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Developing a Regional Resilience Monitor (RRM)

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Introduction

Regional well-being, or health, is a challenging concept for politicians, policy makers, citizens and scholars, alike. Despite the medical metaphor, regional well-being is often understood in terms of how well the regional economy is performing. And yet it is accepted, increasingly, that the economy is only one part of the story (Stiglitz, Sen and Fitoussi, 2009). It is recognised that the well-being of a region also depends upon social, cultural, health, environmental and political factors (see, for example, the Herald/Age-Lateral Economics Index of Australia's Well-Being).

Similarly, the term 'resilience' is much contested and recent writings confirm its ambiguous status. It has been described as 'a new buzzword' (Martin and Sunley, 2014); a 'new catchword' (Müller, 2010); it remains an 'ambiguous, or fuzzy, concept' (Cowell, 2013). Finally, "Superficially, 'resilience' is an undoubtedly agreeable 'motherhood and apple-pie' notion (White and O'Hare, 2014: 1). Despite definitional challenges, its provenance is agreed upon, particularly amongst those scholars who focus upon economic resilience. It is generally accepted that there are three different approaches to resilience reflecting different disciplinary groundings. Thus, Martin (2012) distinguishes between engineering resilience, ecological resilience and adaptive resilience. The first refers to the ability of a material, or a system, to return to equilibrium after a disturbance. The second refers to the ability of a system to transform itself to a new equilibrium following a disturbance. The third refers to an adaptive system that changes and has the capacity to respond to future shocks. From this perspective the system 'bounces forward' rather than 'bounces back' (see also Reid and Botterill, 2013).

Resilience has also 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 as the quality of a nation (Conservative Party, UK 2010).

The aim of this paper is to describe the development of a regional resilience monitor, identify its components and indicate how such a monitor could be used to track changes in those components over time, thereby providing useful information for policy-makers and communities.

Defining Resilience

We have already noted the contested nature of the resilience concept. Thus, MacKinnon and Derickson (2012) trace its roots in physics and mathematics, referring to the capacity of a system or material to recover its shape following a disruption. The authors distinguish between engineering and ecological resilience and identify different forms of resilience in terms of individual, community and regional resilience. However, it is argued, that both the engineering and the ecological approaches are limited. Thus, Hegney et al (2008: 3) argue that 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) discuss resilience as the capacity of a community to cope with disturbances and to adapt to change. They argue that resilience has economic, political, spatial, institutional and social dimensions. In common with the notion of resilience as 'bouncing forward' Reid and Botterill (2013) discuss resilience as proactive – looking forward. This notion of the adaptive capability of regions is also identified by Martin (2012) who proposes four dimensions to economic resilience; resistance which is concerned with vulnerability to, say, economic recession; recovery which refers to the speed and extent of recovery from disturbances; re-orientation which is the extent to which the economy re-orient itself; renewal, which constitutes a resumption of the growth path.

Resilience is more than simply recovering from a shock or crisis created by natural, economic, biomedical, technological or political events. 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 takes place (Edwards and Wiseman, 2010).

Our general definition is:

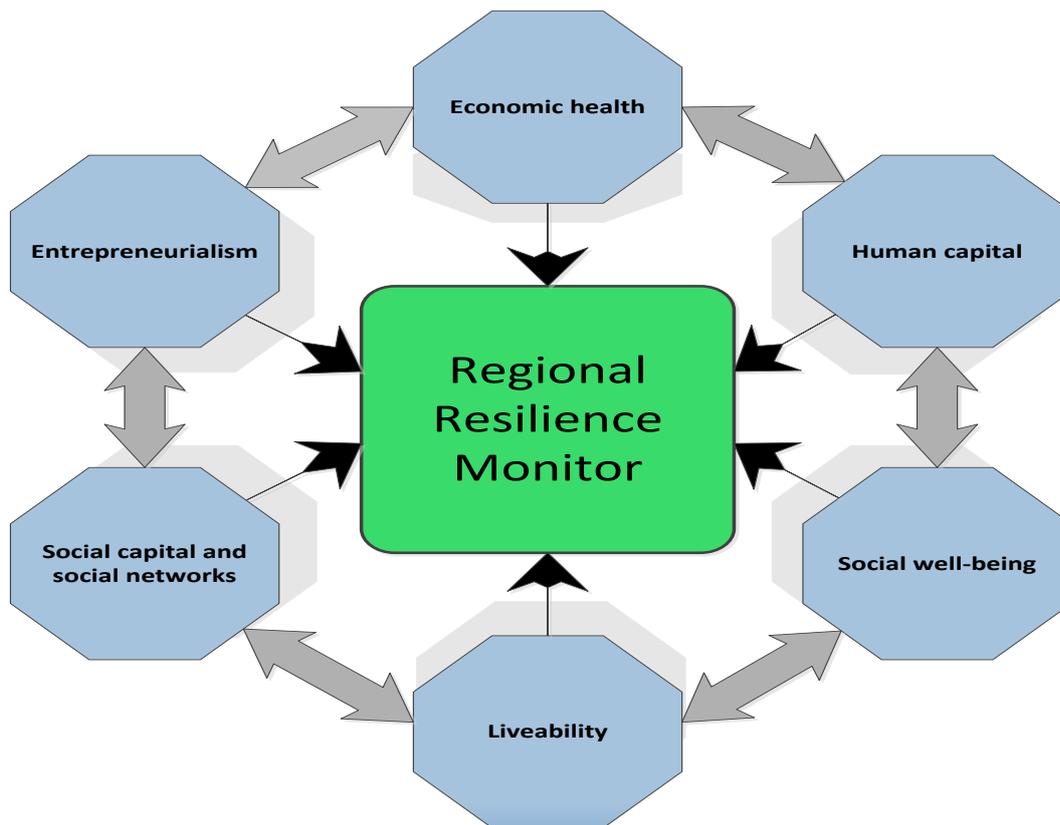
Resilience is the capacity of a community to respond to, and anticipate, economic, social and environmental change and to adapt, plan, and transform itself, for the future.

However, if resilience is presented as an agreeable 'motherhood and apple-pie', it is not without its criticisms. Thus, MacKinnon and Derickson (2012) argue that in encouraging the region or community to develop resilience, the state is abrogating some of its own responsibilities. Self-reliance and self-help have been the mantra of right-wing politicians since the 19th Century and was recently championed once again by the Conservative Party in the UK under its Big Society banner.

The Regional Resilience Monitor (RRM)

Recent research points to the significance of a number of factors in the resilience of a community in facing challenges including economic, social, human and environmental and recognises the importance of the strength, nature of, and commitment to, community relations. It will thus depend upon various forms of capital, including human and social (Hunt et al, 2013); the attitudes and beliefs of community members (Hegney et al 2008); health and well-being (Morton and Edwards, 2012); economic development (Sherrieb et al, 2010); community resources (Maguire and Cartwright, 2008); strong networks (Lee and Lee, 2010); and entrepreneurial activity (Williams and Vorley, 2014). Thus, approaches to resilience need to be addressed through interdisciplinary frameworks (Wilkinson et al 2010). This is the holistic approach we adopt and is illustrated in Figure 1;

Figure 1: The Elements of the Regional Resilience Monitor



In developing the indicators for resilience, we have drawn upon previous work in this area. Thus Sherrieb et al (2010) explored the qualities that enable communities to survive following a disturbance. They examine publicly accessible indicators in order to set up the measurement of resilience in terms of two broad categories; (1) economic development, and (2) social capital. Social capital is defined as the set of adaptive capacities that support the process of community resilience to maintain and sustain community health (Sherrieb et al 2010; 233). Within this category are two important subsets:

- Structural social capital: the forms and varieties of social organizations and networks that contribute to the development of social capital
- Cognitive social capital: mental processes and perceptions resulting from norms, values, attitudes and beliefs that foster mutually co-operative behaviour

In terms of community resilience, Sherrieb et al (2010: 233) represent social capital in terms of:

- Social support i.e. informal networks with family and friends
- Social participation i.e. formal networks involving groups and organizations (professional, social, economic and health-related participation)
- Community bonds i.e. through participation in group and community activities

We have also drawn upon the 'capital' framework of Hunt *et al* (2011) and have identified the dimensions of;

- Human capital in terms of the knowledge, skills and health status of the population
- Liveability to include aspects of healthcare, infrastructure, the environment (Hunt *et al's* natural capital)
- Social well-being encompassing the relationships and social groupings within the community (or what Hunt *et al* define as social capital) and the institutions that provide local capacity (Hunt *et al's* institutional capital)
- Economic health that includes the level of economic activity within a given location

As the literature on resilience suggests, these indicators are not easily separated out into distinct components. Instead they point to the ways in which various social, economic, environmental, cultural and governance issues are interrelated (Lélé, 1998; Wilkinson *et al* 2010). Sherrieb *et al*, (2010) argue that measuring such indicators is a complex task because it is difficult to distinguish between source and outcomes. Rather it is more appropriate to consider these indicators of resilience as ‘...a collective concept [that] should be measured at the aggregate level’ (p. 233).

The Elements and their measurement

Given the lack of agreement in meaning, it would appear problematic to measure the level or extent of resilience. Indeed ‘Clear concepts to operationalize resilience for city and regional developments are...rare’ (Müller, 2010: 6). Similarly, it is argued that there is no single approach to measuring the ‘anatomy’ of regional resilience (Martin and Sunley, 2014). We contend that the individual elements of our RRM can be measured.

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 elements including the level of economic resources, the degree of equality in the distribution of resources and the scale of diversity in economic resources (Sherrieb *et al.*, 2010). It can be measured by employment levels, employment diversity, housing values, number and diversity of businesses, income levels and so on. Gross Domestic Product (GDP), which is the market value of all goods and services produced in a given country during a given year, is used at the national level to measure economic activity. However, it is less useful at the local and regional levels. Not only that but it does not provide a comprehensive picture of all economic activity since it does not include the unpaid work of the caring economy carried out in, for example, households and including looking after the elderly (Eisler, 2007). GDP may also misrepresent economic health; thus, rural areas typically have lower GDPs than urban ones yet rural dwellers may have greater capacity to raise their levels of well-being through self-provision (Perrons, 2012).

It has also been argued that economic indicators are limited such that economic progress may not guarantee other important consideration such as low crime rates and, indeed, may be inversely correlated with quality of life indicators such as the environment or leisure time (Diener and Suh, 1997). Diener and Suh (1997) go on to argue for alternatives to well-being, distinct from economic ones, and these could be based upon normative ideals, subjective

experiences (such as joy or contentment) and the ability to select goods and services that are considered desirable.

Thus in looking at regional economies, Perrons (2012) argues that regional performance needs to include more than the size and growth of the economy. She suggests that there is an underlying assumption that economic policies create wealth whilst social policies redistribute wealth. It is rarely considered that economic growth can be redistributive or that social policy can be economically productive. Thus, according to Perrons, we need to overcome the separation between economy and society and one way of doing this would be to include a measure for social well-being in models of regional performance.

Human capital

Human capital refers to the knowledge, skills, competencies and attributes possessed by individuals that facilitate the creation of social and economic well-being. It is linked to the health of the population and underpins the wider community. 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. It can be measured by education attainment, acquisition and possession of skills, health, language skills and so on. The OECD defines human capital as “the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic wellbeing” (2001: 18). Hence, this term most often refers to the skills, knowledge, capabilities and health status of a workforce, be that of a business or a population more broadly. Human capital is understood as important to economic health in that it refers to two related ideas; first, that the skills, knowledge and capabilities of workers are critical to production, and second, that resources such as education and training are forms of investment that can be examined in ways similar to material capital such as factories and equipment (Blair 2011; Hartog & Oosterbeek 2007). This approach to defining human capital provides a means for economists and policy makers to consider the value of skills and knowledge – how these are used, the ways in which the market assigns them a monetary value, and how and why industry and workers themselves invest in them (Acemoglu & Autor 2012; Becker 1964). Moreover this framework points to the significance of education and training as a means to increase skills and knowledge and so to offering an explanation as to the variations in wages and salaries of different workers (Blair 2011).

Determining the value of human capital therefore requires an aggregate of proxy measures. What needs to be kept in mind is that the value of an individual’s human capital is dependent on the future flow of benefits that the individual can realise through the use of that capital (Stroombergen *et al.* 2002). Given the significance of education in creating human capital, a key measure is the level of achievement of education and skills within a population, and this can be readily ascertained through the percentage of individuals within a population with higher education qualifications and, conversely, the share of that population that did not complete year 12 schooling. However, individual and social investment in education and training and the returns made on this investment must also be considered.

For example, some scholars have pointed to the significance of nutrition and health care in an individual's learning potential (Stroombergen *et al.* 2002), as well as the correlation between better education and improved health and living standards (Grossman & Kaestner 1997; Nordhaus 2002). In considering how education may be facilitated or hindered, researchers have pointed out that nutrition and health care are important. Nordhaus (2002) has demonstrated that health status has an effect on human capital (because of its impact on an individual's earning capacity) that is distinct from the effect of education, although this effect is augmented by education.

Social Well-being

As research has demonstrated (Blyton *et al.* 2009; Morton & Edwards 2012), how well individuals and communities live is not determined by income or wealth alone. McGregor *et al.* (2007: 108) state;

Well-being must be conceived of as combining objective and subjective dimensions and these are located in the social and cultural relationships that all human beings in all societies are engaged in. This conception provides us with a rounded insight into what people do, what they aspire to and how their actions and aspirations are constrained or enabled by wider societal structures.

What is meant by the term *wellbeing* has variously been discussed in terms of 'well-living', 'well-feeling' and 'well-having' (Gasper 2004: 3), yet even so researchers have often used this term vaguely and it tends to be weakly conceptualised (Coulthard *et al.* 2011; McGregor 2004; Stedman *et al.* 2004). One broad approach to defining and measuring wellbeing focuses on outcomes in economic terms such as buying preferences and purchasing power, while a second approach, more aligned with frameworks located in anthropology and cultural studies, seeks to incorporate the individual's understanding of social contexts and the values thereby attributed (Gough 2004). Recent work attempts to reconcile these differing positions through a robust debate as to what 'it is to be a healthy, socially functioning human being and what a "good society" might look like' (McGregor *et al.* 2007: 109; see also Doyal & Gough 1991; Gasper 2004; Gough 2004; Nussbaum 2000; Sen 1992, 1993, 1999, 2009).

While human capital can be considered as inherent in the body and work of the individual (Stroombergen *et al.* 2002), recent ideas about human capital suggests it can be better conceptualised in terms of social relations (Nahapiet 2011; see also Glaeser *et al.* 2002). This is because learning and knowledge acquisition typically take place in a social context, be that within a school or family setting or in terms of collaboratively solving problems. In addition, human capital is made evident within social settings through such skills as communication, interpersonal skills, teamwork, leadership and civic skills (Nahapiet 2011). Definitions of what is human capital also reflect how such skills and knowledge are socially constructed, in that within different contexts different skill and knowledge sets are deemed more important. These social perspectives on human capital are significant, stressing the potential of human qualities and social relationships as valuable resources (Nahapiet 2011). A focus on these

relational contexts also provides a richer understanding of emergent features of social relations that are more difficult to determine when the focus is on individual attributes. Therefore social capital is an additional form of capital to consider (see below).

Determining appropriate databases that capture human needs and how these are met within a society has to include individual capacities and how they may be enhanced or impeded within particular social contexts. In other words, our emphasis in developing this modelling tool is on the ways in which we can determine the individual's social context and social relations. Physical health and autonomy are fundamental to living well, and certain basic needs are required to do this. Therefore measures of health used include the number of general practitioners and dental services, pharmacies, schooling and childcare available to a community. In addition, the availability of services for the less well off in a community is also significant. Here we have drawn on databases that measure social housing, the number of aged care places, people who receive Centrelink support and relative socio economic disadvantage. These data sets can be used to determine proxy measures of social wellbeing as they indicate the strength of social relations within a community. In considering how social bonds may be recognised in the data available we have focused on indicators that suggest social connection is enhanced, as well as where social breakdown can be pinpointed. Community bonds and social cohesion can be inferred from data that measures such things as participation in citizen engagement, sharing meals with family members, and feeling safe on the streets after dark. The breakdown of community connection can be linked to data on criminal activity such as crimes against people and property, as well as drug and alcohol attitudes and associated intentional injuries. Potential instances of social isolation may be linked to low English proficiency. In considering more complex dimensions of social wellbeing, such as ensuring all members of a community are valued and able to contribute, proxy measures from existing databases used in the modelling tool include community acceptance of diverse cultures, and the number of humanitarian arrivals.

Liveability

The significance of place for both human capital and social wellbeing cannot be ignored. This is particularly important in rural and regional areas of Australia. The social health of rural communities is currently of concern following a range of studies that present findings of stagnation and declining standards of living, reduced lack of access to goods and services, social isolation, and problems of poor health and suicide, all of which have led to thinking about ways to reinvigorate the viability and health of rural communities (Cocklin and Alston, 2003). In considering these factors in developing the economic modelling tool we have drawn on the concept of 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. It can be measured by levels of internet access, work-life balances, air quality, and distance to work.

Giap et al (2012) have sought to devise a means to rank the degree of liveability of the world's major cities, yet unlike the global city rankings focus, these authors have considered liveability from the perspective of an 'ordinary' resident. Giap et al (2012: 2, 9-10) attempt to take into account 'a comprehensive list of the everyday concerns of the ordinary household' and determine that liveability depend upon five broad themes:

1. freedom from want (which captures the right to a decent livelihood)
2. satisfaction with the state of the natural environment and its management (which also includes aesthetic appreciation)
3. freedom from fear (to live in safety through the maintenance of law and order, alleviation of natural disasters and prevention of war by the state)
4. satisfaction with socio-cultural conditions (this includes social harmony and the possibility of social mobility, cultural richness through diversity and access to cultural institutions, as well as physical ease in terms of public transport, healthcare and education)
5. satisfaction with public governance (provision of public services, responsiveness of government and political participation)

In determining the ideal indicators for each of these categories, Giap et al (2012) decided on 85 practical indicators from a total of 133. While such a range offers the potential for a more fine-grained analysis, our RRM is designed for regional cities and towns. The hype associated with liveable cities is about certain desired qualities of *urban* living and culture that are in reality limited to a major city's inner urban area. Are such things desired or even feasible in rural and regional locations? Hence, we have determined proxy indicators of liveability in terms of the ease of access to organisations and facilities within a given location, thus accounting for physical/spatial links or networks and the quality of the physical environment.

Measures of connectivity – road, internet and geographical remoteness – provide an indication of the potential for economic outcome and potential, as well as how attractive a town or place may be not only for residents but also for capital investment and business. This in turn will influence employment, not only as to what percentage of the workforce is employed but also the diversity of employment available. Employment diversity is important in terms of resilience, as it can be a buffer when certain industries are perhaps more vulnerable.

Social capital and 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 ie through participation in group and community activities (Onyx and Bullen, 2000).

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). We explore this in more detail as part of the Methodology.

Entrepreneurialism

The essential act of entrepreneurship is new entry, accomplished by entering new or established markets with new or existing good or services. New entry is the act of launching a new venture either by a start-up firm or by an existing firm through internal corporate venturing (Lumpkin and Dess, 1996). Entrepreneurialism indicates the level of optimism in a region concerning new business opportunities, encourages a more diverse economic base and is closely linked to innovation. It involves the activities, attitudes and aspiration of the individual entrepreneur (see Global Entrepreneurship Monitor at <http://www.gemconsortium.org/>). Each of these can be measured in different ways. Also of consideration is the climate for entrepreneurial activity eg the extent to which there is government, financial cultural and social support.

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 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 i.e. the extent to which there is government, financial, cultural and social support for entrepreneurial activity.

Methodology

The development of the RRM focused on the community health and economic performance of Baw Baw, Latrobe City and Wellington Shire councils in the Gippsland region. Given the difficulty of coming up with an absolute measure of resilience we compared our three councils with the Gippsland region average, the Victoria regional average and the state average as a whole. 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 programme followed nine 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.
- (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 index, *share of people reporting type 2 diabetes*, may be viewed as a community dis-benefit – 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. This allowed the relative performance of that index to be compared to that average.

(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

(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

The 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

Table: Dimensions of Indices for RRM

Economic health	Human capital	Social well-being	Liveability	Social capital	Entrepreneurialism
Income level	Education/skills	Density medical GPs	Road connectivity geographical remoteness	Community bonds	Entrepreneurial climate
Employment status	Support to education	Drugs/alcohol abuse	Internet access	Family bonding	Entrepreneurial activities
Housing values	Labour force	Social assimilation	Employment diversity	Volunteer work	Entrepreneurial attitudes
Business conditions	Population	Hospital admissions	Smoking preferences	Social assimilation	Entrepreneurial aspirations
Size of economic unit	Health	Criminal activity	Alcohol- related admissions	Community openness	
Employment diversity	Children development	Social housing	Type of schools	Network relations	
	Language skills	Gambling	Security	Nature of relationships	
	Immigration	Community openness	Air quality	Network features	
	Refugees	schools	Resident perceptions		
	Relative socio- economic disadvantage				

Social Network analysis

SNA as a discipline emerged from the work of noted scholars including Jacob Moreno, Kurt Lewin and Leon Prestinger (Prell, 2012). A range of related and quantitative techniques and methods of analysis fall within the scope of SNA. Put simply, SNA sheds light on social relationships through three elements; (1) identification of actors; (2) information pertaining to actors; (3) the nature of the relationships between actors. According to Haythornthwaite (1996)

‘Social network analysis focuses on patterns of *relationships* between *actors* and examines the availability of resources and the exchange of resources between these actors.’ (1996: 323)

At the basic level SNA represents this information in a visual form to identify network characteristics. A range of sophisticated statistical techniques may be applied for hypothesis testing, factor modelling or other analyses. An associated range of data measurement options are available depending upon the nature of the study and research questions. There are any number of software packages available for data analysis eg ucinet 6.

SNA is the method that can measure the relationships between individuals and between groups within a community, both formal and informal. 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).

SNA has been used to identify and evaluate leadership networks (Hoppe and Reinelt, 2010). Typical questions concern network connectivity (eg are all actors connected to the network?), network health (eg are power relationships within the network appropriate?) and network impact (eg does the network influence policy makers? Important considerations for SNA are the boundary of the network, actor access and measurement issues.

The aim of the study is to use SNA to document community leadership in Gippsland by (1) identifying primary actors (limited to representatives of community groups or Gippsland-based organisations) (2) classifying each actor’s community roles and formal characteristics (eg objective, funding arrangements or legislative status) and (3) communication relationships between actors.

Conclusion

We have developed a new tool to assess the relative performance of local government areas and it has been developed in the context of current academic thinking. In developing the tool we have tried to address the issue raised by Bristow (2005, p. 300), that there is a ‘confused, chaotic discourse’ concerning the definition of regional competitiveness and we concur with those who argue that too narrow a focus on economic activity neglects wider social and environmental concerns that are part of economic health. Thus;

“From a policymaking perspective, it is crucial that future formulators pay more attention to the dynamic link between competitiveness and local well-being at the place-based level. Economic development social cohesion, welfare and environmental policies must become better integrated if they are to build sustainable local communities.” (Huggins and Thompson, 2012, p.57)

What is lacking, at this stage, is some way of weighting the different variables so that, for example, it might be considered that economic health is more important than, say, liveability. There are different contenders for the most important factor in community resilience: business recovery (Regional Australia Institute n.d.); entrepreneurship (Williams and Vorley, 2014); economic diversity (Martin, 2012); community resources (Maguire and Cartwright, 2008); social networks (Hegney et al, 2008). And yet,

“...pure composite indices appear to have made negligible progress in dealing with the incommensurability of the various aspects of well-being, leading most of them to simply posit that each aspect is equally important” (The Herald/Age-Lateral Economics Index, 2011:p x)

Another possibility is that key stakeholders groups decide how much weighting to give to each of the variables. The concern would be to ensure that whatever weighting was decided upon in one locality then the same weighting applies to other localities. The problem is that different localities will have different priorities and concerns.

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).

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. in our research across Latrobe Valley, the Gippsland region or regional Victoria as a whole.

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