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Development and Evaluation of Economic Development Measures

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Executive Summary

This report presents the findings of research into new sources of data on economic development at the local level. This project investigates whether ‘big data’ and other digital development in information collection and access can provide a new tool and lens for better managing the whole lifecycle of economic development programmes; from identifying priority areas and socio-economic problems to solve, to monitoring the performance progress and/or measuring the final impacts of economic development initiatives.

Critically, while there is rising awareness of big data generated by the ‘Internet of Things’ (IoT), smart connected devices, social media and other sources, there is still a lot of confusion and no guidance on how big data sources and analytics can assist and enrich decision-making in economic development. The plethora of big data sources and metrics that is becoming available is also accompanied by a continuously increasing number of big data vendors and platforms, which in turn further complicates the decision on what data to use, how to access and analyse them in order to take appropriate and timely economic development actions. Consequently, economic development professionals in Australia do not know which big data sources, platforms and vendors can best meet their information needs in terms of the type of big data collected and being available, the costs for accessing it within the budgets and time frames they have available.

To address this problem, this project comprised a number of discrete stages:

- A Round Table (face-to-face and on-line) discussion with economic practitioners on their data needs and use of information to monitor the impacts of their economic development program;
- A review of the available literature on new and emerging data sources;
- The investigation of data sources and vendors, their pricing, availability and utility. This involved a limited number of in-person interviews, as well as on-line searching;
- A second Round Table (face-to-face and on-line) with practitioners on our preliminary findings and the presentation of a decision framework to support the strategic directions of economic development professionals in the future; and
- Production of the final report.

Overall, the project findings reveal that:

- There is a very little published work that directly addresses the question of how economic development programs and professionals can source, use and draw valuable insights from ‘big data’;
 - Most work in this field documents what is potentially available – Twitter, Inside AirBNB, Facebook etc – but provides little guidance on how to apply these data to the real-world problems confronting cities and regions as they develop;
 - There are several reports from the International Economic Development Council based in Washington DC that directly address new approaches to measuring impact, but these reports have a strong focus on government provided data sets;
 - Importantly, US governments treat data collected by governments as belonging to the people, while Australian governments work on the premise that data collected by governments belongs to the Crown;

- Overall, there is a significant absence of clear advice in this field.
- There is clear evidence of significant innovation in the development of new data sources of potential value to economic development professionals, including:
 - Spendmapp;
 - Neighbourlytics;
 - Tourism Tracer.
- These new sources open up new possibilities for economic development professionals as they look to build a stronger evidence base on the outcomes of their programs and other initiatives;
- There are, however, some significant impediments to the take up of these new data sources:
 - Cost;
 - Economic development practitioners in the Round Tables reported that, on average, they had budgets of \$20,000 to spend on the evaluation of outcomes. Some of the new data sources have annual costs significantly greater than this;
 - Expertise/skills;
 - Some of the emerging data sources require skills – and available time – in data analytics not commonly found in economic development offices across Australia;
 - Uncertainty in a rapidly changing domain;
 - It is clear that applications in big data are moving rapidly, with new data sets and commercial packages becoming available at an increasing rate. Economic development professionals are aware that the options available to them today are likely to be much restricted when compared with the choices potentially available in the near future;
- There are challenges in adopting a ‘big data’ approach to managing and evaluating economic development activities, but this report outlines a decision-making framework to assist local governments, Regional Development Australia Committees and others to make sound choices in entering this emerging area. This framework is based on:
 - Need;
 - What is the priority/need to be addressed?
 - What evidence is needed to measure this priority/need?
 - Which types of data match this evidence need?
 - Value;
 - Are the data accessible?
 - Are the data at an appropriate geographical scale?
 - Are the data at an appropriate unit of analysis?
 - Who provides the data and at what cost?
 - Time;
 - Does the data cover the time period required?
 - Is the data available in real time?
 - Can the data collection be repeated over time?
 - Utility;
 - Is the presentation of the data appropriate?

- Can the data be used in a cross classification analysis?
 - Are the data useful for other projects/activities?
- Finally, the report recommends that:
 - There is a role for the EDA or other bodies to co-ordinate across economic development agencies and this could include negotiating discounted subscriptions for commercially available data sets and developing data standards;
 - There is a role for the EDA or other bodies to up-skill economic development staff in this area through awareness raising sessions and specific skills acquisition; and,
 - There is a role for the EDA or other bodies to continue to monitor developments in big data and its use in economic development.

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1. Introduction

This report and associated research sets out to establish new insights into the measurement of economic development activities undertaken at the local level across Australia. In commissioning this project, Economic Development Australia appreciates that developments in the use of digital technologies and the rise of ‘big data’ (Rae & Singleton 2015), has potentially generated new ways of measuring and evaluating both the outputs and outcomes of a range of economic development initiatives, including the hosting and promotion of events, interventions in the labour market that boost skills, investment in business incubators or accelerators, and investment in key infrastructure.

Measuring the impact of economic development activities is critical, as the capacity to demonstrate impacts both guides continuous improvement in the field and assists in securing resources to further growth at the local or regional scale. Economic development has many stakeholders, including elected members of council, ratepayers, governments at all levels and economic development professionals interested to learn from the success of others. There is a pressing need to develop robust metrics on the impact of economic development programs and activities. These measures are needed in order to:

- justify the expenditure of scarce public sector resources by local governments, or indeed any tier of government;
- provide an evidence base on progress towards economic development goals;
- help local government agents to better allocate funds across economic development plans by monitoring and evaluating their impacts and ROI;
- assist in the management of economic development funds by assisting local governments to monitor their performance and impacts and take appropriate corrective actions;
- assist economic development practitioners select the most appropriate and effective strategies in order to achieve their economic development goals; and,
- build momentum in economic development efforts by creating knowledge of local success that can be shared with businesses, the community and other key stakeholder.

Until this point in time, measuring the success of economic development activities has been challenging because of the difficulty – and high cost – associated with using conventional methods to assemble meaningful measures that reflect economic development outcomes. Output measures are readily assembled, but outcome measures – that speak directly to the impact of economic development efforts – are often difficult to develop and implement (Beer, Haughton & Maude 2003; Turok 1989).

Contemporary approaches to economic development measures suffer from a number of shortcomings:

- Official data from ABS and other sources is often only available irregularly, or at time periods that do not match the needs of the organisation. Moreover, the scale of the data analysis is often challenging as key data may only be available at a very broad scale. This outcome is a reflection of both privacy concerns and the limitations of the data collection process.

- There are a number of business data sets within the private sector – of which the Australian Business Register (ABR) is perhaps the best known – but these data sets are often complex and do not necessarily cover the types of enterprises – SMEs, business start-ups, emerging industries – of interest to economic development agencies.
- Primary data collection (i.e. the gathering of data for the specific purpose of evaluating economic development activities) is one solution, but attribution is an unavoidable problem (Turok 1989). Businesses often benefit from economic development actions but either overlook who provided that assistance, or are unaware of the boost they received. Moreover, the surveying of businesses or consumers can be expensive and often results in output measures, rather than outcome measures.

This project has the goal of identifying and evaluating new technologies and data sources that can shed light on the additional value created by economic development programs and activities, and programs and activities which have economic development outcomes. It looks beyond traditional data to relevant data sources that are increasingly becoming available globally, nationally and locally. Often referred to as ‘big data’ – these alternative information sources reflect the new reality of a digital life, and can include data from various sources (i.e. platforms, devices and technologies) such as mobile phones, social media, on-line booking websites or applications, transactions and smart sensors installed by governments or the private sector.

The monitoring and capturing of big data is not an easy process, and it is also a non-stop process. This is because, big data are changing and created on a continuous basis, as well as it is characterised by seven factors (Gunther et al. 2017): (1) *volume*, refers to the large size of datasets generated through the fast development of technologies and applications like Internet of Things (IoT), Artificial Intelligence (AI) and user generated content (UGC) from online social media platforms, (2) *variety*, represents the diversity of data sources and multimedia formats, e.g. text, videos, photos, likes, comments, website statistics, log data (3) *variability*, related with the data whose meaning can vary significantly in context, (4) *velocity*, refers to high speed of data generation through the growth of interconnected devices generating enormous amounts of data in real-time, big data change and are created with the speed of light (5) *veracity*, represents the data reliability, as data is worthless if it's not accurate, (6) *visualization*, science of visual representation of data and information in a way that is easily readable, accessible and understandable. Big data is recognized as a key source for creating (7) *value*, since it is considered that it contributes to more efficient and effective operations like optimal price setting, optimizing supply chain, minimizing errors and improving customer satisfaction. M-Brain (2016) identified another characteristic of big data that makes its management difficult, i.e. (8) *virility*, which means that big data are quickly spread around through viral online practices and social networks and by being spread and shared they are being augmented, enriched, changed which again makes their monitoring, capturing and understanding quite difficult and laborious. Figure 1 illustrates each of these eight points.



Figure 1 Big Data with 8 V's (M-Brain 2016)

1.1 Our Approach

This project has examined new data sources and their potential in forming part of a new metric, or set of metrics, in economic development evaluation. The research was undertaken in five stages:

Stage One – Desktop research

We examined previously published work on the digital economy and the potential for new data sources to measure economic development activities. In partnership with EDA, we draw upon the work of globally significant economic development bodies (including the International Economic Development Council (IEDC)) as well as work previously undertaken by EDA in other parts of Australia. We examined this body of work in order to better understand developments in this field of enquiry and in order to benchmark potential metrics against each other and current practices. This analysis informed the development of a decision framework and data matrix, the purpose of which is to assist in making decisions about which potential measures offer the greatest potential. The matrix in particular was also seen as a useful tool in for communicating the outcomes of this research.

Stage Two – Roundtable 1

Working with the advice of EDA and the Steering Committee we undertook a first Roundtable early in the life of the project (April 12) with key economic development practitioners and influencers within councils and regional development agencies to determine:

- contemporary measures used in their organisations;
- issues in meeting the reporting needs of their organisations and funding bodies; and,
- data sources and software currently used.

In discussing these issues we gave priority to determining which issues were most important for local government and other stakeholders, and which questions about the performance of economic development strategies should be awarded priority.

In addition, we sought the advice of the participants on:

- measures they have considered in the past but not deployed because of issues of cost, access lack of knowledge on how to use or other impediments;
- their knowledge of new indicators that may not otherwise enjoy high visibility; and,
- information on reports or other documents their councils may have commissioned within the past two years on this issue.

This Roundtable was conducted at the offices of the City of Charles Sturt, with an additional 9 participants from around Australia joining via video conferencing. A survey also accompanied the first Roundtable to enable those who could join live, the ability to provide input.

Stage 3 – Technology and data source discovery, interrogation and application

This stage of the research focused on the potential embedded in ‘big data’ from new digital sources and platforms, and the review of established data sources. Critically, in keeping with the project brief, the emphasis was placed on the former task. Each potential data source was examined from the perspective of providing an answer to three issues central to this project:

- Does the data have the capacity – spatial scale, time period and relevance – to shed light on the impacts of economic development initiatives?
- Is the data accessible? That is, can it be readily obtained and is there a reasonable expectation that it can be obtained on an on-going basis?
- What is the likely cost of obtaining access to such measures and of analysing their data? High quality metrics may be possible, but could be beyond the fiscal resources of local governments and other economic development agencies.

As part of this stage we examined ways in which these new data sources could either be repackaged or otherwise transformed – perhaps into dashboards – to better achieve useful measures of the effectiveness of economic development outcomes. In addition, we considered forms of

conventional data that have only recently become available. For example, the Australian Bureau of Statistics has jointly with the Australian Tax Office recently engaged in large-scale data linkage to produce the Business Longitudinal Analysis Data Environment (BLADE) data set that could potentially provide aggregate measures of economic performance.

Stage 4 – Development of a suite of economic development measures

In this stage the team took the inputs from the previous components of this project and sought to craft a suite of measures that could be applied to economic development programs. In developing this suite we examined the potential of new indicators based on ‘big data’, established measures that may be transformed or enhanced in other ways, and the potential to mix these two sources to produce the best possible outcome.

Stage 5 – Roundtable 2

A second Roundtable was undertaken on June 12 at the City of Charles Sturt offices in order to test the outcomes produced to date. The results were presented through the lens of studies, and we sought feedback on the perceived value of the measures, their degree of being fit-for-purpose, presentation issues etc. In addition to this face-to-face Roundtable, we undertook a video-conference with interested individuals from around Australia. The separate meeting was used in order to maximise the capacity of remote participants to engage and provide meaningful inputs. The key foci on in these sessions were:

- Discussion of the final report on the ways in which existing data sources could be more effectively used.
- Recommendations for the final report on how the measures/evaluation techniques can be applied by economic development agents to assist them with their business decision-making processes and needs.

1.2 Structure of the Report

This report is structured into a number of sections. The next section – Section 2, considers the review of relevant literature from both academic and practitioner-focussed sources (such as the IEDC). This part of the report is presented as a series of reviews of the key messages from these significant publications.

Section 3 then considers the outcomes of the first Roundtable. It draws out the key lessons and messages from that meeting. Section 4 provides a discussion of the new data sources that were examined, and outlines the key decisions points and questions that will guide the use of these data sets. Section 5 presents the outcome of the second Roundtable while Section 6 provides a conclusion and recommendations for the EDA and economic development practitioners.

2. Review of the Literature

This section examines relevant industry-focussed and academic publications on the measurement of the performance of economic development activities. In considering this material, a particular focus is placed on the practical insights that are of value to economic development professionals working across Australia. Importantly, not all data sources are of equal value/significance.

2.1 Economic Development Australia & Urban Enterprises Victorian State Practitioners Network 2016, *Annual Performance Measures of Local Economic Development in Victoria*.

Format: PowerPoint Presentation

Synopsis: This presentation reports the findings of a research project into the activities and performance measures currently adopted by EDA members in Victoria working for local government. Data were collected via a survey, a workshop, a review of best practice across local government, discussions with leaders in the sector and through consultations with the relevant state government department – The Department for Land and Environment.

Findings: The report found few data sets that are freely available to local governments and able to provide consistent measures of economic activity and outcomes. It established key considerations for judging data sets, including the need for measures that:

- respond to the objectives of local government in economic development;
- are available at minimal or no cost;
- are available annually;
- are not time consuming to process;
- consider the diverse approaches to local economic development; and,
- are comparable across various local governments.

From its survey, the authors concluded there were three overarching objectives to local economic development in local government in Victoria:

- supporting the existing business base;
- attracting new businesses and jobs; and,
- promoting liveability and sustainable communities.

The report recommended a number of high level metrics for economic development activities within local government:

- council expenditure on economic development as a proportion of total rates revenue;
- number and types of engagement with the existing business base;
- awareness and satisfaction with local economic development; and
- number of new businesses.

Not all of these high level metrics are directly relevant for this project, but it is worth noting that the underlying methods for measuring these metrics are relevant. For example, the report noted that

the Australian Business Register is the most frequently used method for counting new businesses in a region, but it remains a challenging data source as in raw form it counts businesses that are not economically active or do not employ others. Additionally, the application of filters to this data set may remove several groups of businesses of critical interest economic developers. The satisfaction survey used by councils is not targeted to businesses (it is sent to a random sample of residents) who are then asked to self-identify as a business owner or manager. Similarly, the measure of council expenditure as a percentage of rates, is an input measure not an outcomes measure and the engagement metric is neither an input nor an output measure alone.

2.2 Economic Development Australia, Victoria Committee & Urban Enterprise 2015, Local Government Industry Performance Monitoring and Benchmarking Survey.

Format: PowerPoint Presentation

Synopsis: This presentation reports on the findings of a survey sent to Victorian member of EDA by Urban Enterprise on behalf of the EDA Victoria Committee. The aim of the survey was to understand the performance measures used by economic development officials in local government and to test the measures proposed as part of the Local Government Performance Framework. Some 53 responses were received, covering 41 individual local governments across the state. Fully half came from metropolitan Melbourne, one third from regional shires and 18 per cent from regional cities.

Findings: The Australian Business Register is used by most local governments to measure industry growth and decline, though most regional shires believe it is a poor measure of their firm size and growth. Most users filter the data to remove trusts, remove fields that are not applicable to their region; remove non trading Australian Business Numbers (ABNs) and remove superannuation accounts and deceased estates. Most local governments use consultants and third party providers to undertake this task.

Overall, most local government respondents felt that the proposed framework was of limited value - 'a meaningless indicator of economic performance', or a 'poor indicator of economic performance' (2015, p.5).

Regional cities were found to allocate the highest proportion of their rate revenue to economic development. In addition, the research identified the following core economic development services provided by Victorian local governments:

- tourism promotion and tourism industry development;
- industry support and development;
- destination development;
- policy development and advocacy;
- infrastructure creation;
- marketing and promotions;
- support for local business;
- information on demographics and trends;
- business efficiency network;
- economic and community asset network;
- new resident attraction;

- telecommunications;
- natural disaster recovery;
- skilled migration services; and
- careers forums for students.

2.3 International Economic Development Council 2016, *A New Standard: Achieving Data Excellence in Economic Development*, IEDC, Washinton.

Format: Report

Synopsis: This report finds that the data needs of users within economic development in the US are changing rapidly, although the IEDC's 2002 Data Standards continue to provide an excellent foundation for evaluation and monitoring. It also finds that recent developments in the US in open data, mobile data and big data have increased the availability of information.

Findings: This report was written for a US audience (and to a degree that includes Canada) where economic development practitioners often provide information to specialist site selection firms that are hired by major corporates to advice on where new branch plants, transport hubs and other facilities should be located. The IEDC's 2002 Data Standards provided a standardised format for providing that data. Since 2002 other data has become available and this report seeks to understand how this resource can add to their existing template.

Importantly, the US has seen growth over the last two decades in Open Data, with more state and Federal agencies making administrative data sets available. Critically, in the US publicly collected data is owned by the people, whereas in Australia it is the property of the Crown. The report notes that 11 per cent of economic development agencies in the US now make their own data open to others.

The report finds that open and big data offers the possibility of automated data collection, but such mechanisms can be misleading because of error, partial information or other gaps. Economic developers will need to continue to transform and actively analyse these data sources.

The data most commonly sought by site section agencies from economic developers in the US are:

- labour regulation;
- employment by industry;
- taxes and incentives at the site;
- business revenues;
- building regulation;
- employers;
- demographics;
- higher education; and
- natural disasters.

The report found that the four most important data sources for economic development practitioners in the US were Federal government agencies (with 62% describing it as critical), local government,

state government and paid software sources. Over 80% of local economic development agencies surveyed as part of the report noted that they collected primary data in some form, including business visits, email or phone based surveys, and on-line polls.

The report found substantial challenges with the absence of standardised data collection, the mismatch between the spatial resolution of the data and the needs of the user, data being dated by the time it becomes available, the lack of representativeness, and poor sampling.

Overall, the key lessons to emerge from this study are:

- The IEDC report suggests there has been little innovation in, or take up of, new data sources for economic development in the US. Where there has been innovation it has been in accessing open data from other government agencies.
- In the US, economic development practitioners are most concerned to have data available to help in attracting new investment from outside the region.
- Third party providers – including Federal agencies – are an essential part of the data ecosystem for economic development in the US.

2.4 International Economic Development Council 2014, *Making it Count: Metrics for High Performing EDOs*, IECD, Washinton.

Format: Report

Synopsis: This report examines the use of metrics amongst economic development organisations and the ways in which they can help drive greater success. It argues there are at least four variables that have emerged as key measures of economic development achievement:

- job creation;
- capital investment;
- changes in the tax base; and,
- personal income.

Findings: This publication reviews approaches to economic development performance and concludes that both measuring achievement and reporting on those achievements have a positive impact on overall success. This conclusion is wholly unsurprising. It acknowledges there are four types of metric in the logic model used by most non-profit organisations:

- inputs;
- activities;
- outputs; and
- outcomes.

It also notes the ‘balanced scorecard’ method of assessing performance.

Using a survey of IEDC members, the research found that:

- Over 30 per cent of respondents did not measure performance regularly.

- The presence of a strategic plan determines whether an organisation measures performance.
- 'We live by jobs, we die by jobs, and that is a problem' (International Economic Development Council 2014, p.8).
- Performance measurement carries organisational risk – and may be difficult because of data inadequacies.

The report recommends that performance metrics can be divided into four segments, which can then be developed as a menu of options for individual agencies. These four segments are:

- An internal segment that assesses the internal processes that help the organisation conduct its business.
- An economic development program support segment – such as business attraction or technology and innovation promotion.
- A relationship management segment.
- A community segment.

The IEDC (International Economic Development Council 2014, p.79) identified a number of new approaches to performance measurement for economic development organisations, and these include:

- Relationship building, focussing on creating long term relationships with metrics tailored to capture how each party perceives the relationship;
- Capacity building focuses on the commitment, skill set and resources within a community – seeking to measure its resilience and adaptability;
- Customer satisfaction is measured by how the target audience views the relevance and helpfulness of an economic development agency;
- The ratio of effort to results approach measures the efficiency of an enterprise by calculating its marginal benefits and costs;
- Social return on investment (SROI) quantifies the social impacts of an enterprise by considering the outcomes that would have emerged if no intervention had taken place;
- Program sustainability approaches considers the ability to leverage resources over a considerable period of time;
- Environmental costs and benefit analysis quantifies the impacts on environmental quality and public health;
- Moving from partnership to aligning organisations examines the degree to which organisations share values, beliefs and behaviours;
- The growth of powerful networks perspective quantifies the growth in the breadth and depth of economic development networks; and,
- Progress in open source collaborations measures the extent to which an organisation's efforts foster the growth of grassroots engagement with economic development initiatives.

The report also provided findings on why some organisations do not track their performance. Some did not because there was disagreement over metrics and they lacked the resources – cash and staff

time – to engage in effective performance measurement. Other impediments included uncertainty over which metrics were appropriate – or even usable – and concerns that key stakeholders may not fully understand the outcomes of tracking progress. They also acknowledged that many of the drivers of local growth are outside the sphere of influence of local economic developers, and therefore they were reluctant to measure something they could not control or substantially shape. The simple absence of appropriate data was a factor behind some agencies not track performance, while others felt that many development outcomes simply cannot be measured through quantitative indicators.

Overall, the findings of the IEDC report 2014 do not focus on new forms of data and their capacity to shed light on economic development efforts in Australia. It does, however, provide a solid foundation for understanding some of the potential uses for such data, and the boundary conditions that will enable, or limit, their take up.

2.5 Hansell, D & Rafi, B 2018, 'Firm-Level Analysis Using the ABS' Business Longitudinal Analysis Data Environment (BLADE)', *The Australian Economic Review*, vol. 51, no. 1, pp. 132-138.

Format: Journal article

Synopsis: The ABS's Business Longitudinal Analysis Data Environment (BLADE) is the most comprehensive firm level statistical data base in Australia. The paper describes what it is, what it could be used for, who can gain access to it and its limitations as a source of information.

Findings: BLADE can be described as a collection of integrated, linked longitudinal data sets that was created to meet a data request from the OECD. It is not a single, static data set. It brings together ABS survey data such as the Business Characteristics Survey and the Research and Development Survey, alongside government administrative data including Australian Tax Office data on PAYG receipts, Business Income Tax, Business Activity Statements, alongside Department of Industry, Innovation and Science data on programs and IP Australia data. BLADE is only available from 2002 to 2015, but could be extended into the future. It is possible that real-time reporting of ATO data will be introduced, and this would remove concerns about timeliness.

Access to BLADE is significantly limited, with only staff employed by the Australian statistician – directly or through secondment – able to access BLADE.

In conclusion, BLADE holds considerable potential for economic development practitioners in the future although the limitations on who can access the data may limit its take up. Its capacity to shed light on which large-scale programs are more or less effective is promising, and may provide insights not previously available to economic development practitioners in this country.

2.6 Parker, T 2017, 'The DataLab of the Australian Bureau of Statistics', *The Australian Economic Review*, vol. 50, no. 4, pp. 478-483.

Format: Journal article

Synopsis: The DataLab protected research environment allows unparalleled access to Australian micro-level data sets. It is highly protected and covers BLADE, the 2006-11 linked Census and administrative data.

Findings: DataLab is a data analysis solution for high end data users wanting to extract full value from ABS micro data. It can only be accessed on-site at ABS premises or as part of the virtual-lab trial. Access to DataLab depends on compliance with the 'Five Safes' approach, and requires individuals to be employed by an organisation that has a responsible officer undertaking with the ABS. They also need to be able to demonstrate they have relevant knowledge and training, have capacity in the relevant software, they must undergo DataLab training and submit a project proposal.

The DataLab of the ABS is clearly a secure environment and the controls in place would appear to exclude both private companies from accessing the data, as well as individual economic development agencies. It is a specialised information resource for specialist users.

2.7 Economic Development Australia & Urban Enterprises – Victorian State Practitioners Network 2018, *Best Practice in Economic Development Strategy: National Survey Results and Discussion*.

Format: PowerPoint Presentation

Synopsis: This research builds on the previous benchmarking efforts undertaken in 2015 and seeks to shed light on the resources dedicated to economic development, the governance structures shaping agencies, the approaches applied and the processes of formulating strategies.

Findings: The research used an internet based survey sent to all EDA members in November and December 2017. It achieved responses from 52 local governments across Australia. It found economic development agencies had total annual budgets ranging from \$600,000 to \$900,000 with larger local governments having larger average budgets. Budget allocation was focussed on traditional economic programs and further found that though tourism budgets were smaller they were still significant. Regional local governments spent more on tourism compared with metropolitan councils.

Priority in economic development was given to attracting new business and investment, supporting existing businesses, growing the visitor economy and resident attraction – in that order.

A number of key issues were identified by the respondents, and these included the need to have a cross-organisation approach to economic development, there needs to be a greater awareness of the long time frames associated with growth, the planning system often creates blockages, there is a tendency for economic development in Australia to be reactive, and there is poor collaboration with

state government. There was a strong belief in the need to set practical and achievable strategies with KPIs and review constantly.

2.8 Rafi, B 2017, *Participation in South Australian Innovation and Investment Funds: Impact on firm performance*, Office of the Chief Economist, Canberra.

Format: Research paper.

Synopsis: The paper links empirical data held by the Department of Industry, Innovation and Science with BLADE to assess the impact of South Australian Innovation and Investment Funds on participant firms. The research uses a counter-factual approach – what would have happened in the absence of intervention – to assess whether firms who participated in these schemes. It finds that involvement with these programs had a positive impact.

Findings: This paper is significant as it is one of the few pieces of publicly available work that speaks to the potential capacity of BLADE to shed light on the impact of economic development activities, notably the introduction of structural adjustment funds. By implication, this data source could be used for any long-term economic development initiative of local government focussed on businesses. The paper uses quasi-experimental techniques to match firms and thereby construct a counterfactual – ie it estimates the performance of firms that participated in programs against ‘matched’ firms that did not. The research finds that firms that receive structural adjustment assistance grew – on average – four more jobs than those that did not, and that this impact persists for at least two years. Micro firms (fewer than five employees) grew the most. Government investment also increased firm turnover, with the greatest impact evident over two years in medium sized firms with between 20 and 199 staff. Micro firms had little uplift in turnover over one year.

3. Outcomes of the First Round Table

A first Roundtable discussion was undertaken to better understand:

- current approaches to measuring the impact of economic development activities by practitioners;
- the budgets available for such measurement;
- awareness of new or emerging opportunities for impact measurement;
- the priorities of practitioners – what is most important to be measured;
- who the key stakeholders are for the evaluation of economic development efforts;
- staff resources for evaluation, including the appropriateness of skill sets; and,
- time constraints on data collection and evaluation.

As noted above, the Roundtable included approximately 12 participants able to participate face-to-face, with a smaller group both listening in and contributing via video conference.

3.1 Key Themes

The Roundtable unearthed a number of themes that were repeated throughout the discussions. These themes emerged across a number of areas of discussion and provided a clear indication of the priorities of the participants. First, the respondents clearly indicated their need to better understand tourism and employment outcomes, especially as they related to small business. Second, the Round Table showed there was a strong desire to have better metrics on the outcomes associated with outputs, as well as the outcomes associated with new investments. Third order priorities included data on liveability, community and wellbeing and how these societal measures relate to economic development. There was marked interest in open source and shared data across local governments and regions, as well as scenario modelling and benchmarking.

Respondents were able to articulate their priorities in terms of data on economic development and also gave voice to the impediments to them realising these aspirations. These barriers included:

- Limited skills in the manipulation and interpretation of data, including familiarity with data sets and the capacity to make use of GIS.
- Tightly constrained staff time to work on data analysis and the development of measures;
- Budget restrictions – with most respondents indicating a budget of just \$20,000 for performance measurement.
- Concerns over the reliability, security and ethical use of the data available to them.
- Government and agency silos restricting access to data.
- Questions on the relevance of Census data, when it is only one night of every fifth year. Economic development requires real time data.

Participants expressed the desire to understand changing demographics, local economic structure and the integration of data. They also sought to conduct scenario modelling and understand adaptive capacity as they believed these abilities would aid opportunity identification and decision making.

3.2 Specific data needs

Specific data needs mentioned by the Round Table respondents included:

- employment in
 - micro businesses,
 - small Businesses,
 - entrepreneurial activity.
- permanent and seasonal population;
- the number of new business in a locality, and how long they remain;
- the number of home based businesses;
- conversion rates of those seeking advice to the establishment of a business;
- the value of business workshops;
- data that assists in understanding employment growth sectors;
- sustainability of businesses;
- the value of business associations;
- the number and characteristics of businesses who are not registered for GST; and,
- the automatic input of business data.

Tourism:

- length of stay;
- the value of investment and promotion; and,
- local level data sourced from big data platforms – such as Airbnb.

Data on Specific Initiatives:

- measuring the impact of place activation (the City of Adelaide may have a model to deliver this outcome);
- the outcomes of development at Tonsley park;
- business displacement associated with the North South Corridor;
- the impacts of major projects, capital works, infrastructure projects;
- the outcomes of events such as festivals, major commercial construction;
- return on investment for infrastructure and other investment undertaken to achieve growth;
- development - residential and commercial building approvals and completions;
- industry structure at the local level;
- the impacts of the mining boom; and,
- data on established Boards/Organisations/Programs.

3.3 Data Sources

The Roundtable participants were asked to list the data sources and tools they currently use, and these included:

- [REMPPLAN](#);
- [Australian Bureau of Statistics](#);
- [Australian Business Register](#);

- Development applications and approvals;
- [.ID The Population Experts](#);
- Vacancy rates on residential and commercial properties;
- Goods and Services Tax data;
- [Economy ID](#);
- [Data SA](#);
- [Neighbourlytics](#);
- [Spendmapp by Geographia](#);
- [South Australian Tourism Commission](#); and
- Specific collections undertaken by councils including:
 - council Satisfaction Survey;
 - business Surveys; and
 - environmental scans such as – newspapers, social media and local informants.

3.4 Aspirations for Future Data

The Roundtable discussants were asked about their aspirations for future data – what they would seek to achieve, what their ideal data sets would look like and where their priorities would lie if they had to make choices. They expressed interest in investigating alternative data sources including:

- Facebook;
- Gumtree;
- Airbnb;
- the development of a chat bot to automatically collect data;
- big data generally; and,
- sensors.

When asked what they wanted to measure, the respondents reported the following priorities:

- Efficiency of activities and projects;
- Benefits of capital projects;
- Establishing and testing benchmarks;
- The lag between activities and outcomes;
- Views of success – what does success look like to stakeholders?
- Causality – what is driving outcomes?
- Macro-economic indicators; and
- How can we use open source info or shared data across councils?

They also identified significant gaps between current data collections and measurement and what they would like to see measured. Specifically they noted that the contribution made by the sharing economy was not captured under current arrangements, nor was their data on the relationship between demographic change and economic development, nor the movement of skilled labour.

The respondents also identified a number of types of economic development activity they considered most important to gain metrics on. This included cluster development and strengthening, local tourism data, information that would assist in master planning, the economic impacts of key assets and infrastructure, and value creation through the provision of advice to small

businesses. Discussion at the round table also focussed on rates of participation in economic development initiatives – business breakfasts, events etc. – as well as the potential role of ‘smart city’ style sensors to provide data of value to economic development. Finally the participants noted the desirability of information on home-based businesses, the differences between data collected during the Census and other times during the year, and ways to gain access to GST data to measure economic activity.

The Roundtable participants reported that budgets for measuring the impact of economic development activities were typically very modest – commonly limited to \$20,000 pa, and as such were often inadequate for the task. This funding envelope clearly places a significant constraint on the level of innovation possible in developing new metrics. The impact of the budget limitations is compounded by the limited number, and skill base of staff available to work on measurement. Discussion across the meeting noted positively that in the past one RDA Committee had received funding to employ a dedicated staff member to work with councils to extract information from REMPLAN. Elsewhere, the Eastern Region Alliance in Adelaide shares resources across Councils to undertake monitoring and evaluation.

When asked, the participants in the Round Table reported that their ideal data sources would include an integrated ABS and ABR data set, including information on businesses too small to be registered in real time. This data would also be made available in real time, and may include a ‘chat bot’ that brings together data and provides it to users on an on-going basis. Others felt it was important to include community statistics, forecasting and scenario modelling, and that ideally there would be one system to cover all needs. Part of this discussion considered whether it would be possible to incentivise businesses to capture and share data where possible, and that all data needs to meet standards with respect to security, privacy, consistency and reliability.

Many participants focussed on the need for data that made it possible to both disentangle the impact of macro level and micro level influences, while also clearly addressing both outputs and outcomes. These issues were seen to be important because practitioners are held accountable for the outcomes associated with expenditures and need to use data to influence decision makers within their organisations.

Other issues raised in the Roundtable included their desire for data on employment growth and growth sectors; the performance of the retail sector – including occupancy rates, mix and clusters; demographic change, the structure of the district or regional economy; and, senior entrepreneurship. There was also a clearly articulated desire to have information on the contribution their economic development activities were making locally, as well as their capacity to shape business confidence. There was a clear desire for data on the sharing economy, its performance and contribution to local wellbeing.

A number of other issues emerged in the discussion that related to the characteristics of the data the Round Table participants sought. They felt it highly desirable to be able to link local level data with regional data and they sought data in time series, able to measure outcomes over a five to ten year horizon. GIS analysis and spatial data overlays were perceived to be an attractive option, especially when linked to social media, sensors and asset management. Some of the informants believed an ‘app’ with local level data would be helpful, while others focussed on the data needed to understand the rate at which requests for business advice or assistance translated into real world

outcomes. Some of the participants noted novel data sources, including development approvals while others highlighted the contrast between the long-term nature of economic development and the short term narrative of achievement.

The participants in the Round Table were as one in agreeing that innovation and new approaches in measuring economic development outcomes were critical to their long term success and funding. They believed that economic growth would come from new and better insights that would enable the creation of better programs and strategies. They would also serve an educative function in informing senior managers and council on the true value of local economic development.

3.5 Roundtable 1 Implications

The first Roundtable was designed to surface what data sources and sets were already known and in use and what potential directions were particularly relevant for this project. From this perspective the team were able to recognise the potential in data sets not well known or understood and could therefore focus efforts on data and sources that were new or emerging and generally cast a wider net to identify other data sources that may be relevant to the economic development agenda. The review of possible data sets follows in section 4.

However, the Roundtable 1 also highlighted a number of other key concerns that are critical to identifying and utilising data from external sources in the economic development context. Primarily it became apparent that a series of decisions were required in selecting data sources and targeting the use of this data to particular outcomes. A critical and obvious decision was cost. Data that came at too high a cost was not going to be immediately useful for economic development agencies with limited funds. Other decisions relating to purpose, geographic coverage, timing, accessibility, reporting structure, broad applicability, analysis, privacy and ethical use of data all arose as concerns and issues to be addressed. From this standpoint the team approached the problem posed by the project by not only scanning for available data sources and sets but by also outlining a decision framework and decision making tool for data acquisition and application.

In deriving such tools it was also apparent that the application of these tools should also be exhibited. Consequently the report team set about identifying and developing two exemplar cases that illustrate how an agency, such as a local council, would select a data source and illustrates the range of sources that could be selected and used depending on the budget the user has available. The two cases decided were reflective of the primary focus conveyed by the Roundtable participants being assessment of impact of a tourism example and an employment generating business opportunity. For a tourism example the team opted to exhibit the case of hosting the opening and closing stage of the major cycling event held annually in South Australia, the Tour Down Under (TDU). The estimated cost of hosting the stage was proposed at around \$635,000 including direct and indirect costs. The second case chosen exhibited the issues that arise when considering relevant data for a decision to support and back the construction and opening of a new bulk retail store in the main street by granting a \$50,000 lump sum or rate holiday to entice the large retailer.

Both the decision framework and tool were used in Roundtable 2 and further developed for presentation in this report as detailed in section 6.

4. New Data Sources and Sets: Use and Access Issues for Analysis

This section will briefly outline some of the more recent data sources available, including some mentioned In Roundtable 1 but were not well known, social media data sources and government data sources. A large focus is given to the types of social media data available and what should be considered in their use.

4.1 Social Media Data

The Use of Social Media Platforms in Australia

Social media platforms have grown in popularity as the internet has become more accessible in Australian homes and via handheld devices. Since 2014 the ABS has reported 86% of Australian households to have internet access, with primary access to the internet being on a desktop computer, laptop or smart phone (Australian Bureau of Statistics 2018). The most popular forms of internet use in Australia as reported by the ABS were banking, entertainment and social media each at 80% (Australian Bureau of Statistics 2018). In Roundtable 1 it was identified that social media data was a data type that local government wanted to utilise in their economic development. Research also identifies the growing need for organisations to understand their own use and their customers' use of social media, such as the importance of online reviews (68% of people were reported to 'read online reviews and blogs before shopping, averaging eight reviews before making a decision' (Yellow 2018, p.5)). Research into social media and organisations is in its early stages, examples include, examining social media and tourism (including its relationship with smart tourism (Gretzel et al. 2015), typologies to understand the stage organisations are at in their social media growth (Chung et al. 2017) and the use of social media in the local government (Mohd Hisham Mohd, Indrit & Robyn 2014).

In order to begin to use social media data effectively, local government needs to understand who is using social media and via what platforms. There are numerous social media platforms utilised in Australia but a recent global report by We Are Social, reported that Facebook was the most commonly used with 17 million monthly active Facebook users (We Are Social & Hootsuite 2018). Other popular forms of social media in Australia and their usage as a percentage of total social media users are listed below:

- Facebook – 91%
- Facebook Messenger – 79%
- Youtube – 53%
- Instagram (owned by Facebook) – 39%
- Snapchat – 23%
- Linked In – 22%
- Pinterest – 22%
- Twitter – 19%
- Google+ - 13%

The availability and use of Gumtree data was mentioned in Roundtable 1. In researching this report data was not found to be publically available for Gumtree. With the entrance of Facebook Market Place, this type o data could be accessed via platforms that analyse Facebook data.

Using Social Media Data

Social media data, such as Facebook, Instagram and Twitter can be monitored using a local government name or names of places, businesses, community centres within a LGA, events/festivals, hashtags # (most commonly used on Twitter, Facebook, YouTube and Instagram), location tags or relevant phrases related to the 'brand names' of the area, destination, businesses, politicians and/or other celebrities (athletes, actors etc.) living and/or performing in the area. For example, during the Tour Down Under popular hashtags may have included #tourdownunder #TDU2018. While these can be searched manually at the user end of Twitter, Facebook and Instagram, this is only possible on a small scale and can be time consuming. Understanding the impact of posts or advertising campaigns, therefore, by viewing the platforms manually is limited.

There is a variety of social media search tools that are either freely available or on a cost basis that can be used for searching and collecting data created and shared on social media. These tools can be categorised based on what data is required (e.g. text, videos, location or event check-ins), budget constraints and capacity to clean and analyse the data. There are some other data sources that utilise social media data in their reprint, for example Neighbourlytics that mash-up user-generated-content from various social media platforms and analyse it in various ways in order create a report for purposes such as reputation monitoring, campaign impact, creation of online awareness.

Key Considerations in using Social Media Data

When considering the use of social media data, the following should be considered:

- What is the data to be used for? To examine patterns in social media engagement with Council's events/posts/output, improve engagement, analyse the effectiveness of marketing programs?
- What is the time period? Is the aim to examine user engagement over time or a set time period (e.g. before, during and after an event, crisis and/or economic development activity)?
- What specifically should be measured? For examples, the value of each post and how it may have related to sales, tourist length of stay?
- Is the aim to measure increases (or decreases) in chatter? For example, for a specific event held in a LGA, or on a LGA, measures taken prior to, during and after an event would reveal any change.
- Is the aim to benchmark the performance of one event/economic development project over another and/or the performance of one region against another?
- Is the aim to examine and compare data sets? For example, compare two events in a LGA or compare chatter with a neighbouring local government. Is the interest to compare

¹ Yellow and Sensis have conducted a number of surveys on social media use, with the 2018 survey consisting a sample size of 1500 Australians reached online.

performance against time or after an event or intervention? Is the interest in benchmarking performance against a competitor?

- What social media platforms are preferred for data collection?
- In what language and/or country of origin is wanted for collection and analyse of online data? E.g. when assessing the international appeal of a tourism event and its ability to draw international visitors or destination awareness / brand image development, an international wide study and/or a focus on key target markets (such as China) could be conducted.

When undertaking data analysis of social data the following questions should be asked:

- What is being talked about? How much is being talked about what and when?
- How fast does the news spread?
- Who is influencing the spread?
- What is the people's perception (positive/negative/neutral) with the event or location?
- What is the people's engagement (positive/negative/neutral) with the event or location?
- What is the ROI of the event in creating online buzz, bookings, participants, investment etc?

To address the above mentioned questions, social media data can be analysed in a number of ways including:

- Volume - number of mentions, number of hashtags, location tags etc.
- Velocity - how fast posts are spread through twitter retweets or Facebook shares.
- Engagement - number of comments, number of posts with comments, number of likes, number of clicks of links embedded within posts.
- Sentiment analysis, e.g. positive, negative, neutral type of posts.
- Who is influencing discussions - people who have a large audience or following, 'influencers'?
- Return on investment (ROI) of economic development projects– e.g. an investment in a tourism sports event of 50K has produced what numbers of international visitors, online destination promotion and awareness, enhancement of the destination image online based on metrics such as (online viewers of the event, conversion of viewers to ticket purchasers, people attracted to the website, people talking about the event, people reading about the event online vs people engaging with the event online in relation to the money invested to create online promotion).

To access and collect Twitter data, one can use various ways such as:

- Using a social media search tool to manually conduct searches and identify online posts based on keywords, #hashtags and Boolean search;
- Using a social media monitoring tool, which is usually subscription based;
- purchasing through Twitter's Application Programming Interface (API) subscriptions/packages;
- by using a public API; and
- purchasing through another provider using API to access Twitter data; and
- using an existing data set, which will be variable in price and the data available.

Accessing Social Media Data

Social Media Monitoring Tools – These range in cost, but often include a free trial period and incorporate posting to and of monitoring of several social media platforms. These monitoring platforms require a lower skill level to understand the metrics and reports provided. They are also less costly than purchasing data through Twitter or a specialised provider, providing a choice in subscription style packages. Examples include [Hootsuite](#), [Sprout Social](#), [AgoraPulse](#) (monitoring only) and [Buffer](#). These are used commonly in small business and marketing, they may be used by the marketing teams in local government and could be an area of more collaboration between teams to understand some outcomes of economic development.

Purchasing Data from Twitter - Data can be accessed directly from Twitter through three package options. These include a basic or 'Standard' free option which allows for a limited amount of data to be collected and is advertised as for testing. Twitter also offers two higher level packages, Premium and Enterprise, paid for by a monthly subscription. The data collection occurs through an API and can be exported through numerous file types but would require analysis to use. This is geared towards those skilled in working in this space and large organisations. Accessing this data via a specialised platform may be more appropriate for larger local government.

Accessing Twitter via Specialised Platforms - Twitter and other social media data can also be accessed via platforms which have approval to access Twitter's data, for example through their Enterprise package. There are various platforms which allow this with some being more suited for research or government use than others. Examples of this include [Twitonomy](#), [Discover Text](#), [Podargos](#) and [Crimson Hexagon](#). Other data and analysis providers such as [Neighbourlytics](#) incorporate social media data into their reports.

4.2 Government Data Sets

Government data sets examined were found to provide platforms for other organisations and government departments including local government to publish their data than actively providing data in addition to what can be accessed already such as from the ABS or ABR websites. Several of these sites also provide assistance to organisations who wish to make their data publically available in line with government open data policies. The government data sets examined are briefly described in appendices C and include:

- [Australian Government Data.gov.au](#) and its state and territory branched sites;
- [Research Data Australia](#);
- [NSW Data Analytics Centre](#);
- [Australian National Data Service](#);
- [Chief Data Analytics Officer Public Sector](#);
- [Open Data Tool Kit – SA Premier and Cabinet](#);
- [IP Government Open Data \(IPGOD\)](#);
- [National Cities Framework](#); and
- [Open Council Data](#).

4.3 Other Data Sets

[Census of Land Use and Employment \(CLUE\)](#)

The Census of Land Use and Employment (CLUE) is conducted every two years by the City of Melbourne. It is a city wide census of small business. CLUE incorporates a number of aspects of business data

- including business type;
- floor space type and use;
- building information
- venue and capacity measures; and
- spatial distribution.

(City of Melbourne 2018)

This data provides insight into trends and change in employment and economic activity driven by businesses in the City of Melbourne to aid planning, policy development and strategic decision making (City of Melbourne 2018). This data is published as interactive maps, tables and also available for export as multiple file types including via Google Earth for maps and CVC for the table data (City of Melbourne 2018).

[Spendmapp by Geographia](#)

Spendmapp by Geographia is a new subscription based web platform designed to assist local government in tracking their local economy through resident and visitor spend. Spendmapp data is based on transaction data from one of Australia's major banks. A minimum subscription is 12 months with four subscriptions options available and discounts on mid-level packages for small councils (under 10,000 residents), custom set up can also be negotiated. Data is available at any one time for the previous 15 months and the data from one month becomes available in the middle of the following month. The data available in Spendmapp may also prove useful across a number of council departments.

Spendmapp transaction data is available with location of transaction and of the card holder at the LGA or suburb level depending on the subscription package. The volume of spending by industry category is also available on most subscriptions packages. Daily spend tracking is available in the top package or as an additional feature of any package. Some packages report on the impact spending has on employment and floor space. The top package provides additional economic and population profiling and modelling. Spendmapp allows local government data in neighbouring areas to be compared, with the top locations of 'escape spend' included in reports.

Depending on the subscription package the information accessed will vary but each package allows filters to be applied to the data presented in either the map or graph and to be exported. Data sets in spreadsheet form are not available in full, only the minimum data required to plot the graphs (x and y intercepts).

While Spendmapp is in its early stages, it seems to provide data that fills a gap that local government currently has in understanding its local economy.

[Neighbourlytics](#)

Neighbourlytics provides place making reports with three types of dashboards, People, Place and Lifestyle (customised dashboard requests considered on a case by case basis). The reports are produced on a 1km radius (up to 5km radius for city wide reports) based on 30 days of data, which includes but not limited to:

- social chatter;
- online reviews; and
- ABS data

The reports produced by these dashboards can be used to understand:

- the most popular restaurants;
- neighbourhood identity; and
- activity and place.

[Inside Airbnb](#)

Inside Airbnb is an independent, non-commercial site providing free data taken from the Airbnb website. The website contains an interactive map, which the user can apply filters to gauge the infiltration of Airbnb in the local government area. The data used to create these maps is also available for download. Currently, Sydney, Northern Rivers, Melbourne and Hobart are the only areas available in Australia. This data is not endorsed by Airbnb.

[AirDNA](#)

AirDNA is a commercial platform that provides government, commercial organisations and Airbnb hosts with Airbnb data for a fee. AirDNA data is endorsed by Airbnb and data is available for most capital cities dating back to October 2014 and elsewhere Airbnb is operating since October 2016. AirDNA has been collecting data from HomeAway and Stayz over the last 18 months and will have this available for purchase in the coming months. In some cases AirDNA restricts who they provide the use of their data to.

[ArcGIS Online Esri Australia](#)

ArcGIS Online by Esri Australia allows access to public data through ArcGIS Online, a cloud based mapping platform.

[Tourism Tracer](#)

Tourism Tracer is a research project conducted by the University of Tasmania which tracks the movements of visitors. It began in January 2016 and required participants to carry around a provided smart phone to track their travel movements. An interactive dashboard is available on the website to view some of the data gathered and the smart phone application is available for download to enable ongoing contributions to the research. Similar versions of this project have also been replicated as Tourism Skåne Project in Sweden and the Tourist Tracking Project in Japan.

5. Outcomes of the Second Round Table: Face to Face and Online

A second Round Table was undertaken in mid-June, and was completed in two parts. On the 12th of June a face-to-face meeting with eight participants was undertaken at the Offices of Charles Sturt Council. On the 15th of June a second part to this discussion was conducted online, with the separation of the two parts intended to maximise participation by both groups of informants. The outcomes of the two sets of discussions are presented here in a unified way, reflecting the totality of inputs received by practitioners.

The objectives of the Second Roundtable included:

- Updating stakeholders on the progress made to date.
- Providing participants with the outcomes of the literature review, and seeking their input on the conclusions we drew from that analysis.
- Working with the group to understand how they would approach/would like to approach two case examples of economic development activity – measuring the impact of being the host of a stage of a major tourism event, and actions to secure an anchor tenant in a retail development. The decision framework was used to guide key questions to derive the data requirements of each case and as a means to refine the decision-making tool.

5.1 Key Themes

The Roundtable shed light on a number of major initiatives taking place in the broad area of the measurement of economic development efforts and their impacts. The respondents noted that the Regional Australia Institute (RAI) is undertaking benchmarking across 76 regions that cover all of Australia and their data collection processes that may serve as a source of information in the longer term. Part of their work involves [Statebook International](#). The participants noted that Statebook is used by several states in the US and that it has the support of the IEDC. There is a strong focus in that data set on firm recruitment, a point also evident in the review of IEDC materials.

The Roundtables discussed the potential use of the BLADE data set that is discussed in the literature review section above. They noted its potential value in measuring the outcomes of a range of long-term government programs, especially those undertaken by state or Australian Government agencies. The participants also canvassed other sources and in summary noted that:

- Regional Development Australia (RDA) Committee staff – as employees of an Australian Government agency – should be able to form partnerships with other Federal entities – such as the Office of the Chief Economist, ATO, or ABS – to gain access to the data.
- ABS and ABR data is often incomplete, and this must be borne in mind when considering the potential long term uses of BLADE type data.
- It would be desirable for state governments to involve local governments in planning for major longitudinal analyses, such as those possible with BLADE.
- The inability of local governments to directly access BLADE data is an impediment to its application.
- REMPLAN already links to ABR data and provides insights into business employment, but cannot measure turnover.

- [Trendwise](#) based in Perth, uses sensors to provide internet-style visitor analytics for physical locations, allowing business and local government a greater understanding of people and their interactions with various locations.
- The participants also noted that the Local Government Association is working with local governments to determine current data collections and data acquisition strategies, who has access to data, where data is stored, and what are the standards for data collection. Several of the participants noted that local governments have considerable assets and more data is needed on the state, use and capacity of these assets.

There was a strong sense amongst the participants that there is a need to develop data standards for local government in the area of economic development. They noted that such standards would enable developing both smart cities initiatives and accessing the Smart Cities funding program.

The Roundtable discussions noted that tourism is very diverse and covers many forms of visitation, and involves many industries, not just accommodation and eateries. The participants also discussed the potential for a number of controlled pilot studies, including:

- Kangaroo Island; and,
- South Australia's Northern Corridor (from Adelaide to Whyalla).

The Roundtable participants were especially keen to see data/new metrics on:

- Impact of climate change an issue to be understood; and,
- Economic growth but population decrease.

They noted that it is possible to commission Telstra to undertake 'heat mapping' of economic activity, but this is an expensive option, and they also expressed a desire to know more about small accommodation providers. Data is already collected on registered accommodation providers but little is known about the informal sector, such as properties that use platforms such as Stayz and Airbnb.

5.2 Roundtable 2 Implications

The critical observation coming from this Roundtable was the difficulty confronted in determining the key objectives that may be addressed through the lens of each case. It was apparent that different council experiences and needs also skew or slant the objectives toward a particular viewpoint even from the same activity. For instance our first case on the Tour Down Under tourism activity revealed objective outcomes as diverse as achieving particular economic outcomes (e.g. gains in local spending and employment), increasing regional awareness and exposure, developing inter-institutional or inter-regional relationships, and growing community arts, culture and heritage. The second case, on attracting a major bulk retailer, emerged similar economic objectives but also added development of human capital and growth in industry cluster effects. The diversity in range of objectives makes any one source of data difficult to recommend. Different data will vary in its degree of resonance with this spectrum of outcomes targeted in economic metrics across various needs. This suggested that the decision framework coupled with the decision tool would be useful but serve merely as guides to the awareness and characteristics of the data sets and each economic development initiative would need to look creatively and broadly at the range and types of measures readily available.

The following sections six (6) and seven (7) outlines each of the cases to indicate the range and sources of data that could be accessed to facilitate a monitoring of economic development from these types of activities.

6. Outputs from the Roundtable Activities

The discussions at the second Roundtable emphasised the need to understand the current economic situation in local government areas and in regions. There is a need to better understand day-to-day activities and undertake gap analyses in critical areas of the local economy.

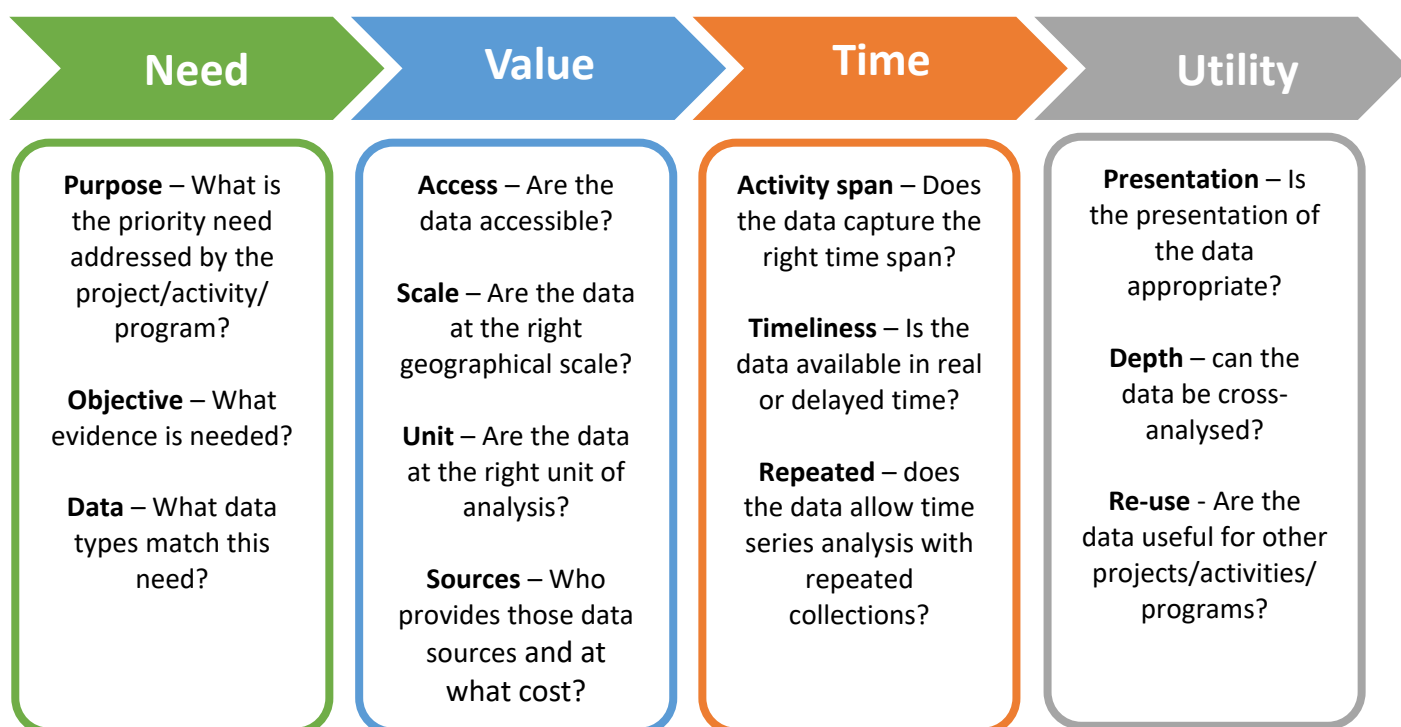
There was a sense amongst the respondent that social media data currently sits at the monitoring and engagement end of data analysis, and is not yet a comprehensive tool for detailed interrogation. The respondents noted that informal accommodation – such as that accessed through Airbnb – is poorly understood, and that a more sophisticated approach is needed for utilising heat maps and other data.

The participants in the face-to-face Round Table felt that Spendmapp by Geographia appears to provide a good solution to many of the monitoring challenges economic development practitioners face, but the online participants noted that the cost of this facility was a major impediment to its take up. Many informants felt that the creation of partnerships to access data was a likely solution.

6.1 Guide to Data Source Decision Making

The Roundtables also evolved the following decision framework given in Figure 2 designed to guide and suggest available data sources and the suitability of data from those sources for use by the likes of local council economic development agencies.

Figure 2: Decision Framework for assessing Data Source Suitability



The application of this decision framework first decides the need, evidence, and data sources required which surfaces the cost of accessing the data from any particular supplier or possible group of suppliers. Assuming the cost falls within budget, there are subsequent decisions to be made in perhaps choosing between multiple data sources and/or providers, and then determining the value, timeliness and utility of the data provided by any source to comprehend the value for money in accessing the data. Each category of value, time, and utility can be ranked under criteria for the degree that it meets the particular criteria. The ranking system would follow the guideline below.

Value

- Low value – wrong scale, wrong unit of analysis and not readily available to LGA.
- Mid value – fulfils some but not all value requirements.
- High value - right scale, right unit of analysis and readily available.

Time

- Inappropriate – Inaccurate time period, too long a delay (>2 years), not regularly and repeatedly reported, costly.
- Somewhat appropriate – Fulfils some but not all budget requirements.
- Completely appropriate – Accurate time scale, real time data available with little delay (<1 month), repeatable and reasonable cost.

Utility

- No additional utility – Data not available for user re-use or analysis.
- Some additional utility – Fulfils some but not all utility requirements, for example, available in report formats, limited range of negotiable reporting, limited or single application.
- Good utility – Available as raw data, multiple categorical cross tabs, high applicability across economic development activities.

6.2 Social Media Data Sources

It was not intended that this project would be comprehensive or complete in identifying all data sources. Instead the aim was to identify whether new data sources could be accessed and provide new measures and indicators of economic development. Deciding which data source is relevant and suitable for the application can be assisted by an easy reference guide. New data sources will appear, others will disappear. Supplier companies of data may merge, be acquired or close. In fact throughout the project we encountered changes in the data suppliers and what data they would supply as the economic and political landscape for data was constantly in flux. However, new data sources or sets can be quickly assessed using a decision tool to discover whether they are a suitable source of data for an economic development application. From there specific and targeted enquiries with the owners/suppliers of the data can be further carried out prioritising the apparently most useful source.

While it was not feasible or possible to attempt to identify all possible data sources, we collected many data sources that to various degrees offer the opportunity for expanding the measures of economic development across the duration of the project and report them here.

Table 1 Social Media Data Sources

Name	Cost or Package Type	Website
Social Media		
Twitter – Standard	Free	https://twitter.com/
Hootsuite	Subscription costs for government and larger organisations available on request	https://hootsuite.com/
Twitonomy	A free version is available	http://www.twitonomy.com/
Discover Text	USD \$99 Professional, \$2000 Enterprise Add on packages for specific Twitter data analysis is available/	https://discovertext.com/solutions/
Sprout Social	Subscriptions start at \$99 per user month	https://sproutsocial.com/
Tourism		
Inside Airbnb	Price available on request	http://insideairbnb.com/
AirDNA	Free – limited locations available	http://insideairbnb.com/
Government		
BLADE	Not accessible at this stage	https://industry.gov.au/Office-of-the-Chief-Economist/Data/Pages/Business-Longitudinal-Analysis-Data-Environment.aspx
Other		
Spendmapp by Geographia	Minimum 12 month subscription, choice of four packages. Discounts available for smaller councils.	https://spendmapp.com.au/
Neighbourlytics	One off fixed price or reoccurring packages and custom dashboards available on request.	https://www.neighbourlytics.com/
Seek	Free via website search	https://www.seek.com.au/
Local Employment Sites – eg Adelaide Northern Jobs	Depending on council involvement, data may be readily available	https://www.northernadelaidejobs.com.au/

The following two sections look at the application of the decision tool.

7. Case Study One – Measuring the Impact of a Tourism Event

The participants in the Round Table noted the desirability of measuring more than just the economic impacts of tourism events/program. They highlighted the desirability of understanding outcomes that are alternatives to pure economic objectives. Using the Tour Down Under they noted the benefits of understanding:

- local sports group involvement and participation rates in events;
- the introduction of free bike schemes and associated community outreach; and,
- volunteer involvement in concerts.

The discussion also canvassed the broader impacts of tourism, including events leading to new buyers becoming ‘brand ambassadors’ for the region and the product, thereby helping to shift perceptions. New data is needed for this task.

The respondents also argued it is possible to leverage social media and understand engagement through simple social media monitoring tools and analytics. Most local government subscribe to such services. The participants also explored the question of whether businesses collect social media data, and if so, what do they do with that data? Are they prepared to share and contribute information toward measuring the economic development measures?

The online Round Table participants focussed their discussions on:

- Measurement of pre, during and post event spending – with Spendmapp identified as an option;
- The need to look at positions advertised on Seek and survey local business for their recruitment habits leading up to major tourism events;
- The potential to measure increased activity on fitness and social apps such as MapMyRun and Strava, to understand how the community become more active after sports events such as the TDU; and,
- Investment from sponsors in the event and the region generally.

Overall, the participants agreed that the measurement of a tourism event was a worthwhile example, and that data collection and analysis should take a broad perspective of the potential impacts.

Table 2 below indicates the types of measures that could be applied to the different objectives and whether current or new data sources may be used to measure progress of these objectives.

Table 2: Measures and sources for Case 1: Tourism

Objective Type	Direct	Indirect	New Measures	Current Measures
Economic	<ul style="list-style-type: none"> Local Spending 	<ul style="list-style-type: none"> Local Business Participation & Diversification 	<ul style="list-style-type: none"> Spendmapp Neighbourlytics 	<ul style="list-style-type: none"> ABR
	<ul style="list-style-type: none"> Employees 	<ul style="list-style-type: none"> Number of new businesses 	<ul style="list-style-type: none"> Seek 	<ul style="list-style-type: none"> Local Business Survey ABR
Regional Profile	<ul style="list-style-type: none"> Visitation 		<ul style="list-style-type: none"> AirDNA, Inside Airbnb 	<ul style="list-style-type: none"> Local Tourism Centre SA Tourism Commission
	<ul style="list-style-type: none"> Attendance 	<ul style="list-style-type: none"> Perceptions and sentiment 	<ul style="list-style-type: none"> Social Media Monitoring Tools 	
	<ul style="list-style-type: none"> Media Exposure 	<ul style="list-style-type: none"> Perceptions and sentiment 	<ul style="list-style-type: none"> Social Media Monitoring Tools 	
Relationships & Funding		<ul style="list-style-type: none"> Attraction of investment – private & government 		
Arts, Culture, Heritage, Community		<ul style="list-style-type: none"> Improved Infrastructure 	<ul style="list-style-type: none"> Partner Data Sources 	<ul style="list-style-type: none"> Development applications Council grants Council participation
		<ul style="list-style-type: none"> Flow on events 	<ul style="list-style-type: none"> Partner Data Sources Social Media Monitoring Tools 	
		<ul style="list-style-type: none"> Increased physical activity 	<ul style="list-style-type: none"> Social Media Monitoring Tools 	
		<ul style="list-style-type: none"> Community cohesion 		<ul style="list-style-type: none"> Applications for using council spaces for local events. Participation in Council run/local events

8. Case Study Two – Establishment of a Retail Business Anchor

The participants in the face-to-face and online Round Tables raised a number of issues that related to measuring the impacts of supporting the establishment of a major retail business expecting to attract customers to the locality.

They noted:

- The desirability of collecting base line data before such developments/actions take place;
- The absence of data at the level of individual local governments;
- The potential to use rating and infrastructure data to measure impact;
- The need to understand the displacement of other businesses associated with providing support to a major enterprise, and the potential for leakage out of the region if the development is not supported;
- The desirability of undertaking a retail gap analysis before the event;
- The ratio of employees to investment and the percentage of employees living in the region;
- Questions on whether the new investment will compete with other traders, or attract additional customers to all businesses;
- The activation of local government managed spaces;
- The need for employment data from the business and job placement providers;
- The degree to which retailers use registered training providers and TAFE;
- A line of sight on questions of accessibility – logistics and public transport;
 - The degree of increase in transport activities eg. use of adjacent parking space;
- Will the retailer make use of local goods and services? Local procurement in construction/operation – how can this be monitored?
- Resultant growth in the local Business Chamber or Chamber of Commerce;
- The desirability of time series data; and,
- The origin of customers – from sources such as Spendmapp or other providers.

The types of objectives that arose from this case and the data sources that could provide measures of these objectives are provided in the table 3 below.

Table 3: Measures and sources for Case 2: Retailer

Objective Type	Direct	Indirect	New Measures	Current Measures
Economic	<ul style="list-style-type: none"> • Local Spending 		<ul style="list-style-type: none"> • Spendmapp 	<ul style="list-style-type: none"> • ABR
	<ul style="list-style-type: none"> • Investment Value 		<ul style="list-style-type: none"> • Spendmapp 	<ul style="list-style-type: none"> • Cost defrayments – in part, joint venture • Gap Analysis
	<ul style="list-style-type: none"> • Employees 	<ul style="list-style-type: none"> • Number of new businesses • Skills & human capital 	<ul style="list-style-type: none"> • Seek • Local employment sites (eg. Northern Adelaide Jobs) 	<ul style="list-style-type: none"> • Local Business Survey • ABR • Registered Training Organisations
	<ul style="list-style-type: none"> • Changes in business 	<ul style="list-style-type: none"> • Economic • Cluster effects • Displacement Issues • Local Business Participation & Diversification 	<ul style="list-style-type: none"> • Spendmapp • Neighbourlytics 	<ul style="list-style-type: none"> • ABR • Local Business Survey • Planning & development applications • Analysis from previous examples

9. Implications

Having considered the literature, received input through the workshops and considered two case study applications, this section seeks to draw out the implications of our research for local governments and other economic development agencies seeking to use new sources of data on economic development at the local level. It is clear from the discussion above that ‘big data’ and other digital developments in information collection and access has the potential to provide a new lens for better managing economic development efforts. But how that translates to action ‘on the ground’ remains an open question. This section considers a number of critical issues that need to be addressed in the use of big data and other new information resources for the evaluation of economic development initiatives. It argues that once key questions are answered, it is possible to work through a program logic that in turn shapes a data strategy that meets the organisation’s needs.

9.1 Towards a Single Approach to Measuring Economic Outcomes?

In undertaking this analysis and through discussions with practitioners in the workshops and elsewhere it is clear that any initiative to use new data sets, including big data, is caught between two contradictory tensions. On the one hand, it is desirable to develop and maintain a single set of metrics that:

- Can be used to assess a number of economic development programmes within a local government or region;
- Allow for comparison between local governments, regions and development programs/activities;
- Enable a longitudinal data collection, with the inherent capacity to measure how programs perform over time, whether programs become more impactful as they mature, and whether changing macro-economic circumstances influence the effectiveness of various initiatives; and,
- Offer the potential to engage in cost and data sharing as well as data re- and cross-utilisation for fertilising data sources and analytic efforts at the local or regional scale.

On the other hand, practitioners were very much concerned to develop specific measures able to measure particular programs. Such bespoke approaches offer considerable utility with respect to providing insights into individual programs, but:

- Insights may be limited to just the one programme or event;
- Comparison across locations and time periods may be difficult, if not impossible, as it is difficult to keep the context and factors constant;
- They may not be able to be sustained in the longer term, making the establishment of causative effects very difficult; and,
- There will be limited opportunities to share costs.

These are important considerations, especially given the range of options available to economic development practitioners and which have been discussed in the body of this report. Each of these options carries a cost – often it is the cost of purchasing or acquiring data, and in many instances

there is an additional, and substantial, cost associated with gaining familiarity with the data and its application to the questions of interest to the local government or regional agency.

Practitioners and the organisations that they work for may need to adopt one of two strategies: accept that not all questions will be answered fully in all instances and work with one, general purpose, data source to shed light on a number of programs and questions of policy. Or, accept the need to use multiple data sources, and seek out tailored information solutions on an 'as needed' basis. This could include purchasing data and expertise from third party providers.

9.2 The Impact of Context, Cost and Confounding Influences

The very nature of, and setting for, local and regional economic development results in complexity. This in turn means that developments at the neighbourhood or community scales are subject to a range of influences – some of which are planned, others are unplanned. Many intersecting forces may shape outcomes and they can be both interdependent and time dependent, all of which makes the establishment of causality – ie programme X had impact Y – extremely difficult. Factors such as the state of the national economy, movement in interest rates, broader changes in the labour market, the commencement of a major building project or the introduction – or withdrawal – of Australian Government programs may all shape local economic conditions, and the impact of a programme on the performance of businesses in that locality. For example, economic development initiatives aimed at assisting existing businesses invest in a refreshed web presence may have a strongly positive impact when the national economy is strong, but little impact during a period of muted economic conditions.

In many respects, attempting to establish causation in local and regional economic growth is a misplaced aspiration, not only because one cannot isolate and identify the impact of all factors on development outcomes but also because even if the latter is found, replicating the context and factors of development programs is not easy and possible in the future. Thus, there is greater value in identifying a series of key indicators (which may include elements of 'big data' – and tracking change over time) that can influence desirable development outcomes and then try to 'create' the conditions for enabling these factors in the future. Such key indicators could include business turnover, local expenditure patterns, number of staff employed and new investment in the region. Under this policy setting key stakeholders – such as the Boards or RDA Australia Committees and local government Councils – would be kept informed of overall progress and the assumed impact of the range of measures being implemented by economic development professionals.

9.3 Establishing Goals for the Evaluation of Economic Development Efforts

It is critical to establish a clear set of goals prior to embarking on an evaluation of economic development activities, and these goals need to be defined early in the planning of the evaluation strategy, and ideally alongside the planning of the programme or event.

- Goal setting needs to consider:
- The inputs committed relative to the task at hand;
- The size of the local economy targeted for assistance;
- The outputs expected;

- The contextual factors that can influence these outputs and indicators/metrics that can reflect them; and,
- The desired outcomes and the likely timeframe it would take for them to emerge/be observed.

9.4 Data Sources

The sources of data to be used and the frequency of the data to be deployed needs to be decided through the lens of cost and the importance of the information for key stakeholders and the economic development strategy. As discussed earlier, data is expensive to acquire, gain familiarity with, maintain and interpret. It can be highly effective in persuading key stakeholders and helping economic development practitioners fine-tune their programs, but the costs can be considerable and may exceed the expenditure on the programs being evaluated. Practitioners therefore need to consider whether the data:

- Can be used for multiple purposes within the economic development portfolio?
- Would be of value to other parts of their organisation, such as the planning department within a local government or a marketing team?
- Can be shared with third party users? Thereby reducing the cost per user; and,
- Can be accessed in cost effective ways? Including through a partnership with a State or Federal Government Department, or via a University or other research provider.

Purchasing data may not always be the most cost-effective strategy, especially if it is needed for a single purpose. Consultants, including the Australian Bureau of Statistics (ABS) may be able to provide a solution that achieves the organisation's goals without calling for the development of substantial new capacity amongst the staff. Alternatively, economic development professionals and the organisations that they work for should look to develop a data infrastructure that enables them to develop insights into a number of initiatives and they need to develop this capacity in collaboration with a number of partners.

9.5 Stakeholder Expectations

Stakeholder expectations remain critical to the overall evaluation of economic development efforts. It is important that:

- Stakeholders are clearly informed about what is, and is not, possible with respect to the evaluation of programs and other initiatives;
- They are informed of the limitations of the data available to them;
- They are made aware of the issues that cannot be addressed or investigated through the available data sources;
- They are aware of the assumptions made behind any associations found between key metrics showing or not a relation between contextual factors and developmental outcomes; and,
- They are reminded of both the outcomes and outputs sought. This ensures they have realistic expectations for both the program and the evaluation.

9.6 Integration of the Evaluation Strategy and Maximisation of Outcomes for the Resources Expended.

Ultimately the most appropriate new or big data sources for the assessment of economic development programs will depend on a combination of factors. This includes the:

- awareness of possible data sources;
- level of skill needed to access and interrogate the data;
- time frames available for the evaluation;
- preference to undertake the work internally or through an outsourcing strategy; and,
- available budget.

In many ways these are questions that are individual to each organisation and very complex. Sustaining an awareness of the range of data sources potentially available for economic development evaluations is a challenging task: new information sources and platforms become available all the time. In addition, in some instances the data is potentially available, but it is difficult to know how to gain access, what the fee structure looks like and whether there are restrictions on how the data is used. To use one common example, ABS data is often randomised to ensure the confidentiality of individuals and businesses, this process ensures public confidence when providing information but significantly limits the application of the data.

In an ideal working environment, economic development practitioners would continue to share examples of best practice, and information on how to generate new insights into the impact of their programs. Economic Development Australia has a key role to play in generating this community of practice and we can only conclude that engagement with such information sources are going to be essential if economic development efforts are to be sustained through the 21st Century.

10. Conclusion

This report presents the findings of research investigating the use of new data sources for supporting and enriching decision-making for economic development at the local level. It investigates whether 'big data' and other digital developments in data collection and access can assist the economic development professional. Particularly it examined whether new data sources provide a new tool and lens for identifying economic development priority areas and monitoring the impacts of economic development initiatives. Our work leads to a number of important conclusions, the first of which is an acknowledgement that this is a rapidly evolving area: new forms and sources of data as well as data analytics vendors and platforms are on the horizon across a broad range of activities that are important for economic development practitioners in Australia. There have been some important recent developments, including an emerging use of Spendmapp, as an extension of – and competitor to – REMPLAN, as well as the development of planning-focussed tools such as Neighbourlytics.

Second, it is clear from the work undertaken here that rapid change is taking place in this broad field of big data and its application to questions of economic development. This rapid change adds to the complexity of this area, and makes it more difficult to provide clear advice on which data metrics and data sources represent the best solutions for economic development practitioners. Put simply, the data sources available today are likely to be overtaken within the coming months and may be redundant within two years. That said Spendmapp appears to be the most promising of new software platform and data source being marketed to local governments and other agencies at the moment. Its capacity to shed light on a number of key questions for economic developers – especially expenditure patterns at a fine scale – could prove invaluable for informing Councils and other decision makers about the outcomes arising from economic development actions.

A third key insight to emerge from this research is that there is very little published work on this topic, and apparently relevant reports produced by the International Economic Development Council in the US are very much focussed on new forms of government-produced and held data. Australian practitioners and agencies do not have access to the same sources of information. This work therefore sits at the knowledge frontier and there is clearly an on-going need to continue to investigate this issue. We recommend that the EDA, or similar entity, takes a monitoring role in this field – keeping practitioners informed about developments as they arise.

Fourth, many of the packages made available commercially are expensive and may require full time, skilled staff to ensure maximum value is secured from that investment. There is therefore a role for a) local governments and other agencies collaborating with each other to share data and expertise (perhaps in the form of a jointly supported staff post) and, b) the EDA or similar body to take on the challenge of bringing together agencies interested in new data sources and working with them to negotiate more favourable prices based on the aggregation of demand. There could be value in establishing a Working Group within the EDA or amongst local governments to share best practice on an on-going basis, develop data standards and continue to explore opportunities for new data.

Fifth, the work undertaken in producing this report has shown local governments and other agencies often have immediate and complex needs with respect to identifying and prioritising 'problematic' areas that require economic development interventions as well as assessing the impacts of

economic development activities. The identification, use and interpretation of appropriate big data provide a great tool whereby information can significantly empower economic development professionals to better assist their decision-making processes and guide their actions. However, both workshops revealed that economic development agents lack critical information literacy skills in terms of: knowing how to identify and assess the usefulness and value of big data metrics, sources and analytical platforms; and how to conduct big data analytics and interpret big data findings for guiding industry action and interventions proactively but also re-actively (e.g. foresee priority economic investment areas and opportunities and/or predict, sense and get alerted as well as re-act to economic crises and challenges). For example, although there are several online platforms offering 'free' social media search tools, economic development professionals lack and therefore need, to acquire and develop the appropriate skills. These skills include: identifying and using appropriate keywords and #tags to search specific topics/areas; setting up Boolean keyword/#tags searches, as well as streams of keyword searches for continuously monitoring and staying alert of trends; becoming aware of the various types of social media metrics and basic ways for analysing and interpreting them. This creates significant challenges for individual agencies and we believe there is an important role to be undertaken with respect to raising awareness of big data amongst economic development practitioners generally, and in developing relevant information and analytical skills specifically. There may also be value in developing both industry data standards and benchmarks for collecting, analysing and sharing big data across Australia. To add to the latter point, measures of the additional expenditure associated with a festival or tourism event will be of greater value if able to be compared with experience elsewhere.

Sixth, we note that the Australian Government and state governments continue to experiment with data linkage in an attempt to develop better insights into the operation of the economy and the impact of their programs. Current arrangements make it difficult for local governments to participate in these analytical exercises, but there is potential for Regional Development Australia Committees and their staff to work with local governments and lead investigations that are of long term significance. This is an issue that deserves to be explored with the Australian Government's Department of Infrastructure.

Finally, data has become the new currency and resource of our economy. This is not only true for companies like Uber, [Waze](#)², Airbnb, [Ofo](#)³ and others that collect a mass amount of data on a daily basis about anything we do (e.g. where we stay, where we travel and how frequently, what and when we eat) and then use it for personalising advertising, exploiting price elasticities and better targeting potential clients. This big data is also of a great value to economic developers' alike, for example better design of urban transportation planning can be informed by access to Uber's transportation data. There is therefore a role for EDA, national or local government agencies to approach these platforms and big data collection sources and collectively 'negotiate' an access and use of such big data for public good. Similarly, lobbying for regulations on data access and sharing for public good as a collective could prove a useful contribution to benefit all Australians.

² Worldwide community based traffic application.

³ Yellow hire bike company.

Overall, the rise of big data has the potential to reshape economic development at the local level in Australia, helping practitioners and governments produce better outcomes per unit of expenditure. It will also help make the case for on-going, or enhanced, expenditure in economic development at the local or regional scale. There can be no doubt there will be further important developments in this field as new data sources come on-line and as the sector matures to take advantage of these opportunities.

Appendix A. Participants in Round Tables

Table 4 Roundtable 1 Participants

Name	Organisation	Attendance
Virginia Miller	City of Holdfast Bay	Physical
Kym Wundersitz	City of Charles Sturt	Physical
Peter Graves	City of Charles Sturt	Physical
Greg Ratsch	City of Salisbury	Physical
Brian Hales	Economic Development Australia	Physical
Matt Grant	City of Adelaide	Physical
Leandro Lopez Digon	City of Adelaide	Physical
Kevin Lowe	Campbelltown Council	Physical
Emily Moskwa	Campbelltown Council	Physical
Anne Petch	DC Yankalilla	Physical
Donna Griffiths	City of Marion	Physical
Steven Thomas	RDA Barossa, Gawler, Light, Adelaide Plains	Physical
Brett Steiner	CTTG	Physical
Michael Bridge	Regional Development Australia Murraylands and Riverland	Physical
James Goldsmith	Buloke Shire Council	Teleconference
Trevor James	Shellharbour City Council	Teleconference
Debbi Roden	Port Stephens Council	Teleconference
Peta Melki	Developing East Arnhem Limited	Teleconference
Noree Orticio	Redland City Council	Teleconference
Ryan Cook	Wollongong City Council	Teleconference
Richard Hay	Department of Infrastructure, Regional Development & Cities	Teleconference
Felicity Anderson	City of Bunbury	Teleconference
Stephanie Addison-Brown	City of Bunbury	Teleconference
Kristen Mildwaters	City of Bunbury	Teleconference

Table 5 Roundtable 2 Participants

Name	Organisation	Attendance
Michael Shillabeer	Rural City of Murray Bridge	Physical
Greg Ratsch	City of Salisbury	Physical
Kym Wundersitz	City of Charles Sturt	Physical
Peter Graves	City of Charles Sturt	Physical
Simon Millcock	Legatus Group	Physical
Anne Petch		Physical
Anne Marrone	Northern RDA	Physical
Virgina Miller	City of Holdfast Bay	Physical
Daniel Thomson	City of Freemantle	Online
Steve Shotton	RDA Adelaide Hills, Fleurieu and KI	Online
Mark Wigley	Regional Development Australia Sydney	Online
Jason McFarlane	Far Lane	Online
Jaycob Petering	Far Lane	Online
Sam Miller	Balmoral Group Australia	Online
Dana Harding	Frankston City Council	Online
Matthew Nelson	Frankston City Council	Online
Martin Homisan		Online
Lou Zarro	Knox City Council	Online
Michelle Riley	Department of State Growth	Online
Catherine Borazio	Hobsons Bay City Council	Online
Richard Hay		Online
Therese O'Dwyer	Regional Development Australia Sydney	Online
Ann Niddrie	Blue Mountains Economic Enterprise	Online
Erin McGoldrick	Glenorchy City Council	Online
Mark Holdsworth	EDA	Online

Appendix B. Organisations, Experts and International Colleagues Consulted

Table 6 Organisations, Experts & International Colleagues Consulted

Name	Organisation
Örjan Sölvell	Stockholm School of Economics, Sweden
Christian Ketels	Harvard University, Centre for Strategy & Competitiveness
James Wilson	Orkestra, the Basque Institute for Competitiveness, Spain and TCI Cluster Evaluation working group
Madeline Smith	Glasgow School of Design, TCI Cluster Evaluation working group
	Association for Information Systems
	International Federation for IT and Travel & Tourism
	School of Travel Industry Management, University of Hawai'i at Manoa
Anne Hardy	Tourism Tracer – University of Tasmania
Molly Connor	Neighbourlytics
Aimee Trusler	AirDNA

Appendix C. Australian Government Data Sets

[Australian Government Data.gov.au](https://data.gov.au)

This platform provides access to where 288,000 open data sets can be accessed and also details for additional data available for purchases and unpublished data. Interaction is encouraged including alerting data.gov.au on how you are utilising the data you have accessed. Data sets can be searched for and filtered by keywords, data provider (organisation), topics (groups), tags, file format and licences. An area on the site is also dedicated to assisting organisations in publishing their data online.

[Data.sa.gov.au](https://data.sa.gov.au)

Data.sa.gov.au is a South Australian Government website which provides a central location for 67 government and community to list access to over 68 data sets. This site is part of the SA Government's proactive declaration to providing the public access to free and open data (Government of South Australia 2018).

Contributors to these data sets include state government agencies, local government and some non-government organisations such as the Jam Factory (*Jam Factory* 2018) and Adelaide Film Festival who receive government support. The site also provides access to South Australian data collected by the ABS. It should be noted that some data sets for community organisations are only limited to annual reports, and other organisations while listed do not have any data sets available through the site. Data sets can be viewed by organisations and groups (categories by subject/topic).

State and territory government sites also exist in a similar format for [NSW](#), [Victoria](#), [Queensland](#), [Western Australia](#), [Tasmania](#) and the [ACT](#).

[NSW Data Analytics Centre](#)

The NSW Data Analytics Centre is not an open data source but uses data sets from various government departments 'to build world-class capabilities in whole-of-government data analytics to improve health and well-being, safety, social, economic and environmental outcomes for the citizens of NSW' (NSW Government Treasury). There is not very much information readily available on the Centre.

[Research Data Australia](#)

Research Data Australia is a data discovery service provided by the Australian National Data Service (ANDS), which connects users with potential data sets available from over 98 research organisations from across Australia. This is an initiative supported by the Australian government as part of the National Collaborative Research Infrastructure Strategy Program. This includes government and non-government organisations. Research subjects include:

- Agricultural and Veterinary Sciences
- Biological Sciences
- Built Environment and Design
- Chemical Sciences

- Commerce, Management, Tourism and Services
- Earth Sciences
- Economics
- Education
- Engineering
- Environmental Sciences
- History and Archaeology
- Information and Computing Sciences
- Language, Communication and Culture
- Law and Legal Studies
- Mathematical Sciences
- Medical and Health Sciences
- Philosophy and Religious Studies
- Physical Sciences
- Psychology and Cognitive Sciences
- Studies in Creative Arts and Writing
- Studies in Human Society
- Technology

[Australian National Data Service](#)

The Australian National Data Service is a partnership between the CSIRO, Monash University and Australian National University. It is a website produced to provide a central location for Australian research data.

[Chief Data Analytics Officer Public Sector](#)

Conference organised by Corinium a professional organisation for high level executives, C-suite level (CEO, COO, CFO), presidents and vice presidents of companies. The conferences are aimed at the executive level, government, non-government and academic data analysts to learn more on data, analytics, customer and digital innovation.

[Open Data Tool Kit – SA Premier and Cabinet](#)

Open Data Tool Kit provides tools for organisations including local government to publish open data they may have available on data.SA . The Tool kit includes six steps:

1. Identify
2. Classify
3. Approach
4. Approve
5. Publish
6. Maintain

[IP Government Open Data \(IPGOD\)](#)

The IP Government Open Data is an open national data set comprising all IP linked o business numbers and with information on the firms registered including size, technology and geographical location. This data can be found on data.gov.au Papers are available to accompany the data explain and illustrate the use of the data and the technical aspects of firm matching.

[National Cities Framework](#)

A new framework launched in December 2017 by the Department of Infrastructure, Regional Development and Cities. The National Cities Framework covers 21 cities across Australia incorporating City Deals and the Smart City Plan. It collects and reports on data across a number of areas via a [series of dashboards](#), which can then be compared across cities. These areas have been identified as crucial to measure to allow cities to become smarter and better places to live and work. These areas are:

- Jobs and skills
- Infrastructure and investment
- Liveability and sustainability
- Innovation and digital opportunities
- Governance, planning and regulation
- Housing

It draws on the following established key indicator frameworks and dashboards:

- Measures of Australia's Progress – ABS
- Progress in Australia's Regions Yearbook
- Community Indicators Victoria
- Sustainable Development Goals – UN
- City Keys
- The Economist Intelligent Unit
- International Organisation for Standardisation
- City of Adelaide – Economic Insights Dashboard
- Tasmania Together
- Melbourne Data – CLUE
- Green Star Communities
- Regional Australia Institute
- RMIT Centre for Urban Research
- Australian Urban Infrastructure Network (AURIN)
- The Committee for Sydney Australian Sustainable Built Environment Council (ACBEC)

[Open Council Data](#)

A collaboration between Open Knowledge, MAV Technology, the Local Government Spatial Reference Group and several Victorian councils. The aim of the Open Council Data is to aid data sharing and use of data across council boundaries, support research, aid the development of smart device applications and encourage use of the data by the public. The datasets are focussed around

data that are, used by many councils, useful to data users in aggregated forms, and not easily available elsewhere in aggregated forms.

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