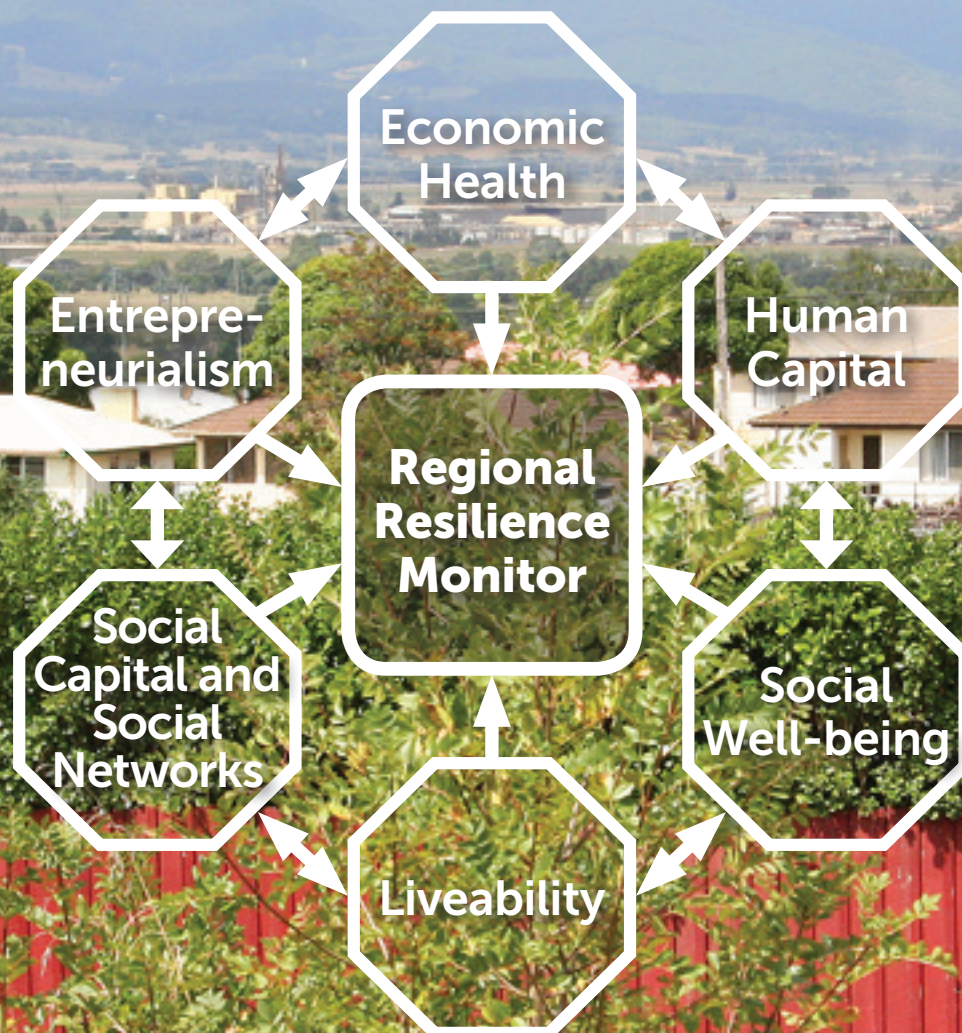


# Developing a Regional Resilience Monitor

2014

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# **Developing a Regional Resilience Monitor**

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## Executive Summary

This study develops a Regional Resilience Monitor (RRM) which will enable the measurement of changes over time in a number of key dimensions for the well-being of regional Australia. Resilience is defined as the capacity of a local community to respond to, and anticipate economic, social and environmental change and to adapt, plan and transform itself for the future. Regional Resilience – in terms of health and well-being, productivity and economic growth, managing risk, and capturing opportunities for sustainable environments and human systems – has been identified as a key strategic priority for Australia, as it has been for a number of other countries.

The RRM is made up of six interlocking elements that, together, form a holistic tool and provide a composite measure. These elements are:

1. Economic Health
2. Human Capital
3. Social Well-being
4. Liveability
5. Entrepreneurialism
6. Social Capital and Social Networks

The first four elements can be measured using existing data and we identify those data sources. Elements 5 and 6 can be measured using a combination of existing data and, respectively, a newly developed regional entrepreneurship survey and a newly conceived social network analysis.

The RRM was developed in, and for, the Latrobe Valley and the wider Gippsland region but can be ‘rolled out’ across regional Victoria as a whole and across regional Australia.

\*The first four elements have been measured by the researchers and are discussed in the companion report Lawton, A., Valenzuela, E., Duffy, M., & Morgan, D. (2014). *The Development of the Gippsland Economic Modelling Tool*. A Report Prepared for Regional Development Victoria (Gippsland). Gippsland, Victoria: Federation University Australia.

## Key Deliverables

The RRM is a theory-based monitor of regional resilience that can be updated on a periodic basis. The RRM can:

- ❖ Identify and integrate existing data which assess liveability, health, social and economic impacts for the region in order to facilitate building capability to plan and adapt to change;
- ❖ Provide new measures that will capture entrepreneurial activities, aspirations and attitudes (referred to as the entrepreneurial mind-set), social capital and community networks;
- ❖ Provide a set of validated social impact indicators, that can be monitored over time, as a basis for informed, engaged and institutionally integrated regional programme planning, investment and policy-making;
- ❖ Identify critical barriers in the way of, and enablers for, economic productivity and social and community development;
- ❖ Differentiate between different levels of economic and social performance throughout the region, thus reflecting regional relativities, allowing for more specific policy recommendations, and;
- ❖ Provide evidenced based input into future policy, programmes and funding decisions.

## Introduction

Regional Resilience – in terms of health and well-being, lifting productivity and economic growth, managing risk, and capturing opportunities for sustainable environments and human systems – has been identified as a key strategic priority for Australia (see [www.innovation.gov.au/StrategicResearchPriorities](http://www.innovation.gov.au/StrategicResearchPriorities)).

Regions, as much as individuals, can be vulnerable to changes in economic, social, health or environmental conditions. What is important is how regions respond to, and, indeed, anticipate the impact of those changes. Much will depend on the resources, economic, social and human, that are available and can be leveraged by key stakeholders including community groups, government and business. The capacity to respond will depend upon a number of factors including current economic health, the quality of the relationships between different stakeholders, the support networks that exist within a community, the human capabilities and competences that exist and the attitudes of individuals and groups to the challenge of change.

The Gippsland region presents particular sets of economic, social and ecological challenges and these are well-documented. As the *Gippsland Regional Growth Plan* (2014) reminds us, Gippsland has an economy that relies strongly on natural resources and strong population growth. Gippsland's oil, gas, and coal, water catchments, agricultural produce and nature-based tourism drive not just the region's economy but also that of Victoria, while a projected population growth of 20% in the next 15 years also means a growth in demand for goods and services, residential and industrial land as well as improved infrastructure. These also mean increased pressures on the region's liveability and sustainability.



Locally, the rapidly changing economic and social changes facing Gippsland, and the Latrobe Valley in particular, present both challenges and opportunities. The *Latrobe Valley Industry and Employment Roadmap* identifies these challenges and opportunities and:

- ❖ Recognises the need to enhance entrepreneurial capacity
- ❖ Argues for enhancing workforce skills through training and education
- ❖ Identifies *liveability* as a key consideration
- ❖ Promotes the need for a more diverse industry base
- ❖ Recognises the importance of stakeholder engagement

This report presents a holistic tool to capture the changes in six key dimensions that underpin resilience. We recognise that what makes up a region or a community is sometimes difficult to define and would need to include geographical location, common interests, common identities and common issues. We have used as our ‘unit of analysis’ the geographical locations associated with the local authority. This is the unit of analysis for much of the available data and it is recognised that local governance arrangements will be a key component of the resilient community.

## **Defining of Resilience**

Resilience has been identified as a response to key events such as floods, climate change or bushfires (Pooley *et al.*, 2010); as the capacity of individuals and communities (Buckle *et al.* 2001); and, elsewhere, as the quality of a nation (Conservative Party, UK, 2010). Yet, according to commentators; “Superficially, ‘resilience’ is an undoubtedly agreeable ‘motherhood and apple-pie’ notion” (White & O’Hare, 2014: 1). Despite such scepticism the concept of resilience has attracted a range of definitions, from both academics and

government, even though agreement in one definition has remained elusive. Table 1 indicates some of these definitions.

**Table 1:** Key definitions associated with the concept of resilience.

<b>Author(s)</b>	<b>Definition</b>
Hegney <i>et al.</i> (2008:3)	Resilience refers to the capacity of an individual or community to cope with stress, overcome adversity or adapt positively to change.
Maguire and Cartwright (2008:3)	Social resilience is the capacity of a community to cope with disturbance or changes and to maintain adaptive behaviour. Social resilience has economics, political, spatial, institutional and social dimensions....
Reid and Botterill (2013:33-34)	In some disciplines, resilience means a capacity to return to the status quo; A second approach sees resilience as a measure of the ability of a system to absorb change and disturbance. A third definition focuses upon social resilience which refers to the capacity of communities to adapt to changes in their circumstances, political, social and economic. Resilience can be seen as proactive rather than reactive change to external circumstances and can be forward looking. A resilient community might be one in which society ‘bounced back’ to some sort of status quo after recovering from some external shock such as a natural disaster’.
Shaw (2012:2)	...resilience has recently emerged as an important feature of debates on how individuals, communities and organisations can draw upon their internal resources and capabilities to both ‘bounce back’ from external ‘shocks’ and reduce future vulnerabilities.

In drawing upon these different definitions we offer our own definition:

*Resilience is the capacity of a community to respond to, and anticipate, economic, social and environmental change and to adapt, plan, and transform itself, for the future.*

Thus, resilience is more than simply recovering from a shock or crisis. Communities are dynamic entities, encountering and responding to a range of changes. Therefore resilience needs to be considered in terms of the capacity a community has to anticipate and plan for the future, taking into account how such plans can involve intentional and transformative actions to influence what sort of change take place (Edwards & Wiseman 2010).

Recent research points to the significance of a number of factors in the resilience of a community in facing crises and challenges, with a particular focus on a framework of assets in terms of 'capital' (Hunt *et al.* 2011: 113):

- *human capital* (the knowledge, skills, and health status of the population);
- *social capital* (relationships and social groupings within the community);
- *produced capital* (financial resources of the community and the equipment and infrastructure driving the local economy);
- *natural capital* (the state of the natural bio-physical environment), and;
- *institutional capital* (i.e., the public, private or not-for-profit organisations and institutions that can be drawn on as local capacity).

Clearly, resilience at the community level is dependent upon resources, economic, social, human and environmental, and the strength, nature of, and commitment to, community relations. It will also depend upon the attitudes and beliefs of community members (Hegney *et al.* 2008)

A lack of resilience makes communities and individuals vulnerable. Ensuring levels of adaptive capacity in communities provides a means of safeguarding against vulnerability.

Much that has been written on the vulnerability of communities has addressed areas such as agricultural production, economic impacts, or health (particularly with regards to risk and health cost (see Confalonieri *et al.* 2007). There has also been research on vulnerability in terms of concerns about the impact on individuals and communities of a low socio-economic status and how this can be addressed, (for example Adelekan, 2010). Within government frameworks protection against individual and community vulnerability has begun to focus on measuring indicators of community wellbeing. In their recent report, *Community Wellbeing Indicators: Measures for Local Government*, Morton and Edwards state that governments must better understand ‘what drives the sense of wellbeing of people and nations’ so as to determine ‘what needs to be done to achieve greater progress for all’ (2012: 7).

What researchers in this field are pointing out is that approaches to resilience need to be addressed through interdisciplinary frameworks (Wilkinson *et al.* 2010). This is the approach that underpins the RRM.

## **Elements of the Regional Resilience Monitor (RRM)**

Resilience studies, presented in both the academic and grey literature, present a number of factors that contribute to a local community’s resilience. These include economic development and social capital (Sherrieb *et al.* 2010); human capital and natural capital (Hunt *et al.* 2011) community resources (Maguire & Cartwright, 2008) civil society and governance, innovation (Longstaff *et al.* 2010); social networks (Pooley *et al.* 2010) strategic leadership (Shaw, 2012); strong networks and face-to-face communications (Lee & Lee, 2010). Our six elements or indices of the RRM encapsulate all of these and whilst we discuss them individually we recognise that there will be overlap between them given the complexity involved in defining resilience.

### *Index 1: Economic Health*

Economic health is concerned with the extent, and type of, economic activity within a given location and the prospects for economic growth. This is made up of a number of different factors including the level of economic resources, the degree of equality in the distribution of resources and the scale of diversity in economic resources. It can be measured by, for example, employment levels, employment diversity, housing values, number and diversity of businesses, income levels and so on. GDP is used at the national level but is less useful at the regional and local levels.

It is considered that the more diverse the economy, and the higher the levels of employment the more resilient the region is likely to be.

### *Index 2: Human Capital*

The OECD defines human capital as “the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being” (2001: 18). Thus, while human capital is held within the individual, the skills, knowledge, and capabilities and health status of a population generally are more broadly linked to the social and economic well-being of the community. Therefore human capital underpins the wider community and is not just the property of the individual. It also points to the importance of the physical health of the population as a contributor to human capital. Thus the more diverse the skill sets of the workforce, the greater the influx of new skills, the higher levels of education and health are all likely to lead to a more resilient community.

### *Index 3: Social well-being*

Community health and well-being contribute to overall well-being and is not determined by income or wealth alone. It can be measured through, for example, the quality of life index, which links subjective notions of life satisfaction with more quantitative data such as average wage, education and life expectancy. It is also dependent upon the quality of health care provided, the extent of drug and alcohol consumption and the level of criminal activity. However, the quality of life indices often underestimate the significance of community and connections to the quality of life. Hence, factors such as family bonding in the home, community health and wellbeing, community engagement, social capital and social networks are important contributors to quality of life (see Cummins & Choong, 2012). Understanding how these factors contribute to social wellbeing is fundamental to ensuring all members of a community are valued and able to contribute to building a resilient and strong society. What is key to ensuring a resilient community is to facilitate the ways in which individuals come to feel connected such that a stable society – one that has a shared consciousness and is built around sustainable co-operation – is valued and actively maintained. In this approach social cohesion plays an important role in building a set of shared values, which in turn facilitates a sense that individuals are engaged in facing shared challenges.

Thus, social well-being results from the frequency of social groupings and the interconnectedness of community relationships within given locations and we capture these connections with the social network analysis described below.

#### *Index 4: Liveability*

Liveability is the ease of access to organisations and facilities within a given location accounting for physical/spatial links or networks and the quality of the physical environment.

Liveability is most often associated with the global liveable city rankings of the Mercer *Quality of Living Survey* and the Economic Intelligence Unit's *Global Liveability Report*.

These rankings are based on factors such as political stability, health care, infrastructure, education, culture and environment. According to *The Economist* in 2014, cities ranked highly are likely to have low population densities, which may mean that these places are more likely to be associated with low crime rates, functioning infrastructure, and easily available recreational activities.

The Planning Institute of Australia (PIA) has argued for government policy and strategies that address the increasing disparity between urban and regional places that are exacerbated by globalisation processes (PIA 2010). Their recommendations include considering how smaller towns and regions can be integrated into larger networks; improving localised public transport services, road connections, information and communication technologies; acknowledging that lifestyles outside of the major cities offer many benefits for families and older people and therefore regional centres may offer an attractive alternative to the continued sprawl of the bigger regional and metropolitan centres.

#### *Index 5: Entrepreneurialism*

Entrepreneurialism is important to the RRM for several different reasons:

1. It indicates the level of optimism in a region concerning new business opportunities
2. It encourages a more diverse economic base
3. It is closely linked to innovation

Our working definition of Entrepreneurialism is:

*Entrepreneurialism involves human activity that identifies, and acts upon, opportunities that create value, be that economic, cultural or social, by exploiting new products, processes or markets.*

We suggest that Entrepreneurialism involves three main factors and these are the activities, attitudes and aspirations on behalf of the individual entrepreneur (see Global Entrepreneurship Monitor found at <http://www.gemconsortium.org/>). The factor Activities is concerned with what is done; Attitudes involves that of both of individuals and the wider community to entrepreneurialism and entrepreneurs; Aspirations is concerned with the optimism to start a new business or enterprise. Each of these three elements can be measured in different ways. We also need to consider the climate for entrepreneurial activity. That is, the extent to which there is government, financial, cultural and social support for entrepreneurial activity.

#### *Index 6: Social Capital and Social Networks*

A further significant factor in healthy and resilient communities is that of social capital. Social capital is about the relationships that connect and create meaningful exchanges that form social ties. Face-to-face connections are complemented by virtual connections. Scholars such as Lee and Lee (2010: 711) found that face-to-face communication “in the traditional community is still essential to ensure the quality of community as a whole” as they observed deep and lasting affection between community members. Physical relationships and face-to-face communication encourage engaged communities to sustain social capital. Strong



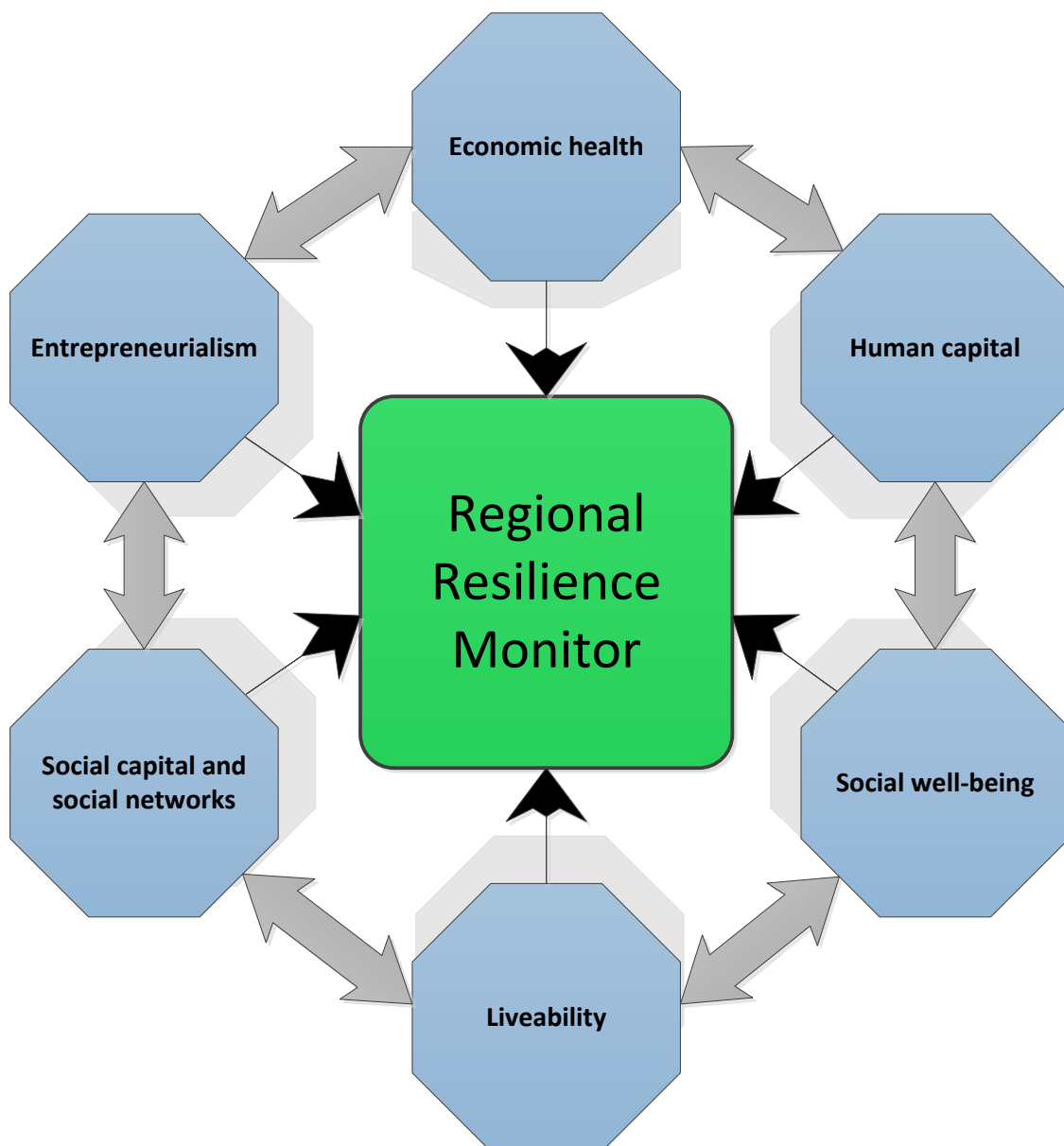
networks and online communication through social media, for example, further enhances community conversations and sets up networks for ongoing communication.

Located within both informal and formal community networks, social capital facilitates the sharing of information, and supports collective action and decision-making. Key to this is to facilitate the ways in which individuals come to feel connected and that their contributions to decision-making are valued. As Field (2008: 3) points out, 'people's networks really do count... [these networks] are part of the wider set of relationships and norms that allow people to pursue their goals, and also serve to bind society together.' Moreover, it is the quality of these relationships that are important. For while social capital is understood to confer resilience in communities (Cacioppo & Patrick 2008), where it is there is increased vulnerability (Pine, 2012). Thus we are interested in social support involving networks with family and friends; social participation through formal social networks individuals have with groups and organisations (professional, social, economic and health-related participation); and community bonds through participation in group and community activities.

Social Network Analysis is the method that can measure the relationships between individuals and between groups within a community. It focuses upon the structure of the relationships and how they may change and thus demonstrates the dynamic, and not static, nature of social relation. The properties of the network that can measure these relationships include the content of the relationship, in terms of resources, information, influence and social support; the nature of the relationship in terms of its importance and the frequency of communication; the density of communication and the centrality of individuals and groups in the network (Streeter & Gillespie 1992).

The interlocking relationships of these six elements are captured in Figure 1.

**Figure 1:** The elements of the Regional Resilience Monitor.



## Resilience Indicators

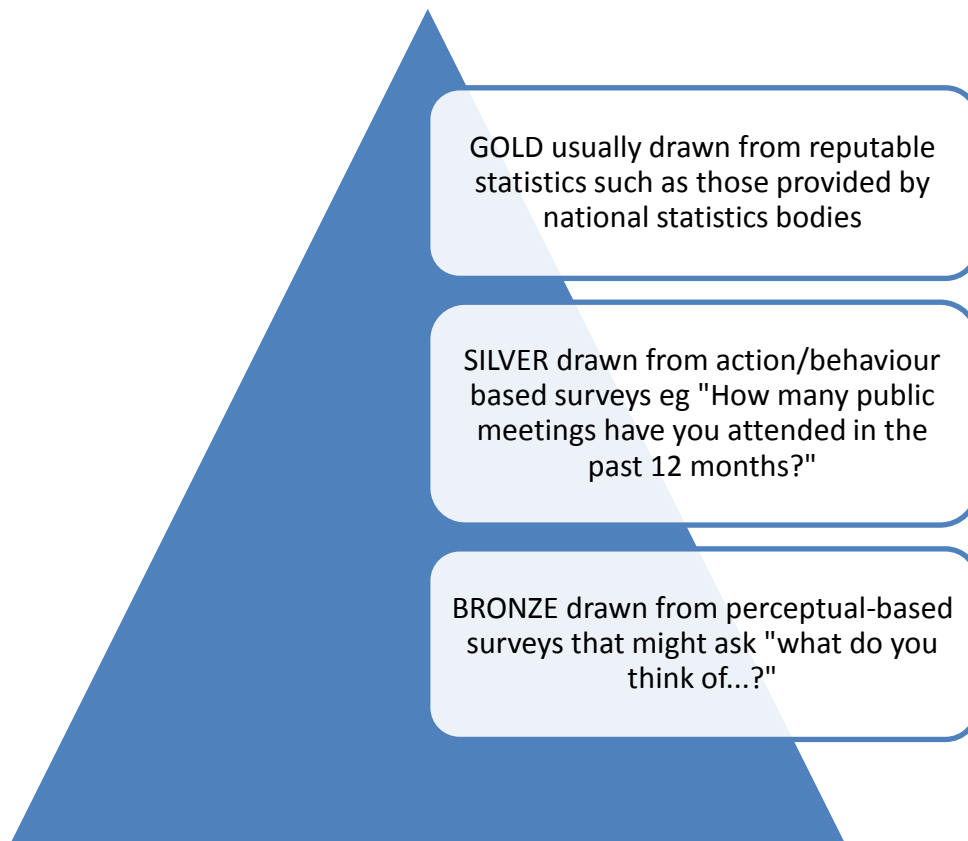
The use of Key Performance Indicators (KPIs) is common in government and business alike and are frequently used in policy studies. An Indicator provides information that is selected on the basis of objectivity that helps us to understand whether things are getting better or worse. KPIs have a number of features and we have borne these features in mind when choosing the KPIs for the RRM. We also identify some of the challenges in the use of these KPIs.

1. **Availability** – information may be available at the national level, but not at the local or town level. In order to make fine-grained distinctions at local levels then the lack of data are a problem.
2. **Cost-effective** - collecting data can be very expensive and existing data should be used as far as possible. Where that information is not available, or not available at a reasonable cost, then primary research will need to be conducted. For the RRM data are available for Economic Health, Human Capital, Social Well-being and Liveability and for only certain items of the Entrepreneurialism and Social Capital elements.
3. **Consistent over time**- in order to track progress we need to be clear that the baseline data being collected can also be collected subsequently. For a baseline of 2015 this would have to rely on existing data from, for example, ABS and new data collected by survey and the Social Network Analysis.

4. **Consistent methodology** - drawing upon a large number of data sources means these will need to be monitored for consistent methodology. For example, The Community Indicators Victoria (CIV) survey, much used in community well-being research, consists of ABS data (20%), telephone survey (29%) local council data collected for other purposes (2%), data collected by state organisations (44%) and data collected by national organisations (5%).
5. **Be substantiated by current research** – We have provided a theoretical framework for our dimensions and this has provided the rationale for the Indicators that we have used.
6. **Credible** – We are mindful of using indicators that are likely to provide information relevant to the domain and also are drawn from credible sources.
7. **Straightforward to interpret** – Indicators need to be simple and clear.
8. **Sufficient sample size to avoid bias** – In collecting new data for the through the Entrepreneurialism and Social Capital elements we need to be clear that our sample size is of sufficient size and representativeness to avoid bias in our findings and analysis.
9. **Relevance** - Be recognised as relevant and supported by stakeholder groups. We have presented the initial set of indicators to an academic audience and to Regional Development Australia Gippsland Committee and to Latrobe Valley Transition Committee, Senior Officers Group.

There are different data sources for Indicators, each of which might serve a different purpose and be more or less robust. We are confident that the majority of the Indicators will be of ‘Gold standard’.

**Figure 2:** Gold, silver and bronze indicators.



One notable contribution resilience research has provided is acknowledging that measuring such indicators is a complex task and that it is appropriate to consider these indicators of resilience as ‘... a collective concept [that] should be measured at the aggregate level’ (Sherrieb *et al.* p. 233).

## The Methodology

The purpose of this study is to create a monitor to capture the six elements or indices relevant to community health and economic performance for the Gippsland region. The six indices were specified based on an extensive review of academic theory plus previous government and community initiatives that inform on the measurement of the health, well-being and economic progress relevant to specified geo-political regions. Following this review, six identified indices captured the breadth and scope of community status and performance.

Following this initial process, the research programs followed ten steps:

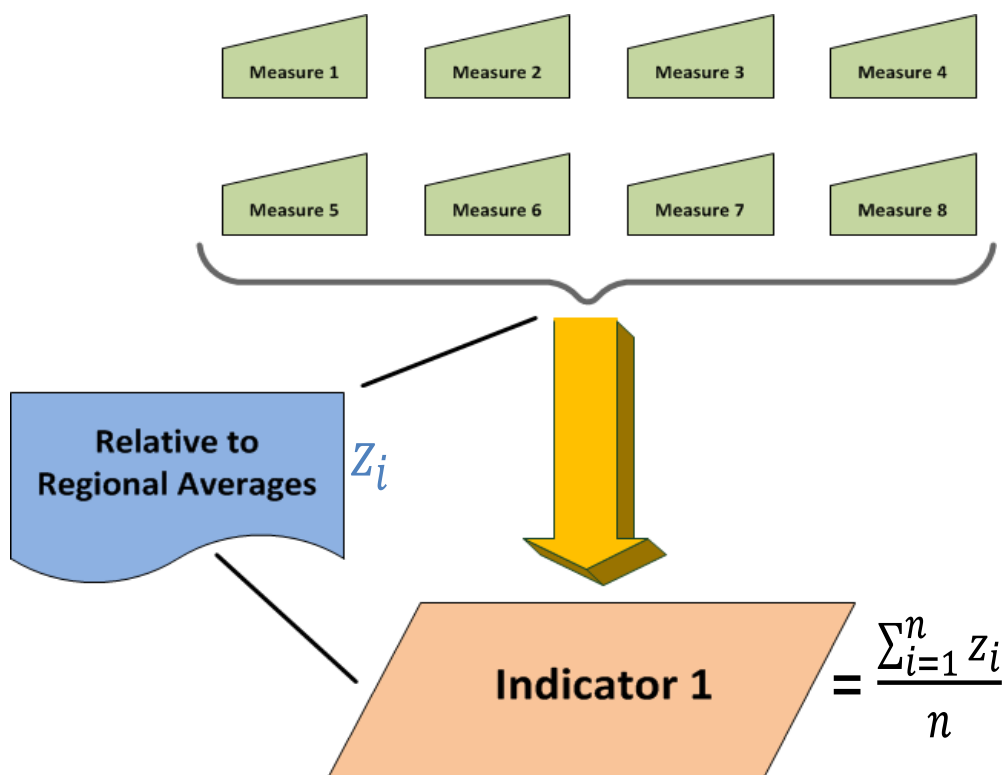
- (1) A working definition was proposed for each index and agreed to by the project team.
- (2) A comprehensive list of all available candidate data sources relevant to the project was compiled. The list was informed by previous work, consultation with Regional Development Victoria, and directed Internet searches. Sources included the Australian Bureau of Statistics, Department of Health, and the Victorian Commission for Gambling and Liquor Regulation.
- (3) Candidate data sources were screened by the research team for currency (data reported for 2006 onwards), and numerical format. Data sources were further characterised according to the standard of validity discussed later.
- (4) Selected data sources were sorted into one of six indices by the project team based on the operational definitions. This process was first conducted by individuals. A group consensus process was then applied. Where disagreement on the categorisation of a data source was found, opposing views were considered followed by a final consensus decision.
- (5) For each index, classified data sources (termed indicators) were listed in tailored spreadsheets allocated to a specified location (i.e Local Government Area).

- (6) Indicator data were transformed into standard scores (allowing valid summation).

Where necessary this transformation applied a calculation so each indicator moved in the same direction with respect to community benefit (e.g., the indice, *share of people reporting type 2 diabetes*, may be viewed as a community disbenefit – the direction of measure effect was reversed (1 minus the score) with respect to its contribution to the index *Human Capital*).

- (7) Transformed indicator data were aggregated by selected location for each index. Each score was then standardised (z-scores). The standardised score was then compared to a selected benchmark represented by a mean value; this was in most cases a summated regional average. The allowed the relative performance of that index to be compared to that average. The figure below demonstrates the basic method.

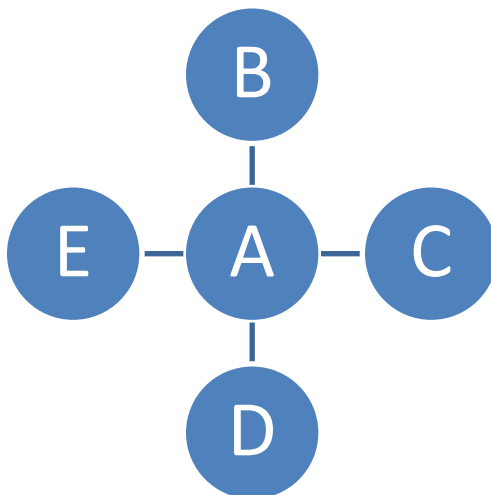
**Figure 3:** Calculating the index



- (8) We developed a regional version of the Global Entrepreneurship Monitor and piloted this using a telephone survey in Baw Baw, Latrobe City and Wellington Shire (see Appendix 2 for a copy of the survey).
- (9) We used a method, Social Network Analysis and developed a tool to provide information on the type, extent and reason for, communications between groups and piloted this with 2 organisations within the Gippsland region (Appendix 3 provides details of the template that we used). Figures 4, 5 and 6 illustrate the basic idea.

Social network analysis has its roots in different disciplines going back to the 1930s and has been a feature, in particular in research in the disciplines of sociology and anthropology and more recently in the study of firm relations in business studies. Relations can be depicted in several ways.

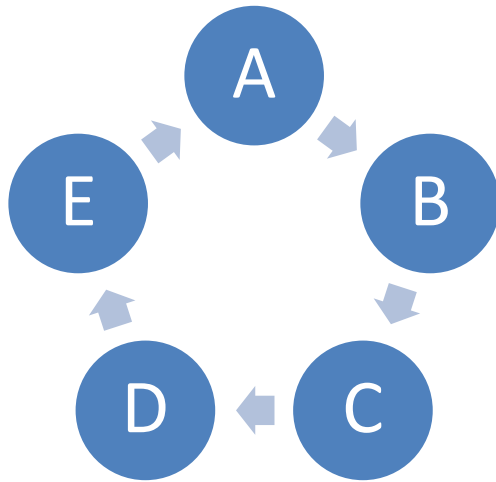
**Figure 4:** Simple model.



In this figure A is the central actor within the network and all relationships flow through A.

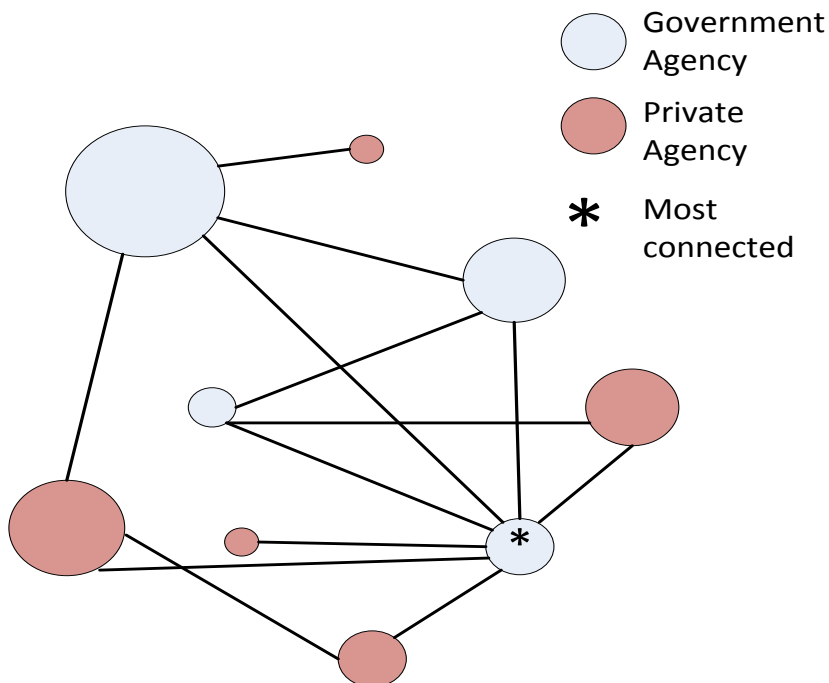


**Figure 5:** Relationship model.



In this figure, relations flow between the different actors so that each actor has relations with two others.

**Figure 6:** Diverse relationships.



This figure presents a more realistic picture of the diverse relationship that we might find in a local community.

(10) We conceive the RRM as an additive model of the six elements in the following form:

$$RRM = \omega_1 EH + \omega_2 HC + \omega_3 SW + \omega_4 LV + \omega_5 ENT + \omega_6 SC$$

Where:

$\omega_i$  are weights to be determined. Two options are proposed: a) uniform weights, and b) stakeholders informed best estimates.

*EH* is the Economic Health Index

*HC* is the Human Capital index

*SW* is the Social Well-being Index

*LV* is the Liveability index

*ENT* is the Entrepreneurialism index

*SC* is the Social Capital and Social Network index

This definition of the RRM identifies robust estimators by systematically running correlations between individual dimensions grouped within each index and between the RRM and each index.

## **Measuring the RRM**

We report here on the dimensions and the proxy measures that underpin the different indices.

We also provide a summary of the results of the comparisons between Baw Baw, Latrobe

City, Wellington Shire, the Gippsland, Regional and State averages, fully reported in Lawton

*et al.* (2014).

## (1) Economic Health Index

Table 1 identifies the dimension and the proxy measures that we used for each index.

Appendix 1 provides details of the data sources. Figure 7 is the comparative analysis that was carried out as part of The Development of the Gippsland Economic Modelling Tool and full details can be found, as above, in Lawton *et al.* 2014.

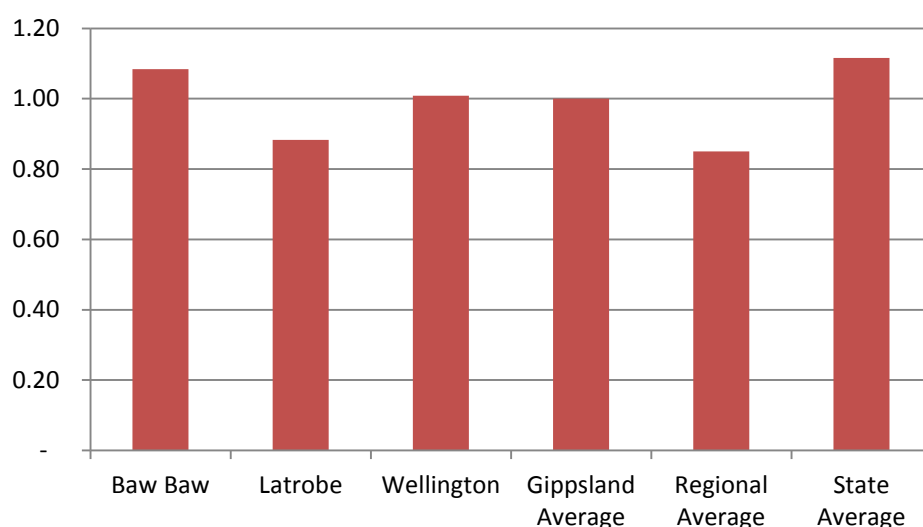
We present Human Capital, Social Well-being and Liveability in the same format.

**Table 2:** Economic Health Index: targeted dimensions and applied proxy variables.

Targeted Dimension	Used proxy measure from existing databases
Income level	→ Personal income (\$)
Employment status	→ Employment Participation rate (%)
Housing values (stock)	→ Median house price (\$) → Average rent and mortgage payments (\$) → Building approvals
Business conditions	→ Number of businesses
Size of economic unit	→ Area of LGA (km <sup>2</sup> )
Employment diversity	→ Industry of employment by occupation share of non-dominant industry (%)

Source: Authors' definitions.

**Figure 7:** Economic Health Index by LGA level (values relative to Gippsland average).



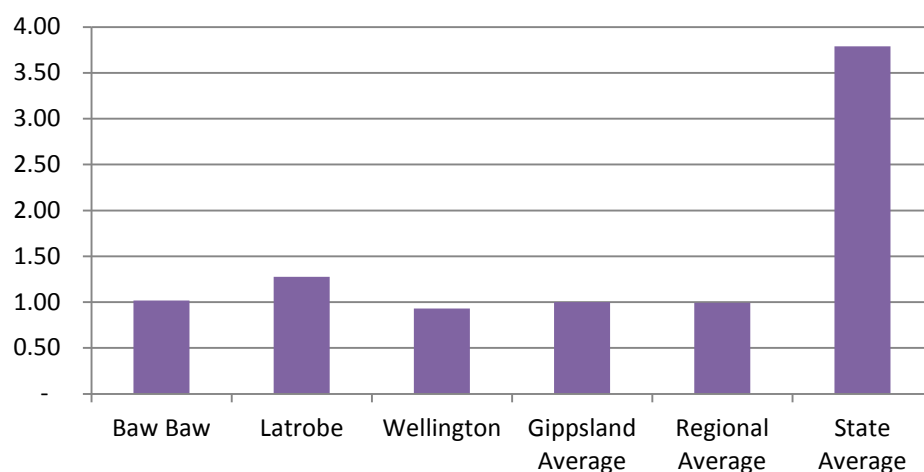
## (2) Human Capital Index

**Table 3:** Human Capital Index: targeted dimensions and applied proxy variables.

Targeted Dimension	Used proxy measure from existing databases
Education/Skills	→ Population with higher education qualification, (%) → share of population who did not complete year 12, (%) → FTE students
Support to education	→ Students & apprentices receiving youth allowance
Labour force	→ Sum of estimated residential population (ERP) 15-64
Population	→ Population density (people/sq Km)
Health	→ share of people reporting fair or poor health, (%) → share of people reporting type 2 diabetes, (%) → share of people overweight or obese, (%) → 1-share of low birth weight babies, (%)
Children development	→ 1-share of children developmentally vulnerable in one or more domains (%)
Language skills	→ 1-share of low English proficiency (%)
Immigration	→ New settler arrivals per 100,000 population
Refugees	→ 1-share of humanitarian arrivals (%)
Relative socio-economic disadvantage	→ IRSD Index

Source: Authors' definitions

**Figure 8:** Human Capital Index (values relative to Gippsland average).



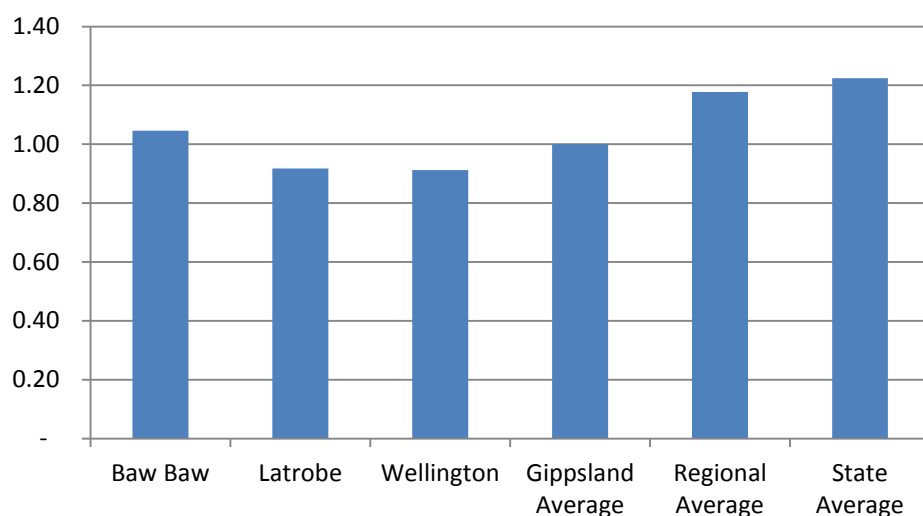
### (3) Social Well-being Index

**Table 4:** Social Well-being Index: targeted dimensions and applied proxy variables.

<b>Targeted Dimension</b>	<b>Used proxy measure from existing databases</b>
Community Bonds	<ul style="list-style-type: none"> <li>→ People who participated in citizen engagement in the past year, (%)</li> <li>→ Child Care/Kindergarten sites</li> <li>→ Average aged care places per 1,000 eligible population</li> <li>→ 1-share of people 75+ and living alone, (%)</li> </ul>
Family bonding	<ul style="list-style-type: none"> <li>→ People sharing a meal with family at least 5 days per week (%)</li> </ul>
Volunteer work	<ul style="list-style-type: none"> <li>→ People who are involved in voluntary work, (%)</li> </ul>
Density Medical, GPs	<ul style="list-style-type: none"> <li>→ General Practitioners per 1,000 population</li> <li>→ Dental services per 1,000 population</li> <li>→ Pharmacies per 1,000 population</li> <li>→ Population with private health insurance, (%)</li> </ul>
Drugs/Alcohol attitudes	<ul style="list-style-type: none"> <li>→ 1/Drug and alcohol clients per 1,000 population</li> <li>→ 1/Density of intentional injuries treated in hospital per 1,000 population</li> </ul>
Social assimilation	<ul style="list-style-type: none"> <li>→ share of low English proficiency, (%)</li> <li>→ People receiving support from Centrelink per ERP 15-64</li> <li>→ New settler arrivals per 100,000 population</li> <li>→ Humanitarian arrivals as a share of total arrivals, (%)</li> </ul>
Hospital admissions	<ul style="list-style-type: none"> <li>→ 1/Hospital inpatient separations per 1,000 population</li> </ul>
Criminal activity	<ul style="list-style-type: none"> <li>→ 1/Crime against person per 100,000 people</li> <li>→ 1/Crime against property per 100,000 people</li> <li>→ 1/Crime rate density per 100,000 people</li> <li>→ People who feel safe on street after dark, (%)</li> <li>→ 1/Total criminal offences per 1,000 population</li> </ul>
Relative socio-economic disadvantage	<ul style="list-style-type: none"> <li>→ IRSD Index</li> </ul>
Social Housing	<ul style="list-style-type: none"> <li>→ Social housing as a share of dwellings, (%)</li> </ul>
Gambling attitudes	<ul style="list-style-type: none"> <li>→ 1/Gaming machine losses per head of population</li> <li>→ 1/Gambling venue numbers</li> </ul>
Community openness	<ul style="list-style-type: none"> <li>→ Community acceptance of diverse cultures, (%)</li> </ul>
Schools	<ul style="list-style-type: none"> <li>→ Number of schools</li> </ul>

Source: Authors' definitions

**Figure 9:** Social Well-being Index (values relative to Gippsland average).



#### (4) Liveability Index

**Table 5:** Liveability Index: targeted dimensions and applied proxy variables.

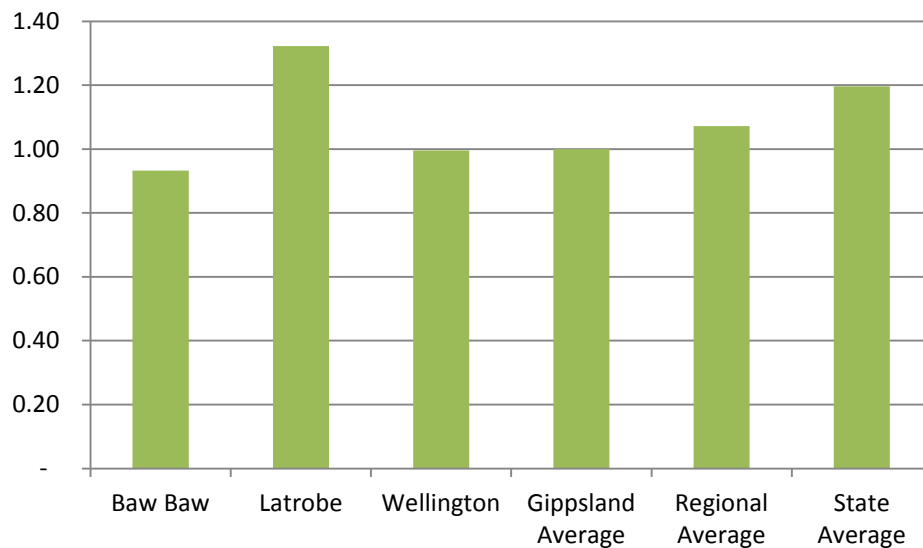
Targeted Dimension	Used proxy measure from existing databases
Road connectivity & geographical remoteness	→ 1/ARIA Index
Internet Access	→ Households with broadband internet connected, (%)
Employment	→ Employment participation rate
Employment Diversity	→ Industry of employment by occupation, share of non-dominant industry, (%)
Smoking preferences	→ Support smoking ban in outside seating areas, (%)
	→ 1-share of males 18+ who are current smokers, (%)
Alcohol	→ Liquor licenses per 10,000 residents 15+
	→ 1/Alcohol-related hospital admission rate per 10,000
	→ Number of schools
Schools	→ TAFE Institutes
	→ University
	→ Child Care/Kindergarten sites
Security	→ People who feel safe on street after dark, (%)
Air quality	→ 1-persons reporting Asthma (%)
Resident perception	→ People who believe the area has good facilities and services, (%)

**Table 5:** Liveability Index: targeted dimensions and applied proxy variables (*continued*)

Targeted Dimension	Used proxy measure from existing databases
Distance to work	→ 1-People with at least 2 hour daily commute, (%)
Distance to Health service	→ 1/Distance to nearest health service, (Km)
Work-Life balance	→ People with an adequate work-life balance, (%)
Affordability	→ 1/median rent for a 3 bedroom house, (\$)
	→ Rental housing that is affordable, (%)
	→ 1/Median house price, (,000 \$)

Source: Authors' definitions

**Figure 10:** Liveability Index (values relative to Gippsland average).



## (5) Entrepreneurialism Index

Table 5 identifies existing proxy variables and also new variables that would need to be generated. This index is a new index developed for this study and we provide further commentary on its development.

**Table 6:** Entrepreneurialism Index: targeted dimensions and applied proxy variables.

<b>Targeted Dimension</b>	<b>Used proxy measure from existing databases</b>
Climate	<ul style="list-style-type: none"><li>→ Extent of diversification in economy</li><li>→ Human capital</li><li>→ Infrastructure</li><li>→ Extent of ‘red tape’ e.g., length of time for building approvals</li></ul>
Activities	<ul style="list-style-type: none"><li>→ New firm creation</li><li>→ Firm closure</li></ul>
Attitudes	<ul style="list-style-type: none"><li>→ Networking</li><li>→ Attitude to failure</li></ul>
Aspirations	<ul style="list-style-type: none"><li>→ Positive support for entrepreneurs in regional and national culture</li><li>→ Intention to start business</li><li>→ Skills and competence</li><li>→ Market opportunities</li></ul>

**Note:** this Index also includes data from a new regional telephone survey, see Appendix 2

The climate for entrepreneurial activity in Australia, at the national level, is generally considered to be very positive. The Global Competitiveness Report 2013-2014 produced by the World Economic Forum (2013) mapped Australia against 147 countries globally against twelve indicators including infrastructure, education and training, technology and innovation. Australia scored highly in terms of the quality of its education and training, its macro-economic environment, financial market development, technological readiness and innovation. It scored poorly in terms of labour market efficiency and exports as a percent of GDP.

The World Economic Forum report captures the activities and the climate for entrepreneurial activity at the national level but does not address attitudes and aspirations of individuals themselves. The Global Entrepreneurship Monitor does survey attitudes and aspirations and we indicate the key findings from the latest Australian survey.



## **Australian Centre for Entrepreneurship Research (2011) Global Entrepreneurship**

### **Monitor; National Entrepreneurial Assessment for Australia: Key Findings**

- ✓ 10.5% of adult population actively engaged in starting and running new business in 2011 – 1.48 million early stage entrepreneurs
- ✓ Entrepreneurship rate is second only to US in developed countries
- ✓ Ranks above average for employee entrepreneurial activity in established firms
- ✓ 50% of Australians believe that good opportunities exist for the establishment of new ventures and that they have the necessary skills to start a new business
- ✓ Below average is the international orientation of Australian entrepreneurs whereby only 12% aim at having a substantial share of customers from international markets
- ✓ 12% have expressed an intention to start a business within the next 3 years
- ✓ Compared with other innovation-driven economies, Australia scores high in entrepreneurial education, cultural support for entrepreneurship and internal market openness

Thus there is information available at the national level but there is no measure of climate, activities, attitudes and aspirations at the local level. The INSIGHT Australia Regional Competitiveness Index captures economic diversification and the competitiveness of regional Australia drawing from the ABS 2011 industry of employment data. The Index points to the importance of the need to diversify a region's economy arguing that highly competitive LGAs have a high degree of economic diversification and vice versa. They conclude that economic diversification is significantly and positively correlated with infrastructure, technological readiness, innovation, human capital and overall competitiveness.

## (6) Social Capital and Social Network Index

Table 6 identifies existing proxy variables and also new variables that would need to be generated. This index is a new index developed for this study.

**Table 7:** Social Capital and Social Network Index: targeted dimensions and applied proxy variables.

<b>Targeted Dimension</b>	<b>Used proxy measure from existing databases</b>
Community Bonds	→ People who participated in citizen engagement in the past year (%)
Family Bonding	→ Child care/Kindergarten sites → Average aged care places per 1,000 eligible population → share of people 75+ and living alone (%) → People who share a meal with family at least 5 days per week (%)
Volunteer work	→ People who are involved in voluntary work (%)
Social assimilation	→ People receiving support from Centrelink per ERP 15-64 → New settler arrivals per 100,000 population
Criminal activity	→ Humanitarian arrivals as a share of total arrivals (%)
Community openness	→ People who feel safe on street after dark (%) → Community acceptance of diverse cultures
<b>Targeted Dimension</b>	<b>Used proxy measure from new database</b>
Network relations	→ Influence → Type of communication → Type of support
Nature of relationships	→ Importance → Frequency → Formal/informal
Network features	→ Size → Density → Centrality

**Note:** This Index includes data from a new developed social network analysis, see Appendix 3

Appendix 3 contains details on how we find out the different relationships within the network. Thus, it is about the actors and the relationships between them in a specific context. The defining feature of social network analysis is its focus on the structure of relationships ranging from casual acquaintances to close bonds. It can:

1. Identify the individuals, groups and organisations that are part of the network and assesses their importance to it.
2. Examine the content and pattern of relationships
3. Capture content (information giving or advice offering); direction (who communicates with whom); and depth (the intensity of a relationship) (Haythornthwaite, 1996).

## **Conclusion**

The Regional Resilience Monitor is a new tool made up of six interlocking elements to measure, comparatively, resilience in regional Australia. Resilience is a dynamic concept and can be measured over time, thus indicating movements in performance. Each element can be given equal weighting or weighted according to their importance as determined by key stakeholders' (local authority, community groups, local leaders etc.) informed guesstimates.

The RRM relies on a mix of existing data and newly generated data. The former is available for different time periods so care needs to be taken in using these data. Newly generated data can be gathered and this will depend upon the extent of the comparisons that are to be made i.e. across Latrobe Valley, the Gippsland region or regional Victoria as a whole.

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## Appendix 1

### Data Sources

#### Local Government Authority (LGA) level

##### Economic Health

<u>Variable</u>	<u>Source</u>
Personal income (\$)	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Employment Participation rate (%)	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Median house price (\$)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Average rent and mortgage payments (\$) <sup>1</sup>	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Building approvals <sup>2</sup>	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Number of businesses	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Area of LGA (sq Km)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Industry of employment by occupation, share of non-dominant industry (%)	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Industry"

## Human Capital

Variable	Source
Population with higher education qualification, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of population who did not complete year 12, (%) <sup>3</sup>	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
FTE students	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Students & apprentices receiving youth allowance	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Sum of Estimated Residential Population (ERP) 15-64 <sup>4</sup>	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Population density (people/sqKms)	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
1-share of people reporting fair or poor health, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of people reporting type 2 diabetes, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of people overweight or obese, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of low birth weight babies, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of children developmentally vulnerable in one or more domains, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of low English proficiency, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
New settler arrivals per 100,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of humanitarian arrivals, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Index of Relative Socio-economic Disadvantage <sup>5</sup>	Department of Health (2014). Town and community profiles. Data for 2014. Available at <a href="http://www.health.vic.gov.au/modelling/planning/community.htm">http://www.health.vic.gov.au/modelling/planning/community.htm</a>

## Social Wellbeing

<b>Variable</b>	<b>Source</b>
People who participated in citizen engagement in the past year, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Child Care/Kindergarten sites	Department of Health (2014). Town and community profiles. Data for 2014. Available at <a href="http://www.health.vic.gov.au/modelling/planning/community.htm">http://www.health.vic.gov.au/modelling/planning/community.htm</a>
Aged care places per 1,000 eligible population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of people 75+ and living alone, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
People who share a meal with family at least 5 days per week, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
People who are involved in voluntary work, (%)	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
General Practitioners per 1,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Dental services per 1,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Pharmacies per 1,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Population with private health insurance, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1/Drug and alcohol clients per 1,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1/Density of intentional injuries treated in hospital per 1,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of low English proficiency, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
People receiving support from Centrelink per ERP 15-64 <sup>6</sup>	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
New settler arrivals per 100,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>



## Social Wellbeing (continued)

<b>Variable</b>	<b>Source</b>
Humanitarian arrivals as a share of total arrivals, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1/Hospital inpatient separations per 1,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1/Crime against person per 100,000 people	Victoria Police (2014). Crime Statistics by LGA 2011/2012---2012/2013. Data for 2013. Available at <a href="http://www.police.vic.gov.au/content.asp?Document_ID=782">http://www.police.vic.gov.au/content.asp?Document_ID=782</a>
1/Crime against property per 100,000 people	Victoria Police (2014). Crime Statistics by LGA 2011/2012---2012/2013. Data for 2013. Available at <a href="http://www.police.vic.gov.au/content.asp?Document_ID=782">http://www.police.vic.gov.au/content.asp?Document_ID=782</a>
1/Crime rate density per 100,000 people	Victoria Police (2014). Crime Statistics by LGA 2011/2012---2012/2013. Data for 2013. Available at <a href="http://www.police.vic.gov.au/content.asp?Document_ID=782">http://www.police.vic.gov.au/content.asp?Document_ID=782</a>
People who feel safe on street after dark, (%)	Victoria Police (2014). Crime Statistics by LGA 2011/2012---2012/2013. Data for 2013. Available at <a href="http://www.police.vic.gov.au/content.asp?Document_ID=782">http://www.police.vic.gov.au/content.asp?Document_ID=782</a>
1/Total criminal offences per 1,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Index of Relative Socio-economic disadvantage <sup>5</sup>	Department of Health (2014). Town and community profiles. Data for 2014. Available at <a href="http://www.health.vic.gov.au/modelling/planning/community.htm">http://www.health.vic.gov.au/modelling/planning/community.htm</a>
Social housing as a share of dwellings, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1/Gaming machine losses per head of population <sup>7</sup>	Victorian Commission for Gambling and Liquor Regulation (2014). Historical LGA population density and gaming expenditure statistics. Data for 2011. Available at <a href="http://www.vcglr.vic.gov.au/home/resources/data+and+research/data/">http://www.vcglr.vic.gov.au/home/resources/data+and+research/data/</a>
1/Gambling venue numbers <sup>7</sup>	Victorian Commission for Gambling and Liquor Regulation (2014). Historical LGA population density and gaming expenditure statistics. Data for 2011. Available at <a href="http://www.vcglr.vic.gov.au/home/resources/data+and+research/data/">http://www.vcglr.vic.gov.au/home/resources/data+and+research/data/</a>
Community acceptance of diverse cultures, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Number of schools	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>

## Liveability

<b>Proxy Variable</b>	<b>Source</b>
1/ARIA Index <sup>8</sup>	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Households with broadband internet connected, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Employment participation rate	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Industry of employment by occupation, share of non-dominant industry, (%)	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Support smoking ban in outside seating areas, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of males 18+ who are current smokers, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Liquor licenses per 10,000 residents 15+	Department of Health (2014). Victorian alcohol statistics series. Data for 2010. Available at <a href="http://www.health.vic.gov.au/aod/pubs/statistics_series.htm">http://www.health.vic.gov.au/aod/pubs/statistics_series.htm</a>
1-Alcohol-related hospital admission rate per 10,000	Department of Health (2014). Victorian alcohol statistics series. Data for 2010. Available at <a href="http://www.health.vic.gov.au/aod/pubs/statistics_series.htm">http://www.health.vic.gov.au/aod/pubs/statistics_series.htm</a>
Number of schools	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
TAFE Institutes <sup>9</sup>	Australian Government data (2013). TAFE Institute locations (Victoria). Data for 2014. Available at <a href="http://data.gov.au/dataset/tafe-institute-locations-victoria">http://data.gov.au/dataset/tafe-institute-locations-victoria</a>
University <sup>10</sup>	Universities Australia (2014). University Profiles. Data for 2014. Available at <a href="https://www.universitiesaustralia.edu.au/australias-universities/university-profiles#.U8IXrECvE_Y">https://www.universitiesaustralia.edu.au/australias-universities/university-profiles#.U8IXrECvE_Y</a>
Child Care/Kindergarten sites	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
People who feel safe on street after dark, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-persons reporting Asthma (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
People who believe the area has good facilities and services, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-People with at least 2 hour daily commute, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1/Distance to nearest health service, (Km) <sup>5</sup>	Department of Health (2014). Town and community profiles. Data for 2014. Available at <a href="http://www.health.vic.gov.au/modelling/planning/community.htm">http://www.health.vic.gov.au/modelling/planning/community.htm</a>
People with an adequate work-life balance, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1/median rent for a 3 bedroom house, (\$)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Rental housing that is affordable, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1/Median house price, (,000 \$)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>

## Entrepreneurialism

<b>Variable</b>	<b>Source</b>
Human Capital	Gippsland Economic Modelling Tool
Infrastructure	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
New firm creation	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
Industry of employment by occupation, share of non-dominant industry (%)	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Industry"
Firm closure	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Industry"
Extent of diversification	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Industry"
Networking	
Attitudes to failure	
Positive support	Regional entrepreneurialism survey
Intention to start business	
Skills and competences	
Market opportunities	

## Social Capital and Social Networks

<b>Variable</b>	<b>Source</b>
People who participated in citizen engagement in the past year, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Child Care/Kindergarten sites	Department of Health (2014). Town and community profiles. Data for 2014. Available at <a href="http://www.health.vic.gov.au/modelling/planning/community.htm">http://www.health.vic.gov.au/modelling/planning/community.htm</a>
Aged care places per 1,000 eligible population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
1-share of people 75+ and living alone, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
People who share a meal with family at least 5 days per week, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
People who are involved in voluntary work, (%)	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
People receiving support from Centrelink per ERP 15-64 <sup>6</sup>	Australian Bureau of Statistics (2014). National Regional Profile, 2008-2012. Data for 2011. Available at <a href="http://stat.abs.gov.au/itt/r.jsp?databyregion">http://stat.abs.gov.au/itt/r.jsp?databyregion</a> , "National Regional Profile", " Search for LGA", "Economy"
New settler arrivals per 100,000 population	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Humanitarian arrivals as a share of total arrivals, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
People who feel safe on street after dark, (%)	Victoria Police(2014). Crime Statistics by LGA 2011/2012---2012/2013. Data for 2013. Available at <a href="http://www.police.vic.gov.au/content.asp?Document_ID=782">http://www.police.vic.gov.au/content.asp?Document_ID=782</a>
Community acceptance of diverse cultures, (%)	Department of Health (2014). 2012 Local Government area profiles. Data for 2012. Available at <a href="http://www.health.vic.gov.au/modelling/planning/lga.htm">http://www.health.vic.gov.au/modelling/planning/lga.htm</a>
Influence	
Type of communication	
Type of support	
Importance	
Frequency	Social network analysis
Formal/informal	
Size	
Density	
Centrality	

## **Data notes – LGA level**

<sup>1</sup>Average of the figures reported.

<sup>2</sup>Total new private sector houses.

<sup>3</sup>Divide total completed up to year 11 by overall total.

<sup>4</sup>Sum of the 15 to 64 ERP age brackets.

<sup>5</sup>LGA level calculated by averaging town level data.

<sup>6</sup>All recipients except Newstart allowance and Family Tax Benefit A and B.

<sup>7</sup>Derived from Victorian Commission for Gambling and Liquor Regulation data.

<sup>8</sup>Values not used for metropolitan LGAs due to incomplete data.

<sup>9</sup>Derived from a Government data map corresponding to LGA areas.

<sup>10</sup>Derived using an Universities Australia map corresponding to LGA areas.



**Question 8**

*What would you say are the three main barriers to starting a new business in the Latrobe Valley?*

- 1.
- 2.
- 3.

**Question 9**

*What is your current employment status?*

*Cross  
below*

Working:                      Employed by others in full-time work  
                                      Employed by others in part-time work  
                                      Self-employed

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Not working:                Seeking employment  
                                      Not working - retired or disabled  
                                      A student  
                                      Full-time home-maker  
                                      Other

**Question 10**

*Gender*

- 1 – Male
- 2 - Female

**Question 11**

*Age range:*

- 1 ---- 18-40
- 2 ---- 41-60
- 3 ---- 61 and over

**Question 12**

*Highest level of education:*

1. High school
2. Vocational (e.g. TAFE)
3. University

**Question 13**

*In which country were your born:*

1. Australia
2. Other (*may I ask which country?*) \_\_\_\_\_

**Thank you ...**

## Appendix 3

### Business Networking Pilot Study

**Instructions:** Record details about every 5<sup>th</sup> communication (any form of business-related contact) with a person outside of your organisation (i.e., not employed by your organisation)

**Collect up to 10 forms per day**

Information is design to be collected at the organisation level. There is no requirement to record any personal information or names.

All data collected will remain confidential to the research and be destroyed following the data collection. Summary data will be reported only and no person will be identifiable from reported results.

**Organisation contacted:** \_\_\_\_\_ **Day/ Time** \_\_\_\_\_ / \_\_\_\_\_

*Communication event – only where business related – a person outside of your organisation*

**Please circle responses as appropriate:**

<p><b>Initiator:</b></p> <ol style="list-style-type: none"> <li>1. Myself</li> <li>2. The other party</li> </ol> <p><b>The other party:</b></p> <ol style="list-style-type: none"> <li>1. Previously part of my organisation (my employer)</li> <li>2. Never part of my organisation</li> </ol> <p><b>Contact frequency with other party:</b></p> <ol style="list-style-type: none"> <li>1. First time</li> <li>2. Daily</li> <li>3. Weekly</li> <li>4. Monthly</li> <li>5. Less than monthly</li> </ol> <p><b>Social connection with other party (choose most appropriate):</b></p> <ol style="list-style-type: none"> <li>1. No real connection</li> <li>2. I'd call the person a colleague</li> <li>3. I'd call the person a friend</li> </ol> <p><b>Relative perceived power in the situation:</b></p> <ol style="list-style-type: none"> <li>1. I have more power than the other party</li> <li>2. The other party has more power than me</li> <li>3. We have about the same power</li> </ol>	<p><b>Level of trust in the relationship</b></p> <ol style="list-style-type: none"> <li>1. No trust has been established</li> <li>2. I would <u>generally trust</u> this person</li> <li>3. I would <u>completely trust</u> this person</li> </ol> <p><b>Mode of contact:</b></p> <ol style="list-style-type: none"> <li>1. Face-to-face (including meetings)</li> <li>2. Email</li> <li>3. Text message</li> <li>4. Telephone</li> <li>5. Other</li> </ol> <p><b>Length of contact</b> (time dedicated to the communication event):</p> <ol style="list-style-type: none"> <li>1. Less than 1 minute</li> <li>2. 1 to 5 minutes</li> <li>3. Over 5 minutes but under 30 minutes</li> <li>4. 30 minutes and over</li> </ol> <p><b>Reason for contact</b> (list the primary reason):</p> <ol style="list-style-type: none"> <li>1. Operational coordination</li> <li>2. Networking</li> <li>3. Problem solving</li> <li>4. Decision making</li> <li>5. Information retrieval</li> <li>6. Other (please state) _____</li> </ol> <p><b>Outcome from the communication:</b></p> <ol style="list-style-type: none"> <li>1. Came out as I had expected</li> <li>2. Did not come out as I had expected</li> </ol>
<p><b>Was there any other way to address the issues apart from this contact?</b>      Yes      No</p>	



## Developing a Regional Resilience Monitor

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