically isolated. This study found telehealth is a cost-effective health solution for

patients (especially considering the many citizens reliant on government income support) as it reduces the need to travel, reduces appointment waiting times and is considered a more convenient option overall. The positive uptake of telehealth in the study area has provided an opportunity for conversations to commence about the potential for other consumer-driven digital health solutions. However, as detailed in the quantitative baseline results in Section 4.2, face-to-face interviews confirmed that personal internet connectivity in The Gemfields is not universal:

*Another problem out here is that a lot of people who live out here don't have access to technology. They need a landline or a phone. So they don't have an Internet connection. (Gemfields Resident 09)*

Although internet penetration in the study area is lower than elsewhere nationally, there is a growing reliance on mobile phones to source the internet. As mobile phone saturation in The Gemfields continues to improve, interview participants suggested greater opportunity for new digital health solutions (such as mobile apps and cloud-based monitoring devices) to advance the effective delivery of healthcare for The Gemfields community.

#### **5.5.5.3 Communication**

Health communication at the grassroots level emerged as a curious theme when considering connectivity within the health sector and externally with health consumers. How consumers obtain, understand and act upon local health messages was viewed as an ongoing challenge in The Gemfields but was viewed quite differently by consumers compared to health workers. Health workers actively endeavoured to reinforce positive health behaviours and there was a genuine desire to help empower individuals to change or improve their health conditions: “with better education, people would be able to self-manage better” (HW07). Health workers viewed communication as a tool to develop successful relationships with health consumers and create trust. One health worker signalled that approximately 80% of their job involved health communication activities and providing health information to consumers (HW06). Health workers flagged the importance of “the community understanding what services they have available and when they can and can't use them” (HW05). However, a barrier to strong communication between them and consumers was the perceived low levels of health literacy of the target population:

*I also think that the population probably has a lower health literacy, which makes the delivering of service even harder. (Health Worker 07)*

Health workers thought keenly about how to communicate externally with the community. Local communication channels at the community level were used to disseminate health messages. Health workers said they utilised the printed community newsletter to help “educated people...and generally try to debunk certain myths” (HW01). Word-of-mouth or the local grapevine was also relied upon to “spread the word” (HW04) as well as the modern-day community telegraph – social media and specifically The Gemfields’ Community Facebook Group. Preventative health messaging was a particular priority to local health workers who “put up a lot of posters around town” in the places where locals go – the public, the chemist, the post office, and the shop (HW04) and viewed such campaigns as capacity-building activities:

*It's about building up their community and empowering the people who live there to start taking some responsibility, you know, learning this health literacy and taking some of this on board. And it's the simple things like wearing shoes, washing, scrubbing your feet, having access to appropriate toiletries, you know. That's I think the improvement that would help them as well. (Health Worker 07)*

However, local residents are less concerned about connecting and communicating within the formal healthcare setting as such interactions are commonly viewed as a last resort when unwell or something you would do in an emergency. Many interview discussions with Gemfields residents focused on treating specific illnesses and injuries rather than on a more general theme of maintaining good health. As previously noted, there were very low expectations of their personal wellbeing and poor health was normalised among residents.

#### **5.5.5.4 Innovation**

Innovation does not tend to occur when systems are efficient, and people are healthy, happy and safe. Rather, innovation happens when there are problems that need to be solved out of necessity. In other words, the consequences of maintaining the status quo are too uncomfortable. Stress-induced innovation happens when the pain of staying the same is too great a burden. In The Gemfields, the operationalisation of a novel solution to a local problem must suit the unique rural and remote setting. However, just as residents choose to

live in relative obscurity, health innovation in The Gemfields stays very much under the radar. Qualitative enquiry in the study area revealed that health innovation came in two forms – informal and formal innovation. In this setting, innovation is a practical enabling factor to achieve health equity for residents, albeit in often unconventional ways.

Informal innovation involves interpersonal interactions and collective intelligence to develop a new or improved response to a place-based problem and complex situation. Often the chronic gap in service provision is filled by grassroots community intervention, whereby the local community work together to enable patients to manage their disabilities, injuries or illnesses at home. At one humpy, for example, a boat winch was installed to ensure that a patient could get in and out of an outdoor bath. The patient lacked the means to buy or install professional medical lifting equipment, so the community invented something useful. In extreme cases of isolation, there was some evidence that Gemfields residents turn to unregistered or retired health practitioners for medical assistance, but this is only as first responders in an emergency situation while waiting for an ambulance to arrive. Another informal innovation involving multiple agencies is to develop a hand-drawn navigation road map of the fossicking areas across The Gemfields. There are no official maps or digital navigation tools that work in this remote area. Health workers operating in the area would continuously pool their knowledge of local roads and tracks and where people set up camp and update the hand-drawn map. This is an invaluable tool, especially in hard-to-reach places and for direction finding. The development of the unofficial road map is also an example of service-related innovation that involves joined-up and cross-sectoral service delivery because multiple agencies (public, private and not-for-profit) contributed to the development of this important local resource.

The formal healthcare system is also forced to adapt and innovate due to the rural and remote setting. Due to a lack of reliable refrigeration in many of the region's homes, rather than requiring patients to take their diabetes medication away with them, medical centre and pharmacy staff tend to store this and other medicines on-site to be dispensed as needed. Alternatively, diabetics living in the study area are prescribed tablets that do not require refrigeration. Another formal example of innovation involves organisational adaptation. Traditionally, the role of a paramedic is to respond to emergency situations and to provide advanced acute care. However, in The Gemfields, a gap in primary health care services has led to a growing number of low acuity call-outs and a need to respond to poorly-managed chronic disease (especially after hours, on weekends and when residents cannot get an

appointment with the part-time GP). This unofficial service adaption is in line with the aforementioned LARU program in urban areas and an example of applying an existing model to a new setting. That is, innovative practices involved the modification of ‘normal’ professional duties to fit local health care needs. The transformative effect of informal and formal innovation cannot be understated in a place like The Gemfields as such invention helps to overcome service constraints and fill gaps in government and commercial services.

## **5.6 Chapter summary**

This chapter provides a detailed summary of thematic analysis results gained through qualitative data collection. Interviews conducted with residents of The Gemfields and with health workers delivered a rich, detailed and complex account of the health equity situation in the study area. The semi-structured interviews engaged in a bottom-up investigation and sought to understand better this unique community from the participants’ viewpoints. It was an immersive process that revealed multiple realities of life in The Gemfields and tested ‘outside’ quantitative health equity indicators against ‘insider’ qualitative data. Subtle situation variances emerged between existing quantitative data sets and qualitative output, which will be analysed further in the next chapter.

## 6 Synthesis and Discussion

*“To be invisible is to be free”*

*(Mikita Brottman, 2018)*

### 6.1 Introduction

Rural and remote Australia is not a smaller version of urban Australia. It is not a single, indivisible monolith that can be lumped together into a large social structure. Two decades ago, Dixon and Welch (2000) wondered what it is about life in rural settlements that contributes to differential health outcomes in Australia. In order to understand the complexities of rural health disadvantages, they influentially proposed that place of residence and how individuals embody aspects of place requires greater research focus. Twenty years later, this research project set out to explore further the notion of place-based health equity at the rural settlement level, and, more specifically, to describe the factors that inhibit or enable health equity in the rural and remote community of The Gemfields. In this chapter, the results from both qualitative and quantitative inquiry are synthesised and discussed as a whole to address this research question.

To achieve this ambitious goal, a case study methodology using qualitative and quantitative data was deployed to gain an “intense focus on a single phenomenon within its real-life context”, as persuasively recommended by Yin (1999, p. 1211). This case study utilised frameworks from the literature to guide the study design, develop informant questions and select research tools. The literature review sought to determine how the term rural and remote health was commonly deployed in scholastic compositions. It also explored in detail the compelling concepts of *social determinants of health* and *health equity* - knowledge that underpins this research (Dahlgren & Whitehead, 1991; Mackenbach & Kunst, 1995; Marmot, 2005; Whitehead, 1990). This section endeavours to integrate these theoretical concepts with ‘outside’ quantitative data and ‘inside’ qualitative information to deliver a balanced and inclusive appraisal of health equity factors in The Gemfields. This chapter provides a comprehensive summary of the community health assets (enablers) and deficits (inhibitors) in The Gemfields, describes the existing health care service capacity to meet community needs, and proposes a tool to rapidly assess health equity in a small-scale, rural and remote settlement. Alternative effective practices are identified to form an overall picture of how localised solutions may emerge as a way to promote health equity enablers in an otherwise under-served and disadvantaged remote population. Finally, this dissertation provides a deep reflection on

the golden thread that connects all aspects of the health equity factors in The Gemfields – invisibility.

## **6.2 Defining Rural and Remote Health in The Gemfields**

Defining health in a small-scale rural and remote settlement is not an unequivocal exercise. As argued by Wakerman et al. (2017), rural and remote health is a contested term that is often used but without having a widely accepted meaning. Literature presented in this dissertation characterised ‘rural’ and ‘remote’ health into four broad categories: geography (distance/size); population (sparsity/density); resources (human/infrastructure); and consumer identity. The application of these key variables used to define health in terms of ‘rurality’ and/or ‘remoteness’ in The Gemfields occurred in the context of a thick description of the local health ecosystem. Thinking of health delivery in an ecosystem sense and including these different definitions in the analysis is important to this study because definitions shape services, influence funding and direct policy.

Focusing on spatial variables such as distance tends to lead to a categorical definition of rural and remote health. From this geographic-centric position, The Gemfields is relatively easily identifiable as ‘non-metropolitan’ (Regan & Wong, 2009) or located ‘outside a major city’ (Gregory, 2009; Wakerman & Humphreys, 2008). In terms of its spatial proximity to a place using territorial units, it is categorised as ‘remote’ using the ASGS (RA4) and the Modified Monash Model (MM6). However, as suggested by Slifkin et al. (2004), such administrative definitions can seem artificial and may obscure local nuances. The lack of mobility of residents in The Gemfields amplifies any pre-existing ‘remoteness’ that metrics might assign to the region.

Alternatively, measuring spatial proximity from one place to central health facilities is a direct, quantifiable and also more meaningful way to define rurality and/or remoteness. For example, it is a 65 km drive from the village of Sapphire to the nearest rural hospital in Emerald. In this instance, using geographical distance seems like an objective metric for planners and scholars alike (Buzza et al., 2011; Cheesmond et al., 2019), but subjectively it can still remain an insurmountable distance for those who do not own a car. As described by McGrail and Humphreys (2009), rural settlements like The Gemfields are not a homogenous area that can be grouped together. Small area variations in geographic access appear in The Gemfields, as demonstrated in The Willows, whereby residents predominantly choose to utilise primary

health care services in Emerald (outside the study area) rather than in Sapphire for reasons of proximity and convenience.

A considerable volume of literature has focused on population markers in a specific geographical area to define rural and remote health. From this population-centric perspective, if The Gemfields were located in Canada it would be ‘automatically’ defined as a rural small town because it has fewer than 10,000 people (du Plessis et al., 2001). Or, if it were situated in the USA it would be considered rural because it is ‘not urban’ and has less than 2,500 people (United States Census Bureau, 2010). Using the OECD definition, The Gemfields also has less than 150 inhabitants per square kilometre (OECD, 2011). The population-to-medical practitioner ratio of Pong and Pitblado (2001) would also place The Gemfields into a remote health setting. Similarly, Makuc et al. (1991) defined rural and remoteness in a health setting as a ratio between the number of physicians within an area and the total population. In the case of The Gemfields, the 1:1,500 physician-to-population ratio places it within the rural and remote classification. However, it is important to note that this metric does not consider several local factors such as the mobility of the population, the transient nature of the population and inaccurate population data collection in The Gemfields.

Categorising rural and remote health relative to both human and infrastructure health resources is also reviewed in the literature. From a resource-centric viewpoint, The Gemfields falls under the RACGP Rural Faculty definition of a ‘rural general practice’ due to the geographic and demographic features of the rural and remote location, combined with the range of medical presentations, the wide scope of skills required to work as a health professional in the area and the reduced facilities available to the practitioner (The Royal Australian College of General Practitioners, 2019). The Gemfields also aligns with Couper’s (2003) characterisation of a rural and remote health setting by what resources are not available. There is no ready access to specialists (other than via telehealth), no hospital, and is generally a low-level resource setting (both human and material).

A less represented position, in either the scholarly literature or policy approaches, is a definition of rural and remote health that incorporates the health consumer’s identity and their subjective point of view. Distinct from King et al.’s (2006) findings, residents in The Gemfields do not generally associate good health with the ability to work (as the majority of interviewed residents were either retired, elderly and/or disabled and unable to work). Rather, results from

this study are more similar to those reported by Gessert et al. (2015), with informants gauging their health status on an ability to maintain independence and not having to enter the health system at all. The Gemfields residents interviewed as part of this study would avoid seeking out health care for matters that they consider minor, not important or non-life-threatening – a comparable result to that found by Slusher et al. (2010). Additionally, a unique aspect of defining health in The Gemfields is the consumer choosing to actively disengage from the system. Remoteness in this instance relates to an individual's perceived social connection (or disconnection) with the health service. Therefore, 'remoteness' or 'rurality' relates to place-based factors that largely concern individual and community identity. Study informants consistently described life in The Gemfields as isolated and a 'long way away' and, in turn, also viewed the health service as geographically rural and remote. Taken together, the four variables of geography, population, resources and consumer identity, consistently define The Gemfields as operating within a rural and remote health service setting.

### **6.3 Health Equity in The Gemfields**

Equity is an ethical construct. Whitehead (1990) persuasively contended that health equity is about reducing or eliminating factors that were unavoidable or unfair. Therefore, health inequity may well be considered the unequal distribution of opportunity. This dissertation has endeavoured to characterise the health equity 'opportunity gap' in the small-scale, non-indigenous rural and remote settlement of The Gemfields. In doing so, this research found that there is more to health equity than health care. Good health is more than what happens inside a GP's consultation room. Good health is intertwined with place – life in The Gemfields is tied closely to social, economic, and physical conditions. Can residents walk or drive to the local health clinic? Are locals socially connected? How do people living on the miners common access clean drinking water? The answers to all of these factors impact a person's opportunity to be healthy, and the basis for this is that person's socioeconomic position (Compton & Shim, 2015; Embrett & Randall, 2014; Friel, 2009; Raphael, 2006). Health equity in The Gemfields can be described as the interface between specific social determinants of health, individual need (demand) and available service provision (supply). In support of the WHO's policy position (2008), this study found these factors, referred to as 'rural determinants of health' henceforth, are intrinsically linked to the non-medical conditions that can either facilitate or impede a person's ability to achieve good health.

This study aimed to challenge conventional wisdom and prompt fresh thinking about the drivers of health inequity in rural and remote Australia. In order to present a balanced

perspective of health equity in The Gemfields both health deficits and assets were explored within the study area. Generally, deficits inhibit health equity and assets enable health equity. As asserted by Brooks and Kendall (2013), a deficit approach to health equity does have a tendency to focus on identifying problems within a population group. This has the potential to characterise a community exclusively in negative terms and to ignore the positives. However, to counterbalance the identification of inhibitors, this study also examined what is working well or what could be considered as health assets. This ‘strengths-based’ approach to health equity, as described by Van Bortel et al. (2019), aimed to identify the positive attributes or enablers associated with The Gemfields health ecosystem at the individual, community and organisational levels.

In assessing Oldroyd’s (2019) upstream (indirect/system) and downstream (direct/personal) rural determinants of health in the study area, overlapping inequities and dual disparity – both vertical and horizontal – were uncovered. Analysis of quantitative data in Chapter 5 resulted in five overarching themes (Level 1 Factors) – poverty, rurality, health need (demand), health access (supply) and connectivity. A summary of the thematic analysis and quantitative findings presented in Chapters 4 and 5 is provided in Table 16. This was developed in consideration of key findings outlined in Section 2.6 of the health equity literature review (Beenackers, 2015; Brennan Ramirez et al., 2008; Goodrich & Pottle, 2005; Ontario Public Health Association, 2013; Signal et al., 2008; VicHealth, 2015b). It is important to note that some statements in Table 16 are truncated and may not necessarily relate to 100% of the population group.

This summary captures why some residents with the same needs are not able to access the same healthcare in The Gemfields, which Starfield (2011) described as horizontal health inequity. For example, some residents of The Gemfields believed that they do not necessarily receive equal treatment within the healthcare system in comparison to people living in other rural and remote settlements. There was also evidence that people with more serious health needs who reside in The Gemfields are not allocated greater resources – an illustration of vertical health inequity. The low resource setting means that people with complex and chronic health needs are not able to be treated proportionate to those needs. Ideally, population groups like The Gemfields who have a poorer health outlook would receive more health resources, as argued by Starfield (2011). Reducing the opportunity gap in The Gemfields involves acknowledging the upstream complex and cumulative conditions that have an indirect snowballing effect on an individual’s state of health, while also considering downstream individual decisions that

directly impact personal health status. Hence, it may be hypothesised that those with the greatest needs and fewest resources in The Gemfields require additional effort and resources to equalise health opportunities. However, improving health equity in The Gemfields will take problem-solving and investment.

Table 16: Synopsis of health assets and deficits in The Gemfields

Type of health inequity	What contributes to poor health? (Deficits)	What contributes to good health? (Assets)
<b>POVERTY</b>		
Cost / Affordability	<p>High proportion of low-income residents (reliant on government pension).</p> <p>Cost of basic utilities.</p> <p>Low ability to pay medical-related expenses.</p> <p>Inability to pay for in-home services (Meals on Wheels &amp; Respite Care).</p>	<p>Some residents (approx. 20%) are financially independent (do not rely on government pension).</p> <p>Shared transportation (lift-giving culture).</p> <p>Free public health services in local community.</p> <p>Community subsidising cost for most disadvantaged (fundraising and gift-giving).</p>
Food Security	<p>Limited transport to access grocery store/supermarkets.</p> <p>Geographical isolation – travelling long distances.</p> <p>Safe food storage – lack of refrigeration.</p> <p>Making poor food choices.</p> <p>High cost of food for low-income residents.</p> <p>Children going to school without lunch.</p> <p>Extreme cases of poverty and neglect leading to hunger, undernourishment and malnutrition.</p>	<p>Local delivery service to those who can afford it.</p> <p>Lift-giving and helping neighbours.</p> <p>Using kerosene fridges, esky with ice.</p> <p>Recognition by health workers that dietetic support services needed in The Gemfields.</p> <p>Local monthly markets – affordable fresh produce sold.</p> <p>Community food donations to local school.</p> <p>Good Samaritans providing food relief (anonymously) to highly disadvantaged.</p>

Type of health inequity	What contributes to poor health? (Deficits)	What contributes to good health? (Assets)
Health Knowledge	<p>Low educational attainment by majority of residents.</p> <p>Low health literacy levels by majority of residents.</p> <p>Inability to perform important health-related tasks.</p> <p>Low levels of personal health efficacy in some segments of the population.</p> <p>Low levels of preventative health action.</p> <p>Low levels of medication compliance by some segments of the population.</p> <p>Delay in seeking medical treatment.</p> <p>Impaired ability to make informed health decisions.</p>	<p>Health workers willingness to assist residents read, process and act on health-related information.</p> <p>Availability of free public health resources.</p> <p>Compassionate and highly skilled local health workers.</p> <p>Commendable attempts to improve community health education at the grassroots level, particularly by ‘insider’ health workers and invested locals</p>
Living Conditions	<p>Miners and ‘Townies’ living below the poverty line and in poor quality housing.</p> <p>Limited access to reticulated government services (water, electricity, waste management, sewerage) on mine fields and some villages.</p> <p>Very high temperatures in summer (extreme weather events and environment heat-related exposure).</p> <p>Low temperatures in the winter (extreme weather events and environment cold-related exposure).</p>	<p>‘Generic folk’, ‘Farmers’ and some ‘Townies’ maintain good living conditions.</p> <p>Cheap living on the miners common – affordable way of life for low-income residents.</p> <p>Little regulation due to isolation.</p> <p>Personal satisfaction and happiness gained from personal lifestyle choices and independent living arrangements.</p>

Type of health inequity	What contributes to poor health? (Deficits)	What contributes to good health? (Assets)
	Lack of clean water and sanitation leading to poor personal hygiene on mine fields.	
<b>RURALITY</b>		
Proximity (Distance)	<p>Long travel time to regional or metro health services</p> <p>High reliance on a car to access any health services either locally or regionally.</p> <p>Inability for some residents to bridge distance</p> <p>Bounded locality and no appearing on Emergency Services official maps.</p> <p>Lack of understanding of proximity by urban decision-makers.</p> <p>High level of frail, elderly and/or disabled residents unable to travel long distances due to poor health.</p>	<p>Coordination with neighbours, family and friends for transport needs.</p> <p>Exceptional local knowledge of fossicking area by residential health workers (in particular local QAS officers).</p> <p>Close proximity of local ROC in Sapphire.</p>
Mobility	<p>High mobility demand due to habitat dispersion.</p> <p>Lack of transport infrastructure - low alternative transport options (walking/bicycles/mobility scooters).</p> <p>No public transport.</p> <p>High dependence on privately-owned vehicle.</p> <p>Vehicle ownership prohibitive for vulnerable populations (due to poverty).</p>	<p>High level of shared transport and lift giving.</p> <p>Transport enables good health for employed, financially secure, car-owners.</p> <p>School bus ensures children transported to school.</p> <p>School bus used by some to travel to and from Emerald for medical appointments (however this is contentious practice)</p>

Type of health inequity	What contributes to poor health? (Deficits)	What contributes to good health? (Assets)
	<p>High level of personal immobility due to age, disability and/or illness.</p> <p>Avoiding emergency transport to Emerald Hospital because of an inability to travel home (no return transport).</p> <p>Unpredictable road terrain (dirt/mud tracks).</p> <p>Treacherous road conditions.</p>	<p>MPC own a 20-seat minivan (but currently out of service).</p> <p>Access to travel reimbursement costs through the Queensland Government Patient Travel Scheme.</p>
Isolation	<p>Physical inaccessibility to remote areas.</p> <p>No residential addresses on mining common.</p> <p>Difficult area to navigate and no gazetted roads in fossicking areas making it difficult for health workers to locate patients.</p> <p>High levels of social disconnectedness.</p>	<p>Local adaptation and innovation to mitigate isolation (e.g. (local health workers developing hand-drawn mud map of mining common).</p> <p>Reported high levels of personal satisfaction and happiness from social isolation.</p> <p>Isolation from other people to reduce exposure to viruses or other airborne diseases.</p>
Stigma	<p>Geographical and social stigma in the form of exclusion, devaluation and adverse social judgement.</p> <p>Overt discrimination and exclusion from external health care setting (i.e. Emerald).</p> <p>Denied access to treatment by health professionals due to bias and stigma (in <i>extremis</i>).</p>	<p>Respectful and non-judgemental health care provided in The Gemfields.</p> <p>Safe health care setting locally.</p>

Type of health inequity	What contributes to poor health? (Deficits)	What contributes to good health? (Assets)
	Refusal to access mental health treatment due to social stigma/shame.	
<b>HEALTH NEED (DEMAND)</b>		
Chronic health	<p>Complex and chronic disease profile of resident population (high burden of disease).</p> <p>Poor health normalised among population.</p> <p>Poor lifestyle choices.</p> <p>Poor health management.</p> <p>Unwillingness to engage with public health system.</p> <p>High percentage of the population living with a disability.</p> <p>High demand for wound care management.</p> <p>High levels of substance use and misuse.</p> <p>Undiagnosed and/or untreated mental illness.</p>	<p>Frontier lifestyle an attractive escape from urban or town living.</p> <p>Wound care treatment provided at local clinic.</p> <p>Non-pharmaceutical approach to pain relief at local clinic.</p> <p>Local Men's Shed providing informal mental health support.</p>
Tourists	<p>Increase transient population place significant strain on local health services and take valuable GP appointments away from local residents.</p> <p>Increased long waiting times for GP.</p>	Economic stimulus and jobs created by local tourism season.
Barriers	<p>Restricted primary health clinic hours.</p> <p>Longer emergency response times due to residential address confusion.</p>	<p>Flexible and obliging primary health care staff at local clinic.</p> <p>Provision of free primary health care locally.</p>

Type of health inequity	What contributes to poor health? (Deficits)	What contributes to good health? (Assets)
	Social disconnection and distrust of authority/government.	
Gaps	<p>Restricted GP hours (3 days per week).</p> <p>Long appointment waiting times for routine health care.</p> <p>No GP coverage afterhours, on weekends and when doctor not in town.</p> <p>Lack of visiting allied health services.</p> <p>No GP management plans.</p>	Highly trained auxiliary health care workers such as paramedics, nurses and pharmacists filling the primary health care service gap.
<b>HEALTH NEEDS (SUPPLY)</b>		
Approachability	Unwillingness to engage with local health care services.	<p>Highly dedicated local health care workforce.</p> <p>‘Clocked off healthcare’.</p> <p>Access to free public health care in local settlement.</p>
Appropriateness	<p>Resource-constrained health care setting.</p> <p>Funding for local health care services does not match high health need.</p> <p>Fragmented health services.</p> <p>Uncertain funding cycles.</p>	Access to free public health care in local settlement.

Type of health inequity	What contributes to poor health? (Deficits)	What contributes to good health? (Assets)
Availability	<p>High demand for existing local health services.</p> <p>Staff shortages and difficulty recruiting health staff to area.</p> <p>Increase pressure on existing staff workloads.</p> <p>Inability to book an appointment in a timely period.</p> <p>Delay in receiving care or care not delivered at all.</p>	<p>Local staff the best service they can do with the available resources.</p>
Acceptability	<p>Limited medical coverage.</p> <p>Inflexible scope of practices for auxiliary health care workforce.</p>	<p>At least three days of medical coverage (some coverage is better than no coverage).</p> <p>Professional autonomy in geographical isolated area.</p> <p>Cross-sector professional integration and auxiliary health worker collaboration.</p>
<b>CONNECTIVITY</b>		
Data	<p>Unreliable population data due to under-reporting, which impacts distribution of scarce health resources.</p> <p>Data voids – ‘hidden population’ and transient/temporary population.</p>	<p>Unofficial population data provides a more accurate picture of real demand.</p>
Technology	<p>Limited use of HIT in primary health care setting.</p>	<p>Positive patient uptake of telehealth.</p>

Type of health inequity	What contributes to poor health? (Deficits)	What contributes to good health? (Assets)
	Lack of digital infrastructure to support cloud-based HIT solutions. Poorer internet access.	Patient support for digital health information (i.e. My Health Record – a secure online summary of an individual’s health information). High mobile phone saturation.
Communication	Health misinformation and myths. Low level of patient engagement. Patient focus on treating illness and injuries rather than preventative health measures.	Local grassroots health information campaigns. Use of local communication channels for health education (newsletter, posters, social media). Strong focus on preventative health messaging.
Innovation	Limited opportunities for innovation due to geographic isolation and social disconnection. Restrictive regulations that prohibit innovation for rural and remote settings.	Grassroots community interventions and novel solutions. Informal medical assistance in an emergency situation. Unconventional and flexible medical responses to suit unique rural and remote setting.

Note: table created by the author

### 6.3.1 Invisibility 1: The Cloak of Invisibility

There is an old bush aphorism that says, “you can’t help someone if they don’t help themselves”. This mindset still runs strong in Central Queensland but in The Gemfields it is more a case of you can’t help someone if they are invisible. Invisibility in The Gemfields comes in many and varied forms – it can mean not being perceptible by the eye but, equally, also it means ‘not discernible by the mind’ (Macquarie Dictionary, 2017). When considering invisibility from an individual perspective, The Gemfields case study shows a dialectical interplay between the medical sociological concept of life chances and choices. It has been suggested that the term ‘life chances’ was first coined by German sociologist Max Weber in the 1920s (Dahrendorf, 1979). Weber viewed life chances as the structural conditions and non-random opportunities over which individuals have no control. Life choices, on the other hand, represent the factors that one has control over – the free-willed choices about one’s lifestyle and behaviour. In no uncertain terms, individual invisibility in The Gemfields is a life choice. At this level, personal invisibility was a self-driven phenomenon – many residents actively choose to be inconspicuous. In summary, the *cloak* of invisibility is one that residents to ‘pull over’ themselves but it is less easy to pull it off and make oneself visible at a time of greater need.

This study found that anonymity within the community is in fact highly prized. People can be friends for decades but always remain on a first name basis only —because they do not know the surname of their friend. There are unspoken rules and social protocols whereby surnames are never used, and you never ask someone’s first name unless you offer your own first. This cloak of invisibility is omnipresent in the study area. In folklore, the invisibility cloak is the magical shroud that a hero may wear to remain unseen in order to fulfil a quest. In The Gemfields, a metaphorical invisibility cloak is used to shield oneself from the outside world and deliberately stay unnoticed. The term ‘remote’ in The Gemfields does not simply refer to geographic or physical remoteness but also cultural remoteness.

Many residents in the study area are experts at making themselves invisible. In fact, the character of the community aids and abets individual obscurity. It is easy to remain hidden and concealed from public view in this rural and remote area. In terms of health care, unsurprisingly, residents use this form of invisibility to actively disengage from services. This observation is consistent with that of Allan et al. (2010) who found that rural dwellers often chose not to participate in the health system and continue through life unseen. In some cases it

was clear that The Gemfields residents choose this vacuum even when it means worse health options. It is a trade-off they accept. A deep-seated distrust of authority in The Gemfields fuels a culture of wanting to be unobserved and thus unmonitored. In other words, 'opting out of the system' is self-driven due to extreme wariness. Some residents, many of whom live on the miners common, chose this lifestyle to avoid the reach of 'big brother' (aka the government) – they sought disengagement and invisibility over good health. In an era of connectivity, this community expresses a desire for disconnection but at the same time feels neglected.

A general desire for invisibility in The Gemfields is coupled with very low expectations of personal health. Hence, a combination of life's chances and choices is at play. Study participants who were socially and economically deprived and marginalised exhibited very low expectations about their health. Poor health was normalised. In this instance, there is a stubborn relationship between life choices and poor health. It is suggested that the isolated environment combined with a frontier mentality perhaps even facilitates poor lifestyle choices such as excess consumption of alcohol, cigarettes and drugs. Conversely, the life choice of invisibility also brings personal empowerment. Study participants on the whole were highly satisfied with their frontier lifestyles and the ability to be self-reliant and ruggedly independent. These results match those observed in earlier studies (Averill, 2003). There was an overall indifference by residents to the concept of 'good health' or 'illness' – there was a general consensus that 'it will be what it will be'. It could be argued that such a fatalistic view and independent spirit could possibly draw short-term health benefits such as lower stress levels. More likely, however, is that a drive for autonomy induces The Gemfields residents to avoid all contact with the healthcare system except as a matter of last resort. Ignoring health ailments in order to maintain a sense of invisibility and self-sufficiency is more likely to further compound individual health issues and contribute to poor health outcomes in the long term.

Substandard expectations also spill over to perceptions relating to health provision in this rural and remote setting. Within the context of disadvantage – low income brackets, low education levels, limited access to local transport options – study participants just accepted whatever health services are provided locally even if they do not fit with the community's complex health profile. A quiet resignation of being disenfranchised and even forgotten permeated through the community. Invisibility, either by design or destiny, has shaped this community's position in the wider health ecosystem but has also contributed to residents' susceptibility to poor health. These results further support Allan et al. (2010), who concluded that escaping an unhealthy

destiny is a lifetime challenge for poor and disenfranchised rural and remote residents. However, despite this fatalistic viewpoint, there is a long strain of discontent among many study informants that The Gemfields is overlooked and under-resourced.

In the case of The Gemfields, a consequence of invisibility is a high level of perceived stigma. The desire of residents for invisibility leads to social stereotyping and geographic judgement. Namely, there was a common belief among study participants that people who live in The Gemfields (insiders) are judged negatively by people who do not live there (outsiders). Participants expressed a fear of discrimination and being deliberately denied access to health services because of their postcode. To be invisible implies being concealed from public view but the opposite is true in relation to the stigma associated with living in The Gemfields – it is on display for all to see. For example, there is widespread acknowledgment across the region of the derogatory terms used to label The Gemfields ('Gemmie') residents as social outcasts. Paradoxically, being given the 'Gemmie tag' results in a lack of anonymity and the exact opposite of a common desire for invisibility. Such prejudicial beliefs fuel 'insider' perceptions that health services are withheld from the area and there is an overall distrust of 'outsiders' or 'blow-ins'. As a result, a vicious cycle of self-stigma endures with many study informants feeling excluded, devalued and embarrassed.

### **6.3.2 Invisibility 2: Out of Sight, Out of Mind**

In saying 'out of sight, out of mind', we move invisibility to a domain where a level of passivity emerges and it is easy to forget people or things that are not visible or present (for example, physical remoteness). This adage suggests that a person or object is dismissed as unimportant because they fail to remain in direct view. However, upon deeper reflection, the idea that something, someone or someplace is less deserving because they are out of sight or invisible begins to emerge. This notion of invisibility is relevant when considering health equity in rural and remote settlements from a health system perspective. Health services and resources are often heavily concentrated in highly visible settings such as urban hospitals. In the United Kingdom, this type of geographical dysmorphia is frequently referred to as the north/south health gap (Marmot, Allen, Boyce, Goldblatt, & Morrison, 2020). That is to say, the large metropolitan centres in the southern part of the UK are better resourced and the population has better health outcomes than those located in northern districts, because the south is more visible, more accessible to London, or more importantly, to Whitehall.

In this scenario, big cities are viewed as the centre of the universe, which is a quintessential urban way of thinking. In Central Queensland, it is an east/west health gap; the most deprived districts (lowest SEIFA 10 percentile) are located west of the Australian east coast and are often overlooked in terms of health resourcing and service provision. The inconsistent and uneven spread of Australia's health workforce is amplified in this region. This study is consistent with Duckett and Breadon's (2013) findings of wide geographic gaps in the availability of primary care services in rural and remote Australia. However, this so-called health opportunity gap continues to escape the attention of politicians and policy-makers in much the same way that small rural settlements also tend to exist beyond the public view. Places like The Gemfields are not in plain sight and thus the health needs of such settlements are not well understood and can be overlooked in health policy or planning discourse. This creates an environment in which what could be called 'urban narcissism' flourishes. Narcissism is characterised by excessive self-centredness and entitlement. In this case study, it was evident that urbanity is construed by some as superior to rurality and systematic invisibility exists when it comes to rural health equity issues. One reason given for this was that health policies are made in urban settings by people who enjoy urban privileges, and they think that they know better. Little consideration is given to the concept of place and there is an absence of policy thought around developing bespoke solutions for small communities that do not fit into an urban way of thinking.

Study participants wholeheartedly believed that there is an unconscious devaluing of the rural experience by city dwellers who view people in small-scale settlements as having lower status and are ignorant. Study informants expressed invisibility in terms of being forgotten, overlooked or lost in the system. A practical illustration of this sentiment is The Gemfields communities (Anakie, Sapphire, Rubyvale and The Willows) being allocated the same postcode (4702) as the major regional centre of Rockhampton, which is located 400 km to the east and has no connection to the community whatsoever. Small-scale settlements like The Gemfields have little lobbying power in Canberra or Brisbane of either a formal or informal nature. In fact, some study participants said they struggle to be heard at the local government level. The east/west health gap in The Gemfields results in many of its inhabitants feeling like 'second class citizens'. This reputed 'invisible class' felt like they have no sway over governments or politicians or high-powered decision-makers. Added to this, residents of The Gemfields felt inadequately represented by the media but at the same time were highly offended or outraged by any outsider's view of their community. Overall, small-scale rural settlements such as The Gemfields are invisible to the big urban-based health system. The consequence of

urban narcissism is an amplification of health inequities and the exclusion of the most vulnerable groups from the health system.

Although the public health system is free at point of use in The Gemfields, entry points into the system are not always visible or easily accessed. Willis, Reynolds and Keleher (2016) discuss the benefits of taxpayer-funded universal health care in Australia. Yet, in The Gemfields accessing publicly funded health care can be likened to trying to find a needle in a haystack. This study in The Gemfields confirmed Regan and Wong's (2009) assessment that many parts of the health sector are fragmented and not easy to navigate for the end user. There is a perceived lack of coordination and connectivity between different health services, which negatively impacts consumers with complex conditions or those who are socioeconomically or geographically disadvantaged. Additionally, current state and federal funding models reward 'churn' and high patient volume, which can result in services focusing on meeting performance metrics in urban areas and overlooking low population areas such as The Gemfields. A health system that perversely encourages high patient turnover (also known as turnstile healthcare) is yet another example of: firstly, rural invisibility; and secondly, of the system not adapting health policy to meet the operational realities of non-urban communities.

Previous studies in New Zealand noted that health equity is embedded in policy for Maori people but not other disadvantaged non-Maori population subgroups (Sheridan et al., 2011). In late 2020, the Queensland Government amended legislation requiring all Hospital and Health Services to develop a strategy that achieves health equity for First Nation people (Queensland Government, 2020). These legislative amendments have regard to "the effective and efficient use of resources for the public sector health system as a whole, and the best interests of patients and other users of health services" throughout the state (Queensland Government, 2020, p. 22). Like New Zealand, the Queensland legislation embeds health equity in policy for First Nation people. However, the implementation for health equity policy for Australians living in hard-to-reach places (geographically remote) or underserved non-indigenous population subgroups such as The Gemfields remains unrealised. Health equity lag across all population groups will remain a challenge unless policy designers cast a wider net so all of society is covered.

### 6.3.3 Invisibility 3: Flying Under the Radar

What started out as a military phrase, the apophthegm ‘flying under the radar’ also adeptly describes some of the undetected barriers to achieving good health in The Gemfields. These barriers will be the focus of this section. In order to better understand what can be termed as ‘passive invisibility’ this study has attempted to disentangle the complicated socioeconomic and geographic heterogeneity of The Gemfields. It has also endeavoured to uncover previously unobserved issues that lie quietly beneath the surface at the individual, community and organisational level. However, they have the capacity to exacerbate health disparities and poor access to health care.

A high level of demographic vulnerability was observed in The Gemfields. Of particular significance was evidence of three key mobility indicators first raised by McGrail and Humphreys (2009) in their *Index of Rural Access*. The Gemfields study confirmed a high percentage of households without a car, very low personal mobility levels and no public transport. In addition to McGrail and Humphreys’ (2009) findings, The Gemfields research uncovered additional transport barrier synchronism with poor road conditions, unreliable vehicles and low-income earner’s inability to pay for fuel – all factors that directly undermine a rural population’s ability to overcome distance barriers. Paradoxically, the most immobilised groups (relating to driving and movement) within the community were found to be the ones with the strongest demand for health-related services. As residents age, their health declines and so their need to access care rises. Whether it is travelling 5 kilometres to the local ROC or 50 kilometres to the nearest hospital, distance becomes a critical barrier to this ageing population. Just as Buzza et al. (2011) proposed, distance cannot be operationalised as a homogenous barrier. Distance to a health service does not equate linearly to access – that is, a short distance does not necessarily equal better access or long distance may not equal poorer access.

This study found that each resident possesses an individual health equity *signature* that takes into consideration a range of rural determinants of health such as proximity (distance), mobility, travel time, geographical isolation, weather, road conditions, transportation infrastructure and poverty. The implication of a combination of poor mobility and no public investment in social infrastructure, such as community transportation, is a disconnection to urban health systems and non-attendance of medical appointments. Rural people need to use a car as their main alternative to move around. The Gemfields provides a sociological example

of social and geographical conditions where dependence on the car to live in a rural and remote area is essential. The lack of access to a personal car establishes its own forms of exclusion and immobilisation that erodes an individual's ability to actively participate within and outside of the settlement area. A lack of transport options ultimately leads to treatment avoidance and an exacerbation of medical conditions. Over time, delays in accessing care give rise to an increased economic burden on patients and on the healthcare system.

Results from this research project showed that 'flying under the radar' or avoiding the reach of government is relatively easy and that an invisible (non-official) population subgroup exists in The Gemfields. Qualitative findings from this study suggest that hundreds of people hide out in the bush on a mining claim – many of whom do not want to be found. This cohort of people never makes it onto any government census and remains obscured from public view. Additionally, transient residents who only visit their mining claim in the winter months but maintain an official principal place of residence elsewhere are also not calculated as part of the permanent population of The Gemfields. For a small-scale rural and remote settlement this is a large group of people to remain unregistered, which results in an incomplete public demographic record. Under-reporting of population is a critical challenge for the area as it impacts directly on health resource allocations. Health funding is allocated predominantly on the basis of official population data. The alleged discrepancy between the official and non-official population data means that urban-based decision-makers fund The Gemfields based on the official census population. The true population demand on the health service remains contested and not quantified.

The lack of population data also extends to temporary visitors. During the peak tourism season, the transient population of The Gemfields can add between 2,000 to 3,000 people at any one time. A tripling of the population at peak times puts additional stress on an already stretched local health service, especially as most of these visitors are older Australians (grey nomads and baby boomers) with high health needs. Hence, this cohort of visiting retired and/or elderly tourists places significant strain on already extended local health resources. As argued here, the sole use of quantitative population statistics for health planning or resource allocation is an imprecise methodology. In the case of The Gemfields, the use of official quantitative population variables does not tell the whole story.

A lack of data at the remote and very remote settlement levels poses limitations on health authorities and government to monitor health inequity. For example, when considering morbidity, the qualitative data collected during the interview phase indicated a high level of deaths within the local settlement area but official statistics were difficult to reconcile with the perceptions of locals. Mortality data are based on the place of usual residence of the deceased. However, residents who may spend the majority of their time on their Gemfields mining claim but use a different address outside of the region as their principal place of residence will not be attributed to the settlement area's mortality rates. Also, the smallest area measured for population deaths is Statistical Areas Level 2 (SA2), which is tantamount to the size of a city suburb. SA2 is the smallest granularity Federal Government data (accessed by Centrelink) is available for a population range of 3,000 to 25,000 persons.

The SA2 that includes The Gemfields population is called Central Highlands – West, which also includes other more advantaged rural towns west and northwest of Emerald. The crude death rate per 1,000 persons for Central Highlands – West is 5.5 persons per annum. This figure seems significantly lower than qualitative data suggest. In order to gain a true indication of premature death levels or mortality rates in The Gemfields data would need to be collected and made publicly available at Statistical Area Level 1 (SA1) – the smallest unit for census data designed for a population between 200 to 800 people. The practical steps of measuring morbidity levels at the small-scale settlement level warrants further consideration as it helps to expose different forms of disadvantage and health inequity within population subgroups.

Substance abuse and misuse is another social and health issue that is not immediately visible in the study area but rather simmers quietly under the radar. Qualitative results indicated that addiction to prescription drugs such as fentanyl and oxycodone is surprisingly commonplace in The Gemfields and these opioids are used mainly by older residents to manage chronic pain. Furthermore, drug and alcohol misuse are viewed as a hidden barrier to achieving good health for people living in The Gemfields. Addiction to illicit drugs and legal substances for non-medical purposes impacts on an individual's immune system, increases the risk of acquiring infections such as Hepatitis B and C and even has other snowballing effects on mental health and heart health. Heavy drug or alcohol use is associated with legal infringements in The Gemfields such as stealing, violent behaviour or driving under the influence (Queensland Police Service, 2020). Although addiction issues were not widely discussed by residents, health workers interviewed acknowledged that the hidden or invisible burden of disease caused by

drug and alcohol addiction has the capacity to exacerbate health disparities and poor access to health care in the study area. At its most basic, the lack of testing facilities and staff in the region mean this problem continues to fly ‘under the radar’.

Study participants, either consciously or unconsciously, chose to overlook the obvious signs of disadvantage that are omnipresent throughout the settlement area. Living in a tin shack without running water is ‘normal’. Receiving a government income payment is ‘normal’. Not bathing for a week is ‘normal’. Having missing teeth is ‘normal’. From an insider’s perspective this is a conventional way to live and is no longer invisible. The high level of disability within the community is also often overlooked, under-reported and perhaps even normalised. The perceptual phenomena of habituation has set in within the community whereby the prolonged and repeated presence of disadvantage has desensitised the population. In other words, residents have become accustomed to the signs and symptoms of poverty. However, from an outsider’s perspective this part of life in The Gemfields is confronting and at times incomprehensible. Locals, or insiders, are easily offended if they feel an outsider is casting judgement on their community or threatening their way of life. Hence, flying under the radar is the preferred *modus operandi* in The Gemfields.

#### **6.3.4 Invisibility 4: Turning a Blind Eye**

The phrase *to turn a blind eye* is popularly attributed to Admiral Horatio Nelson and alludes to him wilfully disobeying a signal to withdraw from a naval battle. In more modern discourse, the Cambridge Dictionary states *to turn a blind eye* means to deliberately ignore something or intentionally not give someone or something any attention (Cambridge University Press, 2021). With reference to this study, turning a blind eye is central to another variant of invisibility: the willingness to intentionally ignore a place, a person or a situation. For example, poverty in The Gemfields is pervasive and perhaps so pervasive it has become a collective experience and thus goes unseen, in the manner of research on subcultures. However, poverty is often linked to health disadvantage (Draper et al., 2004; Marmot, 2005; Wagstaff, 2002).

Results in The Gemfields showed remarkably low trust in professionally trained and accredited governmental providers of health services – in particular, people viewed as ‘outsiders’ or ‘blow ins’. However, the reverse was true if the health professional lives locally in the community, then they are trusted members of the community and viewed as ‘one of us’ or ‘insiders’. Only a handful of health professionals in The Gemfields fit into this second category and are

universally held in very high regard. The majority of residents who live in The Gemfields have chosen to reside in this remote location and many contentedly disconnect from government services such as public reticulation of electricity, water and sewerage. It was strongly evident that a frontier mentality exists in The Gemfields. Many local residents have opted out of society and are distrustful of the government including the health system.

Patients will delay or go without care rather than travel long distances to obtain qualified medical advice. However, there was limited evidence that patients seek out non-registered health practitioners or alternative therapy providers to fill this gap. Although professional and clinical competencies are extremely high in The Gemfields, mistrust of the healthcare system runs deep among locals, especially if a health practitioner is viewed as an ‘outsider’ and not part of the community. The Gemfields residents would deliberately avoid or bypass local health services if the provider is viewed as an outsider. They would turn a blind eye to their health needs and go without or seek care outside of the region. Some residents choose that vacuum even when it means inferior health outcomes. It is a trade-off they accept. A distrust of authority in The Gemfields is part of the ecosystem into which health innovations emerge and thus helps to determine the unique character of the response.

Local health workers in The Gemfields are often required to function by reflex action – there is neither the time nor resources to focus on the peripheral socioeconomic constraints of patients. Rather, health workers are required to do their job, to the best of their ability, under whatever circumstances present themselves at the time. This may require them to turn a blind eye to squalled living conditions or to pass over secondary chronic health conditions in order to treat the most pressing issue on that day. It also may result in standard ‘urban-based’ operating procedures or regulations being modified or ignored depending on the situation. Therefore, turning a blind eye in a rural and remote settlement like The Gemfields cannot be seen as negligent or unlawful but rather non-judgemental and pragmatic. This adaptable approach to policies and procedures may be viewed as unconventional by urban dwellers but the complex operating environment demands agility and innovation.

There are numerous examples reported by interviewees of where ‘normal’ professional duties are modified to fit the local health care needs in The Gemfields: there is no physician on duty, so the local ambulance responds to low acuity call outs; there is no in-home palliative care services, so local health workers provide free care and support afterhours; a schizophrenic

patient lives rough down by the river and is severely malnourished, so local health workers cook and deliver food and water to them in their own time and at their own cost; a patient's wound would not heal, so a retired health professional helped treat the infected sore for five years in their own time until it fully mended. Health professionals are compelled to perform invisible work – referred to in this thesis as clocked-off health care. In these instances, turning a blind eye to bureaucratic norms is done so that locals are treated with respect, dignity and compassion. Research results suggested that local Gemfields health workers believe pushing service boundaries is morally the right thing to do in order to overcome service constraints and to fill health service gaps. Innovation occurs out of necessity.

Turning a blind eye within a regulatory context is more difficult in Australia than it might be in the developing world, for example, as the provision of medical care is highly regulated and effectively controlled. Health professions are governed by national regulations and there is a National Registration and Accreditation Scheme (NRAS) across all Australian states and territories that develops standards, codes and guidelines for each health profession (Department of Health, 2020). It is a highly regulated system that is meant to protect the public, facilitate work mobility, and to sustain a flexible and responsive Australian health workforce. These regulations not only apply to medical practitioners but also extend to auxiliary health workers such as ambulance paramedics, pharmacists and nurses. These auxiliary health practitioners are university-educated, highly trained and registered health professionals in Australia (Schindel et al., 2017) who often fill the health service gaps in rural and remote settings. Even though The Gemfields is geographically remote from the state and national capitals, health practitioners and service providers are still required to meet professional credentialing, accreditations, and scope of practice restrictions. In spite of vast distances, regulation in Australia is still sufficiently structured and largely able to retain control over health care matters even in remote regions.

However, this is not to say that there is not a blurring of professional boundaries in rural and remote settings like The Gemfields and a desire by non-GP trained health professionals to expand their scope of practice to meet community health needs. For example, an expanded pharmacy practice would allow the local chemist to prescribe antibiotics when medical human resources are not available to fulfil this vital service, or expanding vaccination services where doctor to population ratios are low can assist with disease prevention. This study revealed a desire for less regulation – the roles and professional activities of qualified health professionals

(pharmacists, paramedics, or nurses) have the potential to take on more responsibilities. These findings are broadly consistent with previous studies that suggest a relaxation of regulation in rural and remote areas would allow qualified pharmacists, paramedics, and nurses to expand their scope of practice to improve direct patient care and health outcomes for rural populations (O'Meara, Tourle, Stirling, Walker, & Pedler, 2012; Schindel et al., 2017; Taylor, Cairns, & Glass, 2019). As previously stated, less role delineation in rural and remote settings was viewed by non-GP trained health workers as a way to increase professional autonomy but concurrently enhance health care outcomes in The Gemfields. In this case, remoteness offers an opportunity for innovations in supply and models of care and perhaps strategically turning a blind eye to restrictive and not-fit-for-purpose regulatory constraints.

#### **6.4 Potential Solutions: finer grained analysis of health access and the HELP tool**

There is a tendency in rural and remote health to audit what is missing rather than what is present. Unfortunately, in a place like The Gemfields the health service deficits more often than not heavily outweigh the assets. Just like in the developing world, The Gemfields is a resource-poor setting characterised by limited financial resources, scarce health care professionals, constrained health infrastructure and widespread poverty – all in a setting with a significant burden of preventable and treatable acute and chronic diseases that too often goes untreated. However, the existing body of research has found that most of the socioeconomic determinants of health sit beyond the realm of the health sector (Dixon & Welch, 2000; Marmot, 2005; Ndumbe-Eyoh & Moffatt, 2013). Health equity lag occurs because of an outdated approach to integrated and socioeconomic health practices. As this study found, there is an opportunity to treat people with distinct health care needs differently (proportionate to those needs). This chapter endeavours to answer the final research question: How can health equity be realised in everyday praxis within a small-scale rural and remote settlement like The Gemfields?

The findings from this study suggest that a place-sensitive approach to rural and remote health care is warranted in small-scale settlements, whereby community and economic development plays a central role in realising health equity. Thus, it is proposed that a 'root and branch' restructuring of primary health care services in The Gemfields is warranted. Study results indicate that a new model of care is needed that incorporates community, social, economic and health development in order to address the chronic health burden, tackle poverty and advance prosperity. In such a space people, culture, place and economy would work together and break

down existing intersectoral operational silos. The implementation of a Rural Health Hub would include GPs, nurse practitioners, registered nurses, paramedics, pharmacists and allied health professionals who would work alongside social workers, financial counsellors and other government and not-for-profit community and economic support services virtually and in-person. Intersectoral engagement and participation would be key. Pooling information and sharing or developing resources would minimise duplication of effort and services. It would also improve the chances of gaining community member trust and making meaningful changes to socioeconomic conditions. Such a solution is consistent with previous literature (Brennan Ramirez et al., 2008) suggesting that rational redistribution of tasks among local health care workers would maximise the efficient use of scarce resources to best serve community needs. Practicing task-shifting or task sharing would reduce the under-usage of some auxiliary health professionals during off-peak periods and increase access to timely and effective care. These conclusions supplement the idea of allowing qualified auxiliary health professionals such as pharmacists, paramedics and nurses to expand their scope of practice to improve direct patient care and health outcomes for rural populations (O'Meara et al., 2012; Schindel et al., 2017; Taylor et al., 2019). Additionally, combining 'wrap-around' anti-poverty services to deliver clinical care and deliver social support services simultaneously would significantly help to reduce adverse rural determinants of health.

Health happens in communities. This study suggests that in order to break down systematic barriers health professionals need to work closely with consumers about food, housing and transportation alongside their primary role of providing medical care. At the individual level, the development of a screening tool specifically tailored for residents living in small-scale rural and remote settlements would help to identify and screen patients for adverse rural determinants of health (Health Leads, 2018). Devising such a screening tool would take into account a range of adverse rural determinants of health including travel time, distance, mobility, geographical isolation, weather, road conditions, transportation infrastructure, food security, living conditions and poverty. For example, this tool could help health workers understand their patients' living conditions and if any adverse health conditions are exacerbated due to a lack of electricity or exposure to extreme weather conditions (heat waves or cold snaps). It would assess if there was enough access to clean water and sanitation, thereby ensuring good personal hygiene standards at home. It would ask: does the patient have access to a car, and if they do, are they capable of driving it? It would evaluate individual transportation barriers which may restrict timely access to healthcare – thus potentially

reducing pressure on the regional emergency department and decreasing hospital admissions. It would enquire how often the patient shops for fresh food, if they have a refrigerator or if they only eat tinned food. Recognising food insecurity is important because it is associated with greater emergency department visits, higher healthcare use and costs (Berkowitz, Basu, Meigs, & Seligman, 2018). The output of the screening tool would be an *individual health equity signature* that helps to paint a whole picture of a person's community, social, economic and health development needs, and ultimately address chronic health burdens, tackle poverty and advance prosperity.

An inability to provide health management plans in The Gemfields, due to limited resources and referral pathways, is a significant constraint. Focusing on chronic care management aids disease prevention and rehabilitation. The results of this research provide supporting evidence that partnerships are essential when assessing health equity in small-scale rural and remote areas. Bringing together multiple stakeholders to work together to reduce community-level health disparities is crucial because no one health practitioner or health care provider can change these conditions alone. Mackenbach et al. (2003) identified a promising intervention that is based on the introduction of nurse practitioners (NP) in general practice offices in deprived (mostly rural) areas. The nurse practitioners specifically target (low income) patients with chronic obstructive pulmonary disease and asthma and they provide extra attention and counselling to improve treatment compliance and, as a result, health of the patients (Sorgdrager et al., 2001). A comprehensive systematic literature review concluded that the quality, effectiveness and safety of nurse practitioner care was equivalent to that provided by physicians (Stanik-Hutt et al., 2013). Another study in the United States found that rural physicians were embracing the role of NPs as a way to address increased patient demand and to enhance care delivery especially in underserved rural and remote areas (Barnes, Richards, McHugh, & Martsolf, 2018).

NPs were identified as a growth segment of the primary care workforce in the United States and this upward trend was viewed as a way to strengthen the overall delivery of health care, especially in hard to service places (Barnes et al., 2018). In The Gemfields, adding a local nurse practitioner at the ROC could significantly reduce the long waiting times patients currently face and would ease the workload burden on the existing part-time GP. Alternatively, access to bulkbilled GP consultations via telehealth every day of the week is another practical solution to increase care in the remote location. In this instance, there is an opportunity to make

telehealth the first option of care rather than the next best option. Linking-in virtually with a regional or urban bulk-billed primary health care clinic would offer fast and reliable access to clinical care for people living in this marginalised small-scale remote settlement. Enhancing telehealth options within The Gemfields will reduce the travel burden and address place, proximity and mobility challenges for vulnerable patients. However, it is important to note that technology such as telehealth is a tool, not a solution, so the integration of telehealth into day-to-day operations and care delivery would still be required.

From a policy perspective, understanding health equity at the whole-of-community level is still problematic. Possibly with the exception of McGrail and Humphreys' (2009) *Index of Rural Access*, there are no measures for rural health equity integrating both spatial and aspatial rural determinants of health. Figure 37 sets out a possible way to measure health equity in small-scale rural and remote settlements utilising the key rural health equity factors identified as part of this research in Section 5.5. The Health Equity Locale Profile (HELP) tool is designed to take account of the unique barriers that impede health access in a rural settlement like The Gemfields. The instrument is also based on the review of international health equity tools detailed in Section 2.6. In particular, the HELP tool has a clear goal of measuring rural health equity in a defined geographical area and recognises the primary drivers of health inequity in small-scale rural and remote settlements. It uses both quantitative and qualitative data to assess rural determinants of health relevant to the defined local population. Once a baseline community health equity profile is completed, policy-makers, health planners or even local health workers could use the HELP tool to benchmark their small-scale rural and remote community within the local region or against other areas. The aim of the tool is to rank the 12 leading indicators (based on this research project) that impact health equity in rural and remote settlements, and thereby to provide a quantitative metric. Most importantly, this tool was designed with frontline rural health workers in mind – it is simple and quick to complete. We acknowledge that the HELP tool has not been externally validated as a measure of rural health equity. Subsequent validation is required prior to any significant policy or process changes are made based on this methodology. Appendix 30 uses The Gemfields data to complete the HELP form for demonstration purposes.

Figure 37: Health Equity Locale Profile (HELP)

## Health Equity Locale Profile (HELP)

Location: \_\_\_\_\_

For use in small-scale rural and remote communities in Australia

**Instructions:** There are 12 rural health equity indicators listed in the HELP tool. Please rate each indicator between 1 – 4 by circling one box that best describes your community. Record the corresponding number in the subtotal. Add the 12 scores together to receive a total score.

#	Factor	Indicator	1	2	3	4	Subtotal	Total
1	Proximity	Driving time to a hospital	10 minutes or less	11-30 minutes	31 - 89 minutes	90 minutes or more		
2	Mobility	Public transport	6-7 days/ week	4-5 days/ week	1-3 days/ week	No public transport		
3	Mobility	Number of cars/household	0-5% have no access to a car	6-14% have no access to a car	15-19% have no access to a car	20% have no access to a car		
4	Advantage / Disadvantage	SEIFA - IRSD	75 – 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile		
5	Advantage / Disadvantage	SEIFA - IRSAD	75 – 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile		
6	Advantage / Disadvantage	SEIFA - Index of Education and Occupation	75 – 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile		
7	Advantage / Disadvantage	SEIFA - IED	75 – 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile		
8	Rurality	Monash Modified Model Rating	1 & 2	3	4-5	6-7		
9	Health Supply	GP coverage in location	6-7 days/ week	4-5 days/ week	1-3 days/ week	0		
10	Health Supply	Ambulance coverage in location	6-7 days/ week	4-5 days/ week	1-3 days/ week	0		
11	Health Supply	Nurse coverage in location	6-7 days/ week	4-5 days/ week	1-3 days/ week	0		
12	Health Supply	Pharmacy coverage in location	6-7 days/ week	4-5 days/ week	1-3 days/ week	0		
	Total Score							

**Total possible score = 48**

12 – 23: Very high rural health equity (very high level of advantage)  
 24 – 30: High rural health equity (high level of advantage)  
 31 – 39: Low rural health equity (low level of advantage)  
 41 – 48: Very low rural health equity (very low level of advantage)

**Notes:**

1. Number of cars per household data is available from the Australian Bureau of Statistics (ABS) Census.  
 2. SEIFA data is available from the ABS Census.  
 3. Monash Modified Model categories can be found at [www.modifiedmonashmodel.com](http://www.modifiedmonashmodel.com)

Note: table created by the author

## 6.5 Chapter Summary

This research was carried out to determine the factors that inhibit or enable health equity at the rural and remote settlement level. This chapter considered what it is about life in a rural settlement like The Gemfields that contributes to differential health outcomes. The integration of ‘outside’ quantitative data and ‘inside’ qualitative information endeavoured to deliver a balanced and inclusive appraisal of health equity factors in the study area. The output of this case study was an in-depth presentation of a multi-faceted and complex rural and remote health setting. A comprehensive summary of health assets (enablers) and constraints (inhibitors) in The Gemfields were presented, which clearly established the argument that health equity entails more than just health access or episodes of care. Although understanding the health care service capacity of a place was invaluable, this thesis research ascertains that it is equally important to understand the health equity opportunity gaps for small-scale, non-indigenous rural and remote settlements like The Gemfields. In fact, achieving good health is intrinsically intertwined with people and place.

The synthesis of findings generated through this scientific inquiry uncovered the central theme of invisibility. This chapter discovered layer upon layer of invisibility in The Gemfields, such as invisible health barriers from an individual perspective, health system invisibility in the form of urban narcissism and even previously unobserved issues silently hidden from view at the community or organisation level. At times, a sense of wilful blindness to health disadvantage was observed in this small-scale rural and remote settlement that has undeniably exacerbated health disparities and poor access to health care in the study area. However, on a positive note, a place-sensitive approach to rural and remote health care may be the antidote required to shine a light on avoidable and unfair health disparities. Furthermore, it is reasoned that social and economic development has a central role to play to dispel health equity invisibility.

## 7 Recommendations and Conclusions

*“We are such a self-sufficient, resilient community but with lots of issues”.*

*(Gemfields Resident 01)*

### 7.1 Introduction

This thesis —perhaps in common with many theses—has attempted to make the unknown known and the invisible visible. Placing a metaphorical spotlight on the health ecosystem of an obscure, small-scale rural and remote settlement such as The Gemfields in outback Australia is a niche scholarly endeavour – so why bother? Small-scale rural and remote non-indigenous communities are often overlooked, devalued, disregarded and, ultimately, rendered invisible by a predominantly urban-based health system. Equity in health implies that well-designed policies and distribution of resources will equalise health outcomes among different population groups. However, as this study found, the on-the-ground reality in The Gemfields presents a very different picture. Sadly, income, economic resources and health outcomes are markedly poorer in The Gemfields —and other regions in Australian and globally that break a national or state pattern for which healthcare systems are devised. So, how can health equity be realised in everyday praxis within a location like The Gemfields?

This research has detected a strong relationship between compositional health determinants (age, socioeconomic status, health literacy) and contextual factors like rurality and connectivity. It would seem that in order to achieve health equity in a small-scale rural and remote settlement, three fundamental elements must be addressed: socioeconomic disadvantage; rural determinants of health; and primary health care services. A conclusion that can be drawn from this study is that no single measure taken or single health care provider alone is likely to significantly decrease health inequity in The Gemfields. Instead, multiple measures are needed to achieve real transformation. Interventions that consider the physical and social rural and remote environment involve the existing health services, and which pay attention to underlying health literacy skills of the population, are essential. A shift in thinking is required regarding investment priorities and how and where resources are allocated based on a deep understanding of health equity opportunity gaps. By leveraging the community’s unique assets and adopting a place-sensitive approach to rural and remote health care, tackling the

chronic health burden and the issue of widespread poverty in the settlement may be achievable, as detailed in the following observations, recommendations and conclusions.

## **7.2 Recommendation 1 - Rural Health Hub**

Using the quantitative and qualitative findings from this research, there is an opportunity to engage community leaders, health workers and key private, public and non-government stakeholders to develop a new model of care for small-scale, rural and remote, non-indigenous settlements like The Gemfields. Establishing a new Rural Health Hub would combine community, social, economic and health development services to address the chronic and complex health burden and tackle rural determinants of health in the defined settlement area. This research confirmed that greater provision of local primary health services demonstrably reduces unnecessary demand on regional emergency departments and saves money. Therefore, targeted investment in local health services in The Gemfields will lead to better managed health expenditure in other parts of the health sector, such as Emergency Departments. The formation of a Rural Health Hub would involve:

- > intersectoral engagement and participation
- > dismantling intersectoral operational silos
- > integrating state and federal funding streams into a single, local, collective financial resource
- > establishing shared accountability metrics across health and social sectors at both the state and national level
- > ensuring funding certainty with a minimum of three-year budget cycles
- > developing a well-planned, integrated, flexible, sustainable, and strong primary health care service
- > investigating multidisciplinary approaches to care
- > developing cohesive health equity strategies that match community needs and that are co-designed with local health and community stakeholders
- > implementing wraparound anti-poverty services to deliver clinical care and social support services simultaneously
- > focusing health services on chronic care management, disease prevention and rehabilitation
- > pooling information and sharing or developing tailor made local resources
- > minimising duplication of effort and services

- > establishing realistic referral pathways that match an individual's health equity signature
- > improving communication channels with external service providers and funding bodies
- > establishing a dedicated human resource who can help vulnerable patients communicate, advocate and navigate the complex health system (i.e. Consumer Health Coach or Advocate)
- > encouraging greater civic participation and participatory decision-making at the local health level
- > In Appendix 28, an example of a Rural Health Hub, in a region not far from The Gemfields, is described in a case study about primary health care service that operates as a social enterprise.

### **7.3 Recommendation 2: Promoting Partnerships and Social Enterprise**

Following on from Recommendation 1, this research found that standard market-driven models of care are not sustainable in small-scale, non-indigenous rural and remote settlements like The Gemfields. The provision of private health care providers delivering primary care services does not work and is not economically viable. Although the State Government has stepped in to fill basic health service voids in The Gemfields, there remain resource and service gaps and unmet demand. Viable and sustainable alternatives are required to deliver primary health care solutions in small villages. Place-based partnerships and people-centred solutions are required to maximise social returns and to break down health barriers and social stigma in small-scale settlements. Social enterprise is one option worthy of further consideration when attempting to build social capital and contribute to the overall health and wellbeing of a community. A social enterprise is defined broadly as a business that trades to further social (rather than purely business) goals (Steiner & Teasdale, 2019). The mix of 'enterprise' with 'social purpose' ensures that the structures and inherent sustainability built into a conventional business are attached to a desired social outcome.

In the case of The Gemfields, the social purpose would be to achieve meaningful and sustainable improvements in health equity. Typically, the primary healthcare sector is driven by privately-owned GP clinics focused on profit maximisation through servicing the mass market (BEACH, 2017). Best and Myers (2017) recently supported the concept of creating social and economic value for the community by addressing grassroots health challenges. This

poses the question of whether or not a social enterprise could be a good alternative for delivering state-sponsored primary health care services in small-scale rural and remote communities in Australia. This type of model would include working in partnership with other local and regional community-based organisations and encompass an ‘asset-based’ approach that builds on the strengths, capacities and resources of individuals and the community. Social enterprise may have the potential to improve the rural determinants of health, by developing purposive partnerships committed to pursuing a health equity agenda.

There is a role for mutually beneficial partnerships in several segments of the settlement. For example, community groups or volunteers could provide support to those with low literacy levels in order to ensure that health information is received and understood by all members of the community. The local primary school could provide information to students about healthy food choices. The local council could work with Community Reference Group members to provide more walking and bike pathways to support active lifestyles. Local non-government organisations could partner with local-, regional- and state-run food relief organisations to access for free, fresh and healthy food for vulnerable residents. As mentioned previously, partnerships between government agencies, health and social service providers and social enterprises could be explored to address transportation issues and other rural determinants of health such as personal sanitation (free laundry facilities to wash clothes). Social enterprise may also have a role to play in addressing social isolation in the community (Kelly, Steiner, Mazzei, & Baker, 2019). There are many opportunities to leverage the potential of public/private partnerships with the aim to improve health equity in the settlement and bring about positive social change.

#### **7.4 Recommendation 3: Community Health Transport**

Transportation is a basic but fundamental resource that is essential to accessing health care. Sadly, transport options are very limited in The Gemfields, especially if a person does not drive, are disabled, do not own a car and/or cannot afford to maintain a private vehicle. Improved community and public transport options for Gemfields residents will enhance access to local and regional health care services. More work is required to build a business case to implement multiple strategies that address patient mobility and transport issues in the study area. Residents of The Gemfields need to be able to travel safely and affordably in order to connect with the health services that they require. When considering transport options, key considerations must be given to the demographic, economic, social, geographic and health profile of the population

(as outlined in this thesis). Critical transport and mobility issues in regard to the study area must consider distance, time, effort, cost, safety and topography. This study found the following transportation opportunity gaps:

- > source sustainable community transport and patient transit service within The Gemfields and between villages (Anakie, Sapphire, Rubyvale and The Willows)
- > investigate new paradigms of mobility (shared, autonomous, unconventional) such as on-demand mini-bus, shared transportation systems and collective cars
- > formalise shared or unconventional transport solutions (i.e. development of a local ‘ride sharing’ or ‘local lift giving’ app)
- > develop integrated transport solutions with available medical services between The Gemfields and Emerald (in particular a return patient transit service with the Emerald Hospital Emergency Department)
- > improve transport options for patients travelling to Rockhampton or Brisbane
- > public investment in connected footpaths and bikeways, especially between Anakie, Sapphire and Rubyvale to meet the unique mobility needs of the community.

## **7.5 Recommendation 4: Embrace Technology**

Embracing technology in a rural and remote health setting involves connecting people, place and processes with digital resources. The benefits of adopting digital health solutions in small-scale rural and remote settlements are well-established. Telehealth can deliver quality care to a patient regardless of their physical location. It is cost-effective for both health service providers and patients in terms of curtailing unnecessary expenditure of funds (public and personal, respectively). Furthermore, enhancing telehealth options within The Gemfields will reduce the travel burden on patients and address place, proximity and mobility challenges for vulnerable patients. It also has the potential to reduce the misuse of emergency department hospital services. As noted earlier in the thesis the COVID-19 pandemic led to a possibly temporary easing of regulations around the use of digital health measures, leading inadvertently to a flattening of health offerings across Australia for those previously considered ‘remote’. Normalising some of these innovations will improve outcomes for those in remote areas as well as increase efficiency in delivery.

However, further consideration is required on how telehealth can be integrated into day-to-day operations and care delivery. High potential digital solutions for The Gemfields include:

- > strengthening and expanding existing telehealth facilities
- > improving the technological infrastructure to support increased telehealth demand
- > utilise face-to-face GP consultations for complex patients with chronic health management needs and digitally link with a regional or urban bulk-billed primary health care clinic to provide additional GP services to low acuity or non-urgent patients
- > promote telehealth as the first option of care rather than next best option
- > harness technical capacity and local human resources to help patients communicate, advocate and navigate the health system
- > embrace technology-enabled care such as mobile health applications and cloud-based health monitoring
- > convert paper-based clinic records to digital cloud-based records
- > bridge the digital divide between patients and regional health service centres.

## **7.6 Recommendation 5: Greater Workforce Agility and Role Flexibility**

This study observed that local residential health workers are the keystone of health service provision in a small-scale rural and remote settlement. However, attracting and retaining health professionals to live and work in remote outposts remains a constant battle. The undersupply and maldistribution of health workers across rural and regional Australia is well-documented. This study noted that health workers who choose to practice *in-situ* within the remote settlement area are highly valued by locals. However, these well-trained health professionals reported feeling somewhat constrained by their scope of practice, particularly when there is no medical doctor in town or residents are on a long wait list for a GP appointment. Further workforce reform is required to improve flexibility and fill service gaps, especially for after-hours coverage, on weekends and when there is no local doctor available. In order to create an agile health workforce in small-scale rural and remote settlements, this study makes the following recommendations:

- > improve the design and development of workforce planning and policy for small-scale rural and remote settlements
- > better structured position descriptions in order to maintain workforce flexibility for local application
- > combine and redesign resources and systems to match the needs of the small-scale rural and remote settlement

- > investigate modest extensions in scopes of practice for auxiliary health professionals such as paramedics, registered nurses, and pharmacists to fill medical service gaps (i.e. prescribing antibiotics and other medication after hours and on weekends)
- > maximise the efficient use of scarce human workforce resources to best serve community needs
- > practice task-sharing and task-shifting to reduce under-utilisation of auxiliary health professionals during off-peak periods
- > implement collaborative and integrated working arrangements between public, private, and not-for-profit sectors to increase professional autonomy
- > Adapt the urban-based QAS *Local area* Assessment and *Referral Unit* (LARU) model of care for small-scale rural and remote settlements to provide a low acuity ambulance response for non-urgent cases.

### **7.7 Recommendation 6: Baseline Community Health Equity Profile (BCHEP) Tool**

The development of the Baseline Community Health Equity Profile (BCHEP) tool provides a translational and evidence-based resource to help delineate existing service capabilities and capacities in small-scale rural and remote settlements and to map the health assets and deficits within the spatially defined geographic boundary. The BCHEP tool has applied the ideas, insights and discoveries generated from this thesis for wider industry adoption and application. The BCHEP provides an important instrument to measure the geographic, demographic, social, economic and health characteristics of a population group. The process of mapping these resources and assets helps to uncover a settlement area's strengths and opportunity gaps with the aim of using this baseline information to improve health equity in small-scale rural and remote communities. A blank BCHEP template is provided in Appendix 15.

### **7.8 Recommendation 7: Health Equity Locale Profile (HELP) Tool**

An applied research output from this thesis is the newly devised Health Equity Locale Profile, for short also known by the acronym HELP tool. HELP is a whole-of-community health equity assessment tool designed to measure the level of health advantage or disadvantage in small-scale rural and remote settlements. With further research and academic application, it is envisaged that this tool will be used to benchmark health equity at the local, regional, state and national level for small-scale rural and remote settlements. A blank HELP tool template is provided in Appendix 16.

### **7.9 Recommendation 8: Individual Health Equity Signature**

A third and final evidence-based health equity tool developed as part of this thesis is the Health Equity Individual Screening Tool (HEIST). At the time of writing, HEIST is only a prototype that requires operational piloting and further academic testing. Frontline health workers and clinicians are well-placed to assess an individual's basic unmet resource and health needs and to screen patients for adverse rural determinants of health. The HEIST tool is designed specifically for patients living in small-scale rural and remote settlements and questions are based on key rural determinants of health identified as part of this research and further builds on the resources originally developed by Health Leads (Health Leads, 2018). Its primary purpose is to help identify and screen patients with adverse rural determinants of health and to better understand the impact of these issues on achieving individual health equity. HEIST aims to break down systematic barriers and to work closely with health consumers on a range of known barriers to good health such as travel time, distance, mobility, geographical isolation, weather, transportation, food, housing and poverty. The idea is that this tool will strengthen the focus on ill-health prevention at an operational level to provide a connected-up service. The goal is for HEIST to be integrated into clinical workflows at the small-scale rural and remote settlement level. A blank HEIST questionnaire is provided in Appendix 25.

### **7.10 Recommendation 9: Review of Data Gaps**

Quantitative data are crucial when analysing population trends, assessing health needs or designing health policy. Due to small populations sizes, data for several key rural determinants of health are not available for The Gemfields. For example, quantitative investigations found that there were no location-specific data readily available for key health indicators such as mortality rates or frequent GP attenders in the district. Sourcing accurate and reliable population data was also problematic in the study area. Although the ABS Census includes a question on disability and the need for assistance, qualitative data seem to indicate that the actual prevalence of disability is significantly higher than reported. The level of chronic disease in the small-scale rural and remote settlement is also difficult to quantify. One positive outcome of this research is now knowing what we do not know. Filling in these information voids with quantitative data would strengthen the collection of baseline health equity data.

### **7.11 Opportunities for Future Research**

Clearly there is a need for further research exploring the global challenge of rural and remote health access, a challenge that is only exacerbated by increasing pressure on global healthcare budgets. In briefly canvassing the opportunities for future research, this section will confine itself to surveying the opportunities that have risen directly from the findings of this study. This research has explored the factors that enable or inhibit health equity at the local area level in The Gemfields. To further validate the findings, additional research could be done in the study area in several ways:

- > Conduct a community-wide survey to quantify and qualify the permanent residential and temporary residential population of The Gemfields
- > Pilot the HEIST at The Gemfields ROC
- > Conduct a detailed study into the impact of grey nomads and long stay tourists on health services in small-scale rural and remote settlements
- > Trial the HELP tool in other small-scale rural and remote settlements across the region
- > Further research is required to develop a chronic disease profile in The Gemfields
- > Further research is required into community transport and patient transit demand in The Gemfields
- > Ongoing research into the economic impact of improved access to local primary health services on excess avoidable ED presentations and hospitalisations.

Using the same or complementary methodologies outlined in this thesis, the study could be repeated in other small-scale rural and remote settlements areas to test if the identified health equity factors are also present. The BCHEP could also be trialled in other small-scale rural and remote communities across Australia.

### **7.12 Conclusion**

History does not repeat itself but often rhymes, Mark Twain is said to have declared. No two small communities are the same, just as no two individuals are the same. It is quite possible that the health equity elements and themes uncovered in this study may ‘rhyme’ across different rural and remote health settings. The ability to determine the root causes of health inequity is vital to enact equity-oriented change within a healthcare system. The overall intention of this thesis was to make health equity considerations the new norm for small-scale rural and remote settlements. However, for this to be realised an equity approach must be institutionalised

throughout the health sector. Health equity policies are not yet in place at the high level of all states and territories or nationally (federal government level) in Australia. For this to happen urban policy-makers and health system managers must begin to acknowledge that health solutions are rooted in local circumstances. Unfortunately, as this research has shown, operational silos and government agency boundaries can obstruct efforts to achieve health equity at the local area level. Different standards need to be applied to small-scale, non-indigenous, rural and remote settlements in order to flatten the social gradient and thereby to improve health equity. Proportionate responses are required to tackle structural and functional disadvantage in The Gemfields. In making this point, it is also important to acknowledge that the delivery of health services come at a cost. The provision of A-grade physical infrastructure and/or human resources in some remote locations may not be economical or feasible. However, an absence of health institutions in rural and remote communities does not preclude the advancement of collaborative partnerships and innovative approaches to health system delivery.

This research has made several practical and unique contributions to rural health research and advanced the national conversation about health equity. Firstly, it has explored the notion of rural health equity at the small-scale settlement level (town or village). Secondly, it has illustrated how an integrated and immersive approach to sociological and demographic health research can enhance our understanding of health equity in rural and remote communities. Situational anomalies normally hidden or absent from quantitative data sets have been uncovered by integrating ‘outside’ health equity indicators with ‘inside’ qualitative data. This thesis has developed a new method to document and analyse whole-of-community health assets and constraints within the spatially defined geographic boundary. It takes the form of a Baseline Community Health Equity Profile (BCHEP) and it provides a practical demonstration of how community, social, economic and health development considerations play a key role when assessing health equity small-scale rural and remote settlement. This research has also created a new tool to measure health equity in small-scale rural and remote communities by assessing the overall level of relative advantage or disadvantage based on a set of rural determinants of health. The HELP tool uses 12 leading indicators (based on findings from this research) that impact health equity in rural and remote settlements and provides an overall quantitative metric.

Additionally, by asking rural and remote health sector workers and local residents why long-standing disparities in health exist, this research has delivered an in-depth and balanced perspective on how place-based factors can either inhibit or enable health equity at the village level. Both upstream and downstream rural determinants of health were found to trigger vertical and horizontal forms of health inequity in The Gemfields. Compounding this situation is a population group displaying complex and chronic health needs who live in a low resource setting and are not necessarily provided the necessary treatment proportionate to those needs. Ultimately, it was observed that additional effort and resources are required to close the health opportunity gap in The Gemfields and thereby to equalise local health prospects.

Reflection on these research findings suggests there is more to health equity than simply provision of health care. Good health happens in the community and is fundamentally interconnected with people, place and processes. The concept of invisibility was suggested as a recurring theme in this research. There is a thread that links invisibility and health equity in The Gemfields. This thesis proposes that four distinct types of invisibility permeate through the health ecosystem in the study area. Firstly, a ‘cloak of invisibility’ shields residents of The Gemfields from the outside world and facilitates individual obscurity, including disengagement with health services. It is a ‘cloak’ that is in part put on by residents, voluntarily. Secondly, an east/west health gap came to light because small-scale rural and remote settlements like The Gemfields exist beyond the public view and are often overlooked in urban health policy or planning discourse – ‘out of sight, out of mind’. Thirdly, a form of passive invisibility emerged that leads to unobserved issues that ‘fly under the radar’ at the individual, community and organisational level but have the capacity to exacerbate health disparities and poor access to health care. And finally, wilful blindness comes to light – the notion of intentionally not acknowledging or not seeing (or ‘turning a blind eye’) a place, a person or a situation.

In practical terms, it is anticipated that the new knowledge generated from this research will provide government policy-makers, public health authorities, service providers and health consumers with the practical evidence required to develop, implement, monitor and evaluate the equitable provision of health care in small-scale, non-indigenous, rural and remote settlements across Australia. There is also the potential that this investigation can contribute to a larger body of knowledge relating to the formulation of innovative and equitable health solutions for small-scale rural and remote communities in developing countries worldwide. Specifically, this would entail taking practical steps to: firstly, ‘level up’ the overall health of

geographically disadvantaged population groups; and secondly, reduce social gradients. Overall, the outcomes of this thesis provide a deeper understanding of health equity, rural determinants of health and how to measure these factors in small-scale, non-indigenous rural and remote settlements.

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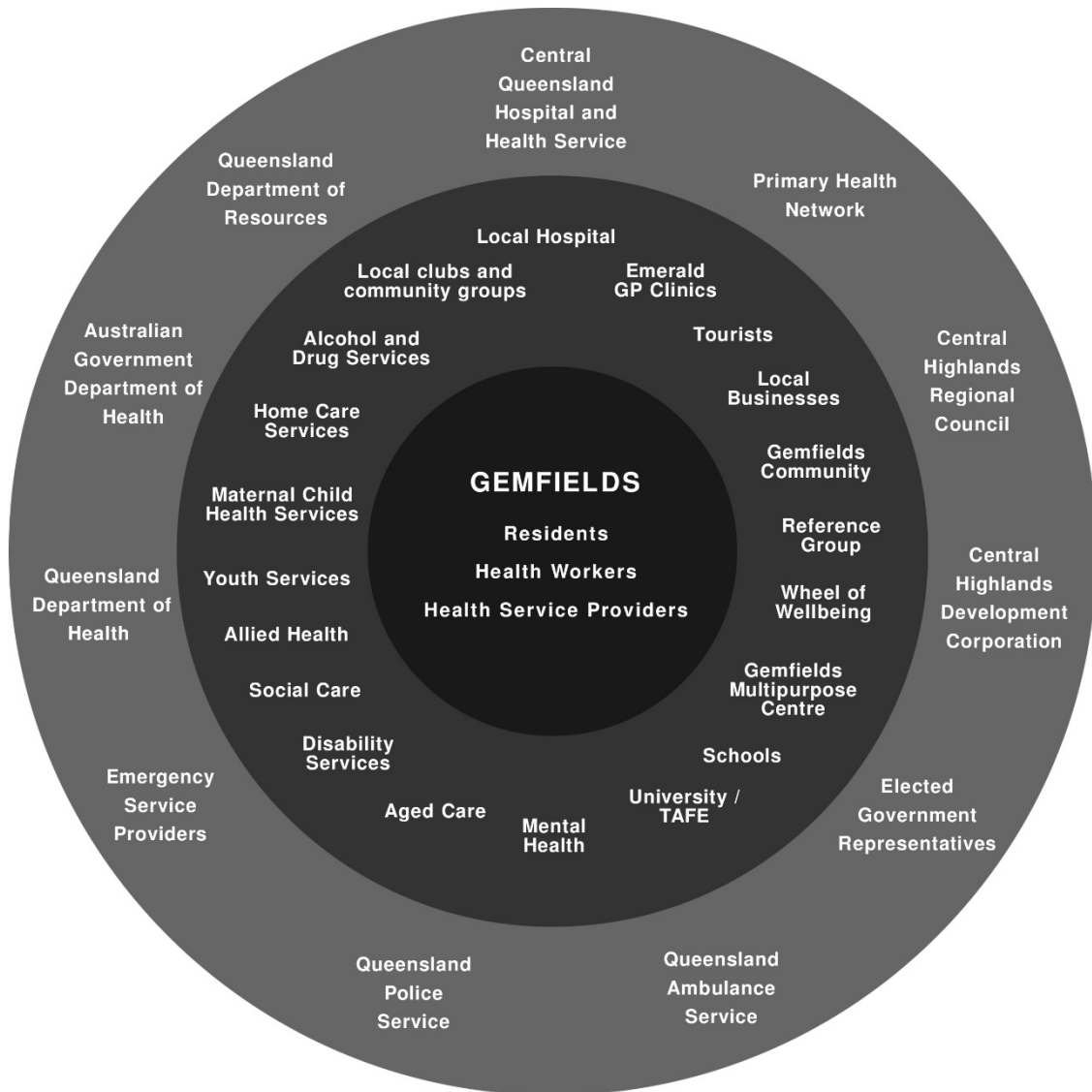
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## Appendices

### Appendix 1: Stakeholder Map



Note: figure created by the author

Appendix 2: COREQ Checklist: Consolidated criteria for reporting qualitative studies (Tong, Sainsbury, & Craig, 2007)

No	Item	Guide	Result
<b>Domain 1: Research team and reflexivity</b>			
<b>Personal Characteristics</b>			
1	Interviews	Which author conducted interviews.	PhD scholar interviewed all participants for this research
2	Credentials	What were researcher credentials.	BA, MPC, PhD scholar
3	Occupation	What was the interviewer occupation at time of study?	Full-time student and non-executive board director
4	Gender	Was the researcher male or female?	One female interviewer. Both genders interviewed.
5	Experience and training	What experience or training did the researcher have?	PhD scholar with previous experience with applied research using qualitative methods. Interview & Focus Group training was completed at Central Queensland University prior to conducting interviews
<b>Relationship with participants</b>			
6	Relationship established	Was as relationship established prior to study commencement?	Interview participants were approached by phone/in person and/or email. Interviewer had limited relationships with participants prior to study commencement (lived in adjacent town 50km away)
7	Participant knowledge of interviewer	What did the participants know about the researcher?	Participant information sheet provided to all informants prior to interviews. This sheet fully provided an overall brief about the researcher, the aims of researcher and what would happen with data. Some interviewees had a professional connection with the researcher (worked in the same large organisation) but did not know each other personally or directly work with each other on a day-to-day basis.
8	Interviewer characteristics	What characteristics were reported about the interviewer	Interest in the research topic as at time research was initiated by living in a rural setting and working in the health sector.
			Prior assumptions were that little was know about the case study area.

No	Item	Guide	Result
<b>Domain 2: Study Design</b>			
<b>Theoretical framework</b>			
9	Methodological orientation and theory	What methodological orientation was stated to underpin the study	An inductive interpretivism approach underpinned the design of this study. Thematic analysis was applied to analyse narrative data collected.
<b>Participant selection</b>			
10	Sampling	How were participants selected.	Participants within the case study site were selected using a purposeful and non-randomized sampling technique. (1) Health sector workers in study area (n=15) – nonprobability purposeful expert sampling. (2) Nonproportional quota sampling was used to recruit residents from four villages (n=30). In more difficult, hard to reach/engage villages, a snowballing technique was applied when a key community leader or influencer was identified, or someone was suggested for interview based on study purpose.
11	Method of approach	How were participants approached	The method of approach was initially a combination of face-to-face conversations, telephone call or email. A poster was also developed for each locality and displayed in prominent community gathering points. Individuals were asked about the place and time they wanted to be interviewed. All interviews were conducted in a public place to ensure the safety of the interviewer.
12	Sample size	How many participants in the study?	The method of approach led to 45 participants involved in the study.
13	Non-participation	How many people refused to participate or dropped out?	There were no refusals and no dropouts.
14	Setting of data collection	Where was the data collected	Data collected in RA4 remote health setting. Community health service known as The Gemfields, Central Queensland
15	Presence of non-participants	Was anyone else present besides participants and researcher	Yes. Interviews were conducted in open public spaces – community halls, health clinic and parks. There was always a second person (interviewer's retired friend) sitting a safe distance away from the interview – out of ear shot but close enough to ensure the physical safety of the researchers.

No	Item	Guide	Result
16	Description of sample	What are the important characteristics of the sample	All interviewees lived or worked in the bounded study area. Interviews were conducted in 2019 over a nine week period (August to October)
17	Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Questions not piloted. Interview questions included as Appendix 6 and 7 in the thesis document.
18	Repeat interviews	Were repeat interviews carried out?	No repeat or follow-up interviews conducted.
19	Audio-visual recording	Did the researcher use audio or visual recording to collect the data?	Interviews with informants were digitally audio recorded and digitally transcribed. Visual records of interview locations and other visual images of interest were taken.
20	Field notes	Were field notes made during or after the interviews?	Limited notes were made at time of interviews (with participant permission), but mostly general observations were noted after the interviews.
21	Duration	What was the duration of the interviews	Interviews were between 30 and 45 minutes.
22	Data saturation	Was data saturation discussed?	Data collection and analysis were conducted simultaneously. Deep and rich data was gathered. Data saturation was achieved. Interviews continued until no new information or themes emerged. This was the point data saturation was achieved.
23	Transcripts returned	Were transcripts returned to participants for comment and/or corrections.	No. Not possible with 45 anonymous interviews. All transcripts were de- identified at time of transcription to protect privacy.
24	Number of data codes	How many data coders coded the data?	Researcher completed all coding. Discussed with principal supervisor.
25	Description of the coding tree	Did the researcher provide a description of the coding tree	Yes – see Appendix 8 Codebook
26	Derivation of themes	Were themes identified in advance or derived from the data.	All themes were identified through analysis of narrative transcripts.
27	Software	What software, if applicable, was used to manage the data?	Yes. Due to the large volume of data, content analysis was initially performed manually and supported by a computer-assisted qualitative data-analysis software (CAQDAS) tool (NVivo) as a secondary step. Microsoft Word and Excel were also utilised to organise, analyse and report on data.

No	Item	Guide	Result
28	Participant checking	Did participants provide feedback on the findings	No due to Covid-19 restrictions a face-to-face feedback session was not possible.
29	Quotations presented	Were participant questions to illustrate the themes/findings? Was each quotation identified?	Yes
30	Data and findings consistent	Was there consistency between the data presented and the findings?	Yes
31	Clarity of the major themes	Were major themes clearly presented in the findings	Yes
32	Clarity of the minor themes	Is there a description of diverse cases or discussion of minor themes	Yes

Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349-357.

Be rewarded for your thoughts

# Health in the Gemfields Study

Your time = \$25 Coles Voucher

## WHAT'S INVOLVED:

Sit and have an anonymous chat with our researcher about your health experiences in the Gemfields for 20 - 30 minutes.

## PARTICIPATE:

WHEN: Friday 16 August

TIME: 10am to 2pm

WHERE: The Willows Hall

CONTACT: To book a visit time please call or text Lisa on [REDACTED] or email [REDACTED]





## Participant Information Sheet

<b>Working Title</b>	Rural Health Equity: A case study
<b>Short Title</b>	Health in The Gemfields
<b>Protocol Number</b>	21425
<b>Student Researcher</b>	Lisa Caffery
<b>Principal Supervisor</b>	Associate Professor Olav Muurlink
<b>Secondary Supervisor</b>	Professor Andrew Taylor- Robinson
<b>Location</b>	Emerald, Central Highlands, Queensland

### Introduction

I (Lisa Caffery) am rural health research student at Central Queensland University (CQU) based in Emerald. I am researching the current status of health delivery in The Gemfields, Central Highlands. This *Participant Information Sheet* and accompanying *Consent Form* tells you about the research project I'm undertaking. It explains the processes involved with taking part. Knowing what is involved will help you decide if you want to take part in the research. Please read this information carefully. Feel free to ask questions about anything that you don't understand or want to know more information about. Participation in this research is voluntary. If you don't wish to take part, please rest assured that you **definitely don't have to**. If you decide you want to take part in the research project, you will be asked to sign the consent section. By signing it you are telling us that you:

- Understand what you have read
- Consent to take part in the research project
- Consent to be involved in the research described
- Consent to the use of your personal and health information as described.

You will be given a copy of this Participant Information and Consent Form to keep.

### Purpose of Research

The level of health care services available in a location can vary depending on your postcode. There are often disparities between living in urban and rural areas. We want to learn more about the current status of health delivery in The Gemfields. We believe you can help by telling us what you know about existing health services in your town now, in the past and what you would like to see change in the future. We want to learn about what health services are available locally and how and when you access them - what works well, if there are any service gaps or challenges. We also want to know more about the local community, how you live/work or if there are any potential solutions or improvements to meet your health needs. The chat with Lisa Caffery will take about 30 - 45 minutes and the audio will be recorded. The results of this research will form part of Lisa Caffery's Doctor of Philosophy (PHD) thesis.

## Who can participate in the research?

You are invited to participate in this research if you are an adult (18+ years) and either live or work in the Gemfields. We are inviting a small group of people (approximately 30) to take part in this research because we feel that your intimate knowledge and experience in The Gemfields can contribute a great deal to our understanding of this unique community. Your participation in this research is entirely voluntary. It is your choice whether to participate or not. There are no negative consequences if you choose not to participate. This research project has been designed to make sure the researchers interpret the results in a fair and appropriate way and avoids study participants jumping to conclusions.

## Your Consent

Please read this information sheet carefully. Take your time and feel free to ask the researcher questions about any information contained in this document. Once you understand what the project is about and if you agree to take part in it, please sign the 'Consent Form' and return by email or in person. By signing and returning the consent form, you indicate that you give your consent to participate in this research project. You are advised to keep a copy of the participant information and consent form for your personal records.

## What will you be asked to do?

If you agree to take part in this research, you will be asked to participate in an individual face-to-face interview:

- The individual interview will be with myself, Lisa Caffery, and you will be asked to describe your involvement in health services in the Gemfields (either as a health practitioner, outreach worker or consumer) and to provide valuable insights into the past and current situation.
- The face-to-face interview will take approximately 30-45 minutes and will be arranged at a time and date to suit you.
- The interview will be digitally recorded and transcribed. Pseudonyms will be used at the transcription stage to protect your identity and provide anonymity. We will remove, at this early stage, any material that should ordinarily identify you personally. Data will be securely stored on university servers, in this de-identified state. Recordings will be deleted once transcriptions are complete and verified.
- The research will not name or identify any particular individual and will be general in nature.
- Please note in relation to confidentiality the provisos listed in the section on Confidentiality and Privacy below.

## Possible Benefits and Risks

Involvement in this study may benefit you as a participant by having the opportunity to discuss your experiences and opinions as a health professional or as a health consumer, however we do not anticipate any significant individual benefit to you as a participant. There are no costs associated with participating in this research project, however you will be offered a \$25 Fuel Voucher or \$25 voucher at the local grocery store as a small incentive to help offset any transport expenses incurred to participate. Participants receiving a cash honorarium or reimbursement, or any form of gift voucher should seek independent financial advice as to whether it needs to be declared as taxable income. No member of the research team will receive a personal financial benefit from your involvement in this research project (other than their ordinary wages).

You may experience minor inconvenience in giving up your time to participate. We do not anticipate that participation in this research will cause you any undue discomfort. You may wish to share personal experiences, but you do not have to give any examples that you are not comfortable sharing. If you should experience any discomfort please let the interviewer know straight away and after this discussion you would like to discontinue your participation, at any stage, you are free to do so. Should you experience any form of discomfort after the interview, we encourage you to contact Lifeline Australia on 13 11 14.

## Confidentiality and Privacy

Confidentiality is important to us. We intend to protect your anonymity and the confidentiality of your responses. Your name and contact details will not be retained, and transcripts generated from a digital recording of this interview will be linked to a pseudonym assigned to you, not your name or identity. The digital recording, as noted, will be deleted. No material that may possibly identify you will be included in any publications or outputs from the project. Written data will be retained according to the requirements set out by the (Australian) NH&MRC Australian Code for the Responsible Conduct of Research; the National Statement on Ethical Conduct in Human Research (2007). Written data will be retained according to the requirements set out by the NH&MRC Australian Code for the Responsible Conduct of Research; the National Statement on Ethical Conduct in Human Research (2007). Only Assoc. Professor Muurlink, Professor Andrew Tailor-Robinson and Lisa Caffery will have access to the full transcript. All research data will be retained for at least five (5) years after the date of last publication in accordance with the CQUniversity Policy and Procedures.

We will ask you not to discuss your interview with other participants. We will, in other words, ask each of you to keep what was said in the interview confidential. You should know, however, that we cannot stop or prevent participants who participated in the research from sharing things that should be confidential. It is possible that your identity will become known to other participants due to the relatively close-knit nature of the local community and your relationship with others in The Gemfields area. For example, you may inadvertently or advertently share your participation in the project with a neighbour or work colleague, who will henceforth may be able to (or may try to) guess the relationship between certain findings or comments in published reports issuing from this study, and your participation. Within these constraints, as far as possible, your interview comments will remain confidential.

Respective electronic data material will be securely stored on computers with password protection on university property at CQU. Data materials such as transcripts and research logs used for the purpose of this research that are not stored on secure university servers will be stored in a locked filing cabinet on the Emerald campus of CQU and retained for five years after the completion of data collection in accordance with CQUniversity Policy and Procedures. After this five-year period the data will be destroyed. If you decide to discontinue your involvement in the project, all data collected from you will not be able to be removed from the data already collected; as it will have been de-identified as part of the transcription process.

## Results of the Project

Nothing that you tell us will be shared with anybody outside the research team, and nothing will be attributed to you by name. A summary report will be available to participating individuals upon request at completion of the research project. You can indicate your interest in receiving general findings by writing to the research student, Lisa Caffery at [REDACTED]

Results of this project will also be submitted as part of my thesis publication, as well as potentially rewritten for submission to peer reviewed journals and/or conference proceedings in a variety of forums. In any publication and/or presentation, there may be extracts from your transcribed interview; however, this information will be provided in such a way that you cannot be identified (except with your express permission).

## Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so. If you do consent to participate, you may withdraw at any time. If you decide to withdraw from the project, please notify Lisa Caffery, Assoc/Prof Muurlink or Prof Taylor-Robinson. If you decide to leave the research project, the researchers will not contact you after this request or collect additional personal information from you. However, data

collected up to the time you withdraw will form part of the research project results if this information has been de-identified and aggregated and it is not possible to identify individual contributions.

## Who has approved this research?

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the HREC of Central Queensland University. This project will be carried out according to the *National Statement on Ethical Conduct in Human Research (2007)*. This statement has been developed to protect the interests of people who agree to participate in human research studies.

## Further information and who to contact

The person you may need to contact will depend on the nature of your query. If you want any further information concerning this project or if you have any problems which may be related to your involvement in the project, you can contact the following people:

### Research contact person

Name	<b>Lisa Caffery</b>
Position	Researcher and PhD candidate
Telephone	0 [REDACTED]
Email	[REDACTED]

### Research Principal Supervisor

Name	<b>Associate Professor Olav Muurlink</b>
Position	Head of Course – Sustainable Innovation
Telephone	[REDACTED]
Email	[REDACTED]

### Research Secondary Supervisor

Name	<b>Professor Andrew Taylor-Robinson</b>
Position	Professor of Immunology/Haematology & Research Coordinator, Infectious Diseases
Telephone	[REDACTED]
Email	[REDACTED]

This proposal has been reviewed and approved by the Human Research Ethics Committee (HREC) of CQU (Reference #21425), which is a committee whose task it is to make sure that research participants are protected from harm. If you have any complaints about any aspect of the project, the way it is being conducted or any questions about being a research participant in general, then you may contact:

HREC Executive Officer	Sue Evans
Telephone	[REDACTED]
Email	[REDACTED]

## CONSENT FORM

<b>Title</b>	Rural Health Equity: A case study
<b>Short Title</b>	Health in the Gemfields
<b>Protocol Number</b>	21425
<b>Student Researcher</b>	Lisa Caffery
<b>Principal Supervisor</b>	Associate Professor Olav Muurlink
<b>Secondary Supervisor</b>	Professor Andrew Taylor- Robinson
<b>Location</b>	Emerald, Central Highlands, Queensland

**I have been invited to participate in research about rural health and innovation in The Gemfields and agree that:**

1. I have read and understood the Participant Information Sheet provided to me;
2. I understand the purposes, procedures and risks of the research described in the project;
3. I have had an opportunity to ask questions and I am satisfied with the answers I have received;
4. I understand that my participation or non-participation in the research project is voluntary;
5. I understand that I am completely free to withdraw from participation at any time. However, data collected up to the time of withdrawal will form part of the research project results if this data has been de-identified and aggregated and it is not possible to identify individual contributions.
6. I understand that the interview will be digitally recorded and transcribed. Pseudonyms will be used at the transcription stage to protect your identity and provide anonymity. Research data will be retained for at least five (5) years after the date of last publication in accordance with the CQUniversity Policy and Procedures.
7. I understand the research findings will be included in the researcher's thesis and potential publication(s) on the project and this may include conferences and articles written for journals and reports;
8. I understand that to preserve anonymity and maintain confidentiality of participants that fictitious names may be used any publication(s). That is, my name will NOT be attached to any findings, and will be removed from the data at the translation stage. However, I understand that it is possible that due to the nature of the study and its focus on a relatively small rural organisation, my involvement in the project may become known to others;
9. I am aware that the key results can be made available to me upon request; and
10. I am providing informed consent to participate in this project.

Participant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name (please print): \_\_\_\_\_

Please sign and return this form via email to Lisa Caffery at [REDACTED]

Researcher Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## Health Professionals and Outreach Interview Questions

<b>Title</b>	Rural Health Equity: A case study
<b>Short Title</b>	Health in the Gemfields
<b>Protocol Number</b>	21425
<b>Student Researcher</b>	Lisa Caffery
<b>Principal Supervisor</b>	Associate Professor Olav Muurlink
<b>Secondary Supervisor</b>	Professor Andrew Taylor- Robinson
<b>Location</b>	Emerald, Central Highlands, Queensland

### Introduction

1. The purpose of this research
2. Your anonymity is assured and what you say today will be treated in confidence
3. There are no right or wrong answers
4. Whatever you have to say is important – your personal opinions and beliefs are really valued.
5. Please feel free to interrupt me or ask for clarification or even decline to answer a question if you don't want to.
6. A bit about my background and why I am interested in this research
7. In order for me to collect everything you say I want to record our discussion. Is that ok with you?
8. Remember you can stop the interview at any time
9. Please sign the Consent Form

### Questions to Health Sector Workers

1. Tell me a little bit about how long you have worked in The Gemfields as a health professional?
2. What are some of the main reasons patients seek health advice or assistance from you?
3. In terms of health care for Gemfields residents, what does the health system do well?
4. In terms of health care for Gemfields residents, what could the health system do better?
5. What barriers or challenges have YOU encountered in providing care to Gemfields residents?
6. What are some of the barriers or challenges some of your clients have?
7. Are there any other health care needs or services that are unmet or should be addressed?
8. What role does technology have in your job?
9. What are some of the 'other' jobs you have to do that would be outside the 'normal' scope of practise for a Paramedic/Nurse/Doctor/Health professional?

10. What do you think are the most pressing health care needs in the Gemfields?
11. Is there one particular issue here that you think wow, that could be easily fixed by doing XYZ?
12. How do you link in with other health professionals in your area?
13. Is there a process where you can come together to discuss issues or solve problems?
14. What data do you think would be helpful for me to seek out from Qld Health or Qld Ambulance or your organisation?

## Residents Interview Questions

<b>Title</b>	Rural Health Equity: A case study
<b>Short Title</b>	Health in the Gemfields
<b>Protocol Number</b>	21425
<b>Student Researcher</b>	Lisa Caffery
<b>Principal Supervisor</b>	Associate Professor Olav Muurlink
<b>Secondary Supervisor</b>	Professor Andrew Taylor- Robinson
<b>Location</b>	Emerald, Central Highlands, Queensland

### **Introduction**

1. The purpose of this research
2. Your anonymity is assured and what you say today will be treated in confidence
3. There are no right or wrong answers
4. Whatever you have to say is important – your personal opinions and beliefs are really valued.
5. Please feel free to interrupt me or ask for clarification or even decline to answer a question if you don't want to.
6. A bit about my background and why I am interested in this research
7. In order for me to collect everything you say I want to record our discussion. Is that ok with you?
8. Remember you can stop the interview at any time
9. Please sign the Consent Form

### **Questions to Health Sector Workers**

1. Tell me a little bit about how long you have lived in The Gemfields?
2. What are some of the main reasons you need to access healthcare?
3. What is your primary mode of transportation to the clinic? In other words, how do you usually get to the clinic from your home (e.g., walk, drive yourself, friend or relative drives you, volunteer van)?
4. In terms of health care for Gemfields residents, what does the health system do well?
5. In terms of health care for Gemfields residents, what could the health system do better?
6. What barriers or challenges have YOU encountered in trying to access health care as a Gemfields residents?
7. Are there any other health care needs that are unmet or should be addressed?
8. What do you think are the biggest health care needs in the Gemfields?
9. What is your overall satisfaction level of health care services in your local area?
10. Have you needed to use the local ambulance service in the last 12 months? If yes, why?
11. Was there a time in the previous 12 months that you felt you needed health care services but did not receive them? If so, why?
12. Was there a time in the previous 12 months that you forewent health care due to costs?
13. How approachable do you think healthcare providers are in The Gemfields? What about
14. Has technology played a role in you accessing health care? If so, how?
15. Are there any other health care needs or services that are unmet or should be addressed?

## Appendix 8: Code book

### Place-based factors of health equity in The Gemfields

Code Name (shortened name)	Definition	When to Use	When not to Use	Representative Quote
<b>Poverty</b>	This code refers to those instances which describe how social, economic, or environmental disadvantage impacts the health of Gemfields residents	This code applies to all references to living conditions, food security, cost and affordability of accessing health care. This code relates to the lived experience and observations of Gemfields residents and workers	Don't use this code to refer to the geographical isolation or barriers or gaps to services.	<p>"Jim lived in a three metre by three metre garden shed...his bed was a couple of cupboards that somebody gave him. He cooks on his potbelly stove in a tin shed. Without ventilation, there's no flooring. He peed in bottle and kept the bullets [faeces] inside the bed".</p> <p>"There's a lot of kids that are doing it really tough...they go to school dirty, no shower, dirty clothes from yesterday."</p>
<b>Rurality</b>	This code refers to instances in which the interviewee describes the ability to seek and receive health services	This code applies to all references in which the interviewee describes geographic differences, distance, mobility, transport access, travel time	Don't use this code to refer to instances which describe physical living conditions	<p>"Of cause a lot of people need transport, they haven't got a car, they can't drive. I don't know how they can get into town."</p> <p>"A lot of people are isolated, they do drive. And they don't have mobile phones. They're just pensioners."</p> <p>"I've got four appointments for MRI's and I haven't been to one of them because they said you gotta to go to Rockhampton."</p>

<b>Health Services Need (Demand)</b>	This code refers to descriptions regarding the ability to engage with the health services – the demand side of the equation.	This code applies to all references which describe the interviewee's own information and understanding regarding people in the Gemfields ability to engage with the system – what are the health issues, barriers and gaps. Other pressure such as tourists	Don't use this code for those references which describe the supply side of health services (i.e. what is actually delivered)	<p>"I think they've only got a doctor there once a week at the moment at the clinic and they could certainly do with a few more times."</p> <p>"They bring up about mental health and depression and that all the time."</p> <p>"Tourists come to town with a shopping list of health issues. Because nearly all of them are on medications and the pharmacy would be able to tell you they're really busy in winter. And it's a problem at the clinic...people said we can't get a doctor's appointment for four weeks."</p>
<b>Health care services (Supply)</b>	This code refers to descriptions regarding the supply side of the equation – approachability, acceptability, appropriateness of health services.	This code applies to to supply strengths (what works well), weaknesses (what doesn't work well) and opportunities for improvement.	Don't use this code to describe resident's ability to seek health care but rather the system's response.	"I saw a child here. He's from the Gemfields. He's 4. His mother came and saw me because she's concerned. She's been in two abusive relationships. So the child is having these anger outbursts. So she asked me. And so I've done referrals to mental health, child and youth mental health. And they've all been returned saying we can't help her."
<b>Connectivity</b>	This code includes references to factors relating to connectivity and using data/technology to link people to services	This code applies to all instances where data, technology, communication and innovation help or hinder health in the Gemfields	Don't use this code for instances in which the interviewee about personal or emotional connectivity	<p>"This is the point that I push, that the population is far greater than their estimate with the census."</p> <p>"I would think the mobile phone coverage in Rubyvale in particular is very hit and miss...And so you're trying to ring people on their mobile phones. And the reception doesn't always work. You try to send text message reminders. It doesn't always go through. The mobile phone coverage in Rubyvale is really bad."</p>

Note: table created by the author



Queensland  
Government

Enquiries to: District Research Governance

Phone: [REDACTED]

Fax: [REDACTED]

Our Ref: Project Id: 71752

E-mail [REDACTED]

Central Queensland  
Hospital and Health Service

Ms Lisa Caffery  
[REDACTED]

Dear Ms Caffery,

**Proposal title:** Health Equity in the Gemfields

The above proposal was submitted to the Central Queensland Hospital and Health Service Human Research Ethics Committee (HREC) for advice/opinion regarding ethical and scientific review on 28 January 2021.

I wish to acknowledge that the proposal does not require full HREC review on the basis that the application is a request for archival, de-identified, secondary, quantitative data at population level.

Should you require any additional information, please contact me through the HREC Co-ordinator, Dr Kristy Richardson on [REDACTED]

Yours sincerely  
[REDACTED]

Mr Graham Fenlon  
**Deputy Chair**  
**Central Queensland Hospital and Health Service**  
**Human Research Ethics Committee**

8 February 2021

## GENERAL INFORMATION

\*Project Title The Rural Health Deficit: Exploring rural health inquiry in Central Queensland \*Start Date 22/01/2018

\*Project Lead/Primary Investigator Name Lisa Caffery  
(Data Manager for the Project)

If student project, please provide primary supervisor's name: Dr Olav Muurlink

Is this Research Data Management Plan linked to another Research Data Management Plan? ☐ Yes ☒ No

If yes, please specify linked DMP Identifier #

## School

- ☐ School of Access Education ☒ School of Business & Law ☐ School of Education & the Arts  
☐ School of Engineering and Technology ☐ School of Health, Medical & Applied Sciences ☐ School of Nursing, Midwifery and Social Sciences

## Research Centre or Institute

- ☐ Appleton Institute ☐ Centre for Intelligent Systems (CIS)  
☐ Centre for Railway Engineering (CRE ☐ Centre for Regional Advancement of Learning, Equity, Access and Participation (LEAP)  
☐ Centre for Tourism & Regional Opportunities (TROp) ☐ Institute for Future Farming Systems  
☐ Queensland Centre for Domestic and Family Violence Research ☐ Centre for Indigenous Health Equity Research

## Research Data Management Plan Created by

Only required if different from Project Lead/Primary Investigator

Add additional CQU Staff member/s who need access to this RDMP (eg. Supervisor) Olav Muurlink  
Andrew Taylor-Robinson

## Funding Information

If applicable, provide the funding body, grant application number, and Research Master (RM) project number (if known)

Funding Body Grant Application Number Research Master (RM) Project Number

RESEARCH PROJECT DATA DETAILS

\*Project Description

Provide a short summary

The primary aim of this study is to investigate longstanding disparities in rural and remote health care services in Central Queensland, specifically the highly socio-economically underprivileged rural area near the town of Emerald that is known as The Gemfields. Principally, the project will critically examine how place-based factors inhibit or enable health equity at the local area level in the medically under-served rural and remote community of The Gemfields. This research project will map health strengths and constraints in a detailed case study to better understand health inequity in small-scale rural and remote communities. The project will involve sourcing secondary socio-economic and health status data to gauge the current size and magnitude of the existing health situation at the small-scale, local area level. It will also collect primary data through the conduct of semi-structured interviews. The objective of this endeavour is to present new insights into possible solutions to health care disparities within the rural and remote health context.

Data Formating

What file formats will be used for the data eg. images, spreadsheets, documents, audio, video recordings...

Support Information

- 1. 35 hours of digitally recorded data
- 2. Photographic data - images and video
- 3. MS Word documents - interview transcripts (qualitative)
- 4. Excel Spreadsheets - coded data extracts (qualitative) and socio-economic baseline data (qantitative data)
- 5. There will be NiVivo files - qualitative data
- Following the Stanford Libraries best practice for file formats, this project will be non-proprietary, unencrypted and uncompressed.
- 6. File formats to be used will include:
  - Containers: ZIP
  - Databases: XML or CSV
  - Moving images: MOV or MPEG
  - Sounds: WAVE or MP3
  - Still images: TIFF, JPEG 2000, PDF, PNG or GIF
  - Tabular data: CSV
  - Text: XML, PDF/A or HTML
  - Web archive: WARC

If data is converted into another format, will the original be retained for the stated retention period ☒ Yes ☐ No

List the storage location/s of original and reformatted dataset/s

- OneDrive
- AAARnet Cloudstor
- Hard Drive of University provided laptop
- List any software/equipment used to create/collect data include what version
  - Sony ICDBX140 BX Series MP3 Digital Voice IC Recorder (Interviews)
  - iPhone 8 (images)
  - MJX B4W 5G WIFI FPV With 4K HD Camera Ultrasonic GPS Follow Me Foldable Brushless RC Quadcopter RTF (aerial video)

List any software/equipment used to manipulate/analyse the data/reuse

NVivo

Data Organisation and Structure For example: What metadata will be kept? Is there a particular naming format/standard/schema to follow? List any vocabularies to be used (e.g. ANZLIC, ISO, LCSH, ANZSCO etc) How will different versions of the data files be tracked? Support Information

- Proposed folder structure
  - Project management (timelines, budget, purchasing )
  - People and/or Partnerships (information relating to supervisors, industry partners, casual project staff)
  - Data collection and analysis – (raw data and analysis)
  - Thesis chapters
  - Publications – (conference posters/papers, journal articles, grey literature, etc.)
  - Other (self-nominated) – 1
  - Other(self-nominated) – 2

- 1. Audio files will be labeled audio and numbered from 00-45
- 2. Documents will be labeled according to subject and version.
- 3. Metadata will be stored in local source systems with the data it is about.
- 4. Descriptive metadata, such as the name of the photographer, the location and subject of the photograph, the date and time that the photograph was taken.
- 5. Each docuemnt will include a Version Control description at the start.
- 6. All hardcopy files will be located in a secure/lockable filing cabinet in the Researcher's Office at CQU Emerald Campus

ETHICAL/CONFIDENTIALITY/PRIVACY/COPYRIGHT CONSIDERATIONS

\*Is ethics approval required?

Yes  No

(If yes attach this form to ethics application)

Insert Ethics approval number here when available

21425

Support Information

Is data sensitive or confidential?

Yes  No

Types of Sensitivity

Commercially sensitive  Culturally sensitive  Security classified  Non-public

STORAGE AND ACCESS REQUIREMENTS

Please note, the CQUniversity dedicated research data storage system is automatically backed up every night to keep your data safe.

Support Information

Is Working data that isn't stored directly on CQUni dedicated research data facility, backed up to this system on a daily basis?

Yes  No

If No

How regularly is working data synced or backed up to the dedicated research data store?

At least daily  At least weekly  Other

If Other

Who is responsible for backing up data to the dedicated research data store? Specify the storage arrangements and measures to be taken to ensure the security of information from misuse, loss or unauthorised access during the research project (eg. will identifiers be removed and at what stage? Will information be physically stored in a locked cabinet?)

\*What will be the estimated volume of electronic data annually? (approximate)

- <5GB  <100GB  <500GB  <1TB  1TB-5TB
- >5TB

If physical specimens are required, please indicate storage location of specimens and related documentation.

\*Who will have Access?  
List all collaborators, including yourself:

Name	Email Address	CQU Staff Username	Username Lookup
Lisa Caffery	<div></div> <div>@cqumail.com</div>	<div></div>	If you are not sure what the CQU Staff Username is, type the name here to find out.
Organisation/Affiliation	Campus Location	Access Level	Result
CQU	Emerald	<div><div></div></div> full <div><div></div></div> read-only	
Name	Email Address	CQU Staff Username	Username Lookup
Dr Olav Muurlink	<div></div>	<div></div>	If you are not sure what the CQU Staff Username is, type the name here to find out.
Organisation/Affiliation	Campus Location	Access Level	Result
Central Queensland University	Brisbane	<div><div></div></div> full <div><div></div></div> read-only	
Name	Email Address	CQU Staff Username	Username Lookup
Professor Andrew Taylor-Robinson	<div></div>	<div></div>	If you are not sure what the CQU Staff Username is, type the name here to find out.
Organisation/Affiliation	Campus Location	Access Level	Result
Central Queensland University	Brisbane	<div><div></div></div> full <div><div></div></div> read-only	

DATA RETENTION, REUSE AND DISPOSAL

As there may be multiple datasets (including raw, clean and de-identified) created during the course of a project this section allows for individual dataset information.

Completed Dataset – file

Applicable minimum retention period

At the end of the required retention period, you must seek written permission from the University to destroy research data and materials. A Request to Dispose form must be approved by the Records Management team and appropriate disposal methods must be used, as per the Records Management Policy and Procedure.

- ☐ 12 months (short term research projects for assessment purposes only)
- ☐ 5 years post last use
- ☐ 7 years post last use (psychology only)
- ☐ 15 years after Clinical Trial or after last patient service provision or medicolegal action
- ☐ Permanently
- ☐ Other

If Other (eg. funding requirements)– please nominate

Nominate a data custodian (The data custodian will remain primary contact at CQUniversity once project has been completed)

- ☐ DDR School of Business and Law
- ☐ DDR School of Education and the Arts
- ☐ DDR School of Engineering and Technology
- ☐ DDR School of Nursing, Midwifery and Social Sciences
- ☐ DDR School of Health, Medical and Applied Sciences

Who are the copyright and intellectual property owners – please list

Central Queensland University  
Lisa Caffery

Information about contractual obligations or third party licences that apply to this data? (include any limitations or conditions on the publication of results)

Not applicable

Can the dataset be shared or reused? Note The original copy and the de-identified copy must both be kept.

[Support Information](#)

☒ Yes ☐ No

Please indicate level of access required for underlying/associated dataset

- ☐ Open Access –licence required, please select below (eg. CC BY) – dataset will be made available via CQUniversity’s Institutional Repository, ACQUIRE
- ☐ Mediated Access – Author, title and relevant details of dataset will be made available via CQUniversity’s Institutional Repository, ACQUIRE. A note will be added to contact Data Manager/Data Custodian for sharing licence required, please select below (eg. CC BY)
- ☒ No access (Citation Only) – only Author, title and relevant details of dataset will be made available via CQUniversity’s Institutional Repository, ACQUIRE
- ☐ No access – no public listing, no details will appear in CQUniversity’s Institutional Repository, ACQUIRE eg. due to sensitivities as previously indicated

Please select licence for the data

☐ CC BY ☐ CC BY ND ☐ CC BY NC ☐ CC BY SA ☐ CC BY NC SA ☐ CC BY NC ND

[Support Information](#)

Which version do you want to publish?

☐ Original ☒ De-identified (ethics restrictions)

Will this dataset be embargoed? ☐ Yes ☐ No If Yes embargoed until 31/07/2021

Any further information

For dataset to be made available in ACQUIRE, a research dataset must be submitted to Research Elements.

[Submit to Research Elements](#)

Has dataset been submitted to Research Elements? ☐ Yes ☒ No

Additional Notes

Project Completion Date

Project Completion Date29/01/2021

**Dedicated Research Storage Share Name:.**  
*This field is for administration purposes only and will indicate any share names on the Dedicated Research Storage facility that are associated with this data management plan.*

rural-health-deficit

**Ethics Office use only.**  
*Upload copy of the approved information sheet and consent form or advise if a waiver for the requirement of consent was approved:*

[Consent Form GEMFIELDS STUDY.pdf](#)  
[Information Sheet GEMFIELDS STUDY.pdf](#)

 consent waiver approved

**Please Note** Edits can occur at anytime, even after a form has been lodged. It is recommended that Data Management Plans are reviewed annually.  
Form ID RDM01

# PARTYLINE

(/partyline/)

Search



THE MAGAZINE FOR HEALTHY AND SUSTAINABLE RURAL, REGIONAL AND REMOTE COMMUNITIES

## Living on tinned food: food insecurity in the Gemfields



A "humpy" in the Gemfields region. [REDACTED]

**By Central Queensland University**

*Lisa Caffery, PhD candidate, School of Business and Law*

14 Sep 2020

Issue: 72 (/partyline/taxonomy/term/352)



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(/email)



Australia is generally considered a food secure nation. The current COVID-19 pandemic has highlighted that national food consumption needs are more than amply supplied through domestic agriculture production with Australia exporting far more food (70%) than it needs. Despite an apparent abundance of food production within Australia, there are still segments within the community who struggle to consistently access safe, affordable and nutritious food.

A recent study into rural health equity in the small remote district of The Gemfields revealed that food insecurity was commonplace for many residents. The Gemfields is a small geographically remote community in Central Queensland located approximately 350 km west of Rockhampton. The resident population is predominantly white, older Australians (50+) with complex health needs, the majority of whom experience age-related decline or live with a disability.

The researcher conducted 45 face-to-face interviews with local residents, health workers and outreach service providers to explore their views about health equity issues in The Gemfields. This research identified five key factors that contributed to food insecurity for people living in this remote community – limited transport, geographic isolation, lack of refrigeration, poor knowledge about nutrition, and cost.

A lack of transport options was a persistent barrier for people to access food in the study area. The study identified that there was no public transport in The Gemfields and a large cohort of residents (21%) either had no motor vehicle or struggled to pay for fuel if they did have access to a car. As one research participant noted, “for a lot of people getting food without a car is problematic; they don't have transport so they can only carry the food that's in the bag that they get from the shop”.

Another interviewee reported community members using the high school bus to travel to Emerald, the nearest regional centre 50 km away, to do their shopping but then they have to stay in town all day until they can catch the bus back when school finishes. “They can't buy like frozen food because it's thawed out by the time they get back home at half past four in the afternoon,” another study participant said.

Safe food storage was also problematic in the Gemfields and was a contributing factor of poor food security. Many residents live in temporary or makeshift dwellings such as caravans, tin shacks, decommissioned buses or humpies and are not connected to the main power grid. Study participants said residents used solar power but they did not have a fridge and could not freeze anything. Consequently, a diet comprising mainly of tinned food was a common phenomenon.

The study found there was a lack of awareness about the importance of eating a nutritious balanced diet and the need to buy fresh fruit and vegetables. One health worker reported visiting a client who did not cook, had no fridge and was living on chips and dips. Another study participant anecdotally recounted that “half the people out here wouldn't know what an orange was”. Further compounding a general lack of knowledge about nutrition was economic disadvantage - buying fresh, nutritious food was viewed as expensive and a luxury.

The real-life consequence of food insecurity in the remote study area was malnutrition and poor health outcomes. In the ominous words of one health worker, “I have to say, the most disturbing thing I’ve seen was an elderly gentleman who was so malnourished, filthy dirty and dying in front of us”.

The study concluded that greater action at the local community level was required to tackle the identified socio-economic determinants of health that impede food security in rural and remote communities.

*Lisa Caffery is a rural health PhD candidate based in Emerald, Central Queensland. Under the supervision of Olav Muurlink and Andrew Taylor-Robinson (Central Queensland University), Lisa’s research focus is on health equality in the remote Central Queensland district known as The Gemfields. Her research interests are driven by innate curiosity and by the ambition to make a connection between research and practice. She is particularly interested in understanding what the trade-offs are between living in a rural and remote community and having limited access to local health care services. The results from Lisa’s PhD research intend to inform the development of a new health equity assessment tool for small rural towns. With a professional background in community engagement and social impact, Lisa also holds several company director roles and is currently a board member on the Central Queensland Hospital and Health Service. When not researching, you’ll most likely find Lisa at home with her two boys and husband or outside enjoying the Queensland sunshine on her mountain bike.*

Comments	1
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## Vulnerable Gemfields residents are struggling, 'dying of malnutrition', health researcher says

ABC Capricornia / By Erin Semmler

Posted Tue 27 Oct 2020 at 5:39am, updated Tue 27 Oct 2020 at 5:58am



Many people in the Gemfields have no permanent water, power, or sewerage systems.

(ABC Capricornia: Erin Semmler)

Queensland's Gemfields has a dazzling reputation for fossicking precious stones, but Lisa Caffery says many of the area's vulnerable, ageing population are struggling to access nutritious food.

The population of more than 1,400 is spread over about 900 square kilometres of Queensland's Central Highlands, 50 kilometres west of the regional centre of Emerald.

Lisa Caffery, a Central Queensland University PhD researcher, said it was an understudied community, mostly made up of non Indigenous senior men with complex health needs.

"It's actually one of Australia's last mining commons," she said.

"That means people can peg out a 30 by 30 metre holding ... and live on it as a mining claim.

### Key points:

- A study finds many vulnerable people in the Gemfields are malnourished, living on a diet of canned and packet food
- One researcher says it is due to vulnerable people living with no power, water, or sewerage system
- Residents say public transport could be one way to help disadvantaged people access nutritious food

"It's a very cheap way of living and a lot of people get gem fever and they're wanting to dig for gems, but it's also a way to perhaps disengage from society."

Marg Lewis has worked at the Gemfields Community Support Association for 12 years and is in the community reference group.

"It's very different on the Gemfields, it's a very unique area and everyone that lives here, is [here] because they love the uniqueness of this area," she said.

"[Some] people out here are financially disadvantaged folk ..."

Ms Caffery said while some live comfortably on mining claims with many amenities, vulnerable people with low incomes tend to struggle.

"There's no running water, no electricity, no sewerage, so you're living a very different lifestyle to what average people in urban Australia would recognise — with that comes disadvantage," she said.

Ms Caffery said while the lifestyle was charming for some, it was difficult for those who are vulnerable.

"Trying to access fresh, healthy, nutritious food is a day-to-day struggle," she said.

"The majority of [vulnerable] people are living on packet or tinned food as their main sustenance."

Ms Lewis said the multipurpose centre did what it could to help vulnerable people access nutritious food.

"We do have a very good grocery store right here in town but a lot think they can get it cheaper [in Emerald]," she said.

"We've got all our mining claims like Divide, Reward and The Willows — there's not much out [there] that they can get.

"They're all out dirt roads, probably about 20 kilometres, so it could be very difficult for them to come in."

### **Surviving on 'chips and dips'**

Ms Caffery interviewed 45 residents, health workers, and outreach service providers for her study and discovered malnourishment in the Gemfields due to poor food security.

Her study found limited transport, geographic isolation, lack of refrigeration, poor nutrition knowledge and cost had led to food insecurity in the area.

"[Fifty kilometres] doesn't sound like a long way in rural and remote terms, but it is a long way if you don't have a car or you don't have enough money to put fuel in the car," Ms Caffery said.

She said the problem was often identified in Indigenous communities, but it was also common in isolated rural and remote communities.

"[One elderly lady] just lived on chips and dips because she didn't have to refrigerate them and she didn't have to cook," she said.

"In her humpy she didn't have any cooking facilities and that is a really common experience.

"The consequence of not having good food security and access to safe, nutritious food is there are then health consequences.

"There are [vulnerable] people living in the Gemfields right now who are clinically malnourished."

Ms Caffery was shocked to learn malnourishment was an issue so close to Emerald.

"It's not something you would actually associate with a developed country like Australia, but we actually have that problem right here in central Queensland," she said.

"We can't have people in this day and age dying of malnutrition and that absolutely is happening right now in the Gemfields."

# CQU Researcher Gets Death Threats For Her Gemfields Research

By Mel Frykberg

A Central Queensland University (CQ) researcher, Lisa Caffery, has received death threats for publishing controversial research on the Gemfields community.

The embattled CQ University researcher, Lisa Caffery has declined to comment to The Highlands Leader and to other media outlets, other than confirming the death threats.

Lisa Caffery has been forced to close her Facebook and her other social media accounts and lay low.

The Highlands Leader has contacted Emerald Police who advised that they had not received any complaints from the Central Queensland University, or from the University's researcher, Lisa Caffery.

The CQ PhD researcher, said 'the Gemfields was an understudied community, of non-indigenous senior men with complex health needs', which she described in late October on

Capricornia ABC Radio.

Caffery's study found limited transport, geographic isolation, lack of refrigeration, poor nutrition knowledge and cost had led to food insecurity in the area.

The ABC story provoked a barrage of angry Facebook comments from outraged Gemfields residents, who accused the researcher and Capricornia ABC of 'cherry-picking' their facts and employing sensationalism.

"What a load of sh\*\*", maybe researchers should have come to our house and seen how big our veggie garden is, as lots of people out here have, compared that to the big smoke," declared Gregory John Skate on the Gemfields Facebook site.

Another Gemfields critic, Anne Suter added "What a load of crock!!"

"We have access to fresh produce, alternately grow what we can, generate own power, so if any suffer from malnutrition, it is by choice," Anne added.

Criticisms of CU University research has also come from another resident, Gaye Saunders, who has called on Mayor of the Central Highlands Regional Council, Kerry Hayes to get involved.

"I think this article deserves your attention," Gaye declared.

"This is just a ridiculous read.

"We choose to live here and love it and the lifestyle.

"Barry and I are far from malnourished.

"Our Gemfields multi-purpose centre serves a purpose just as blue care etc. do.

"Our Rubyvale friendly grocer has everything we need, including the cheapest diesel in the region," Gay added.

A more measured response came from Bill Saunders who said that he 'had the impression that most are equating what the (ABC) reporter published with the study outcomes'.



"Separate the two and focus on what the study may be trying to say," Bill Saunders said.

"The study looked at vulnerable people, not the

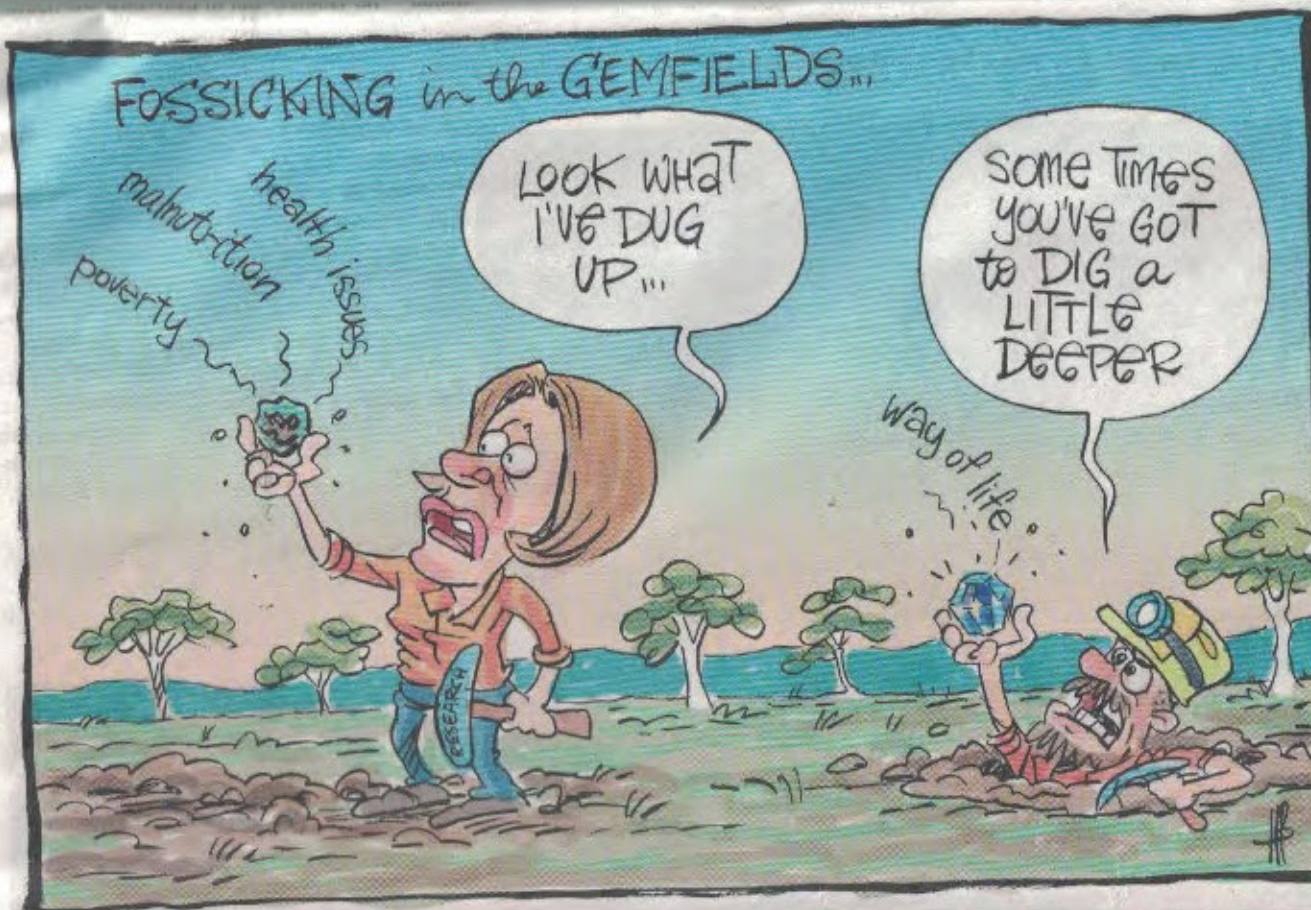
an important light on a vulnerable sub-section of the Gemfields population'.

"The preliminary findings (as covered by ABC) might be considered confronting and

FOSSICKING in the GEMFIELDS...

look what

SOME TIME



"Separate the two and focus on what the study may be trying to say," Bill Saunders said.

"The study looked at vulnerable people, not the majority of us.

"For most of us, the Gemfields community and living conditions are good and some may say great, and this article has not said otherwise for those.

"What it does suggest is that for vulnerable people, living conditions can be an issue and for the 'majority', it may actually be OK.

"Don't equate necessity with choice.

"Don't assume that at a minimum, everyone is on at least the pension or has some means."

The CQ University's Vice-President of Research, Professor Grant Stanley, defended Caffery, commenting that that 'her research had shed

an important light on a vulnerable sub-section of the Gemfields population'.

"The preliminary findings (as covered by ABC) might be considered confronting and this has resulted in a strong response from some members of the community," Professor Stanley added.

"Her research methodology has been endorsed by an expert panel."

However, it is not clear to The Central Highlands Leader if researcher Lisa Caffery's findings have been refereed by her academic peers prior to publication.

When asked if CQ University had taken steps to support Caffery in light of the vitriol and death threats directed at Lisa Caffery, Professor Stanley said CQU has provided the necessary support and advice for her wellbeing, in light of the negative response.

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# CORRECTION AND APOLOGY

The recent articles Gemfields Fight Back, CQU Researcher Gets Death Threats For Her Gemfields Research and subsequent editorial comments contained a number of statements that were entirely or partially untrue.

This paper confirms that no contact was made with CQU University PhD candidate Lisa Caffery during the preparation of these articles.

The original research and the radio

interviews on the ABC at no time made a link between medical attention or medical services and food security on the Gemfields, and at no time did the researcher state there was no fresh food available in the Gemfields. Such claims were incorrectly attributed to Lisa Caffery and her research.

This research was conducted to the highest standard and approved by a review committee of experts at both an ethical

level and a research quality level. Claims made by this paper that the research was a small sample size for the kind of research conducted is incorrect. This was a large sample size considering the settlement size and the nature of the research. This newspaper apologises for implying that the researcher was immature or incompetent.

This paper stated that the PhD candidate Lisa Caffery had received death threats because

of her research in The Gemfields. This is not the case.

We unreservedly apologise for any offence, distress or prejudice the inaccurate information contained in this publication has caused Lisa Caffery.

The Highlands Leader has a binding obligation to provide fair, accurate and balanced coverage of local news and we sincerely regret these errors.

## Appendix 15

### Baseline Community Health Equity Profile

#### Blank Template

A: Geographical and Historical Context		
Where is the community located? When and how did it develop? How is it positioned in relation to regional and metropolitan centres?		
A1	Locality Name:	
A2	Town / Village Names:	
A3	What is the age of non-indigenous settlement area?	
A4	How did the settlement area develop?	
A5	Unique settlement patterns or features:	
A6	Degree of urbanity/rurality:	ASGS: MMM:
A7	Name of nearest rural centre:	
A8	Distance to nearest rural centre:	
A9	Travel time to nearest rural centre:	
A10	Name of nearest regional centre:	
A11	Distance to nearest regional centre:	
A12	Travel time to nearest regional centre:	Driving: Bus: Train:
A13	Name of capital city:	
A14	Distance to capital city:	
A15	Travel time to capital city:	Driving: Bus: Train:
A16	Local Government Area:	
A17	State Government Electorate:	
A18	Federal Government Electorate:	
B: Demographics		
What are the population characteristics of the study area? Who are the vulnerable groups? Are there any interesting population trends?		
B1	Population size:	
B2	Area:	
B3	Population density:	
B4	Gender ratio:	Males:

			Females:	
B5	Median Age:			
B6	Age Profile:			
	0-19years	20-49 years	50-69 years	70-89 years
B7	Ethnicity:		% Australian born % Indigenous	
B8	a. Approximate number of households in study area	Separate house: Temporary: Total:	b. Average household size (population/households)	
B9	Relative poverty (Index of Relative Socio-economic disadvantage)			
B10	Potential vulnerable groups in the community (e.g. women, children, religious / ethnic / race)			
	Group Description	Why is this group vulnerable	% of total population	
	Disabled			
	Veterans			
	Unemployed, Pensioners, People not participating in workforce			
	Children / Youth			
	Elderly			
<b>C: Economic Conditions</b>				
What are the local economic factors that may impact health outcomes in the study area? What do residents do for work?				
C1	Labour participation			
C2	Main Skills			
C3	Median Income			
C4	Cost of living			
C5	Private health insurance			
C6	Medical bills			
C7	Main economic drivers (main industries)			
C8	Access to economic resources (Index of Economic Resources)			
<b>D: Health Care Environment</b>				
What are the current health care capacities and capabilities in the community? What contributes to good health? What contributes to poor health?				

D1	Geographic access to health services	Number of doctors/1000 citizens: Number of nurses/1000 citizens: Number of hospital beds/1000 citizens:		
D2	Provider availability	Public GP provider: Private GP provider: Public RIPERN Nurse provider: Public Enrolled Nurse: Ambulance Paramedic: Pharmacist:		
D3	Quality of care			
D4	Total episodes of care for Gemfields residents per annum (2019/20)			
D5	Estimated Annual Operational Costs for Queensland Health (2019/20)			
D6	Mortality Rates			
D7	Chronic Disease Profile			
D8	Community Health			
<b>E: Education</b>				
What education assets are available locally and regionally? Can you identify any gaps?				
E1	Index of Education and Occupation 2016			
E2	Education level			
E3	Main language spoken			
E4	Educational care facilities and infrastructure in the study area / district.			
	<b>Facility Type</b>	<b>Number of Facilities</b>	<b>Location / Distance</b>	<b>Description</b>
	Playgroup			
	Creche / Kindergarten			
	Primary School			
	Secondary schools			
	TAFE College			
	University			
<b>F: Physical Environment</b>				
What are the daily living conditions like in the local area? Are there any key physical environment factors unique to this area?				
F1	Housing quality			
F2	Housing Occupancy			
F3	Transport / Mobility			
F4	Walkability			
F5	Post Code / Geography			

F6	Electricity	
F7	Water and sanitation	
F8	Waste Collection	
F9	Neighbourhood design	
F10	Weather	Minimum Temperature: Maximum Temperature: Annual Rainfall:
<b>G: Social living conditions</b> What percentage of the population group has access to the internet? Is there social connectivity within the community? What are the crime statistics for the area?		
G1	Social support / social isolation	
G2	Social cohesion	
G3	Physical working conditions (exposure to noise or sun or physical strain)	
G4	Safety	
G5	Connectivity (Internet)	
G6	Food security: Markets, shops, grocers, and food outlets in the study area / district.	
	<b>Type</b>	<b>Number</b>
	Supermarket Chain Store	
	Grocery Store	
	Convenience Store	
	Fast Food	
	Café/Restaurants	
	Markets	
<b>H: Community Assets</b> Map the community health assets within the local area.		
H1	People	
H2	Services	
H3	Resources	
H4	Places	
H5	Physical Assets	
H6	Exchanges	
H7	Private business	
H8	Not-for-profits / Community Organisations or Groups	

Source: Table adapted from SEAT Toolkit (Anglo American, 2015)

# Health Equity Locale Profile (HELP)

Location: \_\_\_\_\_

For use in small-scale rural and remote communities in Australia

**Instructions:** There are 12 rural health equity indicators listed in the HELP tool. Please rate each indicator between 1 – 4 by circling one box that best describes your community. Record the corresponding number in the subtotal. Add the 12 scores together to receive a total score.

#	Factor	Indicator	1	2	3	4	Subtotal	Total
1	Proximity	Driving time to a hospital	10 minutes or less	11-30 minutes	31 - 89 minutes	90 minutes or more		
2	Mobility	Public transport	6-7 days/ week	4-5 days/ week	1-3 days/ week	No public transport		
3	Mobility	Number of cars/household	0-5% have no access to a car	6-14% have no access to a car	15-19% have no access to a car	20% have no access to a car		
4	Advantage / Disadvantage	SEIFA - IRSD	75 – 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile		
5	Advantage / Disadvantage	SEIFA - IRSAD	75 – 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile		
6	Advantage / Disadvantage	SEIFA - Index of Education and Occupation	75 – 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile		
7	Advantage / Disadvantage	SEIFA - IED	75 – 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile		
8	Rurality	Monash Modified Model Rating	1 & 2	3	4-5	6-7		
9	Health Supply	GP coverage in location	6-7 days/ week	4-5 days/ week	1-3 days/ week	0		
10	Health Supply	Ambulance coverage in location	6-7 days/ week	4-5 days/ week	1-3 days/ week	0		
11	Health Supply	Nurse coverage in location	6-7 days/ week	4-5 days/ week	1-3 days/ week	0		
12	Health Supply	Pharmacy coverage in location	6-7 days/ week	4-5 days/ week	1-3 days/ week	0		
	Total Score							

## Total possible score = 48

12 – 23: Very high rural health equity (very high level of advantage)

24 – 30: High rural health equity (high level of advantage)

31 – 39: Low rural health equity (low level of advantage)

41 – 48: Very low rural health equity (very low level of advantage)

## Notes:

1. Number of cars per household data is available from the Australian Bureau of Statistics (ABS) Census.

2. SEIFA data is available from the ABS Census.

3. Monash Modified Model categories can be found at [www.modifiedmonashmodel.com](http://www.modifiedmonashmodel.com)

## Appendix 17



Lisa Caffery [REDACTED]

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**Human Ethics Application outcome - 0000021425**5 messages

---

9 April 2019 at 14:15

To: [REDACTED]  
Cc: [REDACTED]

Application reference: 0000021425

Title: The Rural Health Deficit: Exploring social innovation as a response to rural health inequalities in Central Queensland

This project has now been approved by the Human Research Ethics Committee, either at a full committee meeting, or via the low risk review process.

The period of human ethics approval will be from 06/05/2019 to 22/01/2021.

The standard conditions of approval for this research project are that:

- (a) you conduct the research project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee;
- (b) you advise the Human Research Ethics Committee (email [REDACTED]) immediately if any complaints are made, or expressions of concern are raised, or any other issue in relation to the project which may warrant review of ethics approval of the project. (A written report detailing the adverse occurrence or unforeseen event must be submitted to the Committee Chair within one working day after the event.)
- (c) you make submission to the Human Research Ethics Committee for approval of any proposed variations or modifications to the approved project before making any such changes;
- (d) you provide the Human Research Ethics Committee with a written Annual Report on each anniversary date of approval (for projects of greater than 12 months) and Final Report by no later than one (1) month after the approval expiry date;
- (e) you accept that the Human Research Ethics Committee reserves the right to conduct scheduled or random inspections to confirm that the project is being conducted in accordance to its approval. Inspections may include asking questions of the research team, inspecting all consent documents and records and being guided through any physical experiments associated with the project
- (f) if the research project is discontinued, you advise the Committee in writing within five (5) working days of the discontinuation;
- (g) A copy of the Statement of Findings is provided to the Human Research Ethics Committee when it is forwarded to participants.

Please note that failure to comply with the conditions of approval and the National Statement on Ethical Conduct in Human Research may result in withdrawal of approval for the project.

You are required to advise the Secretary in writing if this project does not proceed for any reason. In the event that you require an extension of ethics approval for this project, please make written application in advance of the end-date of this approval. The research cannot continue beyond the end date of approval unless the Committee has granted an extension of ethics approval. Extensions of approval cannot be granted retrospectively. Should you need an extension but not apply for this before the end-date of the approval then a full new application for approval must be submitted to the Secretary for the Committee to consider.

The Human Research Ethics Committee wishes to support researchers in achieving positive research outcomes. If you require an approval letter on university letterhead, please do not hesitate to contact the ethics officers, Sue Evans



Lisa Caffery [REDACTED]

## Human Ethics Application outcome - 0000022602

2 messages

30 November 2020 at 11:00



Application reference: 0000022602  
 Title: Health Equity in the Gemfields

This project has now been approved by the Human Research Ethics Committee, either at a full committee meeting, or via the low risk review process.

The period of human ethics approval will be from 30/11/2020 to 30/06/2021.

The standard conditions of approval for this research project are that:

(a) you conduct the research project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee;

(b) you advise the Human Research Ethics Committee (email [REDACTED]) immediately if any complaints are made, or expressions of concern are raised, or any other issue in relation to the project which may warrant review of ethics approval of the project. (A written report detailing the adverse occurrence or unforeseen event must be submitted to the Committee Chair within one working day after the event.)

(c) you make submission to the Human Research Ethics Committee for approval of any proposed variations or modifications to the approved project before making any such changes;

(d) you provide the Human Research Ethics Committee with a written Annual Report on each anniversary date of approval (for projects of greater than 12 months) and Final Report by no later than one (1) month after the approval expiry date;

(e) you accept that the Human Research Ethics Committee reserves the right to conduct scheduled or random inspections to confirm that the project is being conducted in accordance to its approval. Inspections may include asking questions of the research team, inspecting all consent documents and records and being guided through any physical experiments associated with the project

(f) if the research project is discontinued, you advise the Committee in writing within five (5) working days of the discontinuation;

(g) A copy of the Statement of Findings is provided to the Human Research Ethics Committee when it is forwarded to participants.

Please note that failure to comply with the conditions of approval and the National Statement on Ethical Conduct in Human Research may result in withdrawal of approval for the project.

You are required to advise the Secretary in writing if this project does not proceed for any reason. In the event that you require an extension of ethics approval for this project, please make written application in advance of the end-date of this approval. The research cannot continue beyond the end date of approval unless the Committee has granted an extension of ethics approval. Extensions of approval cannot be granted retrospectively. Should you need an extension but not apply for this before the end-date of the approval then a full new application for approval must be submitted to the Secretary for the Committee to consider.

The Human Research Ethics Committee wishes to support researchers in achieving positive research outcomes. If you require an approval letter on university letterhead, please do not hesitate to contact the ethics officers, Sue Evans or Suzanne Harten or myself.

Yours sincerely,

Tuesday 30<sup>th</sup> October 2018

To Whom It May Concern,

**Re: Letter of Support**

I strongly support the research proposal by Lisa Caffery to critically examine existing Primary Health Care services in the Gemfields and the social determinants of health in this community. I look forward to working with Lisa to examine existing quantitative data as well as support her qualitative data collection in community.

I see great value in Lisa's needs evaluation tool to rapidly assess rural and remote community health requirements and the likely barriers impacting on health service delivery models.

Yours Sincerely,



**Eduardo Gacitua**

B.Env Sc, B.Pharm, M. Ed, Dip. Manag, Dip. Fin, PRINCE2, JP  
General Manager, Central Highlands  
Central Queensland Hospital and Health Service

## Appendix 20

### DATA-2196

#### Veterans residing within The Gemfields

Release Date: 27 November 2020

Response for Lisa Caffrey, PhD Candidate, CQUniversity Australia

#### Caveats and Explanatory Notes:

This data request provides details of the number of veterans for a subset of the Central Highlands Local Government Area (LGA), specifically *The Gemfields* (ABS Category SSC32819). The related study seeks details of the number of veterans who reside within the villages of Anakie, Rubyvale, Sapphire and Willows.

Please note the following:

1. State Suburbs (SSC) boundaries are effective 2016.
2. *Net Total Veterans* includes any current or former serving member who is eligible for compensation, income support or treatment under either the Veterans Entitlement Act 1986 (VEA), the Safety Rehabilitation and Compensation Act 1988 (SRCA) or the Military Rehabilitation and Compensation Act 2004 (MRCA).
3. *Total Dependents* includes any partner, widow/er or child of a former serving member who is eligible for compensation, income support, education payments or treatment under either the Veterans Entitlement Act 1986 or the Military Rehabilitation and Compensation Act 2004.
4. *Net Total DVA Clients* includes any person in receipt of a pension/allowance from DVA or who is eligible for treatment or pharmaceuticals paid for by DVA.

#### Response:

DVA CLIENTS BY SCC REGION <sup>(1)</sup>		
SEPTEMBER 2020		
THE GEMFIELDS, QUEENSLAND		
	Number	Average Age
<b>Net Total Veterans<sup>(2)</sup></b>	25	64.96
eligible under the VEA	23	66.70
eligible under the SRCA	8	59.00
eligible under the MRCA	Under 4	-
<b>Total Dependents<sup>(3)</sup></b>	16	69.56
<b>Total Net DVA Clients<sup>(4)</sup></b>	41	66.76
<b>Disability Pensioners</b>	20	67.50
Special Rate (incl. above)	12	68.00
<b>War Widow Pensioners</b>	7	72.86

DVA CLIENTS BY SCC REGION <sup>(1)</sup>		
SEPTEMBER 2020		
THE GEMFIELDS, QUEENSLAND		
<b>Service Pensioners</b>	19	70.89
Veterans	13	71.54
Partners and widow/ers	6	69.50
<b>Income Support Supplement</b>	6	74.67
<b>Social Security Aged Pensioners</b>	Under 4	-
<b>VEA Pensioner Population</b>	34	69.03
<b>Gold Card Holders</b>	24	69.38
Veterans	17	67.94
Dependants	7	72.86
<b>White Card Holders</b>	31	60.71
<b>Treatment Population</b>	31	67.42
(Percentage of DVA clients holding a treatment card)	75.6%	

**Additional Information:**

- If you have questions regarding this data, please email the team at [statistical.services@dva.gov.au](mailto:statistical.services@dva.gov.au), quoting the data request number listed at the top of this document.

[REDACTED]

---

**Epidemiology  
Central Queensland Public Health Unit  
Central Queensland Hospital and Health Service  
Queensland Health**

---

## **DATA REPLY**

---

In reply to your request for information or epidemiological assistance, my comments and advice are as follows:

Date:

Nature of request:

From: [REDACTED], Senior Epidemiologist, CQ Public Health Unit.  
[REDACTED] [REDACTED]

---

Dear Lisa,

I have had some difficulty locating the data you have requested on death rates and causes of death in the Gemfields area. My contact at the Queensland Government Statisticians Office (Annette Geiss) has been able to supply data for Central Highlands - West (SA2 308011191). For 2019, the number of deaths was 43. The 2019 crude death rate per 1000 persons was 5.5 (see attached pdf).

If you require further detail, Annette has suggested contacting the Queensland Registry of Births, Deaths, Marriages and Divorces: <https://www.qld.gov.au/law/births-deaths-marriages-and-divorces/data>

Alternatively you could approach the ABS to ask if they are willing to release unpublished data through a data request: (<https://www.abs.gov.au/contact>).

General data on the health of people in rural and remote areas are available from the Australian Institute of Health and Welfare: <https://www.aihw.gov.au/reports-data/population-groups/rural-remote-australians/overview>

The Australian Institute of Health and Welfare also may supply data on request, at <https://www.aihw.gov.au/our-services/aihw-custom-data-request-service>

General data on deaths are available at: [Deaths, Australia, 2019 | Australian Bureau of Statistics \(abs.gov.au\)](#)

I'm sorry I haven't been able to give you anything more specific.

Please contact me if you need further assistance.

Kind regards:

[REDACTED]



## EMERALD HOSPITAL

### EDIS Presentations - The Gemfields and Surrounding Areas

Reporting between: 01/07/2014 to 28/02/2021

*This report displays Emergency Department presentations by month for patients with an address of Anakie, The Gemfields, Rubyvale, Willows or Willows Gemfields within specified period.*

Data as at 11/03/2021

Data Source  
EDIS

#### Report Criteria

Campus Code: EME  
Present Suburb: ANA, GEM, RUBYV,  
StartsWith: SAP, THE GEMF,  
WILL

Pat PostCode: 4702

Patient Suburb	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/Feb2021	Total
ANAKIE	112	83	65	74	74	53	54	515
RUBYVALE	380	385	297	315	323	280	224	2,204
SAPPHIRE	389	345	365	347	312	314	238	2,310
THE GEMFIELDS	-	-	-	3	5	3	-	11
WILLOWS	-	-	-	-	28	21	9	58
WILLOWS (4702)	11	14	29	21	-	-	-	75
WILLOWS GEMFIELDS	33	54	45	51	59	62	30	334
Total	925	881	801	811	801	733	555	5,507

## EMERALD HOSPITAL

### Discharges - The Gemfields & Surrounding Areas

**Reporting between: 01/07/2014 to 28/02/2021**

*This report shows total discharges of patients with an address of Anakie, The Gemfields, Rubyvale, Willows or Willows Gemfields within specified period. Data excludes boarders and episode changes.*

*Data as at 11/03/2021*

**Data Source**  
HBCIS Admissions

**Report Criteria**

AdmSource <	21
DischargeCode <	06
PatPostcode:	4702
PatSuburb	ANA, GEM, RUBYV,
StartsWith:	SAP, THE GEMF, WILL

Patient Suburb	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/Feb2021	Total
ANAKIE	40	34	26	35	42	30	28	235
RUBYVALE	140	151	166	183	215	174	137	1,166
SAPPHIRE	168	159	187	184	241	220	138	1,297
THE GEMFIELDS	-	-	1	4	3	-	-	8
WILLOWS	3	6	8	10	20	11	8	66
WILLOWS (4702)	1	1	-	-	-	-	-	2
WILLOWS GEMFIEL	20	41	40	33	34	50	23	241
<b>Total</b>	<b>372</b>	<b>392</b>	<b>428</b>	<b>449</b>	<b>555</b>	<b>485</b>	<b>334</b>	<b>3,015</b>



## EMERALD HOSPITAL

### The Gemfields Clinics - Occasions of Service

**Reporting Period: 01/07/2014 to 28/02/2021**

*This report provides the Occasions of Service data for The Gemfields clinics (codes starting with GEM or GF) held within specified period. Only patients with a current status of seen, seen elective surgery or discharged are included.*

Data as at: 11/03/2021

#### **IMPORTANT NOTE:**

The activity data included in this report only captures appointments with a status of **Seen, Seen Elective Surgery or Discharged**.

Appointments with a status of Arrived, Booked, Removed, Cancelled, Did Not Wait, Failed to Attend, etc, will not be included in this report.

Data is current as at run time. Any changes made after this time **will not** be captured in this report.

Appointments mapped to New/Repeat Status of **OTHER** are not eligible for ABF.

**295 Exclusion** Corporate Clinic Code is used for internal reporting only. This activity is **not** reported to Brisbane as Outpatient activity.

Clinic Code & Description	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/Feb2021	Total
GEM DR - THURS DOCTOR'S CLINIC	821	653	-	-	-	-	-	1,474
GEMCFH - GEMFIELDS CFH CARER CONSULT	-	-	-	-	3	13	1	17
GEMDR - GEMFIELDS DOCTOR CLINIC	-	101	940	894	954	2,862	1,487	7,238
GEMOP - GEMFIELDS MINOR OPS	-	-	-	-	29	139	64	232
GEMOPD - DAILY RN CLINIC	1,849	1,963	2,330	2,662	2,839	3,830	2,268	17,741
GF DRESSING - GEM FIELDS DRESSING CLINIC	1,192	854	-	-	-	-	-	2,046
GF PATHOLOGY - GEM FIELDS PATHOLOGY CLINIC	653	595	-	-	-	-	-	1,248
GF POD - GEMFIELDS PODIATRY OUTPATIENTS	5	-	-	-	-	-	-	5
GF RFDS WWC - GEMFIELDS RFDS WELL WOMENS CLINIC	11							11
GFDRESS - GEMFIELDS DRESSING CLINIC	-	73	1,121	1,155	1,388	1,280	912	5,929
GFHOME - GEMFIELDS HOME VISITS	-	-	-	-	48	46	7	101
GFPATHOLOGY - GEMFIELDS PATHOLOGY CLINIC	-	84	703	598	900	1,084	730	4,099
GFPHYSIO - PHYSIOTHERPY GEMFIELDS	-	-	-	-	-	22	-	22
GFPOD - PODIATRY GEMFIELDS OUTPATIENTS	88	64	37	56	42	5	22	314
GFTELE - GEMFIELDS OUTPATIENTS TELEHEALTH	-	-	9	23	123	122	58	335
GFWWH - GEMFIELDS (SAPPHIRE) WOMENS HEALTH	-	-	19	13	13	-	-	45
<b>Total</b>	<b>4,619</b>	<b>4,387</b>	<b>5,159</b>	<b>5,401</b>	<b>6,339</b>	<b>9,403</b>	<b>5,549</b>	<b>40,857</b>

# Health Equity Individual Screening Tool (HEIST)

Location: \_\_\_\_\_

Name:

Preferred Language:

Phone number:

Email:

Best time to call:

## In the last 12 months:

1	Have you needed to see a doctor or another health worker but could not because there were no available appointments?	Yes No
2	Do you put off or neglect going to the doctor or other health appointments because of cost?	Yes No
3	Do you put off or neglect going to the doctor or other health appointments because of distance?	Yes No
4	Do you put off or neglect going to the doctor or other health appointments because of transportation?	Yes No
5	Do you put off or neglect going to the doctor or other health appointments because of disability and personal mobility issues?	Yes No
6	Are you able to get a friend or relative to take you to health appointments?	Yes No
7	Do you put off or neglect going to the doctor or other health appointments because of embarrassment or stigma issues?	Yes No
8	Do you have a disability that prevents you from accepting any kind of work during the next six months?	Yes No
9	Do you ever skip medications to save money?	Yes No
10	Do you ever go hungry because there wasn't enough money for food, or the cupboards were empty?	Yes No
11	Do you have access to a refrigerator and freezer where you live?	Yes No
12	Have you received a food donation from friends or a community group?	Yes No

13	Do you rely on solar as your main source of electricity?	Yes No
14	Do you have internal heating for the winter?	Yes No
15	Do you have internal cooling in the summer (i.e. air conditioner or fan)?	Yes No
16	Do you ever need help reading hospital materials or medical letters?	Yes No
17	Are you confident filling out medical forms by yourself?	Yes No
18	Do you need help understanding what is told to you about your medical condition?	Yes No
19	If you checked YES to any boxes above, would you like to receive assistance with any of these needs?	Yes No

Are any of your needs urgent?

For example:

I don't have food tonight

I don't have a place to sleep tonight

I can't afford to pay for my medicine

I can't get to my medical appointment tomorrow

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Please circle your current residential location:

Village or town location

Mining Lease

Caravan Park

Other: \_\_\_\_\_

Please circle the type of dwelling you currently reside in:

Permanent dwelling – house or unit

Temporary dwelling – shed, caravan, tent, container, shack, bus, car

No fixed address

## **SOCIAL DISRUPTERS: CONSTRUCTING A NEW WAY TO DELIVER PRIMARY HEALTH SERVICES IN A RURAL SETTING**

**Lisa A. Caffery\***

School of Business and Law, Central Queensland University, Emerald, Qld, 4720, Australia. Email: [lisa.caffery@cquemail.com](mailto:lisa.caffery@cquemail.com)

**Olav T. Muurlink**

School of Business and Law, Central Queensland University, Brisbane, Qld, 4000, Australia. Email: [o.muurlink@cqu.edu.au](mailto:o.muurlink@cqu.edu.au)

**Andrew W. Taylor-Robinson**

School of Health, Medical & Applied Sciences, Central Queensland University, Brisbane, Qld, 4000, Australia; College of Health and Human Sciences, Charles Darwin University, Casuarina, NT, 0810; College of Health Sciences, Vin University, Hanoi, Vietnam. Email: [a.taylor-robinson@cqu.edu.au](mailto:a.taylor-robinson@cqu.edu.au)

\*Corresponding author

**ABSTRACT:** In this paper, we investigate the role of social enterprise in bridging a gap in health provision that is experienced commonly in rural Australia. Drawing on an exploratory case study conducted in the small town of Emerald in Central Queensland, we use primary interview data to understand better how one, wholly community-owned, not-for-profit, social enterprise has moved beyond the traditional primary health care model and constructed a new way to deliver services in a rural setting. This case study provides an example of a community-driven response that endeavors to transform health service challenges into opportunities. This research identifies key strategies, strengths and business factors that have contributed to a locally responsive health service. We also focus on the business model and examine how innovation has shaped the operation. Key findings are presented as ten critical actions that helped the business establish itself as a thriving social enterprise in rural Australia.

**KEYWORDS:** Social enterprise, rural health, primary health care, social innovation, general practice.

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## 1. INTRODUCTION

Regional population centres continue to shrink relative to urban concentrations, with smaller population unable to sustain basic services, such as general medical practices, the focus of this current study. Despite narratives around globalisation and the increasing use of technology to bridge rural-urban healthcare divides, a health divide persists in regional Australia, one which has deep roots in both location and policy. More than a million rural and regional Australians have distinctly lower levels of access to basic medical care than those living in metropolitan Australia (Duckett and Breadon, 2013). That equity differential translates to significantly compromised health outcomes, which may be predicted by distance from capital cities (Australian Institute of Health and Welfare (AIHW), 2020). People living in medically under-served areas tend to live shorter lives, experience greater incidences of disease and endure poorer access to health services compared to people who live in urban areas (Wakeman *et al.*, 2008). For example, people who live in rural and remote areas experience higher death rates (1.3 times) than people living in major cities (AIHW, 2017).

Although regional Australia is positioned as a ‘minority’ relative to the nation, it contributes disproportionately to the country’s national economy, with 67% of exports (in terms of value) coming from regional, rural and remote areas (National Rural Health Alliance Australia, 2021). Despite this strategic importance, the population retained in rural Australia is forced increasingly to commute to receive primary health care (Mitton *et al.*, 2011). More serious medical cases require individuals and their carers or family members to ‘migrate’ to receive specialist medical treatment at the closest city.

This case study examines a unique success story from the 2010 Australian government’s \$355.2 million funding announcement for building and upgrading GP super clinic facilities. This was the only community-led social enterprise response to emerge. Like many rural centres, the regional hub of Emerald in Central Queensland (population 13,500) faced the consequences related to the speed of access to care: availability of general practitioners (GPs) for initial primary care advice and access to specialist services without needing to visit larger regional centres. The Emerald response was initiated by a group of veteran local GPs who were nearing retirement and had no viable business succession plan for their Emerald practices. What follows is an example of social disrupters challenging the status quo and constructing a new way to deliver primary health services in a rural setting. Social enterprise in health care

provision has attracted significant attention at least at an applied level, but very sparse literature assessing how social enterprise works as an alternative delivery mechanism (Roy *et al.*, 2014).

Roy's proposed model shows the value of harnessing and linking community and individual resources. Using third sector providers to address gaps—or even mainstream healthcare provision—has a substantial history, particularly in the UK where in the 1970s and 1980s, there was an effort to reduce the strain on nationalised health resources (Millar, 2012). This trend is relatively less present in Australia. Typically, primary health care in rural Australia, in particular, is delivered by hundreds of privately owned and operated small businesses (Swerissen *et al.*, 2018). However, there has been a clear upward trend of the 'corporatisation' of general practice across the country since the late 1990s with the three largest corporate chains employing 15 per cent of GPs (Erny-Albrecht and Bywood, 2016). Public health or 'single issue' campaigns have been more likely to be the target of social enterprise efforts in Australia and internationally—there is no shortage of examples of state-sponsored healthcare resources being paired with or funding community-based efforts working to address smoking, alcohol, and exercise outcomes for example, but these efforts tend to be charity rather than sustainable social enterprise in character. Whereas funding for public health measures, such as the Australian campaign to address the risk of skin cancer (Montague *et al.*, 2001) form the minority of health budgets, primary and secondary healthcare continues to dominate total health spend in Australia, which continues to rise albeit gently (Callander *et al.*, 2019).

Broadly speaking, social innovation is constituted as "social experiences aiming at finding new solutions to unsolved problems" (Drewe *et al.*, 2008, p. 22). However, innovating in a complex system like the health care sector is not a straightforward process. Other industries, such as mobile technology, have evolved rapidly by focussing on customer's inherent needs and developing a solution that meets these needs (Roberts *et al.*, 2016). Disruptive innovating and new technology often results in greater affordability and convenience to the consumer (Hwang and Christensen, 2008). This study examines an otherwise 'conventional' health clinic that has significant potential to sustainably disrupt the delivery of healthcare services in rural and remote regions by harnessing a social enterprise model. In addition, the case study examines other aspects of the model that contribute to its sustainability.

## 2. BACKGROUND

In May 2010, the Australian Government led by Prime Minister Kevin Rudd announced \$355.2 million in funding to build and upgrade GP Super Clinic facilities across Australia (Australian Government Department of Health, 2010), the aim of which was to inspire local communities to become involved in designing their own health care solutions. Three local Emerald General Practitioners (GPs) and several community leaders formed a working group to envisage a new way of delivering front-line health services in their rural town. They partnered with the Central Queensland Division of General Practice (now CQ Rural Health) to apply successfully for federal government funding that enabled the creation of a new ‘one-stop-shop’ for primary health care in Emerald. CQ Rural Health was chosen because it was viewed as independent but still locally invested in the community. What was unique about this approach was that *no single GP would benefit personally from the funding*. In addition, the business structure and model had evolved in response to local needs and was designed to leave a lasting legacy for the entire community. Once CQ Rural Health had executed the AUS 5 million grant and the construction of the new facility was complete, ownership of the medical clinic was transferred to a newly formed social enterprise. In October 2015, Central Highlands Healthcare Ltd (CHH) took ownership of the newly built GP Super Clinic and commenced trading shortly thereafter under the business name of the Emerald Medical Clinic (see Table 1 for key characteristics of the clinic). The determined focus of this social enterprise was to provide coordinated quality local health care to the Central Highlands community and improve local health outcomes.

Table 1. Case Study Snapshot – Central Highlands Healthcare Ltd. Source: the Authors.

<b>Town, Region</b>	<b>Emerald, Central Queensland</b>
<b>Country</b>	Australia
<b>Addressed Themes</b>	Primary Healthcare
<b>Development Stage</b>	Scaled
<b>Founding Year</b>	2012
<b>First Trading Year</b>	2015
<b>Organisation Structure</b>	Private Limited Company with Charity Status
<b>Organisation Type</b>	Social Enterprise
<b>Organisation Size</b>	Small Enterprise (< 50 employees)
<b>Annual Income</b>	AUD 4 million
<b>Total Equity</b>	AUD 5 million

### 3. METHODS

Case study analysis allows an examination of outliers, particularly important in studies of innovation, where the novel is by definition uncommon, and thus difficult to examine use quantitative means. We examine how a small group of determined community leaders formed a social enterprise to address health options and explore spillover effects on the local economy. The single case of CHH was selected because it is unique and allows the analysis of an isolated phenomenon (Mills *et al.*, 2010). The scope of the study was bounded to the one organisation (CHH) that was located in Emerald, in Central Queensland, Australia. The CHH business is a novel example of a rural social enterprise operating in the Australian primary healthcare sector. The combination of uncommon attributes and the uniqueness of the case warranted unitary exploration of the topic (Crowe *et al.*, 2011; Liamputtong, 2013; Silverman, 2017). This exploratory case study is based on documentary analysis, including the analysis of minutes of meetings, publicly available annual reports, and community and media comments on the development. In addition, in-depth, semi-structured interviews were conducted with ten key stakeholders, who either volunteered (in a permanent or part-time capacity) or worked for remuneration in the social enterprise. An informal conversational style of interviewing was particularly well-suited to the rural social enterprise setting (Yeo *et al.*, 2013). Interviews with stakeholders were transcribed and anonymised, and in the following analysis care has been taken to de-identify stakeholders in order to preserve confidentiality. This study was conducted following formal review by the Human Research Ethics Committee of Central Queensland University, with approval number 21472.

### 4. RESULTS AND DISCUSSION

#### *The Social Enterprise Business Model*

For the purposes of this case study research, a social enterprise is defined broadly as a business that trades to further social (rather than *purely* business) goals (Steiner and Teasdale, 2017). CHH is both a social enterprise and a limited public company with a social purpose. The mix of ‘enterprise’ with ‘social purpose’ ensures that the structures and inherent sustainability built into a conventional business are attached to a desired social outcome. In this regard, the goal of CHH is to achieve meaningful

and sustainable improvements in access to local health care services. The limited company organisational structure offers limited liability protection to its members, while a local, volunteer, skills-based board oversees the company's governance, a structure that has acted as a framework for innovation within the organisation. A full-time chief executive officer (CEO) oversees the day-to-day management of the business, and the medical staff are led by a globally renowned principal GP. The senior management team is comprised of the CEO, sentinel GP (senior GP), practice manager, training and education manager, nurse manager and senior receptionist. The company is an entirely community-owned asset, for which all retained earnings are reinvested in the CHH operation. Moreover, the board members are not compensated for their time, nor are dividends paid to members. That is, unlike most GP clinics in Australia, CHH seeks to maximise social returns rather than to distribute profits to shareholders or owners. CHH is registered with the Australian Tax Office as a Deductible Gift Recipient (DGR) and all donations over AU\$2 are tax deductible. CHH trades as the Emerald Medical Clinic and, as previously mentioned, the construction of the building in which the clinic is housed was fully funded by the Australian Federal Government's *GP Super Clinics Infrastructure Program*. An overview of the CHH social enterprise model is provided in Table 2.

***We needed a company structure that was big enough and bold enough to continue to invest in itself and grow as a business —  
CHH Board Member***

With a focus on the future, the CHH Board of Directors has taken a modular approach to its business in both design and operation. At the centre of the organisation is the Emerald Medical Clinic and this acts as the main hub. As the business grows, it was the Board's explicit plan to establish or 'bolt on' new facilities and services around the GP clinic. This has begun to happen. In its third year of operation, CHH funded the construction of a chemist building adjoining the GP clinic. This second module also made available additional clinical space for visiting specialist services and a coffee kiosk. The extra commercial space also contributes a source of secondary revenue for the social enterprise through rent received from lease agreements. A diagnostic ultrasound unit was also added to the complex in the 2019-2020 financial year. As the business matures there are further plans to add more modules, such as a day surgery wing, an education and training wing, a palliative and aged-care unit and x-ray and radiology unit. The realisation of each of these expansion plans is dependent on several critical factors, including community need, business

sustainability and funding sources, but the clinic is more able to access funding due to its non-profit foundations.

Table 2. Overview of the CHH Social Enterprise. Source: the Authors.

<b>Enterprise Orientation</b>	<ul style="list-style-type: none"> <li>• <b>Directly involved in providing health services</b></li> <li>• <b>Viable trading organisation generating revenue and profit</b></li> <li>• <b>In operation since December 2015</b></li> </ul>
<b>Attributes</b>	<ul style="list-style-type: none"> <li>• Explicit social aim to challenge health care delivery model</li> <li>• Autonomous organisation with governance structures based on community ownership</li> <li>• Seeks to make an impact and to alleviate a social challenge</li> <li>• Profits reinvested in the business or used for the benefit of the community</li> <li>• Business delivery model unique to rural health sector</li> <li>• Local leadership and collaborations with public and private institutions</li> </ul>
<b>Scalability</b>	<ul style="list-style-type: none"> <li>• Innovative business model has potential to be applied to other geographical areas or population groups</li> <li>• Financial, organisational and market aspects of the business are sustainable</li> </ul>
<b>Competitive Advantages</b>	<ul style="list-style-type: none"> <li>• Adopts a mission that sustains social value</li> <li>• Agility in aligning with mission</li> <li>• Ability to leverage non-profit status</li> <li>• Maximises limited resources</li> <li>• Skills-based volunteer board</li> </ul>

Another strategic aspect of this ‘hub and spoke’ operating model is the strategic partnering agreements with other medical service providers to achieve diversification of health care provision. Rather than try to attract and retain medical workers or to compete with high-demand health service providers (which may have had some unintended negative consequences) the Board of Directors has chosen to co-locate these businesses within the Emerald Medical Village precinct. QML Pathology collection service was the first business to trial this model by establishing a collection laboratory in the same building as the GP clinic. Since this successful pilot, other services have followed and co-located within the precinct. The overarching

strategic goal is to provide multiple medical services, previously not available in the town, on one site (a one-stop shop). The outcome has been a consumer-driven model of care offering a comprehensive range of health services.

Evidence from the CHH case study reveals four key characteristics of the model that appear to be linked to its success: (a) a grassroots response to local health needs, (b) a focus on community, (c) critical partnerships with statutory authorities; and (d) governance.

*(a) Grassroots Response*

Different regions have distinct characteristics—treating ‘regional and remote’ communities in a generic manner clearly has weaknesses, and this project was clearly founded on principles of human-centred design. Community engagement and consultation have been a critical component in the establishment and ongoing operation of the business.

***The business model didn’t just happen. It was a lot of blood, sweat and tears and many sleepless nights for a lot of people —  
CHH Board Member.***

For instance, the original idea for the social enterprise was borne out of a town hall public meeting to discuss the threat of closure of local maternity services. More recent community consultation activities have centred on young people’s mental health and responding rapidly to an increase in youth suicide rates across the Central Highlands region. CHH led a youth-focused movement called #BigRural in response to regional mental health and wellbeing issues. The primary aim of this initiative is to bring together a range of agencies and support workers to provide outreach youth health services to where they are frequently needed. Most often, this is in geographically dispersed and isolated rural communities that do not have easy access to a dedicated health service. This outward-facing and community-centred approach is changing radically how primary health care is delivered in rural locations. Another example of meeting the needs of a specific population is Indigenous Health. Of the population of Emerald 3.24 per cent identify as Aboriginal and Torres Strait Islander (Central Highlands Regional Council, 2016), while 6.5 per cent of patients registered on the CHH database identify as First Nation people. This two-fold increase in indigenous access indicates that the clinic is engaging successfully with a wide range of Aboriginal and Torres Strait Islander clients not only living in Emerald but from across the region. These discussions lead to the emergence of the CHH.

*(b) Rural Orientation*

Health solutions that may work in the city cannot be transplanted readily into a rural setting. One board member commented: “You can’t just pick up a run-of-the-mill GP Clinic from the city and plonk it in a country town and expect it to thrive or even survive”. The CHH board recognised quickly the need for a bespoke primary health care model that involves real consultation with local communities. The flexibility to tweak the model and to take into account unique characteristics of the region (rather than ‘rural Queensland’ in general) was crucial. The model harnesses the power of place and values the people who call the Central Highlands home.

***The community must feel like they own this place — CHH board member.***

CHH has successfully established itself as a business that collaborates and gives back to the rural health professionals it employs and the local community it serves. For instance, it often holds public health information sessions that are open to the whole community and sets up a free health check stand at local events like the annual Emerald Show. Another example of meeting the specific needs of a rural client base was the establishment of a Q-Fever vaccination clinic. Q-Fever is a bacterial infection that can cause a severe influenza-like illness. The bacteria are contracted from animals, mainly cattle, sheep and goats, so it is predominantly a disease common among people living with domesticated animals and working in the livestock industry (SA Health, 2019). The clinic formed an alliance with a local ‘Beef Expo’ so that rural workers could be screened for Q-Fever while in town attending the industry event. Around 100 people attended the first screening clinic, which involved dermatology and haematology tests. A follow-up visit was organised to check the results and clients were administered a vaccination if required. Without this targeted pop-up clinic, many rural residents would not have access to Q-Fever testing and vaccination.

*(c) Creative Partnerships*

The CHH case study is an example of a cross-sector partnership to address a social need. The three main societal pillars – business, government and civil society – together are applied to a social issue. Local government has played an instrumental role in the establishment and ongoing success of CHH. Traditionally, health services provision in Australia is viewed as a state government function with funding support from the Australian government. It is not usually a space for local

government involvement. However, the Central Highlands Regional Council (CHRC) and its supporting not-for-profit entity, the Central Highlands Development Corporation (CHDC), have adopted an atypical mind set and resolved to take a very different approach. They came to view health not just as a service but as an economic driver for their community. The Council's contribution to the project development process was principally in-kind but nevertheless significant. The Council's financial support in making land available of the clinic site (see next section) was pivotal in supporting the viability of the project – without this help the project would never have got off the ground.

***Without the local government partnership and advocacy this primary health care model would never have emerged — CHH Board Member***

CHRC utilised town planning strategies and resources to identify vacant council-owned land that was suitable to be leased to the social enterprise to develop. The two-hectare greenfield site was chosen as the preferred location not only because it met CHH's needs but it aligned closely with the Council's Economic Master Plan (KPMG, 2017) and vision for a sustainable health care sector in the region. Although considered 'on the edge of town', the site selection was advantageous in being located opposite the airport, thus facilitating easy access for medical evacuations, was in a flood-free zone and, most importantly, established the only medical facility on the eastern side of the Nogoia River. One Board member said this was especially important to Emerald because now there is joint access to medical facilities and an airport during those times of isolation due to flooding and other natural disasters. The area was also identified as having future development potential for residential retirement housing and aged-care facilities. CHRC designed an innovative, long-term, lease-to-buy land purchase agreement that allowed the not-for-profit entity to secure the plot and then pay it off in manageable instalments. Council's involvement strengthened the viability of the project during the early stages, and also strengthened the appeal of the project for further funding from federal and state funding bodies.

***Local government have a mandated role of supporting the provision of health services in order to keep their community strong— CHH board member***

CHRC also completed the necessary planning approvals, head works and roadworks, so the greenfield site was accessible and ready for development. The Council and CHDC each provided a high-level representative to sit on the CHH Board of Directors and CHDC provided secretariat support during the start-up phase in order to ensure good

governance. Local government also played a pivotal advocacy role to secure federal funding for the infrastructure build as well as providing leadership for the project within the community.

*(d) Transformative Governance*

The governance structure of a business acts as the framework for organisational innovation (García *et al.*, 2009), but beyond having ‘some’ governance, lies the importance of having ‘good’ governance. A range of studies is beginning to confirm that public funding of social enterprises—such as in this case—are particularly effective in terms of job creation if the entrepreneurs are experienced managers/leaders (Rey-Martí *et al.*, 2016). The clinic project attracted an experienced group of entrepreneurs and managers—including an accountant, a property valuer, a real estate developer, two local Councillors, a GP practice manager and an economic development specialist.

The group maintained a focus on the core business: delivering local health services. Due to the company structure, the board had the flexibility to make minor changes, sometimes in response to understanding the specific challenges of the rural location. Clinical governance is also an important feature of the CHH organisational structure. The highly regulatory nature of contemporary GP clinics demands well-developed and integrated systems and procedures that understand how health services are different to (say) engineering services. CHH places a strong emphasis on a systematic approach both to health and safety and to quality of service but equally views patient experiences as a key measure of quality care. So the leaders of the project drew on patient feedback and using data translation at the practical level both help to improve service delivery, as an integral component of CHH’s clinical governance framework.

Beyond direct health provision benefits, the key secondary benefits to Emerald and the surrounding community produced by CHH’s innovative business approach include the creation of local skilled employment opportunities; strengthening local procurement and supply chain; enhanced training opportunities for the health workforce. Out of what was a ‘purely’ health provision ‘target’, there emerged secondary economic benefits in businesses built around health. New activities such as health education and aged-care developments are boosting the region’s economy and adding value to the local health system. Table 3 provides a summary of the differences between CCH and traditional rural GP clinics in Australia.

Table 3. Comparison of Primary Health Care Models. Source: the Authors

	<b>CHH Social Enterprise</b>	<b>Traditional Rural GP Clinic</b>
<b>Ownership</b>	Community-owned – Limited Company	Privately-owned – Proprietary Limited Company
<b>Governance</b>	Discrete, independent Board of Directors controlled by the community	Self-governed with limited or no third-party or independent oversight
<b>Management</b>	Stand-alone and clearly defined management structure with CEO and executive leadership team accountable to the governing body	Owner/operator model – business oversight by medical practitioners, often a married couple or a professional partnership. No accountability to an external governing body
<b>Strategy Development</b>	Board of Directors has strategic oversight which is separate to management implementation	No separation of duties – owners develop and implement business strategy
<b>Profit Distribution</b>	Not-for-profit – surplus funds are reinvested in the business and community	For profit – surplus funds are distributed directly to the business owners
<b>Infrastructure Ownership</b>	Community-owned	Privately-owned
<b>Workforce Supply</b>	Development of a large pool of GPs (15+) through targeted retention strategies and education programs	Difficulty recruiting and/or retaining a private GP
<b>Funding</b>	Sustainable business model. Access to external government grants	Private funds
<b>Partnerships</b>	Extensive inter-sectoral partnerships with private enterprise, government and non-government organisations	Limited linkages with other local GPs (seen as competitors) or agencies
<b>Training</b>	Profits reinvested in workforce training and professional development. Significant participation in the rural generalist training program	Training often only available after hours or when GP role can be backfilled with locums
<b>Scope of Services</b>	Wide range of on-site care facilities; specialist, medical, pharmacy, pathology, ultrasounds, x-rays and allied health services in one location with clear clinical pathways	Limited on-site services (GP only) – all referrals off-site

### ***Unique Business Factors***

The CHH case study is an example of how non-government organisations engaging in partnerships with government can play a unique role in strengthening the health systems by absorbing the risk that is intrinsic to the experimentation required to discover innovative service delivery models. CHH is agile in nature and complemented by its ability to build relational capital and achieve operational sustainability. Most social enterprises are small-scale and often fragile. CHH is a significant business (within a rural context) that has grown exponentially and in turn extended the portfolio of local health services. There are three broad factors underlying the success, which may not be easy to replicate in other contexts:

#### ***(a) Leadership***

Board members were experienced business leaders, at a ‘give back to the community’ stage of their careers, individuals who explicitly understood the local context and were highly motivated to undertake new initiatives and to foster growth.

***Local government is the closest level of government to the people and need to provide strong leadership regarding local health issues in order to cement the sustainability of rural and regional communities — CHH board member***

The group also coalesced around a single ‘marquee’ stakeholder, the sentinel GP, Dr Ewan McPhee, who is recognised globally for his level of skill and knowledge in Rural and Remote General Practice Medicine. This is a characteristic of CHH that cannot easily be replicated in other contexts, however.

Retaining a high calibre sentinel doctor attracts other high calibre medical staff to the clinic. Dr McPhee is also at the forefront of training medical graduates and junior doctors in rural medical practice. Leveraging Dr McPhee’s status, CHH has been able to establish itself as a rural medical training practice and is an active participant in the rural training pathway continuum for medical education and training in Australia. A recent industry survey suggests that 70 per cent of GPs work in practices employing fewer than 10 GPs (BEACH, 2017). However, the CHH business model seeks competitive advantage and enhanced employee attractiveness through scale and thus aims to recruit a larger cohort of GPs. Although Australia has an oversupply of medically qualified practitioners, there is a general reluctance to leave the major metropolitan areas in search

of work in rural and remote regions. The CHH model is breaking down this geographical barrier and giving city-trained doctors a supportive environment in which to live, work and play.

*(b) Social Capital*

***There was community consensus to do something completely different and create a model to address unmet health service demand but not at the expense of other existing GP practices in town — CHH board member***

CHH is an example in which local community leaders found local solutions to issues that ‘big government’ may fail to resolve. The level and characteristics of social capital present in the Emerald community may not be present in other superficially ‘similar’ rural communities. There remains a high level of societal consensus and social capital in the organisation, as evidenced by the substantial amount of time donated by volunteer board members to support the organisational mission. Another social capital initiative is the CHH Community Palliative Care Volunteer Program that provides in-home visits and support to local community members and their families living with a life-limiting illness. Developed in response to identified community needs the program trains volunteers to provide friendship and practical help to make it easier for a person to receive palliative care in their rural community and, should they wish, to die at home. The support that CHH has may be dependent on a particular mix of social characteristics in the community, that cannot be revealed by a single case study.

*(c) Technology*

Traditional narratives (and indeed in some cases, evidence) (Wiseman *et al.*, 2019) that suggest that rural communities are not willing or able to embrace modern technology were not a factor here. Information technology is a key feature of the CHH business, enhancing its ability to communicate with patients, manage health records, collect business data, source medical diagnostic results and even conduct virtual telehealth consultations online. Ensuring that a rural GP practice is equipped with the tools required to provide comprehensive care is no easy feat. The start-up phase of the CHH enterprise involved creative collaboration to access high speed internet as Australia’s National Broadband Network was not available in the region at the time. Initially, a microwave antenna was installed on top of the GP clinic roof that had a direct line of sight to the

Queensland Rail tower. This microwave link then accessed a direct fibre connection to Brisbane, the state capital, which has provided a stable and steady supply of data to the business. Interestingly, this had wider economic implications for the community: the CHH's technology solution attracted a new internet service provider to Emerald offering faster, cheaper and more reliable internet to rural customers using the existing state-owned fibre optic network – again, an unintended (positive) consequence. Access to technological advances coupled with business model innovation continues to deliver more affordable and convenient health care services to CHH patients.

### ***Challenges***

Rural health is characterised by many complex challenges that are not encountered in an urban context. Within the primary health care setting, rural GP practices often face low profitability, withdrawal of physical public health services seen as economically unviable, as well as issues relating to workforce recruitment and retention. Interview data from this exploratory study identified three critical challenges for the CHH business – red tape, funding model viability and staff remuneration.

#### ***(a) Bureaucracy***

GPs are the cornerstone of primary care. There are about 25,000 registered GPs working in Australia (Medical Board of Australia, 2017). Although there is a national oversupply of doctors, access to a general practice varies depending on location (Swerissen *et al.*, 2018). The medical workforce is not evenly disbursed – there are many more GPs located in major cities than there are in rural or remote areas. There is an ongoing challenge to redistribute the medical workforce to better meet geographical needs. Yet, the bureaucratic processes behind the recruitment of GPs by rural practices can also stifle productivity. For example, CHH has experienced delays of up to six months for newly-hired GPs to receive their Medicare provider number and prescriber number from the Australian Government.

#### ***(b) Funding Model Sustainability***

***Gone are the days where GPs are going to get rich by owning and operating their own small rural clinic. It is no longer an attractive proposition to many GPs — CHH employee***

The Grattan Institute reported that primary care is the most accessed component of the health system and accounts for a quarter of all health expenditure (excluding pharmacy) (Swerissen *et al.*, 2018). GPs are compensated on a fee-for-service basis and patients receive a rebate through the Commonwealth Medicare Benefits Schedule (MBS). A complaint common to general practice in Australia is that the MBS has failed to keep pace with the increasing expense of medical services provision and that out-of-pocket costs to consumers have risen due to successive Medicare indexation freeze policies (Australian Medical Association, 2018). Interview data in this case study concurred with the widely held view that the MBS had not evolved to match the complexity or cost of providing high-quality medical services in a rural setting. A prevailing opinion among the CHH Board of Directors was that it is very difficult to make money in general practice. Profit margins are slender. In general terms, large private hospitals work on a three per cent profit margin. CHH by comparison has done well, achieving a 4% margin (Central Highlands Healthcare, 2018), but such slim profit margins mean that achieving scale becomes essential in the sector. This explains the recent trend to corporatise general practice clinics and thereby to achieve greater economies of scale.

CHH, as a social enterprise has been advocating for a system-wide funding reform to raise quality standards, secure future sustainability of the health system and to deliver better outcomes to patients. CHH has publicly advocated for the introduction of the type of capitalisation-based funding model that is currently used in New Zealand, whereby the amount of government funding equates directly with the number of patients enrolled at a primary health organisation. This means that general practices are paid up-front according to the size of the patient register, not retrospectively based on the total number of GP consultations and other clinic activities in a given year.

### *(c) Staff Renumeration*

Rural general practices compete with the public hospital system to recruit and retain staff. Attractive salary packages and employment conditions for rurally located doctors in the public system are enticing GPs away from jobs in general practices. Many rural GP clinics thus lose key staff to the public health system. CHH has endeavoured to at least partially offset this wage disparity by leveraging its charitable status and obtaining a tax advantage for their staff who are eligible to salary sacrifice a portion of their income. These compensatory steps make their salary package more

competitive with those offered by the local public hospital for comparable roles.

In commercial terms, another issue for any GP clinic in Australia is that the remuneration ratio for doctors is significantly higher than it is for most other professions. There is an expectation among junior doctors that they should earn up to 70 per cent of medical fees collected, a figure that far exceeds the remuneration expectations of other professions—for example, property valuers working in the rural sector may expect 40-50 per cent of fees for every billable hour. The high fee payment ratio in general practice results in only 30 per cent of revenue being available to cover all other operational expenses, such as insurance, electricity, rates, accreditation, administration, IT, equipment upgrades and other overheads. Given that the lion's share of the practice income is allocated to salary expenses, budget oversight and control are critical to the ongoing sustainability of the CHH business model. This remains a pinch point that requires constant and scrutiny.

## **5. SYNTHESIS AND CONCLUSION**

The Emerald Medical Clinic is the only not-for-profit, community-owned clinic funded through \$355.2 million federal Australian plan to build and upgrade GP Super Clinic facilities across Australia. Remarkably, it is one of the few medical practices in Australia to succeed—and continuing to succeed—under this funding package. That is, it is one of the few GP Super Clinics still operating under the original contract terms. Many of the other clinics that received funding were privately-owned businesses which have subsequently financially failed and closed (Australian Medical Association, 2014). It is therefore valuable to analyse how the Emerald Medical Clinic defied this national trend.

This exploratory case study of the CHH social enterprise model suggests its success is strongly linked to its social enterprise approach. By harnessing community skills, its emergence from community (rather than commercial) needs, its ability to forge public-private partnerships, and its leveraging of non-profit status to facilitate access to government funding, have proven important to its sustainability. Rural health providers globally struggle with maintaining the human and other resources in the community, at the point of need. CHH, remarkably, has not just partially overcome this challenge, but has proven itself to be, to date, sustainable and financially resilient, while promoting community cohesion and adding value to the local economy through employment, training and education.

This outcome demonstrates the value of community engagement, inclusiveness and adopting a multi-stakeholder approach to enhance rural health care delivery. Innovative interventions and programs are reaching vulnerable populations in historically under-serviced rural and remote areas of Central Queensland. Findings from this study suggest that social enterprise in the primary health care space has the potential to address rural health issues at a local level, and to deliver additional positive benefits in terms of economic sustainability. The clinic proved to be a seed for local health-related enterprise, gaining economies of scale in quite a small community, and even helped drive enterprise beyond the health sector (for example, leading to improvements in IT infrastructure in the community). Thus, CHH offers an integrated service that, emerging from community needs rather than imposed by state or federal government thinking, is almost custom designed, or at least responsive, to geographical context. Productive collaboration and trust-based relations with key stakeholders such as regional government have mobilised the local community to help itself to transform challenges into opportunities.

With health budgets still focused on a conventional medical model of addressing ‘problems’ as they arise, rather than prevention, for social enterprises focusing on primary care, such as the case examined here, there is an opportunity to not just draw seed capital into a social enterprise project, but to link their sustainability with the continuing need to provide primary health care in the regions. While social health programs focused on preventative health approaches may offer good value for money in rural communities (Harvey, 2001) building primary healthcare centres around high volume/high demand primary can address preventative and primary health care in the same footprint. The current case shows how high volume primary health care can act as an ‘engine’ for other forms of health services. To illustrate, after just three years of operation, CHH had 27,000 registered patients—from a population of 30,000. Few social enterprises other than a health-related enterprise could draw these numbers, but these numbers also illustrate the enterprise’s success in meeting local needs.

CHH thus offers one possible model for rural health care provision. The host region may not be typical of ‘all’ rural Australian towns, with its blend of mining and agriculture, but it does illustrate the potential of grassroots-initiated change—what is termed in the language of social innovation, a design-thinking or human centred design approach (Van der Bijl-Brouwer and Dorst, 2017). Social enterprise may thus also have a role to play in addressing social isolation and disconnection in the community (Kelly *et al.*, 2019).

This case study suggests that social enterprises not only have a role to play in ‘solving’ or responding to rural health challenges, but in doing so also more broadly contribute to rural development—having unintended positive consequences for whole communities, rather than purely a single sector.

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## Appendix 27: A comparison of health equity audit tools

	Tool Name	Origin	Level	Aim	Key Questions/Attributes	Strength	Constraints
1.	Health Equity Assessment Tool (HEAT) (Signal, Martin, Cram, & Robson, 2008)	New Zealand	Strategic National	To examine the status of health experienced by different population groups	1. What inequalities exist in relation to the health issue under consideration? 2. Who is most advantaged and how? 3. How did the inequalities occur? 4. What are the mechanisms by which the inequalities were created, maintained or increased?	Focus on equity considerations during health planning process. Section 1-3 relevant to this study.	Not implemented at grassroots level. Section 4-10 deal with direct interventions and outside scope of this research.
2.	Health Equity Indicators (Ontario Public Health Association, 2013)	Canada	Strategic Organisational	To provide a governing body a self-assessment tool on existing health equity status	1. Population profile categories 2. Determinants of health for each population group 3. Potential impacts – positive and negative	High level findings integrated into policy development, strategic planning and health service delivery. Step 1 & 2 relevant to this study.	No guidance at the local area level. Does not directly consider rurality and health equity.
3.	Health Equity Toolkit (Beenackers, 2015)	European Union	Strategic National	To develop evidence-based health equity action plans ready for operationalisation	Phase 1 – Needs Assessment <ul style="list-style-type: none"> <li>General data</li> <li>Regional profile</li> <li>Inequalities of health determinants</li> </ul> Phase 2 – Capacity Assessment <ul style="list-style-type: none"> <li>Individual level</li> <li>Organisational level</li> <li>Institutional framework</li> </ul>	A practical resource for policy makers and practitioners targeted at a national level. Focus on identifying capacities to develop strategies to improve health equity. Phase 1 & 2 relevant to this study.	This provides a ‘big picture’ approach. Phase 3 & 4 outside scope of this research – relates to interventions.

	Tool Name	Origin	Level	Aim	Key Questions/Attributes	Strength	Constraints
4.	National Health Service Health Equity Audit (Goodrich & Pottle, 2005)	United Kingdom	Local Community	To develop a health equity profile at the grassroots level to bring about change with a particular group, area or service	<ol style="list-style-type: none"> <li>1. Partnerships and issue identification</li> <li>2. Equity profile – identify the gaps</li> <li>3. Local action – narrow the gaps</li> </ol>	A pragmatic tool with a focus on disadvantage communities and investigates <i>differences in opportunity</i> for different population groups. Strong focus on local plans. Sections 1-3 relevant to this study.	<p>Heavy reliance of partnerships and local area capacity to complete the health equity audit.</p> <p>Sections 4-6 outside scope of this research – relates to implementing actions.</p>
5.	Promoting Health Equity (Brennan Ramirez, Baker, & Metzler, 2008)	United States of America	Local Regional National	To provide an integrated framework to analyse health equity strengths, challenges and capacity and gaps	<ol style="list-style-type: none"> <li>1. Assess partnership resources</li> <li>2. Assess social determinants of health</li> <li>3. Apply assessment methods (quantitative and qualitative)</li> <li>4. Assess community capacity – map community assets</li> </ol>	Considers a population's socioeconomic position and mapping community assets. Focus on small-scale programs and initiatives. Sections 1-3 relevant to this study	<p>Does not consider rural determinants of health.</p> <p>Specifically designed for US health setting.</p> <p>Sections 4-7 outside scope of this research– relates to implementing actions.</p>
6.	VicHealth Framework for Health Equity (VicHealth, 2015b)	Australia	Universal	A conceptual framework designed to encourage evidence-based actions to address social determinants of health inequities	<ol style="list-style-type: none"> <li>1. Socio-economic, political and cultural context</li> <li>2. Daily living conditions</li> <li>3. Individual health-related factors</li> <li>4. Differences in health and wellbeing outcomes</li> </ol>	Australian health setting. Promotes the use of checklists and lenses; impact assessments; and support structures.	<p>Strong urban focus.</p> <p>Resource dependent.</p> <p>Provides only 'prompts' for planning, rather than specific tools.</p>

## Appendix 28

### 17th WONCA World Rural Conference - Dhaka, Bangladesh, 15 to 18 April 2020

#### Innovation from necessity: two contrasting cases of remote area health access

Pratima Durga<sup>1,\*</sup>, Lisa Caffrey<sup>1</sup>, Andrew Taylor-Robinson<sup>2</sup>, Olav Muurlink<sup>1</sup>

<sup>1</sup>School of Business & Law; <sup>2</sup>School of Health, Medical & Applied Sciences,  
Central Queensland University, Brisbane QLD 4000, Australia

#### Abstract

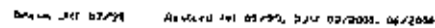
**BACKGROUND:** This study examines two highly contrasting cases of remote health access, one in the developing and one in the developed world. Bhola Island in Bangladesh is a tropical region, densely populated, while the Gemfields in Australia is an arid region, with less than two residents per square kilometre. Policymakers nevertheless face common challenges in these starkly different regions beyond the direct challenge of physical remoteness. An absence of sufficient qualified medical professionals means less mobile, lower socio-economic groups seek alternatives in the vacuum.

**METHODS:** Qualitative interviews were conducted with 28 village doctors and eight professional medical practitioners in southern Bhola, and 15 health professionals in rural Queensland. Interviewees were selected by random sampling.

**RESULTS** Limited professional service provision caused by acute unwillingness of trained medical practitioners to relocate to remote regions; poor health literacy; reduced regulatory control by the national authorities that is linked directly to geographical remoteness, and unregulated misuse of medication are common problems in these two contrasting environments. Extreme poverty, transport and mobility challenges each compound the observed deficits. In Bangladesh, the residents have restricted options to access government hospitals and clinics in which they have significant trust and turn to informal village doctors, or *palli chikitshok*, often by choice. By contrast, in Australia, residents choose to opt out of government service networks due to low trust in professionally trained and accredited governmental services.

**CONCLUSION:** While the Bangladeshi and Australian rural and remote contexts are, *prima facie*, vastly different, they show unexpected commonality. Perhaps surprisingly, it is the developing world case that provides the greater insight into how to best address the challenge, taking advantage of deregulation to innovate in response to geographical isolation. The main advantage identified in both environments was the potential for e-health solutions.

## Appendix 29



## Rural Health Equity: A Case Study

Source: Gemfield's Community Support Centre

## Health Equity Locale Profile (HELP)

Location: GEMFIELDS

For use in small-scale rural and remote communities in Australia

Instructions: There are 12 rural health equity indicators listed in the HELP tool. Please rate each indicator between 1 – 4 by circling one box that best describes your community. Record the corresponding number in the subtotal. Add the 12 scores together to receive a total score.

#	Factor	Indicator	1	2	3	4	Subtotal	Total
8	Proximity	Driving time to a hospital	10 minutes or less	11-30 minutes	31 - 89 minutes	90 minutes or more	3	
8	Mobility	Public transport	6-7 days/week	4-5 days/week	1-3 days/week	No public transport	4	
8	Mobility	Number of cars/household	0-5% have no access to a car	6-14% have no access to a car	15-19% have no access to a car	20% have no access to a car	4	
8	Advantage / Disadvantage	SEIFA - IRSD	75 - 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile	4	
8	Advantage / Disadvantage	SEIFA - IRSAD	75 - 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile	4	
8	Advantage / Disadvantage	SEIFA - Index of Education and Occupation	75 - 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile	4	
8	Advantage / Disadvantage	SEIFA - IED	75 - 100 percentile	50-74 percentile	25-49 percentile	24 or less percentile	4	
8	Rurality	Monash Modified Model Rating	1 & 2	3	4-5	6-7	4	
9	Health Supply	GP coverage in location	6-7 days/week	4-5 days/week	1-3 days/week	0	3	
10	Health Supply	Ambulance coverage in location	6-7 days/week	4-5 days/week	1-3 days/week	0	1	
11	Health Supply	Nurse coverage in location	6-7 days/week	4-5 days/week	1-3 days/week	0	2	
12	Health Supply	Pharmacy coverage in location	6-7 days/week	4-5 days/week	1-3 days/week	0	2	
							Total Score	39

**Result = Low Rural Health Equity.**

Total possible score = 48

12 - 23: Very high rural health equity (very high level of advantage)

24 - 30: High rural health equity (high level of advantage)

31 - 39: Low rural health equity (low level of advantage)

40 - 48: Very low rural health equity (very low level of advantage)

### Notes:

1. Number of cars per household data is available from the Australian Bureau of Statistics (ABS) Census.

2. SEIFA data is available from the ABS Census.

3. Monash Modified Model categories can be found at [www.modifiedmonashmodel.com](http://www.modifiedmonashmodel.com)

## Appendix 31: Additional photos of The Gemfields

Image 1: Active Mining Claim



Note: photo by the author

Image 2: Mine shaft (closed with tin when not in use)



Note: photo by the author

Image 3: Sophisticated mining claim shaft (concreted)



Note: photo by the author

Image 4: Example mine claim dwelling (tin shed)



Note: photo by the author

Image 5: Example mine claim dwelling (tin shed)



Note: photo by the author

Image 7: Garden Shed used as a home



Note: photo by the author

Image 8: Inside tin shed – bed, lounge, heater



Note: photo by the author

Image 9: Inside tin shed - kitchen



Note: photo by the author

Image 10: Historical site #1 – original miners shed



Note: photo by the author

Image 11: Historical site #2 – original miners shed



Note: photo by the author

Image 12: Example outdoor camp kitchen



Note: photo by the author

Image 13: Nature Loo (original outdoor toilet)



Note: photo by the author

Image 14: Make-shift shower on mining claim



Note: photo by the author

Image 15: Example of signage on mining claim



Note: photo by the author

Image 16: Trespassers will be shot



Note: photo by the author

Image 17: Mine claim identification signage



Note: photo by the author

Image 18: Mine claim identification signage



Note: photo by the author

Image 19: Bus dwelling



Note: photo by the author

Image 20: Minivan dwelling



Note: photo by the author

Image 21: Caravan dwelling under tin



Note: photo by the author

Image 22: Caravan dwelling on mine claim



Note: photo by the author

Image 23: Camels roam free at the Sapphire town entrance



Note: photo by the author

Image 24: Horse grazes outside the Rubyvale Hotel



Note: photo by the author

**Image 25: Abandoned Gem Store in Rubyvale**



Note: photo by the author

**Image 26: Old fuel Station in The Willows**



Note: photo by the author

**Image 27: The Willows Helicopter Pad**



Note: photo by the author

**Image 28: Anakie Railway Station**



Note: photo by the author

Image 29: Sole children's playground in Sapphire



Note: photo by the author

Image 30: Community Hall in The Willows (interview location)



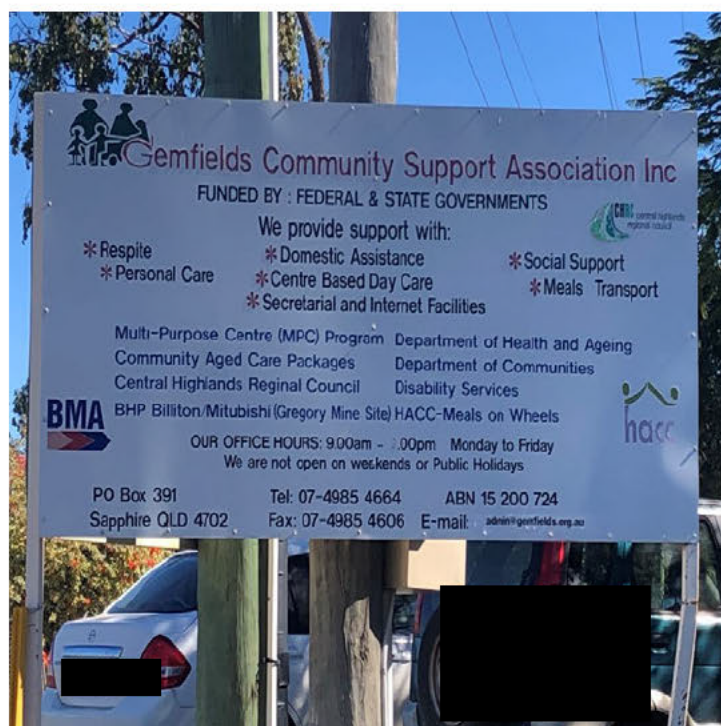
Note: photo by the author

Image 31: Exterior signage to ROC



Note: photo by the author

Image 32: Exterior signage to Multipurpose Centre



Note: photo by the author