# [In]Sight 2014 User Guide

Your guide to understanding

[In]Sight: Australia's regional competitiveness index

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# About [In]Sight

Australia's regional areas are developing at different paces. Each has different potential for positive growth and change.

*[In]Sight: Australia's regional competitiveness index* enables Australians to access the information they need on regions to make better informed decisions for regional communities.

*[In]Sight* is a competitiveness index. Competitiveness refers to the combination of institutions, policies and factors that determine the level of productivity of a country or region.

*[In]Sight* builds on significant international experience in the development of competitiveness indices. The design of *[In]Sight* reflects the experience and approach of the World Economic Forum's Global Competitiveness Report methodology, the European Union's Regional Competitiveness Index and Centre for International Competitiveness in the UK.

The *[In]Sight* framework however is unique to Australia's economic situation. *[In]Sight* is also one of the finest grained and comprehensive assessments ever undertaken for the Australian economy.

The ten themes and 68 indicators used in *[In]Sight* focus on the economic drivers that determine longer term competitiveness. All of the main areas in which governments influence a regions economic outcomes are assessed by *[In]Sight*.

Competitiveness is assessed at both the Local Government Area (LGA) level and also at a regional level and includes both regional and metropolitan Australia.

As a result, *[In]Sight* provides 624 individual regional profiles covering the whole of Australia at both the local and regional scales.

*[In]Sight* also goes further than most indices as the Regional Australia Institute (RAI) makes all of the data available through the online interactive map for use alongside reporting of the results. This puts over 97,000 pieces of information on the Australian economy at the fingertips of every Australian.

This makes *[In]Sight* an essential tool for assessing our capacity to build new prosperity and a better quality of life across our diverse nation.

## Changes for [In]Sight 2014

*[In]Sight* 2014 is the second iteration of Australia's regional competitiveness index.

In early 2014, the RAI sought feedback and suggestions from stakeholders about ways to enhance *[In]Sight*. The feedback received included suggestions on ways to improve the methodology, suggestions on alternative indicators and requests for new website functionality.

*[In]Sight 2014* includes an expanded and revised indicator set, updated data and refined methodology. Key changes include:

- A suite of nationally-consistent indicators on the quality and performance of regional and local **institutions**;

- New indicators measuring the **economic fundamentals** of each region to provide a more nuanced view of the state of each local and regional economy;

- An updated method for calculating the distance for residence and businesses to key **infrastructure and essential services** and **natural resources**;

- New measures for **technological readiness** including quality of access to broadband, mobile internet and mobile phone coverage in each LGA and region;

- New indicators on patents and business start-ups in **innovation**;

- A new theme on **demography** to provide **new information on population dynamics** in each area;

- **Updated data** on unemployment, school performance, welfare dependency, research organisations and income from own businesses;

- Data for **eight new regions** will be added to align with state regions in Western Australia, the Northern Territory and Tasmania that do not align to the national Regional Development Australia (RDA) framework; and

- A **new robustness and ranking process** to reduce the impact of outliers and other data anomalies on *[In]Sight* on the interpretation of results.

# Using [In]Sight

*[In]Sight* has a diverse range of applications and its results can be used in a number of ways by all Australians.

*[In]Sight* can be accessed at [www.regionalaustralia.org.au/insight](www.regionalaustralia.org.au/insight). From the *[In]Sight* home page users can:

- Access basic information on *[In]Sight* including fact sheets, this user guide and key findings;

- Explore all of the *[In]Sight* data using the interactive online map; and

- Download the RAI's summary analysis for each theme and other analysis reports.

## Using the Online Interactive Map

The online tool is user friendly and interactive. The first screen (screen shot below) shows how to access data in [In]Sight in four easy steps:

# [In]Sight Themes and Indicators

A description of each theme and its associated indicators is provided on the following pages, along with details on the sources of data used in *[In]Sight*.

## Theme 1: Economic Fundamentals

The economic fundamentals of an LGA or region include measures of the size and relative activity level in the economy. Solid economic fundamentals support local businesses and workers and indicate a region successfully translating economic potential into activity and growth.

*[In]Sight* measures the economic fundamentals of each LGA and region on a per person basis. This approach allows more populated LGAs and regions to be compared to less populated areas.

A larger stock of industrial and commercial buildings means an area can produce a relatively larger amount of private sector activity. Higher wages, more hours worked and larger business turnover per person indicates a region is more effectively translating its workforce and other assets into economic activity. Strong investment in residential and other buildings indicates confidence in the future and growing capacity in the economy.

This theme has been expanded and refined for *[In]Sight 2014* with the addition of the three new measures: number of hours worked, and two measures of the current asset base of an area (value of commercial and industrial buildings). Building Approvals in the previous index has been deconstructed into residential and non-residential which provides more insight into an area's economic profile.

The Economic Fundamentals theme includes three perspectives on each LGA and region - the stock of productive assets, business and labour activity and levels of recent investment (Table 1).

Table 1: Competitiveness Indicators for **Economic Fundamentals** Theme

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Wage/labour costs** | Average wage and salary income | Wage & salary earner statistics ABS 5673.0.55.003 | Higher rankings result from higher wages | Updated data |
| **Business turnover** | Business turnover per capita | ABS, cat. 8165.0 | Higher rankings result from higher turnover | Updated measure |
| **Number of hours worked** | Average number of hours worked per week per working age person | ABS Census, 2011 | Higher rankings result from more hours worked | New measure |
| **Building approvals - residential** | $ value of residential building approvals per capita | Building approvals Australia, ABS | Higher rankings result from higher values | Replacement measure |
| **Building approvals – non-residential** | $ value of non-residential building approvals per capita | Building approvals Australia, ABS | Higher rankings result from higher values | Replacement measure |
| **Value of industrial buildings** | Value of industrial buildings per capita | Geoscience Australia | Higher rankings result from higher values | New measure |
| **Value of commercial buildings** | Value of commercial buildings per capita | Geoscience Australia | Higher rankings result from higher values | New measure |

## Theme 2: Labour Market Efficiency

Labour Market Efficiency measures how well a region engages its people within the economy. Efficiency suggests a strong matching of workforce size and skills to the needs of local firms. Maintaining efficiency over time suggests an adaptability of workforce size and skills to changing needs.

*[In]Sight* measures Labour Market Efficiency through two measures of current employment rates, three measures of the utilisation of the potential workforce and a measure of skilled labour (Table 2).

Employment rates indicate the current level of demand relative to supply of workers in the region. Unemployment may also reflect a mismatch between the local labour force and firm needs.

The level of utilisation of the potential workforce indicates whether a region has longer term structural challenges in achieving Labour Market Efficiency. The presence of long-term unemployment, lower participation rates and/or high welfare dependence suggests longer term efficiencies issues in a region.

Skills are also important and most regions will need a mixture of skilled and unskilled labour. A lack of skilled labour will limit the sophistication of local firms and the adaptability of the economy to changing needs.

Table 2: Competitiveness Indicators for **Labour Market Efficiency** Theme

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Unemployment rate** | % persons in the labour force looking for work | Small Area Labour Market Estimates, Department of Employment | Higher rankings result from lower unemployment | Updated data |
| **Youth unemployment** | % persons in the labour force aged 15-24 looking for work | Census 2011, Australian Bureau of Statistics | Higher rankings result from lower unemployment | Same as 2013 |
| **Participation rate** | % working age population in the labour force | Social Health Atlas of Australia PHIDU, University of Adelaide | Higher rankings result from higher percentages | Updated data |
| **Skilled labour** | % of workforce employed as managers and professionals | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Unchanged from 2013 |
| **Welfare dependency** | % of population using Government support as their main source of income | Social Health Atlas of Australia PHIDU, University of Adelaide | Higher rankings result from lower percentages | Updated data |
| **Long term unemployment** | % People receiving an unemployment benefit for longer than 6 months | Social Health Atlas of Australia, PHIDU, University of Adelaide | Higher rankings result from lower percentages | New measure |

## Theme 3: Business Sophistication

Firms provide a majority of jobs for most communities and ensure local resources and the potential of a region can be translated into economic success.

A region with a more diverse business community, profitable small businesses and good local access to financial expertise and facilitators of exports, imports and wholesale trade is best positioned to compete in Australia's economy (Table 3).

Table 3: Competitiveness Indicators for the **Business Sophistication** Theme

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Economic diversification** | Index of relative economic diversification* comprising measures regional industry structure relative to the national industry structure | Calculated from ABS Census, 2011 - employment by industry data | Higher rankings result from lower measurements | Same as 2013 |
| **Exporters, importers, wholesalers** | % employed as importers, exporters or wholesalers | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Same as 2013 |
| **Income source – own business** | Average own unincorporated business income | Estimates of personal income for small areas, 2009-10, ABS | Higher rankings result from higher incomes | Updated data |
| **Access to local finance** | Number of people employed in banking, building society operation, credit union operation, other depository financial intermediation, depository financial intermediation & non-depository finance | Census 2011, Australian Bureau of Statistics | Higher rankings result from greater access | New method-ology |

## Theme 4: Human Capital

The skills, health and education of a workforce are fundamental to a region's competitiveness.

Strong Human Capital allows communities and the individuals within these communities to be more productive and more able to respond to shifts in the economy.

Human Capital is measured using nine indicators in *[In]Sight 2014* (Table 4).

Five indicators measure basic educational outcomes in a local area or region, from early childhood through to adulthood. Basic education is the foundation for competitive Human Capital.

Two indicators measure the availability of technical and university qualifications in a region. Having a large proportion of the workforce with a technical or university qualification is essential to competitiveness.

Two key constraints on Human Capital are also included. Poor health or low levels of English proficiency undermine the competitiveness of the workforce. Improving health in the community and English proficiency provides a pathway for building a more competitive economy over time.

*Table 4:  Competitiveness Indicators for the **Human Capital** Theme*

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Early childhood development** | % of children developmentally vulnerable | PHIDU, University of Adelaide, Social Health Atlas of Australia | High rankings result from fewer developmentally vulnerable children | Same as 2013 |
| **Primary school education** | % of high bands achieved in NAPLAN tests | MySchool data, Australian Curriculum & Assessment Authority | Higher rankings result from higher percentages | Updated data |
| **Secondary school education** | % of high bands achieved in NAPLAN tests | MySchool data, Australian Curriculum & Assessment Authority | Higher rankings result from higher percentages | Updated data |
| **Early school leavers** | % of adult population that did not complete year 12 | Census 2011, Australian Bureau of Statistics | Higher rankings result from low percentage of population that did complete year 12 | Same as 2013 |
| **Lifelong learning** | % of working age population participating in education and training | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Same as 2013 |
| **Technical qualifications** | % of working age population with certificate and diploma qualifications | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Same as 2013 |
| **University qualifications** | % of working age population with a university qualification | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Same as 2013 |
| **Health** | Adults with at least one of the four health risk factors; smoking, harmful use of alcohol, physical inactivity and obesity | PHIDU, University of Adelaide, Social Health Atlas of Australia | Higher rankings result from fewer adults with risk factors | Same as 2013 |
| **English proficiency** | % population with English as first language or, if second language, speaks English well | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Same as 2013 |

## Theme 5: Infrastructure and Essential Services

Infrastructure and Essential Services facilitate economic activity. A region that is well connected to external markets and has good access to essential services best enables businesses to compete in the wider economy and the facilitation of new investment.

Three key interdependent components of Infrastructure and Essential Services – transport, education and health - are reflected in the measures included in *[In]Sight 2014* (Tables 5a, b & c).

Transport infrastructure - roads, rail, airports and ports - are critical to the efficient delivery of goods and services and support a region's competitiveness in economic markets by reducing freight costs.

 Educational infrastructure is a vital component in the development of a region's population.

*[In]Sight* contains measures of access to primary, secondary, technical and further education and tertiary education, indicative of a region's ability to develop a skilled and productive workforce.

Health infrastructure - access to medical facilities, allied health and GP services - supports the ability of a community to support a healthy workforce.

Table 5:  Competitiveness Indicators for Infrastructure & Essential Services Theme

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Distance to airport** | Average distance for residents and businesses to the nearest commercial airport (km) | GIS calculations, Airport Traffic Data 1985-2011, Bureau of Infrastructure, Transport and Regional Economics | Higher rankings result from shorter distances | New methodology |
| **Distance to port** | Average distance for residents and businesses to the nearest port (km) | GIS calculations; Map of Australian ports, Ports Australia | Higher rankings result from shorter distances | New methodology |
| **Road infrastructure** | Average distance for residents and businesses to the nearest major road. | GIS calculations using GEODATA TOPO 2.5M 2003, Geoscience Australia | Higher rankings result from shorter distances | New methodology |
| **Rail infrastructure** | Average distance from SA1 to nearest rail station (either freight or passenger) | GIS calculations; GEODATA TOPO 2.5M 2003, Geoscience Australia | Higher rankings result from shorter distances | New methodology |

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Access to tertiary education services** | % of working age population attending university or another higher education institution | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Same as 2013 |
| **Access to technical and further education** | % of working age population attending technical or further education institutions | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Same as 2013 |
| **Access to primary education services** | Distance to nearest primary school | GIS calculations; MySchool, Australian Government | Higher rankings result from shorter distances | Same as 2013 |
| **Access to secondary education services** | Distance to nearest secondary school | GIS calculations; MySchool, Australian Government | Higher rankings result from shorter distances | Same as 2013 |
| **Distance to a medical facility** | Average distance to nearest medical facility | GIS calculations | Higher rankings result from shorter distances | Replaces distance to hospital |
| **Access to allied health services** | % of workforce employed in health services (excluding hospitals) | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Same as 2013 |
| **Access to GP services** | Number of GP services (patient consultations) per annum per capita | Social Health Atlas of Australia, PHIDU, University of Adelaide | Higher rankings result from greater numbers of GP services | Same as 2013 |

## Theme 6: Institutional Foundations

Regions that are able to mobilise local resources are more likely to be successful than those who submit to the influence of external forces.

The Organisation for Economic Co-operation and Development (OECD) and others have identified that institutions are crucial to this mobilisation of resources in any region[i]. Institutions are important because they facilitate negotiation, dialogue and collaboration among key actors in a region. Institutions also enable a region to exert external influence by engaging on behalf of the region with higher levels of government and other external actors important to a region's economy (such as major corporations or potential investors).

Formal institutions (such as local government or a major organisation such as a university) and informal institutions (such as local industry or community networks) are important for development as both can work to mobilise resources within and beyond a region.

Measuring the status and impact of institutional factors in *[In]Sight* remains challenging as what constitutes an effective mix of institutions will differ between areas. It will also change over time as conditions in a region change[ii]. Work on institutions has also noted that more institutions are not always better. While some places can be challenged by institutions that are too small or too few to facilitate growth, other places have a plethora of institutional actors that conflict or crowd each other out and undermine the successful mobilisation of local resources.

Given these theoretical and practical challenges, the *[In]Sight* Institutional Foundations theme does not seek to provide a comprehensive assessment of institutional status or performance in regional Australia. Rather *[In]Sight* provides a consistent and objective assessment of whether the foundations exist for strong and successful local institutions in each part of regional Australia.

Regions with stronger Institutional Foundations as measured in *[In]Sight* are more competitive as they are better positioned to develop and maintain an effective mix of institutions over time.

The theme includes measurements identifying the relative capacity and focus of local government towards business and economic development. Local government is amongst Australia's most important regional development institutions as it is present in every local area, is locally run and has formal powers to facilitate or constrain local economic development.

However formal institutions outside of local government are also important to competitiveness in regional Australia. To identify an area's Institutional Foundations beyond local government, *[In]Sight* measures the presence of other major organisations and the relative size of the public sector workforce. These factors expand the formal institutional presence in a region and deepen external institutional connections.

The presence of people with the qualifications and experience to support institutional performance as well as the engagement of local people in voluntary activity is also included. This provides an estimation of both the foundations for informal institutions. It also indicates whether formal institutions are likely to be supported by local people with the capacity and commitment to make them successful.

*[In]Sight* measures these different facets of institutional competitiveness through eight indicators (Table 6). The institutions theme has been completely revised and updated in 2014 with the inclusion of a range of data not previously available at the national level.

Table 6:  Competitiveness Indicators for **Institutional Foundations** Theme

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Public sector workforce** | % of workforce employed in public administration | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | Same as 2013 |
| **Leadership capacity** | % of the workforce employed in management, the professions or self-employed (including farmers) | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | New measure |
| **Community skills base** | % of the local population with a degree | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | New measure |
| **Volunteering** | % people aged 15 years and over who participate in voluntary work | Social Health Atlas of Australia, PHIDU, University of Adelaide | Higher rankings result from higher percentages | New measure |
| **Presence of major organisations** | Presence of post-school educational institution (university or TAFE); major hospital and other major publicly-funded facility (excluding defence) | Various websites – see page 28 for full list | Higher rankings result from more organisations | New measure |
| **Local economic development support** | Systematic assessment of the availability of business information and pro-business policies | Local government websites (refer to page 30) | Higher rankings result from higher scores | New measure |
| **Local government discretionary expenditure** | Local roads and general purpose spending (per capita), estimated entitlement | Local Government National Report2011-2012, Department of Infrastructure and Regional Development | Higher rankings result from greater expenditure | New measure |
| **Financial burden of local government** | Rate revenue (per capita) | Various websites – refer to page 30 for full details | Higher rankings result from lesser levels of financial burden | New measure |

## Theme 7: Innovation

Australia's regions need to be at the forefront of cutting edge products and processes in order to retain their competitive advantage.

*[In]Sight 2014* measures two aspects of Innovation, the potential capacity for Innovation and the extent to which this capacity is translated into products and processes (Table 7).

Capacity is measured through the number of research organisations, managers, research and development (R&D) expenditure and human resources in science and technology. Relative levels of innovation are assessed by the number of patents and businesses start-ups.

Number of patents and business start-ups are new indicators that have been added to the Innovation theme in 2014.

Table 7: Competitiveness Indicators for **Innovation** Theme

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Human resources in science, technology** | % of people qualified in the natural and physical sciences, ICT or engineering and related technologies | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | New methodology |
| **Research and development managers** | % employed as research and development managers | Census 2011, Australian Bureau of Statistics | Higher rankings result from higher percentages | New methodology |
| **Presence of research organisations** | % of research organisations out of all businesses | Innovation Australia - Registered research organisations | Higher rankings result from a higher percentages | New methodology |
| **Number of patents** | Number of patents certified and granted (2009-2014) per 1000 people | IP Australia | Higher rankings result from more patents | New measure |
| **Business start-ups** | The number of new businesses since 2009 as a percentage of all businesses | Counts of Australian Businesses, including Entries and Exits, Jun 2009 to Jun 2013, Australian Bureau of Statistics | Higher rankings result from more new businesses | New measure |

## Theme 8: Technological Readiness

Technological Readiness is an important facilitator of internal regional growth. The physical location of a person or a product is increasingly less important in the Australian and international business environment.

Communication technologies are now essential to efficient commercial practices and productivity. They are transforming the way industries operate, propelling Australia's previously isolated regional economies into national and global markets.

A region's Technological Readiness or its ability to rapidly absorb and make use of new technologies is now a vital determinant of competitiveness.

Three key interdependent components of Technological Readiness are reflected in the measures chosen for this theme (Table 8). Relative availability of technology infrastructure indicates the opportunity for technology-linked growth in regions. Technology take-up at a household level reflects relative engagement with technology in the population. Finally, the presence of a technology workforce in the region provides a measure of the capacity for technology-based innovation.

Table 8:  Competitiveness Indicators for **Technological Readiness** Theme

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Broadband coverage** | 2-10 Scale of access to high quality broadband | My Broadband, Department of Communications | Higher rankings result from higher scores on the scale | New measure |
| **Mobile internet** | 1-6 Scale of access to mobile broadband services and the speed of those broadband services | My Broadband, Department of Communications | Higher rankings result from higher scores on the scale | New measure |
| **Mobile coverage** | % of the area that is covered by a Telstra 3G service | Telstra | Higher rankings result from higher percentages | New measure |
| **Internet connections** | % of households with internet connection | ABS Census, 2011 | Higher rankings result from higher percentages | New methodology |
| **Employment in technology-related industries** | % of workforce employed by technology-related businesses | ABS Census, 2011 | Higher rankings result from higher percentages | New methodology |
| **Employment in ICT and electronics** | % employed as ICT and electronics specialists | ABS Census, 2011 | Higher rankings result from higher percentages | New methodology |

## Theme 9: Demography

The inclusion of the Demography theme in *[In]Sight 2014* recognises the importance of people and population to a region's competitiveness.

Demography is difficult to change through regional development. History, wider demographic trends (such as an ageing population) and national trends shape a region's competitive position. Demography is something that each region must work with to succeed.

Each region has its own demographic profile. For instance, large populations attract a diverse range of businesses, which find it convenient to be located near other relevant businesses, forming agglomeration economies. However, population change – growth, loss or turnover – affects employment or lifestyle opportunities. A stable population supports the formation of social capital.

Measures in this theme describe the size, change, composition and distribution of each LGA and a region's population.

Table 9: Competitiveness Indicators for **Demography** Theme

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Population size** | Number of people in the region | Regional Population growth 2012-13, ABS | Larger populations are ranker higher | New indicator |
| **Population density** | Number of people per square kilometre | Regional Population growth 2012-13, ABS | Higher density leads to a higher ranking | New indicator |
| **Population growth** | % change in population from 2012 to 2013 | Regional Population growth 2012-13, ABS | Higher rankings result from higher growth | New indicator |
| **Population turnover** | People that moved to or from the region in the last 5 years as a % of the current population | Australian Population & Migration Research Centre estimates using Census 2011, ABS | Higher rankings result from lower percentages | New indicator |
| **Senior dependency** | Seniors (65+ years) as a proportion of the working age (15-64 years) population | National Regional Profile 2012, Australian Bureau of Statistics | Higher rankings result from a lower senior dependency ration | New indicator |
| **Youth dependency** | Youth (14 years or below) as a proportion of the working age (15-64 years) population | National Regional Profile 2012, Australian Bureau of Statistics | Higher rankings result from a lower youth dependency ratio | New indicator |

## Theme 10: Natural Resources

Much of economic activity in regional Australia is directly linked to local natural resources. Access to Natural Resources can create economic opportunities through offering inputs to production (such as access to water or good quality soil), and can be used to generate production outputs (such as minerals or extractives) or as a foundation for services such as tourism and recreation. The nature of a region's physical endowments, in terms of both the access to natural resources and the physical attributes of the region, are hugely influential in many regions' current economies and future opportunities.

Natural Resources are a component of a region's competitiveness that is relatively difficult or impossible for regions to meaningfully influence. As a result, less competitive regions have limited scope for improving their competitiveness over time through development efforts. The challenge for regions is in translating their competitiveness into economic opportunities through the way in which local resources are used in the economy.

[In]Sight 2014 provides a diverse measure of Natural Resources competitiveness, reflecting the diverse resources available across regional Australia. The theme includes six measures (Table 10) indicating the workforce associated with mineral, timber, agriculture, aquatic and agricultural resources and two measures identifying the proximity of the region to the coast and nature reserves which can provide foundations for tourism.  Highly ranked regions in this theme are those with a diversity of natural resource opportunities.

Table 10:  Competitiveness Indicators for **Natural Resources** Theme

| Indicator | Description | Data Source | Indicator Ranking System | Changes in 2014 |
|---|---|---|---|---|
| **Mineral and energy resources** | % employment in mining | Census 2011, ABS | Higher rankings result from higher percentages | New measure |
| **Timber resources** | % local workforce employed in logging | Census 2011, ABS | Higher rankings result from higher percentages | Same as 2013 |
| **Commercial fishing and aquaculture** | % local workforce employed in fishing & aquaculture | Census 2011, ABS | Higher rankings result from higher percentages | Same as 2013 |
| **Coastal access** | Distance from the midpoint of each LGA to the nearest coastline | GIS calculations* | Higher rankings result from shorter distances | New methodology |
| **National parks** | Average distance (km) for a region's residents to the nearest nature reserve or national park | GIS calculations* | Higher rankings result from shorter distances | New methodology |
| **Agriculture** | % of local workforce employed in agriculture | Census 2011, ABS | Higher rankings result from higher rates | New measure |

*See 'Calculating Distance Scores in [In]Sight (page 27) for more information.

# Notes on Data Collection and Indicator Calculations

*[In]Sight* provides access to the most up to date, nationally consistent data on LGAs and regions. This section provides some notes on data and indicator calculations that underpin indicators across many of the ten themes.

## Hachman Index of Economic Diversification

The Hachman index has been used to calculate the economic diversification indicator in the Business Sophistication theme. It accounts for disparity between the economic structure of a region and that of a reference economy. The Hachman index shows how diverse a given region's economic structure is relative to that of the Australian economy. Values closer to one would mean that the region's economic structure is very diverse. Values closer to zero would mean that the region does not have a diverse industrial structure as compared to the nation.

## Calculating Distance Scores in [In]Sight

For a number of indicators, *[In]Sight* relies on distance measures. Distance measures in *[In]Sight* are derived using Geospatial Information Systems (GIS) software.

The GIS software contains digital spatial boundaries for very small geographic areas (including ABS-derived Statistical Areas Level 1 and Mesh Blocks), population quantities for those areas and location data for geographical positions of interest such as roads, ports, airports etc.

Distance scores in *[In]Sight* are calculated by measuring the distance from the centres of the small geographic areas to the nearest geographic location of interest, then weighting these distances by the population. The data is then aggregated to LGA and regional boundaries, giving a population-weighted score to indicate the proximity of the area's population to the particular feature of interest.

## Websites Used to Source Presence of Major Organisation

**Hospitals Sources**

Victorian info from Department of Health, Victoria:

http://www.health.vic.gov.au/hospitals/pubwebs.htm

Private hospital information:

http://www.health.vic.gov.au/privatehospitals/index.htm

NSW information from the Health Engine website:

http://healthengine.com.au/find/Public_Hospital/NSW/ &

http://healthengine.com.au/find/Private_Hospital/Australia/

Queensland information from the Health Engine website:

http://healthengine.com.au/find/Public_Hospital/QLD/

http://healthengine.com.au/find/Private_Hospital/QLD/

WA information from the Health Engine website:

http://healthengine.com.au/find/Private_Hospital/Australia/

http://healthengine.com.au/find/Public_Hospital/WA/

South Australia information from the NHPA My Hospitals website:

http://www.myhospitals.gov.au/private-hospitals & from SA Health.

Tasmania info from the NHPA MyHospitals website:

http://www.myhospitals.gov.au/browse/tas/tasmania/name-asc

NT info from the NHPA MyHospitals website:

http://www.myhospitals.gov.au/browse/nt

ACT info from the NHPA MyHospitals website:

http://www.myhospitals.gov.au/browse/act/canberra.

Some data are from the MyHospitals website run by the National Health Performance Authority: http://www.myhospitals.gov.au.


**Major Publicly Funded Facility**

CSIRO: http://www.csiro.au/

PIRSA: http://www.pir.sa.gov.au/

Department of Environment and Primary Industries (DEPI) work locations:

http://www.depi.vic.gov.au/__data/assets/pdf_file/0005/183128/DEPI-Work-Locations.pdf

NSW Department of Primary Industries:

http://www.dpi.nsw.gov.au/aboutus/about/office

Queensland Government Department of Agriculture, Fisheries and Forestry:

http://www.daff.qld.gov.au/about-us/contact-us/offices

Government of Western Australia Department of Agriculture and Food:

https://www.agric.wa.gov.au/office-locations

Inland Fisheries Service:

http://www.ifs.tas.gov.au/about-us/contact-us

Forestry Tasmania:

http://www.forestrytas.com.au/contact

Northern Territory Government Department of Primary Industry and Fisheries (DPIF):

http://www.nt.gov.au/d/Primary_Industry/index.cfm?header=Key%20Contacts

**Post-school Educational Institutions (university or TAFE)**

TAFE

https://www.tafensw.edu.au/

http://www.vic.gov.au/education/tafe-training/tafe-training-courses.html

http://tafeqld.edu.au/

http://www.tafesa.edu.au/

http://www.central.wa.edu.au/Pages/default.aspx

http://www.tastafe.tas.edu.au/

http://www.cdu.edu.au/cdu-vet

**Universities**

All universities as list at:

http://www.australianuniversities.com.au/list/

## Assessment Methodology for Local Economic Development Support

The assessment of the availability of business information and pro-business policies was made using a score of 0, 0.5 or 1for each of the following data set elements, giving a total score of 0-10.

Business Accessibility

1. Business Page: the LGA has a business/economic development/investment page;

2. Statistics/Investment Prospectus: information on why it is good to invest in the LGA;

3. Business links: links are provided to further useful information;

4. Business content: more information is provided than simply links to other websites, substantive to business interest;

5. Quality of Business content: see above, is the page substantial?

Pro-Business Policy

6. Business grants;

7. Business advisory program: the LGA has programs that offers one-on-one advice on starting a business;

8. Business classes/workshops/seminars run by the LGA;

9. Business awards; and

10. Other business support programs.

## Websites Used to Source Revenue Information Financial Burden of Local Government

Victorian data from the Department of Transport, Planning and Local Infrastructure website (2012-13)

http://www.dpcd.vic.gov.au/localgovernment/find-your-local-council/alpine

New South Wales data from the Office of Local Government document titled "Comparative Information on NSW Local Government: Measuring Local Government Performance 2012-13"

http://www.dlg.nsw.gov.au/dlg/dlghome/dlg_DocumentsIndex.asp?sectionid=1&documenttype=6&mi=3&ml=2

All other data from annual reports or financial reports published on LGA websites.

## Time Series Differences

Data for small areas is produced irregularly in Australia and much of *[In]Sight* is reliant on the ABS Census data. The most recent Census occurred in 2011 and many indicators are not able to be updated until the next Census in 2016.

As a result, some data in themes is more recent than others. For example, in Labour Market Efficiency, unemployment estimates are for June 2014 while other measures such as youth unemployment can only be provided on the basis of the most recent census data.

Users are encouraged to identify the time series for different data and look to local knowledge to assess how factors may have changed since the last Census.

## A Caution on Small Area Data

The RAI's aim with *[In]Sight* has been to present the best available, nationally consistent information we have about competitiveness in regional Australia.

Regional Australia includes a wide diversity of regions, from densely populated regional cities to our many small rural and remote Heartland communities.

Some small area data in *[In]Sight*, particularly population related indicators, carries a higher risk of error (i.e. that the measure does not accurately reflect the true situation) than data on more populated areas.

Things can also change more rapidly in small areas as smaller numbers of people or the arrival of a new business or investment will have a much greater impact on the overall competitiveness situation for the community.

Some users have suggested that given these challenges, the RAI should exclude data for the smallest areas from *[In]Sight*.

However the RAI believes that this approach risks mirroring the pattern of excluding or ignoring these areas in most mainstream analysis of the Australian economy.

On balance the RAI believes that it is better to make information available even if it has limitations, than to exclude areas from this index.

In most cases *[In]Sight* relies on data from national agencies, particularly the ABS. This means that we use the best and most reliable data available across the index.

Nevertheless, accurate measurement for sparsely populated areas is challenging, even for our national statistical agencies.

Data for areas with only a few hundred people or less should be used with some caution.

The RAI recommends that users of data on small area seek to confirm the current situation and recent trends in small communities by engaging directly with local institutions in the area.

# Spatial Boundaries in [In]Sight

*[In]Sight* provides data based on the primary administrative boundaries used by Australia's three levels of government.

*[In]Sight* provides data for each of the 564 LGAs in Australia.

*[In]Sight 2014* is based on LGA boundaries as of September 2014. The most significant changes from 2013 include:

- The inclusion of data for Douglas, Livingstone, Mareeba and Noosa in Queensland and revised data for Cairns, Rockhampton, Sunshine Coast and Tablelands as a result of de-amalgamations in Queensland. In some cases where data cannot be disaggregated, these LGAs are allocated the result from the amalgamated LGA;

- The inclusion of data for West Daly and revised data for Victoria-Daly resulting from the creation of the West Daly LGA in the Northern Australia;

- The inclusion of data for Greater-Geraldton following the merger of Geraldton-Greenough and Mullewa LGAs in Western Australia;

- Roebourne in Western Australia has been renamed Karratha in 2014. Boundaries have not changed.

*[In]Sight 2014* provides data and rankings for 60 regions including 52 RDA regions that are aligned to State regional development boundaries and eight State and Territory regions that sit within the national RDA structure (see [www.rda.gov.au](http://www.rda.gov.au) for more information).

Data and rankings have been included for eight new regions in 2014:

- Data and rankings for Mid-West and Gascoyne regions in Western Australia consistent with the State Regional Development Commission Structure (together these regions comprise the Mid-West Gascoyne RDA region);

- Data and rankings for the three Tasmanian regions – North, Tasmania – North West and  Tasmania – South (together these regions comprise the Tasmania RDA region); and

- Data and rankings for the three Northern Territory regions - Northern Region, Northern Territory - Big Rivers Region, and Northern Territory - Central Australia Region (together these regions comprise the Northern Territory RDA region).

These spatial boundaries make *[In]Sight* usable for the widest range of applications in regional development across Australia.

# Calculating [In]Sight Rankings

*[In]Sight* has been developed as a series of independent indices rather than one index with a single rank for each region. *[In]Sight* includes 20 separate indices comprised of:

- An LGA index for each of the ten themes which compares the performance of all LGAs to each other; and

- A Region index for each of the ten themes which compares the performance of all Region's to each other.

LGAs are ranked from 1 to 564 and regions are ranked from 1 to 60. Rankings are applied at the theme level and also for each indicator. The ranking approach is used to clearly demonstrate the relative position for each region across each of the themes and indicators. This ensures that users can identify the relative position of a region as well as the status of each measure.

No overall index of competitiveness combining the ten themes is included. This approach reflects both the difficulty in meaningfully aggregating relative performance across such a wide range of themes.

This approach also encourages users to concentrate on the nuance of each region's competitive position. Each LGA and Region will have a mix of both competitive strengths and challenges that will shape its competitive position.

## Indexation Methodology

Indexation in *[In]Sight* involves the indicators in each theme being transformed to provide a composite index score for each LGA and, separately, for each region.

Indexation is necessary as there are no common units or scales across the indicators within the themes. Indicator data may be represented in dollars, persons, incidence rates or other forms of quantity and volume depending on the competitiveness factor measurement used.

An indexation approach enables these different measures to be combined into an overall assessment of competitive position for each theme.

Several methods of transforming indicators to enable indexation are available. *[In]Sight* uses the common 'min-max' method of rescaling which is based on the following formula:

$$NX = \frac{x_i - \min(x)}{\max(x) - \min(x)}$$

This transforms the indicator data (x) into scores with a range from zero to one (i.e. the most competitive region receives a score of 1 and the least a score of 0). This approach does not change the relative position of indicators in the distribution and it is straightforward and transparent.

It is noted though that this transformation rewards higher values. A very good result on a few indicators is more advantageous to a region's ranking than a larger number of average scores.

## Outlier Adjustment in the Theme Rankings

Given the tendency for the 'min-max' normalisation approach to favour very high values, the 'Tukey' method has been used to reduce the influence of positively ranked outliers on the theme rankings in *[In]Sight*.

This method identifies outliers within indicators as values beyond an upper or lower fence value. Outliers in the data set were identified using the following formula:

If higher values lead to higher rankings for an indicator:

Upper fence = indicator mean + (3 x indicator interquartile range)

Outlier = any indictor value > lower fence

If lower values lead to higher rankings for an indicator:

Lower Fence = indicator mean - (3 x Indicator interquartile range)

Outlier = any indictor value < lower fence

An adjusted normalised score is then calculated by excluding the outlier values. Outlier values are given the maximum value of 1 in the adjusted score. This adjusted score is then used for the purposes of theme ranking.

The effect of this adjustment is to increase the spread of values in the adjusted normalised score without impacting on the relative distribution of non-outliers. This prevents an outlier in one indicator from unreasonably influencing the location's position within the theme ranks.

Based on the average of the normalised scores for each indicator in the theme, LGAs and regions are then ranked in descending order. A higher average score translates into a higher ranking.

No weightings have been applied in the formation of the *[In]Sight* indices.

This simple approach to indexation is preferred by the RAI to more complex methods (such as principle components analysis). The benefit is that it enables the relationship between indicator data and the theme ranking to be understood by users. This is important for *[In]Sight* where all of the data and rankings at the indicator level are made available to users.

Additional notes on index rankings:

- Regions with the same measurement for an indicator are given the same ranking;

- Three regions - Tasmania RDA, Northern Territory RDA and Mid-West Gascoyne RDA - have not been given rankings as sub-regions for these areas are included and ranked in the region index (for example Mid-West RDC and Gascoyne RDC are included in the rankings and together comprise the same area as Mid-West Gascoyne RDA); and

- Locations with more than 25 per cent of indicator value missing have not been allocated a theme rank.

## Ranking System Limitations

For many indicators there is a simple competitiveness relationship where more or less is clearly a more competitive position. For example having a greater percentage of the working age population participating in the economy or more mineral reserves clearly improves competitiveness.

However for some *[In]Sight* indicators there are also potential challenges involved in having a very high or low score. These indicators include:

- Economic diversification does not take into account the benefits of specialisation and limitations to growth that may flow from having firms spread across many sectors;

- Dominance of large employers does not take into account the limitations for a region's economy that may result from having no large employers that bring a diversity of jobs, more management positions and greater capacity for growth and innovation;

- Population turnover does not take into account the challenges that may arise in very stable communities where no new people join the population, bringing new skills, energy and networks;

- Youth and senior dependency does not account for the possible social costs of having communities where there are few or no older or younger people;

- Population density does not take into account the costs of congestion that can arise in very densely populated areas;

- Timber resources uses an employment measure which does not take into account whether this employment is based on sustainable use of forest resources; and

- Fishing and aquaculture uses an employment measure which does not take into account whether this employment is based on sustainable use of aquatic resources.

The RAI has not adjusted rankings in these indicators to reflect these possible costs that may counter the primary competitive benefit being measured by *[In]Sight*.

In most cases the relative impact of these costs compared to wider competitive benefits flowing from the factors cannot be measured. As a result, the ideal level at which a region is most competitive cannot be identified to enable adjustment of the ranking approach.

Users of *[In]Sight* and particularly those LGAs and regions with very high scores and ranks in these indicators are encouraged to consider the relative costs and benefits of these factors in the economy as part of a more detailed analysis.

# Data Review and Checking Processes

*[In]Sight* has been subject to a thorough review and checking process to ensure the data and indices are correct and consistent with the methodology. The indicator and theme data review process in 2014 included:

- preparation and review of descriptive statistics for each indicator to examine data distribution, missing values, and outliers;

- preparation of correlations to check the consistency and relevance of indicators within each theme;

- all derived data is compared against similar information available from the Australian Bureau of Statistics (ABS); and

- systematic internal review of all calculations to ensure accurate transformation of data and calculation of theme scores and rankings.

The RAI is confident that these processes have produced an accurate set of indicators and theme scores for each LGA and region.

If a user identifies possible errors or inaccuracies, please contact the RAI office on (02) 6260 3733 or info@regionalaustralia.org.au and we will review the issue immediately.

## Data Revisions 16/1/2015

Since the release of the updated Insight data in late November 2014, a number of revisions have been made to the published data.

These revisions address a number issues arising out of the update of the web tool, including:

- display of large currency values;

- display of missing data values as zeros;

- inclusion of additional data and improvements to providing estimates at boundary levels where data is not available directly also drove changes to indicator scores and overall theme rankings; and

- A number of minor data processing errors were identified and corrected.

Adjustments to reporting of some data to improve consistency with publicly available statistics, particularly those provided by the Australian Bureau of Statistics, have been applied.

Specific changes in this release include:

**Economic Fundamentals**

Correction to display error of large data values in business turnover and non-residential building approvals (previously displaying as 'n/a')

**Labour Market Efficiency**

Wage/Labour costs value and rankings display error corrected for 55 Regions.

**Business Sophistication**

- No revisions.

**Human Capital**

- Correction to display of access to tertiary and technical / further education indicator data;

- No change to indicator or theme rankings.

**Infrastructure & Essential Services**

- Access to allied health services – Ranking revisions; no data change

- Access to GP services – data and ranking revisions (formula correction)

- Theme scores (formula correction)

**Institutional Foundations**

- Revised 'presence of major organisations' indicator data for several de-amalgamated LGAs in Queensland.

**Innovation**

- Inclusion of additional data points for Research and Development Managers

- minor resultant changes to indicator and theme rankings

**Technological Readiness**

- No revisions.

**Demography**

- No revisions.

**Natural Resources**

- Re-calculation of theme scores and rankings arising from the exclusion of unreliable water resources indicator data.

## Further updates

The RAI is working to access additional data sources to improve the ability of regions to get a snapshot of how they compare in terms of competitiveness nationally.

Users are encouraged to revisit Insight regularly to access further [In]Sight developments.

# End Notes

[i] OECD (2012) *Promoting Growth in All Regions*. Paris: OECD; OECD (2009) How Regions Grow. Paris: OECD

[ii] Rodríguez-Pose, A (2013), 'Do institutions matter for regional development?', in Regional Studies