The importance of data

Collecting and analysing workforce and region level data enables the region's stakeholders to provide an evidence base to decision making and supports locally led conversations as part of the workforce planning process.

Using current available data to create a snapshot, labour market profile or an environmental scan will strengthen your consultation efforts prior to developing the workforce plan.

What is data?

Data: Observations of facts which when collected, organised and evaluated become information or knowledge.

Information: Data that has been organised to serve a useful purpose.

Qualitative: Qualitative data describes qualities or characteristics, is non-numerical and is often expressed in words or pictures. It answers questions such as 'why' and 'how' and might be collected in interviews, focus groups or by observation.

Quantitative: Quantitative data is a measure of quantity and is expressed in numbers. It measures numeric variables such as how many, how often or how much and might be collected in surveys or questionnaires.

Qualitative vs quantitative: Qualitative and quantitative data provide different outcomes and are often used together during workforce planning to provide a full picture of an industry or population. For example, a qualitative question might explore the occupations in greatest demand in your region, while a quantitative question might ask about the number of additional engineers an organisation intends to employ over the next three years.

Types of data collections

Census: A study of every unit, everyone or everything in a population – basically a complete count e.g. Census of Population and Housing.	Advantages: Accurate and detailed.
	Disadvantages: Only refreshed every five years.

Sample: A sample is a subset of units in a population, selected to represent all units in a population interest – a partial count e.g. Labour Force Survey.	Advantages: Less costly and results can be made available faster than a Census.
	Disadvantages: Less accurate than a census and information on small populations or small geographies is not readily available or reliable.

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Administrative: Collected as a by-product of an organisation's day to day operations e.g. boat builder's quarterly sales data is collected.	Advantages: As data is collected about everyone using that organisation's services, the data is accurate, simple and available for trend analysis as it is collected on an on-going basis.
	Disadvantages: Collects limited data items and may not be publicly available.

Data terminology

Original data: Shows the actual movements over time and will include movements due to cyclical, seasonal and irregular events.

Seasonally adjusted data: Has had the cyclical and seasonal effects removed from the original data e.g. the seasonal increase in retail employment over Christmas.

If your region or industry of focus regularly has an increase of workers to meet a seasonal need, your data will reflect that, it is important to take this into consideration during workforce planning.

Trend data: Seasonally adjusted data which has had irregular effects removed to 'smooth' out the series and show the overall 'trend' of the data over time.

Unemployment rate, Australia
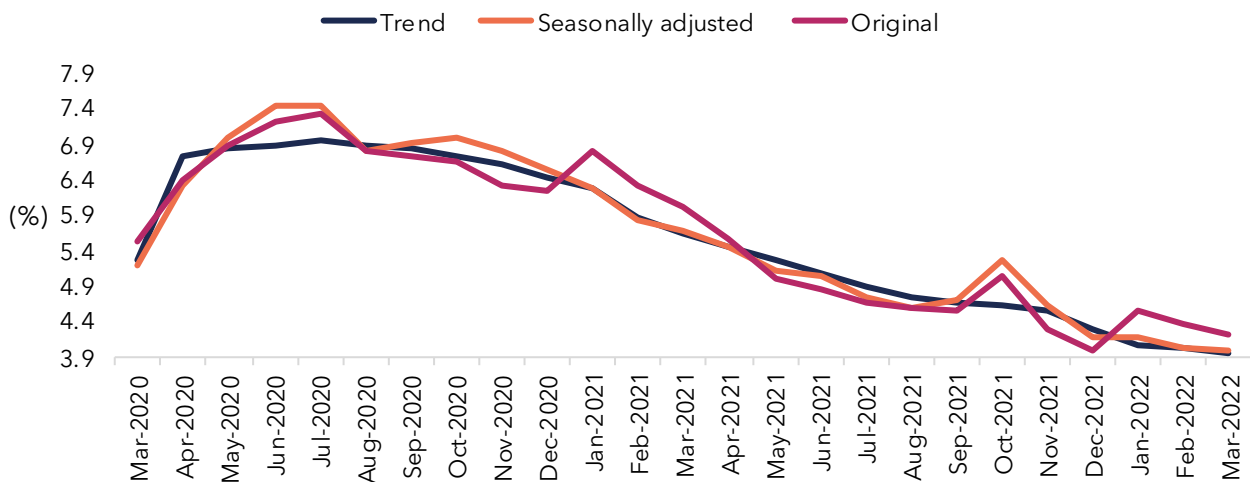
Chain volume measures: Provides an inflation-adjusted measure of economic activity, reflecting the real quantity of goods and services produced over time. The linking process connects these adjusted figures from different years, allowing for a consistent comparison of economic growth that is not distorted by changes in price levels e.g. value of construction work done.

Index: Is a number used to show the change in a quantity over time. Usually the first data point (a benchmark) is fixed as 100, with all later data points linked to this base to compare the relative change over time e.g. Internet Vacancy Index

Title	Region	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24
Business, Finance and Human Resource Professionals	AUST	9934	9751	9579	9397	9201	8996	8811
Information Professionals	AUST	2719	2717	2712	2689	2648	2591	2530
Sales, Marketing & Public Relations Professionals	AUST	3352	3312	3298	3274	3202	3096	2987
Transport and Design Professionals, and Architects	AUST	2154	2142	2134	2117	2085	2060	2055
Engineers	AUST	5896	5707	5567	5464	5359	5244	5128
Science Professionals and Veterinarians	AUST	1791	1729	1662	1601	1533	1458	1401
Health Diagnostic and Therapy Professionals	AUST	9086	8807	8509	8205	7912	7656	7443
Medical Practitioners and Nurses	AUST	15,281	14,801	14,252	13,650	13,052	12,543	12,162

Significant: When a statistic is described as significant, it simply means that the statistic is reliable and that a difference or relationship exists. It doesn't mean the finding is important or that it is useful for making decisions.

Journey to work: Journey to work information can be helpful to examine people's movements from usual place of residence to and from work. This may support a region to determine if transport patterns (and transport systems) align with job availability.

For example: A bus route or timetable may not move workers from one suburb of high unemployment to another suburb with a larger proportion of vacancies. If this is the case, addressing the barrier may increase employment opportunities for individuals without private transport options.

Note that journey to work data may not adequately capture work from home arrangements or other remote working arrangements.

More detailed information is available https://www.abs.gov.au/census/guide-census-data/census-dictionary/2021/variables-topic/location/place-work-powp

Measures of central tendency

Mean: The mean (also called the average) is calculated by adding each value together and then dividing that figure by the number of data points e.g. 1, 2, 4, 4, 10, 15 = 36 divided by 6 = 6. Not a good measure when data isn't evenly spread.

Median: The median is the middle value in a set of data when it is arranged in ascending or descending order e.g. 32, 73, 495, 560, 734 (e.g. median age of a workforce within a region or industry). It may hide the presence of extreme values, or outliers.

Mode: The mode is the most commonly occurring value in a set of data e.g. the retirement age of these people: 50, 55, 55, 55, 57, 59, 59, 60 = 55. This is not useful if there is more than one mode or if it doesn't fall in the centre of the data. Best used when dataset is sorted into different categories, such as business type or religion.

Australian Bureau of Statistics (ABS) Classifications

The ABS uses classifications for occupations, industries, education and geographies and these will underpin much of the labour market data used in workforce planning.

Australian and New Zealand Standard Classification of Occupations (ANZSCO)

- **Purpose:** ANZSCO is used to classify occupations based on the skills and tasks required for different jobs. It provides a standardised way to categorise all occupations in Australia and New Zealand.

- **Structure:** The classification is hierarchical, with occupations grouped into categories based on similar skill levels and specialisations. For example, for the occupation of Boat Builder, the ANZSCO codes are:

Level		ANZSCO Code	Title
One-digit	Major	3	Technicians and Trades Workers
Two-digit	Sub-Major	39	Other Technicians and Trades Workers
Three-digit	Minor Group	399	Misc. Technicians and Trades Workers
Four-digit	Unit Group	3991	Boat Builders and Shipwrights
Six-digit	Occupation	399111	Boat Builder and Repairer

ANZSCO is invaluable in workforce planning to enable planners to understand what occupations are and how they are defined. It allows planners to:

- analyse labor market trends for particular occupations

- identify skills shortages or surpluses in specific roles

- align workforce development initiatives with the needs of specific occupational groups

- develop targeted training and education programs to address gaps in skills.

Australian and New Zealand Standard Industrial Classification (ANZSIC)

- **Purpose:** ANZSIC classifies industries based on the types of economic activities they perform. It's used to categorise businesses and other organisations by the industry sector they belong to.

- **Structure:** Like ANZSCO, ANZSIC is also hierarchical, with classifications grouped into categories. An example is shown below.

Level		ANZSIC Code	Title
One-digit	Division	C	Manufacturing
Two-digit	Subdivision	19	Polymer Product and Rubber Product Manufacturing
Three-digit	Groups	191	Polymer Product Manufacturing
Four-digit	Classes	1919	Other Polymer Product Manufacturing (incl. Hull, boat building, manufacturing)

ANZSIC is essential in workforce planning to understand what industries are and how they are defined. It helps workforce planners to:

- analyse employment patterns across industry sectors

- assess the impact of economic changes on various industries and their workforce needs

- identify industries experiencing growth or decline and forecast future workforce demands

- develop sector-specific workforce strategies, including upskilling and reskilling initiatives.

Differences Between ANZSCO and ANZSIC

Focus:

- ANZSCO focuses on occupations—the roles and jobs people perform

- ANZSIC focuses on industries—the sectors in which businesses and organisations operate.

Application:

- ANZSCO is used to understand and plan for the types of jobs people do

- ANZSIC is used to understand and plan for the economic sectors where people work.

How to use them together in workforce planning

Integrated analysis: By using ANZSCO and ANZSIC together, workforce planners can gain a comprehensive view of the labor market. For example:

- they can identify which occupations (ANZSCO) are most prevalent in particular industries (ANZSIC)

- they can track shifts in workforce demand by both occupation and industry, providing a dual perspective on labor market changes.

Targeted workforce strategies: The combined use of ANZSCO and ANZSIC allows planners to develop more precise workforce strategies. For example:

- if an industry is growing (using ANZSIC data), planners can identify the occupations within that industry that are in demand (using ANZSCO data) and target training programs accordingly.

In summary, while ANZSCO helps categorise the types of jobs people do, ANZSIC categorises the industries in which they work. Together, they provide a powerful toolset for workforce planning, enabling a deep understanding of labor market dynamics and informing strategic workforce development efforts.

Australian Standard Classification of Education (ASCED)

Purpose: ASCED is a statistical classification for use in the collection and analysis of data on educational activity and attainment. It is comprised of two classifications (1) Level of Education and (2) Field of Education.

Structure: Both these classifications are hierarchical, and both consist of:

Level		Example
One	Post Graduate Degree	Master of Maritime Engineering (Advanced)
Two	Graduate Diploma and Graduate Certificate	Graduate Certificate in Maritime Engineering
Three	Bachelor	Bachelor of Engineering (Maritime)
Four	Advanced Diploma and Diploma	Advanced Diploma of Maritime Operations
Five	Certificate Level	Certificate III in Maritime Operations
Six	Secondary Education	Year 12 Senior Certificate

Use in workforce planning: Knowing the current level of education for your population and field of education helps you determine if the education and training system is meeting the needs of your local industry e.g. if a key employing industry needs more apprentices or a minimum of year 12 education and the local system is not meeting those needs, you may discuss this with your stakeholders during consultation to seek industry-led recommendations on how best to target efforts into addressing that identified gap.

Australian Statistical Geography Standard (ASGS) main structure:

Purpose: A classification of Australia into a hierarchy of statistical areas, based on population and land use, includes data for individual states as well as Australia.

Structure: Mesh blocks are the smallest geographic areas and form the building blocks for the larger regions Statistical Areas (SA) of the ASGS. They broadly identify land use such as residential, commercial, primary production and parks.

SA1: Generally have a population of 200 to 800 people, may be urban or rural and are designed to represent Aboriginal and Torres Strait Islander communities as accurately as possible.

The SA1 boundary is depicted in the map as red, with the SA2 boundary depicted in blue.

SA2: Generally have a population between 3000 and 25,000 people, with an average of about 10,000 and are made up of clusters of SA1s. In rural areas, they are designed to represent functional areas (i.e. the area from which people come to access services at a centre). In large cities, SA2s often represent single suburbs.

SA3: Generally have a population between 30,000 and 130,000 and often form the functional areas of regional towns and cities. Made up of clusters of SA2s with similar geographic and socio-economic characteristics.

SA4: The largest sub-state regions in the Main Structure of the ASGS. In regional areas, they tend to have smaller populations of 100,000 to 300,000 people, while in cities, they tend to have larger populations of 300,000 to 500,000 people. They are designed to represent labour markets or aggregates of labour markets based on geographic, social and economic similarities.
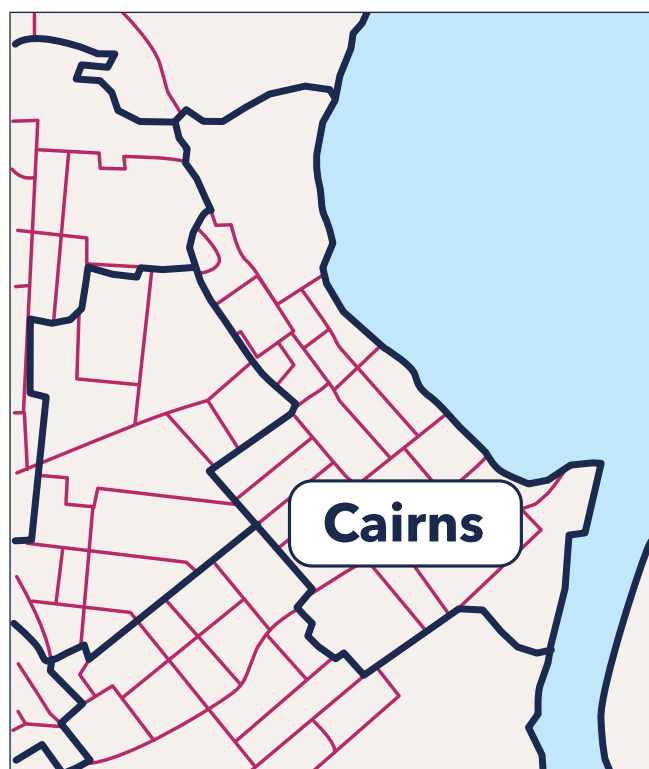
Map of Cairns Statistical Area Level 4

Local Government areas include:

- Cairns - North
- Cairns - South
- Port Douglas - Daintree
- Innisfail - Cassowary Coast
- Tablelands (East) - Kuranda

Source: Queensland Government Statistician's Office, 24 April 2024, Queensland Statistical Areas, Level 4 (SA4), 2021 – Cairns (ASGS Code 306) https://www.qgso.qld.gov.au/issues/10706/qldsaMap4-asgs-2021-cairns.pdf
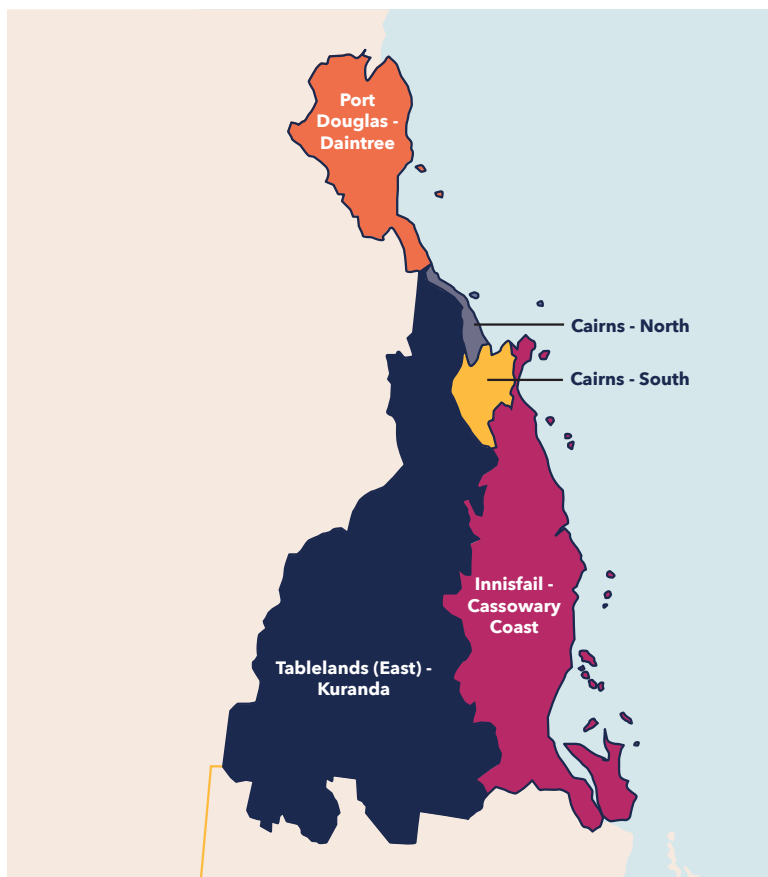
Watch our Youtube Vignettes on topics such as:

- Anticipating Future Skills
- Labour market data
    - o   Australian Bureau of Statistics
    - o   Queensland Government Statistician's Office
    - o   Jobs and Skills Australia