Australian Government

Jobs and Skills Australia

Regional Labour Market Indicator (RLMI)

Methodology Paper

Contents

RLMI's Purpose

Gaining an understanding of the trends that are associated with regional labour market performance will help better inform policy development and assist in ensuring Australia has the necessary pre-requisites to build a better-skilled and more adaptable workforce to position the Australian labour market for the future.

Central to this effort is to measure labour market performance across regions. Doing so, however, is a complex task. For instance, while the unemployment rate is a useful indicator of labour market tightness, it is only one of a number of labour market indicators and identifying common trends across separate indicators can be challenging, particularly at the regional level where labour market indicators are inherently volatile due to poor data quality.

To overcome these challenges, the Regional Labour Market Indicator (RLMI) combines key indicators of spare labour market capacity, from both an employee and employer perspective, into a single, and easy to interpret, summary measure. Regions are grouped into distinct categories of overall labour market performance, ranging from 'poor' to 'strong', which provides an accurate and reliable view of labour market performance, relative to the national average. A strong labour market, that is characterised by a high rate of employment, where employment opportunities are extended to all who want them, is central to a strong economy and prosperous and inclusive society.

Importantly, the RLMI's purpose aligns closely with the Australian Government's approach to consider a broader range of labour market indicators, including of labour market utilisation, to measure progress towards sustained and inclusive full employment, as outlined in *Working Future: The Australian Government's White paper on Jobs and Opportunities*.

Overview of the RLMI

The RLMI combines key indicators of spare labour market capacity, from both an employee and employer perspective, into a single, and easy to interpret, summary measure which provides an accurate and reliable view of labour market performance, relative to the national average.

In defining the RLMI's purpose, it is helpful to understand what the RLMI is **not:**

- An indicator of how a region is performing relative to its historical performance
- An indicator of how well a region's skills and capabilities are being utilised
- An indicator of labour market resilience or adaptability
- An indicator of labour market potential, giving consideration to the characteristics of the region
- An indicator that differentiates between cyclical and structural trends

Composite indicator

Assessing a region's labour market performance is a complex task as there are a number of factors to consider that may sometimes give contradictory signals about the overall performance of the labour market. For this reason, it is useful in policy analysis and public communication to use a statistical model to combine a range of factors relating to a region's current labour market performance into a single summary measure, which provides a more accurate and reliable view of labour market performance[1].

In developing the RLMI, a panel of technical experts were consulted to seek technical advice around building a model, taking into consideration the appropriateness of a model to deliver an accurate, reliable and timely assessment of a region's current labour market performance. The panel consisted of technical experts across Jobs and Skills Australia (JSA) and the Department of Employment and Workplace Relations (DEWR), as well as a range of external experts.

A range of possible approaches were considered during the consultation process, including a composite indicator, principal component analysis, stepwise regression and cluster analysis. After investigating the costs and benefits of the approaches suggested, a composite indicator was chosen as the most appropriate model for rating a region's current labour market performance.

A composite indicator is created when individual factors are compiled into a single index to measure multi-dimensional concepts which cannot be captured by a single indicator. They are particularly useful when the dependant variable is not easily quantified, such as in this case where reliable ratings of relative labour market performance across regions are not readily available.

Another important consideration in choosing a composite indicator was concern raised that using a principal component analysis or stepwise regression model may be susceptible to minimising the importance of relevant factors. This was particularly important for the RLMI as

[1] From the 2008 OECD Handbook on Constructing Composite Indicators.

many of the factors that were considered for inclusion could be broadly grouped into measures of labour supply and utilisation that may have resulted in the minimisation of the few measures of labour demand that were considered for inclusion, despite their importance.

Composite indicator models are already used by others in relation to Australia, including the OECD Getting Skills Right – Australia (2018); Sue Richardson What is a skill shortage? (2007); the NSC Interim Skills Shortage methodology research and prototypes (2020) and the ABS' Digital Intensity Index (2023).

Regions

'Regions' can be defined in many ways. Structured and well-defined regions are essential for data analysis (particularly for comparative analysis). The RLMI produces ratings at the Statistical Area 4 (SA4) level of the Australian Statistical Geography Standard (ASGS). Importantly, SA4s cover the whole of Australia, reflect the location of people and communities and broadly reflect labour markets and the functional areas of capital cities. There is a variety of regional data available at the SA4 level, which makes it a commonly used spatial unit for regional analysis.

That said, it is important to bear in mind there are some limitations when using SA4 boundaries. For instance, SA4's are not perfectly self-contained labour markets, with people often living and working in different SA4s, with research by the Reserve Bank of Australia (RBA) estimating that around 27% of people work in a different SA4 than they live in[2]. This is more common in capital city areas, where people commute between neighbouring SA4s, as well as in border communities, as SA4s do not cross state and territory borders. For this reason, labour market ratings may not strictly reflect labour market conditions in the region, but rather conditions for people living in the region.

Factor selection

A range of key measures of labour market performance were considered for inclusion in the RLMI. Despite their increasing usefulness in policy analysis and public communication, composite indicators may suffer from conceptual and statistical flaws due to a lack of transparency in the factor selection decision making process. To minimise these risks, when considering factor selection, a number of broader considerations are taken into account:

- **Business sense**: The inclusion of the factor aligns with the needs of the composite indicator.
- **Quality**: The data are considered accurate and reliable, with particular consideration given to data volatility, sampling variability as measured by relative standard errors and revisions.

  Frequency: The data can be provided regularly for robust and timely analysis.
- **Accessibility**: The data underpinning each factor is accessible.
- **Comprehension**: The factor can be easily interpreted by stakeholders.

[2] Bishop & Greenland, 'Is the Phillips Curve Still a Curve? Evidence from the Regions', *Research Discussion paper 2021-09*.

- **Uniqueness**: The factor measures something that cannot be captured by other factors already included in the composite indicator.
- **Longevity**: There is a low likelihood of the data being ceased in the near future and there is sufficient historical data to support analysis and testing.

To ensure uniqueness of the factors, a Pearson correlation coefficient has been used to test for statistical correlation between factors. This helps predict the relationship between factors and reduces the risk of multicollinearity that can undermine the statistical significance of the composite indicator.

The 5 factors currently included in the RLMI are listed below (see Attachment A for a more detailed overview of the factors). The factors can be grouped into broader measures of labour supply, demand and utilisation.

Factor	Description	Geography	Weight
Employment rate (15-64 years)	The number of employed persons as a proportion of the working age (15-64 years) population (%)	SA4	2.0
Unemployment rate	The number of unemployed persons as a proportion of the total labour force (%)	SA4	0.5
JobSeeker income support rate	Proportion of the working age (15-64 years) population on JobSeeker Income Support*	SA4	1.5
Underemployment rate	The number of underemployed persons as a proportion of the labour force (%)	GCCSA**	0.125
Vacancy fill rate	The percentage of vacancies that have been filled (%)	GCCSA**	0.125

* JobSeeker income support' is a combination of the JobSeeker payment and Youth Allowance (other) payment

** Greater Capital City Statistical Area (GCCSA)

Constructing the RLMI

Standardising the factors (z-score)

The estimates for the 5 individual factors across all SA4s are standardised (z-score) to have a mean of zero and standard deviation of one. One of the main benefits of using a z-score is to standardise the component factors so that all the different data sources are comparable.

- A z-score is a numerical measurement that describes a value's relationship to the mean of a group of values. If a z-score is zero, it indicates that the data point's score is identical to the mean score. The larger the z-score, the further away from the mean the value is. Factors with extreme values thus have a greater effect on the composite indicator.

In the RLMI, the z-scores are estimated across regions (rather than across time), such that a z-score is indicative of current performance relative to other regions, rather than relative to historical conditions. The weighted sum of the individual factor z-scores is the region's index score (at the SA4 level).

Assigning a weight to the factors

When used in a benchmarking framework, the weights applied to each individual factor can have a significant impact on the overall composite indicator. Factors with a higher weighting will have a larger influence on the index score of a region.

In the absence of a statistical model to determine the weights (such as a principal component analysis or factor analysis), the weights reflect a combination of considerations including uniqueness, data quality and geographical level. Importantly, the choice of weights is the result of extensive consultation and backtesting, which assists in understanding the impact different weight scenarios have on the ratings, including their sensitivity (see Attachment A for a more detailed rationale of the factor weightings).

Assigning a labour market rating

The regions (SA4s) are ranked by their index score and then grouped into the following 5 categories of relative labour market performance: 'strong'; 'above average'; 'average'; 'below average'; and 'poor'. The weighted index scores have a mean of zero. The higher a region's weighted index score, the stronger a region's labour market, relative to the other regions. The current boundaries for the 5 categories are listed below.

$$Strong\text{: } \geq 0.84 \; standard \; deviations \; from \; the \; mean$$

$$Above \; average\text{:} < 0.84 \; standard \; deviations \; from \; the \; mean \; and \geq 0.25 \; standard \; deviations \; from \; the \; mean$$

$$Average\text{: } < 0.25 \; standard \; deviations \; from \; the \; mean \; and \geq -0.25 \; standard \; deviations \; from \; the \; mean$$

$$Below \; average\text{:} < -0.25 \; standard \; deviations \; from \; the \; mean \; and \geq -0.84 \; standard \; deviations \; from \; the \; mean$$

$$Poor\text{:} < -0.84 \; standard \; deviations \; from \; the \; mean$$

These boundaries are designed to have an approximately equal distribution of regions within each category of relative labour market performance. For instance, a region rated as 'strong' may be considered one of the top 15-20% of regions when considering its current labour market performance, relative to the national average.

- It is worth noting, however, that the distribution of regions within each rating category will vary over time given that each region is assessed relative to the national average. For instance, in a case where there is a small number of very poorly performing labour markets (well below the national average) this could result in a higher proportion of regions rated as 'above average'.

A review of the RLMI ratings is conducted to ensure the ratings are consistent and plausible, given that data at the regional level (particularly ABS Labour Force Survey data) are subject

to a considerable degree of statistical variability and the inherent limitations of any statistical analysis. Some ratings may be manually adjusted to reflect this review.

Attachments

Attachment A – Factors included in the RLMI

Attachment A - Factors included in the RLMI

Factor	Description	Rationale	Availability	Geography	Source	Weight
Employment rate (15-64 years)	The number of employed persons as a proportion of the working age (15-64 years) population (%)	• The employment rate measures the extent to which available[3] labour (people available to work) is being used. Importantly, the employment rate is unaffected by voluntary changes in labour force participation and is therefore a useful indicator of current labour market performance. • The employment rate is considered an accurate and reliable indicator at the regional level, particularly when compared to other indicators such as the unemployment rate. • For these reasons, the employment rate has the highest weight of any factor. • The employment rate is measured as a proportion of the working age population to ensure it is less impacted by differences in age demographic structures. It is, however, important to note that since some people do continue to work past the age of 64, this measure does not capture the full scope of employment.	Monthly	SA4	**ABS** Labour Force, Australia, Detailed, 12-month averages of original estimates. Data from Mar-12 onwards are from **ABS** Labour Force, Australia, Detailed, table MRM2 – Modelled estimates of labour force status, by SA4, Age and Sex, 3-month average of original estimates.	2.0
JobSeeker income support rate	Proportion of the working age (15-64 years) population on JobSeeker income support[4] (%)	• The proportion of the working age population on JobSeeker income support is a broad measure of spare capacity. The JobSeeker income support payment is designed to provide financial assistance to support those looking for work, including those who may be working part-time. It is also worth noting that the payment is designed to provide financial assistance to those who are sick or injured and cannot work for short periods of time.	Monthly	SA4	**Services Australia** Administrative data, and working age population estimates from **ABS** Labour Force, Australia, Detailed, monthly original	1.5

[3] It is important to note that some individual's personal circumstances may prevent them from participating in the labour market despite being considered a part of the 'working age population'.
[4] JobSeeker income support' is a combination of the JobSeeker payment and Youth Allowance (other) payment

Factor	Description	Rationale	Availability	Geography	Source	Weight
		• This measure is sourced from administrative data and complements the measures of spare capacity from the ABS *Labour Force Survey*, in particular the unemployment rate which is subject to a considerable degree of statistical variability. • For these reasons, it has a higher weighting than the unemployment rate.			data. Data from Jan-12 onwards are from **ABS** Labour Force, Australia, Detailed, table MRM2 – Modelled estimates of labour force status, by SA4, Age and Sex, monthly original data.	
Unemployment rate	The number of unemployed persons as a proportion of the total labour force (%)	• The unemployment rate measures the availability of unused labour that is willing and available for work and is the key measure of spare capacity. • Despite its importance, the unemployment rate has a lower weight than the employment rate and JobSeeker income support rate as it is subject to a considerable degree of statistical variability at the SA4 level.	Monthly	SA4	**ABS** Labour Force, Australia, Detailed, 12-month averages of original estimates. Data from Mar-12 onwards are from **ABS**, Labour Force, Australia, Detailed, table MRM1 - Modelled estimates of labour force status, by SA4, 3-month average of original estimates.	0.5
Underemployment rate	The number of underemployed persons as a proportion of the labour force (%)	• The underemployment rate provides a broader measure of the spare capacity of labour. • Measures of underemployment are important complements to the unemployment rate in	Monthly	GCCSA	**ABS** Labour Force, Australia, DataLab, 12-month averages	0.125

Factor	Description	Rationale	Availability	Geography	Source	Weight
		assessing how much spare capacity could be called upon in adapting to labour market strength/weakness. • The underemployment rate has a lower weighting as it is measured at the GCCSA level (given the data quality issues with this factor at the SA4 level).			of original estimates	
Vacancy fill rate	The percentage of vacancies that have been filled (%)	• The vacancy fill rate is a key measure of unmet demand for labour. A low fill rate indicates that the demand for labour is not matched by the supply of labour from workers. This may be due to a lack of suitable applicants or high search costs that reduce labour market matching efficiency. • Despite its uniqueness, the vacancy fill rate has a lower weighting as it is measured at the GCCSA level (given the data quality issues with this factor at the SA4 level).	Monthly	GCCSA	**JSA** Survey of Employers who have Recently Advertised, 12-month averages of original estimates	0.125