

2024

# Key Indicators for Skills Planning in South Africa

Labour Market Intelligence  
research programme



higher education  
& training  
Department:  
Higher Education and Training  
REPUBLIC OF SOUTH AFRICA





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Department of Higher Education and Training  
Private Bag X174  
Pretoria 0001  
[www.dhet.gov.za](http://www.dhet.gov.za)

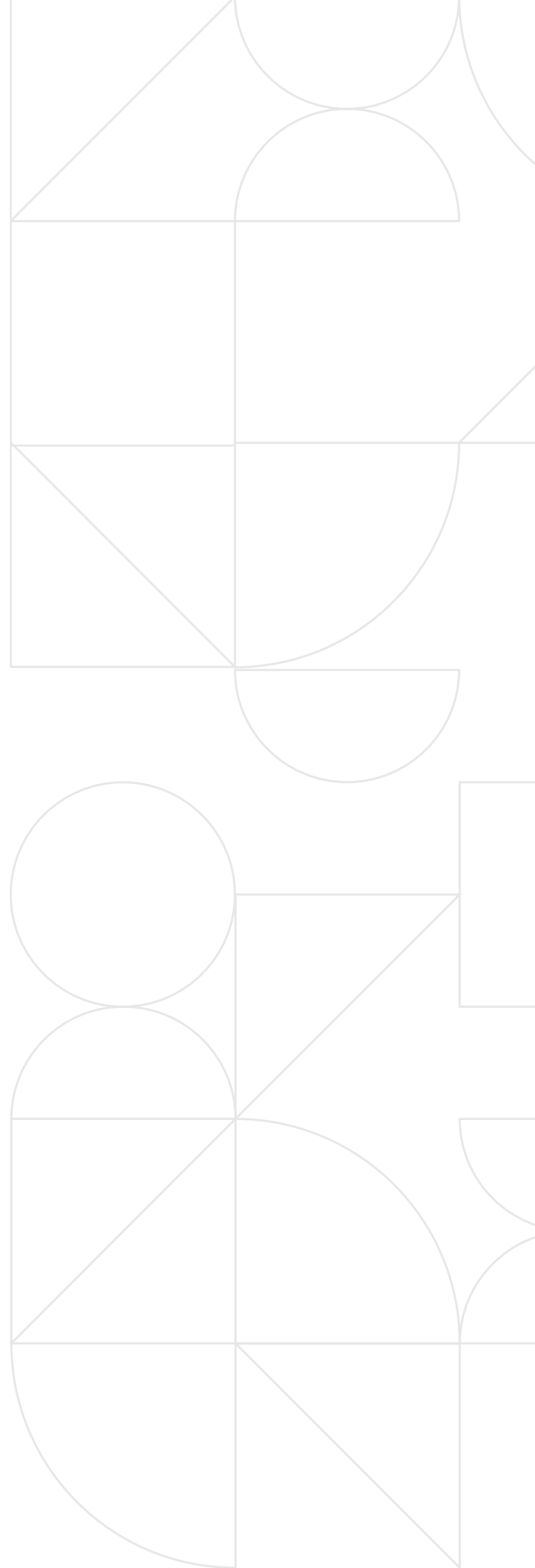
ISBN: 978-1-77018-997-3

2024

# Key Indicators for Skills Planning in South Africa

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A Technical  
Research Report





## Acknowledgements

The authors would like to thank everyone who assisted with, and contributed to, the creation of the report that provides and explains, with examples, a list of indicators relevant for the purposes of labour market intelligence for the post-school education and training (PSET) system in South Africa. We extend our gratitude to the Department of Higher Education and Training (DHET) and the Development Policy Research Unit (DPRU) for their guidance and input throughout the process. In particular, the contributions of Ms Mamphokhu Khuluvhe (DHET) and Dr Hersheela Narsee (independent consultant) for conceptualising and guiding the process of developing and peer reviewing this research report.

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### Citation

Development Policy Research Unit (DPRU) (2024). *Key Indicators for Skills Planning in South Africa: A Technical Research Report*. Department of Higher Education and Training.

ISBN: 978-1-77018-997-3

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## Acronyms and abbreviations

ACRONYM/ABBREVIATION	TERM/DEFINITION
4IR	Fourth Industrial Revolution
CSL	Critical Skills List
DBE	Department of Basic Education
DHET	Department of Higher Education and Training
GDP	Gross domestic product
GER	Gross enrolment ratio
GFCF	Gross fixed capital formation
GVA	Gross value added
HE	Higher education
HEI	Higher education institution
HEMIS	Higher Education Management Information System
HSRC	Human Sciences Research Council
ILO	International Labour Organization
ILOSTAT	International Labour Organization Database
LFPR	Labour force participation rate
LFS	Labour Force Survey
LMI	Labour Market Intelligence
LMIP	Labour Market Intelligence Partnership
LMIS	Labour market information system
NDP	National Development Plan
NEET	Not in employment, education or training
NQF	National Qualifications Framework
NSC	National Senior Certificate
O*NET	Occupational Information Network
OECD	Organisation for Economic Co-Operation and Development
OFO	Organising Framework for Occupations
PPP	Public–private partnership
PSET	Post-school education and training
QES	Quarterly Employment Statistics

ACRONYM/ABBREVIATION	TERM/DEFINITION
QLFS	Quarterly Labour Force Survey
SARB	South African Reserve Bank
SETA	Sector Education and Training Authority
Stats SA	Statistics South Africa
SSP	Sector Skills Plan
TVET	Technical and vocational education and training
TVETMIS	Technical and Vocational Education and Training Management Information System
WSP	Workplace Skills Plan



# Glossary of terms and concepts

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## Labour market concepts

**Working-age population:** The working-age population is defined as all individuals aged 15–64 years.

**Employed:** Individuals of working age are considered by Statistics South Africa (Stats SA, 2008) to be employed if, for at least one hour during the survey's reference week, they worked for a cash or in-kind payment; ran a business, irrespective of size, alone or with partners; helped without pay in a business operated by a household member; or were temporarily absent from a job or business. The employed population therefore includes employees, the self-employed, employers and unpaid family workers. The employed constitute the workforce.

**Unemployed:** Working-age individuals who were not employed in the survey's reference week, but who were willing, able and available to work, are defined by Stats SA as unemployed. The official (narrow) definition of unemployment defines the unemployed as those who were not employed in the reference week but who actively sought employment or tried to start a business during the four weeks prior to the survey, and who would have been able to start work or a business during the reference week (Stats SA, 2008). The expanded definition of unemployment uses the same criteria, except that it does not require the unemployed to have been actively seeking work or trying to start a business in the four-week reference period.

**Labour force:** The labour force consists of all working-age individuals who are either employed or unemployed. Since there are two definitions of unemployment, there are two definitions of the labour force. The narrow labour force consists of the employed and the narrowly defined unemployed; the expanded labour force consists of the employed and the broadly defined unemployed.

**Economically active population:** The economically active population includes all individuals who are part of the labour force. Exactly which individuals are classified as economically active therefore varies, depending on the definition of unemployment being used. Individuals of working age who are not members of the labour force are not economically active.

**Non-searching unemployed:** According to Stats SA, the non-searching unemployed are unemployed individuals who did not actively seek employment or try to start a business during the four weeks prior to the survey. In other words, the non-searching unemployed are those individuals who are unemployed according to the expanded definition of unemployment, but who are not economically active according to the narrow definition. Conventionally, the non-searching unemployed are referred to as discouraged work-seekers. However, Stats SA has started defining discouraged work-seekers as a sub-group of the non-searching unemployed.

**Labour force participation rate:** The proportion of the working-age population who are members of the labour force (i.e., who are either employed or unemployed) is known as the labour force participation rate (LFPR). Given the two definitions of unemployment, it is possible to calculate the corresponding narrow and expanded labour force participation rates.

**Unemployment rate:** The unemployment rate refers to the proportion of the labour force that is unemployed. It is possible to calculate a narrow unemployment rate and an expanded unemployment rate based on the two definitions of unemployment.

## Skills concepts

**Skills:** In a skills planning context, skills are 'all types and facets of competencies required by workers to perform their jobs' (Organisation for Economic Co-operation and Development [OECD], 2017b). The term may, however, be used in different contexts to refer to competencies, educational attainment or qualifications, or occupations. In some contexts, skills refer to job competencies, such as communication, literacy or numeracy. Competencies that are required in the workforce, but that may not be adequately represented in the current skills profile of the workforce, are labelled in the South African discourse as 'critical skills', 'top-up skills' or 'skills gaps'. Skills may be thought of in terms of educational attainment, such as Grade 12 or a degree, or in terms of qualifications, such as a National Senior Certificate (NSC), an MSc degree or a diploma in nursing. Finally, skills may be conceptualised in terms of occupations – for example, electrician, nurse or civil engineer – when considering high- or low-skilled occupations or occupations in high demand. In this document, the term 'skills' is primarily used to refer to qualifications or educational attainment. Where appropriate, however, it will also be used to refer to job competencies or occupations.

**Skills planning:** Owing to its numerous dimensions and extensive scope of activities, the term 'skills planning' means different things to different people. At the one end of the continuum, skills planning is about *identifying* skills needs through research, analysis and social dialogue. On the other end, it is about *using* labour market intelligence and data about skills needs for practical planning and action, which may include allocating resources and interventions to address skills demand, shortages and imbalances, both currently and as anticipated in the future.

**Skills demand:** Skills demand refers to the human resources (in this instance, people) and competencies that employers require, at prevailing wage rates, to meet their operational needs at a given point in time. In this sense, the demand for skills derives from the demand for the goods and services produced by employers. Skills demand therefore reflects the skills that public and private sector employers need to meet their objectives. Skills demand can also be thought of as skills needs.

**Skills supply:** Skills supply consists of the skills – as represented by any appropriate conceptualisation of skills – possessed by individuals who are either working (the employed) or willing, able and available to work (the unemployed). In other words, skills supply consists of the skills possessed by the labour force. Skills supply is influenced by various factors, including individuals' decisions to participate in the labour force, to learn new skills and to migrate. In this context, it is important to understand the pipeline of skills acquisition: the various components of the education and training system, and how they facilitate the acquisition of new skills, qualifications and competences. A full picture of skills supply must therefore include a consideration of both the skills of the current labour force and those of the future labour force (which includes those individuals currently acquiring skills but who are not yet in the labour force). It can also include a consideration of how changes in labour force participation and migration affect skills supply.

**Skills imbalance:** A skills imbalance arises when the skills demanded by employers and the skills supplied by individuals in the labour market are not aligned. Types of imbalances include skills shortages, skills surpluses, skills gaps and skills mismatches.

**Skills shortage:** A skills shortage arises when employers require human resources that are not supplied in sufficient quantities by individuals in the labour market. Skills shortages can manifest as an inadequate number of workers in particular occupations. They are associated with hard-to-fill vacancies, wherein jobs cannot be filled due to a lack of individuals with appropriate skills in the labour force.

**Skills surplus:** A skills surplus occurs when the supply of skills in the labour force exceeds the demand for those skills. A skills surplus may be identified through high unemployment rates among individuals possessing a specific skill.

**Skills mismatch:** A skills mismatch occurs when the skills supplied by an individual do not match demand exactly but are sufficiently close for employers to hire the worker. Skills mismatches can refer either to the inadequacy of a worker's skills relative to the requirements of a job (e.g., having a lower level of qualification than that required for the job, or being trained in a field of study other than that generally required for the job), or to a situation in which a worker's skills exceed the requirements of a job (e.g., having a higher level of qualification than that required for the job). A skills mismatch can take one of three forms: a skills gap, a qualification mismatch or a field-of-study mismatch.

**Skills gap:** A skills gap refers to a situation in which a worker lacks a particular skill required for a job.

**Qualification mismatch:** A qualification mismatch may result when a worker's level of education is not in line with the educational qualification required for a job.

**Field-of-study mismatch:** A field-of-study mismatch occurs when a worker is employed in a field that differs from the field in which they are qualified.



PART 1

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# Introduction

There is a need for the consistent and reliable production, analysis and dissemination of national- and sector-level labour market information on which to make informed decisions and base planning, to ensure that the skills available in the country are aligned with the needs of the economy and society.

To this end, the Labour Market Intelligence (LMI) research programme aims to coordinate and conduct research, and share it broadly in support of the Department of Higher Education and Training (DHET)'s goal of building a labour market information system (LMIS) as part of a national skills planning mechanism, to align skills planning with economic planning, and to support sustainable and inclusive economic growth in South Africa.

Within this context, it is important that the platform, as well as all research conducted and disseminated through the programme, be located within a common framework for understanding skills supply, skills demand and the imbalances between these. Central to this is the development of indicators to provide a common basis for policy deliberations. The Conceptual Framework for Skills Supply and Demand lays out the approach to understanding skills supply and demand taken in the LMI research programme. This document should be read in conjunction with that one, and explains a number of indicators consistent with the Conceptual Framework for Skills Supply and Demand.



**PART 2**

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# **Background**

## 2.1 The LMI research programme

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The LMI research programme is implemented by the DHET with support from the National Skills Fund (NSF). The aim of the programme is to establish a credible institutional mechanism for skills planning. The LMI research programme comprises several research projects related to identifying current and future skills needs and shortages; identifying interventions required to address skills needs and shortages; and exploring ideological, philosophical and empirical approaches to understanding the relationship between education and the economy.

The LMI research programme is undertaken to provide labour market intelligence to align South Africa's education and training landscape more closely with the requirements of employers and the structure of the economy. Specifically, within this context, the LMI research programme is undertaken to:

- align skills planning with economic planning;
- identify skills needs across the economy;
- ensure that skills are not a constraint on economic growth; and
- promote the use of labour market intelligence for skills provisioning.

The LMI research programme aims to build intelligence on the demand for skills, the supply of skills and the imbalances between them, with the ultimate goal of informing policy and planning responses to minimise skills imbalances in the future, and of supporting inclusive economic growth for South Africa. It is within this context that this document lays out relevant concepts and indicators for informing skills planning to achieve these goals. Specifically, this document aims to provide a foundation of common understanding for researchers, policymakers, stakeholders in government, and the private sector and civil society, to support the attainment of these goals.

## 2.2 The role of indicators in labour market intelligence

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An indicator is a 'quantitative metric that provides information to monitor performance, measure achievement and determine accountability (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2010). Indicators are an essential information tool for monitoring and managing systems. More specifically, they are useful for:

- adding value to raw data by generating outputs that can be analysed or interpreted, i.e., formulating intelligence;
- measuring advancements and achievements;
- making clear the consistency between activities, outputs, outcomes and goals;
- ensuring legitimacy and accountability to stakeholders by demonstrating progress;
- assessing project and implementation performance;
- supporting resource allocation and target setting; and
- enabling comparability across countries and over time.

By verifying change, indicators provide an opportunity to confirm progress when things go according to plan and provide early warning signals of unexpected outcomes (United Nations Development Program [UNDP], 2002). Constructing indicators is essential to contribute to the functionality of a LMIS. Managing the demand-supply relationship remains the primary goal for skills planning. A fundamental

starting point for skills planning is to acquire the best possible understanding of the demand for skills from employers and supply capabilities of relevant education institutions in the post-secondary sector. Accordingly, the indicators must be grounded in the demand and supply needs of the various individuals, public and private sector employers, and supply institutions, while recognising that labour markets are complex environments in which the expected supply of skills does not match neatly with predicted demand.

In this regard, this document provides and explains with examples a list of indicators relevant for the purposes of labour market intelligence for the post-school education and training (PSET) system. Specifically, it provides indicators for the purposes of labour market intelligence with respect to the following three key components:

- the supply of skills,
- the demand for skills, and
- imbalances between the demand for and supply of skills.

These concepts are explained in more detail in Section 3 below, before providing the list of indicators relevant to these in Sections 5, 6, 7 and 8.



## PART 3

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# The approach to understanding supply, demand and imbalances<sup>1</sup>

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<sup>1</sup> This section draws heavily from the LMI research programme's Conceptual Framework for Skills Supply and Demand.



A skills planning system should aim to align South Africa’s education and training landscape (skills supply) more closely with the requirements of employers and the structure of the economy (skills demand). Accordingly, and very broadly, labour market intelligence for the purposes of skills planning must speak to, first, the demand for skills; second, the supply of skills; and, third, imbalances between the demand for and supply of skills. Indications of any skills imbalances that exist must then be used to inform the action to be taken within the PSET system, to ensure that the supply of skills in the country is adequate for addressing the country’s demand for skills. The most common approach used to measure skills is an indirect approach in which qualifications (educational attainment by orientation and field) are used as a proxy measure of skills supply. Occupations, on the other hand, are used as a measure for skills demand. Both qualifications and occupations are often used to assess imbalances between supply of and demand for labour.

Figure 1 presents the LMI research programme’s guiding framework for understanding skills supply and demand in South Africa within a broader national and global context. The framework illustrates how the three core concepts of skills supply, skills demand and skills imbalances are related to each other, and is described in further detail below.

**FIGURE 1:** Framework for the analysis of skills supply, skills demand and skills imbalances



### 3.1 The global context

A range of factors can either directly or indirectly influence the supply of and demand for skills. In the global context, these range from current events, such as the impact of the Covid-19 pandemic, to long-term trends, such as climate change, the 4IR and de-globalisation. The ability of a government to influence such factors is limited. However, these global factors impact the national context, where the government is more able to exercise its policy levers to achieve desired outcomes. These are discussed in more detail below.

### 3.2 The national context

There are numerous national contextual factors that influence skills supply and demand. In relation to skills supply, the framework identifies the following specific factors:

1. **Demographic trends:** Demographic trends can either increase or decrease the supply of labour. If a country's population is aging, labour supply will be reducing among the working-age population, as more people retire than enter the labour force (Leitner & Stehrer, 2019). On the other hand, if the median age of the population is low, the labour force will expand as more people enter the labour force than leave it (Leitner & Stehrer, 2019).
2. **Schooling:** Schooling influences the labour supply through the attainment of qualifications and skills. Qualifications should provide signals to potential employers that one has certain abilities to fulfil the responsibilities of a job.
3. **Labour force participation:** Labour force participation records the proportion of the working-age population that is either in employment or looking for employment. All other things equal, a higher LFPR is associated with a larger supply of labour, while a lower LFPR is reflected in a smaller supply of labour.

In relation to skills demand, the framework identifies the following factors that are key to understanding skills demand in South Africa:

1. **Economic growth path:** The economic growth path of a country can determine what type of skills are demanded. As government policies steer the South African economy towards particular growth sectors, the pattern of skills demanded by the economy may change in important ways, as the types of skills these sectors require become increasingly important.
2. **Sectoral trends:** The demand for skills may evolve over time as some economic sectors rise and others decline. These shifts can occur for any number of reasons. Over the past decades, for example, South Africa's gold mining sector has declined in relative terms, while the finance sector has grown rapidly, thereby changing the overall pattern of skills demanded by the economy. At the same time, trends within sectors can result in changes to the kinds of skills required. Thus, for example, technological change within the manufacturing sector may change the types of skills demanded by the sector.
3. **Macroeconomic trends:** One key macroeconomic indicator is current and future gross domestic product (GDP) growth. If a country's economy is healthy and the future looks promising, companies will invest, creating additional jobs and, by extension, increasing the demand for skills.

### 3.3 Skills demand

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Understanding the economy's skills requirements is critical. Without a clear sense of the required mix of skills, it is difficult to formulate appropriate policy that will improve the alignment between skills demand and supply. Skills requirements can be understood in terms of either current skills demand or future skills demand and may give rise to policy interventions with different time horizons. Typically, skills demand is measured through occupational demand, as occupations are associated with a certain skill level, even though nomenclature may differ. For example, all workers in managerial occupations are deemed more highly skilled than those employed in clerical occupations.

Generally, current employment is the starting point for analysing current skills demand. However, where particular skills are in short supply, current employment might not reflect the demand for skills; instead, current employment might simply reflect that portion of demand that is satisfied by the supply of skills. Consequently, an accurate assessment of current skills demand should incorporate information arising from current employment patterns, as well as from various other sources, such as job vacancies data.

Future skills requirements are derived on the basis of projections of future skills demand. There are two key concepts that are used to project future skills demand: replacement demand and expansion demand. Replacement demand arises when a worker leaves their job for any reason and needs to be replaced. One important reason for such a departure is retirement, potentially requiring an understanding of the age profile of individuals with the requisite skills. Other reasons include death, emigration and taking a new job elsewhere.

Expansion demand arises as a result of a change in industry demand for labour by occupation. This may be as a result of an increase (or decrease) in sectoral output, technological change or productivity improvements (Gasskov, 2018).

Projecting future employment is done on the basis of historical trends in employment, combined with the expected effects on future employment of a variety of trends and factors, including technological change and government interventions in the economy. At its most basic, projections of future employment may be a simple extrapolation of historical trends applied to current employment. However, more nuanced projections may be obtained from an economic projection model. In effect, these projections are characterisations of the expected economic growth path, which sees predicted skills demand as evolving from current skills demand.

### 3.4 Skills supply

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On the supply side, the stock of skills in the economy is of central interest. An analysis of the current stock of skills (or the current skills supply) is based primarily on an understanding of the labour force's qualifications. It should be noted that analysing skills supply in terms of occupations is not always possible. For example, where a large proportion of the unemployed has never worked before, such as in South Africa, there is a significant gap in our ability to assess the mix of available skills, since such individuals are unable to indicate their occupation or previous occupation.

However, as a country's stock of skills changes over time, it is also important to understand the flow of skills, both into and out of the labour market. Flow variables relevant to skills supply include graduation and enrolment rates across the entire PSET system and within specific fields of study, such as mathematics.

A consideration of future skills supply requires information on variables, such as demographic trends, LFPR and educational qualifications, as described in Section 3.2.

To measure skills supply, formal educational qualifications, such as degrees, certificates or diplomas, are used as a proxy for skill level. However, this measure is imperfect, as it only gives partial information on an individual's skill level: there are other types of skills, such as communication skills, which are not typically captured by formal educational qualifications. This is discussed in greater detail in Section 3.5.

### 3.5 Skills imbalances: intersection of skills demand and supply

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Within the labour market, skills supply is matched against the demand for skills in the economy. In scenarios where skills supply and skills demand are aligned, no specific adjustment or intervention is required in the education and training system. However, misalignment of skills supply and demand leads to skills imbalances that need to be addressed through appropriate policy and implementation actions. Five key concepts relating to skills imbalances are highlighted here:

1. **Skills shortages** arise when skills demand exceeds skills supply. Employers are unable to find staff with the required skills in the labour market at the going rate of pay and under existing working conditions, due to the lack of an adequately skilled workforce. Skills shortages can be measured by considering hard-to-fill vacancies, for example.
2. **Skills surpluses** occur when skills supply exceeds skills demand. Skills surpluses are characterised by a relatively high supply of, but a low demand for, a given skill. They can be identified by a high unemployment rate of skilled workers or extensive outward migration.
3. **Skills mismatches** can refer to the inadequacy of workers' skills relative to the requirements of the jobs they are currently in, or to a situation in which workers' skills exceed those required for their current jobs. Skills mismatches can be measured relative to qualification level, field of study or competencies. Skills mismatches can be identified through qualification or field-of-study mismatches.
4. **Skills gaps** refer to situations in which a worker lacks a particular skill required for a job. The most common approach in the literature to measuring a skills gap is to compare the educational qualifications of the occupation with that of individuals who are currently employed in that occupation. A skills gap is a type of skills mismatch.
5. The **migration gap** is the difference in skill levels between emigrants and immigrants. It is important to note that data to perform this analysis is not currently available in South Africa and is an issue that should be addressed by all relevant stakeholders with the aim of obtaining high-quality, timeous data.

The types of imbalances identified through the considerations of supply relative to demand inform the actions that need to be taken on the supply side (that is, in the education and training system) so that the demand for skills (or the skills requirements) in the economy can ultimately be met by the supply of skills.

Appropriate feedback through identifying skills imbalances, and the decisive action taken in line with that feedback (interventions that address skills imbalances), can result in an adjusted education and training system, which should be able to transform the current stock of skills into a future stock of skills that is better aligned with the skills requirements of the economy. Such a transformation would then narrow the gap between future skills demand and the future supply of skills.

The framework allows skills shortages, surpluses, skills gaps and mismatches to be identified and analysed, so as to guide policy to achieve these outcomes. Furthermore, it allows for economic planning to feed into the objective of aligning supply and demand. While there is a need for responsive supply-side interventions, on the demand side, economic policy and planning must also be cognizant of the supply of skills in the country and target economic growth that is inclusive.

### 3.6 Limitations

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Before proceeding to the various key indicators for skills planning, it is important to highlight some of the conceptual and methodological limitations of the framework.

The information available regarding qualifications has several limitations. Firstly, the data on qualifications only relates to formal qualifications and does not cover other skills or competencies that have been acquired through other methods, such as through workshops or non-accredited online courses. In other words, formal qualifications only provide partial information on the skills that an individual has acquired. Secondly, educational attainment only reflects the current skills at a specific point in time; as time passes, educational qualifications become less relevant in assessing an individual's skill level.

Data on occupations provide a useful measure of skills demand and distribution in an economy. However, it should be noted that workers in the same or similar occupations may have considerably different skill sets, which would be difficult to identify in labour force survey (LFS) data.

Another limitation relates to a lack of data to measure some variables. For example, two key factors related to future skills demand are replacement and expansion demand. However, there is currently no standardised data to measure these two phenomena in South Africa, making it difficult to forecast future skills demand. Likewise, measuring the migration gap is hampered by a lack of high-quality data on immigrants to and emigrants from South Africa.

## PART 4

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# Key indicators for skills planning: structure of the defined concepts and indicators



The key indicators presented in this report are relevant to the framework presented in Figure 1 under four headings:

1. **Contextual indicators** that impact demand and supply at either the global or domestic levels, and form part of the global and national contexts, respectively;
2. **Skills demand indicators** that measure and describe the demand for skills;
3. **Skills supply indicators** that measure and describe the supply of skills; and
4. **Skills imbalances indicators** that reflect the various imbalances between skills demand and skills supply.

The chosen indicators need to be able to both provide an overview of the current supply of, demand for and imbalances of skills, and should be useful in understanding future supply and future demand so that action can be taken today to minimise future imbalance between supply and demand.

In order to achieve this, both stock and flow indicators are considered in this report. A stock indicator is a quantity that is measurable at a particular point in time. In contrast, a flow indicator is a quantity that is measured with reference to a period of time. In the context of the labour market, examples of stock indicators are the number of employed individuals in the first quarter of 2022 or the number of job vacancies in December 2021. In contrast, the change in employment between the first quarters of 2021 and 2022, or the number of workers made redundant during the first quarter of 2022, are examples of flow indicators.

The descriptions of the indicators presented in this report are structured to contain the following elements:

<b>DEFINITION</b>	A statement of meaning of the term or concept.
<b>PURPOSE</b>	Explains why the indicator is important in the context of skills planning.
<b>CALCULATION</b>	Describes how the indicator is calculated.
<b>DATA REQUIRED</b>	Identifies the data required to calculate the indicator.
<b>DATA SOURCE</b>	Describes where the data comes from.
<b>PRACTICAL APPLICATION</b>	Provides an example of how the indicator is used in a real-life setting.
<b>TYPE OF DISAGGREGATION</b>	Indicates how an indicator can be usefully considered at a more disaggregated level (i.e., at the level of sub-groups). The main purpose of disaggregation is to obtain more information about specific groups based on variables such as gender, age and location.
<b>INTERPRETATION</b>	Explores what the indicator tells us within the context of skills planning and what the consequences or limitations are.
<b>LIMITATIONS</b>	Identifies any limitation with the data available for the indicator.
<b>REFERENCES</b>	Provides a list of sources used for each indicator.



PART 5

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# Contextual indicators



## 5.1 Macroeconomic indicators

### 5.1.1 Gross domestic product

<b>DEFINITION</b>	The total monetary or market value of all the finished goods and services produced within a country's borders in a specific period of time.
<b>PURPOSE</b>	Accurate indicator of the size of an economy. Nominal GDP is calculated using current prices. To make comparisons over time, it is better to use real GDP, which accounts for the effect of inflation on the prices of goods and services. Real GDP indicates whether more or fewer goods and services are being produced over time.
<b>CALCULATION</b>	<p>There are three approaches to calculating GDP, namely the expenditure approach, the income approach and the production approach.</p> <p><i>Expenditure approach:</i>  <math>GDP = \text{private consumption} + \text{gross investment} + \text{government investment} + \text{government spending} + (\text{exports} - \text{imports})</math>, or:  <math>GDP = C + I + G + (X - M)</math></p> <p><i>Income approach:</i>  <math>GDP = \text{compensation to employees} + \text{net operating surplus} + \text{consumption of fixed capital}</math>, or:  <math>GDP = CTE + NOS + CFC</math></p> <p><i>Production approach:</i>  <math>GDP = \text{gross value added} + \text{taxes} - \text{subsidies}</math>, or:  <math>GDP = GVA + T - S</math></p>
<b>DATA REQUIRED</b>	GDP estimates are published by Stats SA and the South African Reserve Bank (SARB), and would not need to be calculated by the user.
<b>DATA SOURCE</b>	Stats SA publishes estimates of South Africa's GDP each quarter. The reports are published as the P0441 Statistical Release. It can be downloaded in Excel format from the Stats SA website.
<b>PRACTICAL APPLICATION</b>	'First-quarter GDP growth for this year grew by 1.1% compared with the last quarter of 2020, but the recent bouts of load-shedding have had a devastating impact on businesses in all sectors of the economy and are introducing hardship for citizens' (Liedtke, 2021).
<b>TYPE OF DISAGGREGATION</b>	By geography, such as provinces (sometimes referred to as Gross Geographic Product).
<b>INTERPRETATION</b>	When an economy changes in size, the impact on employment can materialise with a lag. When the economy grows relatively fast, this can lead to skills shortages, because education and training systems cannot respond to employers' expected demand for workers and skills quickly enough. Additionally, when GDP growth is high, firms are expected to hire more workers and may be able to afford to pay higher wages. When GDP growth is slow, firms are more likely to retrench than hire.
<b>LIMITATIONS</b>	GDP does not capture non-market services such as unpaid care, the shadow economy, or adverse environmental impacts, like pollution.

## REFERENCES

Liedtke, S. 2021. Busa says GDP growth has been 'rolled back' by recent bouts of load-shedding. *Creamer Media's Engineering News*. Available: <https://www.engineeringnews.co.za/article/busa-says-gdp-growth-has-been-rolled-back-by-recent-bouts-of-load-shedding-2021-06-10>. (Accessed 7 February 2023).

Stats SA. 2013. What is GDP and its impact? Stats SA. Available: <https://www.statssa.gov.za/?p=1143>. (Accessed 28 February 2023).

### 5.1.2 Gross domestic product per capita

DEFINITION	The sum of gross value added (GVA) by all resident producers in the economy plus any product taxes (less subsidies) not included in the valuation of output, divided by mid-year population.
PURPOSE	GDP per capita is used as a broad measure of the average living standards or economic wellbeing of a country or region.
CALCULATION	This indicator is calculated as follows: $\text{GDP per capita} = \frac{\text{Total GDP of country}_i}{\text{Total population of country}_i}$
DATA REQUIRED	GDP and population size.
DATA SOURCE	Stats SA publishes estimates of South Africa's GDP each quarter. The reports are published as the P0441 Statistical Release. Stats SA also publishes estimates of the South African population each year. The <i>Mid-Year Population Estimates</i> are published in report format as the P0302 Statistical Release. Both statistical releases can be downloaded in Excel format from the Stats SA website.
PRACTICAL APPLICATION	'Not only is Gauteng the province with the largest GDP, but it is also the most populous. Gauteng was home to 14,3 million people in 2017, according to data from Stats SA's <i>Mid-year population estimates</i> report. The province contributed R1,59 trillion to the country's GDP of R4,65 trillion (current prices), translating to R111 171 per person. This makes it the top ranking province in terms of GDP per capita, followed by Western Cape and Free State.' (Stats SA, 2019).
TYPE OF DISAGGREGATION	By geography, such as provinces.
INTERPRETATION	A high GDP per-capita value suggests a country with high living standards, while a low GDP per-capita value suggests a country with low living standards.
LIMITATIONS	GDP per capita does not necessarily give a good representation of the standard of living in countries with high levels of inequality. Furthermore, it does not capture savings, which can be a large source of wealth for certain segments of the population. Finally, the calculation includes children, most of whom do not earn any income. Therefore, countries with many children would have a skewed result, compared to countries with fewer children.

<b>REFERENCES</b>	<p>Kenton, W. 2023. What is Income per capita? Uses, limitations and examples. <i>Investopedia</i>. Available: <a href="https://www.investopedia.com/terms/i/income-per-capita.asp">https://www.investopedia.com/terms/i/income-per-capita.asp</a>. (Accessed 28 February 2023).</p> <p>Stats SA. 2019. <i>Four facts about our provincial economies</i>. Stats SA. Available: <a href="https://www.statssa.gov.za/?p=12056">https://www.statssa.gov.za/?p=12056</a>. (Accessed 28 February 2023).</p> <p>World Bank. 2022a. DataBank: metadata glossary. Available: <a href="https://databank.worldbank.org/metadataglossary/statistical-capacity-indicators/series/5.51.01.10.gdp">https://databank.worldbank.org/metadataglossary/statistical-capacity-indicators/series/5.51.01.10.gdp</a>. (Accessed 28 February 2023)</p>
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### 5.1.3 Gross valued added by sector

<b>DEFINITION</b>	The total monetary or market value of goods and services produced within a particular sector within a country's borders in a specific period of time.
<b>PURPOSE</b>	Estimates of economic output at the sectoral level indicate a country or region's economic structure. If assessed in real terms, it can tell us whether a sector is growing or contracting. Over time, this can guide skills planning.
<b>CALCULATION</b>	For each sector, the calculation is as follows: Gross valued added = GDP + Subsidies on products – Taxes on products
<b>DATA REQUIRED</b>	Economic output estimates at the sectoral level are published by Stats SA and the SARB, and would not need to be calculated by the user.
<b>DATA SOURCE</b>	Stats SA publishes estimates of South Africa's GVA by sector each quarter. The reports are published as the P0441 Statistical Release. They can be downloaded in Excel format from the Stats SA website.
<b>PRACTICAL APPLICATION</b>	'Although far less than in years prior, manufacturing still contributes significantly towards South Africa's GDP. In 2021, the sector contributed 13% of GDP with a gross value added (GVA) of R523-billion (Parker, 2022).
<b>TYPE OF DISAGGREGATION</b>	None.
<b>INTERPRETATION</b>	Identifying high-growth sectors can indicate which sectors are more likely to demand additional labour. By understanding the occupational structure of employment in those sectors, it is possible to begin to identify occupations that are likely to be in higher demand.
<b>LIMITATIONS</b>	The GVA-by-sector approach does not account for non-market services, such as unpaid care, the shadow economy or adverse environmental impacts, like pollution.
<b>REFERENCES</b>	<p>Parker, D. 2022. A 10% increase in manufacturing investment could yield a 13% boost to the economy. <i>Creamer Media's Engineering News</i>. Available: <a href="https://www.engineeringnews.co.za/article/a-10-increase-in-manufacturing-investment-could-yield-a-13-boost-to-the-economy-2022-09-08">https://www.engineeringnews.co.za/article/a-10-increase-in-manufacturing-investment-could-yield-a-13-boost-to-the-economy-2022-09-08</a>. (Accessed 28 February 2023).</p> <p>South African Market Insights. 2023. <i>South Africa's GDP</i> page. Available: <a href="https://www.southafricanmi.com/south-africas-gdp.html">https://www.southafricanmi.com/south-africas-gdp.html</a>. (Accessed March 18, 2024).</p>

## 5.1.4 Value of exports

<b>DEFINITION</b>	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world over a period of time (usually a year). They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees and other services, such as communication, construction, financial, information, business, personal and government services.
<b>PURPOSE</b>	Export value can identify growth sectors and linkage industries that will require skilled and unskilled labour.
<b>CALCULATION</b>	Sum of the value of the goods at the port of exit. Estimates of the value of exports are published by the SARB and would not need to be calculated by the user.
<b>DATA REQUIRED</b>	The value of all goods and services sold to buyers in other countries.
<b>DATA SOURCE</b>	<p>The SARB publishes the value of exports on a quarterly basis as part of its <i>Quarterly Bulletin</i> report.</p> <p>The United Nations Comtrade Database has detailed global trade data by sector and sub-sector. The World Bank's Export of Value Added (EVA) Database provides insight on how sectoral shifts in trade have contributed to the development of the domestic economy, through the analysis of domestic value added in key exporting sectors and their linkages with other sectors of the economy. The Labor Content of Exports Database (LACEX) provides data on the contribution of labour to exports and is useful for the analysis of key employment-generating sectors, including the relative importance of skilled and unskilled labour.</p>
<b>PRACTICAL APPLICATION</b>	'South Africa's export trade continues to set new records, a trend that began during the second year of the Covid-19 pandemic. At just below R170bn, exports for March were a whopping 32% higher than in February and 10% higher than the previous record (in March 2021)' (Botha, 2022).
<b>TYPE OF DISAGGREGATION</b>	Exports in every sector and sub-sector, disaggregated by trading partner.
<b>INTERPRETATION</b>	Export data can guide skills planning, because it can help predict where skills shortages may arise in both export sectors and linkage industries.
<b>LIMITATIONS</b>	Export data does not consider how market changes or political and economic shifts could affect future growth of a sector and its linkage industries.
<b>REFERENCES</b>	Botha, R. 2022. SA exports reach all-time high in March, thanks mainly to coal. <i>Daily Maverick</i> . Available: <a href="https://www.dailymaverick.co.za/article/2022-05-03-sa-exports-reach-all-time-high-in-march-thanks-mainly-to-coal/">https://www.dailymaverick.co.za/article/2022-05-03-sa-exports-reach-all-time-high-in-march-thanks-mainly-to-coal/</a> . (Accessed 28 February 2023).

## 5.1.5 Gross domestic savings rate as a percentage of gross domestic product

<b>DEFINITION</b>	The gross domestic savings rate consists of savings of the household sector, the private corporate sector and the public sector, expressed as a percentage of GDP.
<b>PURPOSE</b>	This measure can act as a proxy for the level of investment in a country, which may stimulate economic growth. Increased investments in human or physical capital, or research and development, will likely lead to higher economic growth in the future.
<b>CALCULATION</b>	$\text{Gross domestic savings rate} = \frac{\text{GDP} - \text{Final consumption expenditure}}{\text{GDP}}$
<b>DATA REQUIRED</b>	The gross domestic savings rate is published by the SARB and would not need to be calculated by the user.
<b>DATA SOURCE</b>	The SARB publishes the gross domestic savings rate (as a percentage of GDP) on a quarterly basis as part of its <i>Quarterly Bulletin</i> report.
<b>PRACTICAL APPLICATION</b>	<p>'South Africa's national saving rate rose to an 11-year high in the first quarter as households and corporates were hesitant to spend in an economy that extended its longest downward cycle since World War II.</p> <p>The rate of national savings as a ratio of gross domestic product climbed to 18% from 14.2% in the three months through December, according to the South African Reserve Bank's Quarterly Bulletin released Tuesday' (Naidoo, 2021).</p>
<b>TYPE OF DISAGGREGATION</b>	None.
<b>INTERPRETATION</b>	Research shows that there is a strong link between the domestic savings rate and economic growth (Bacha, 1990; Otani & Villanueva, 1990; DeGregorio, 1992; Japelli & Pagano, 1994). Additionally, an analysis by Kriekhaus (2002) in 32 countries shows that higher levels of domestic savings led to higher levels of investment, and thus contributed to higher growth rates (Misztal, 2011). Thus, low savings rates may have an adverse impact on employment-generating investment.
<b>LIMITATIONS</b>	During economically challenging times, consumption can stimulate economic activity across sectors. Consumption would reduce gross savings but is imperative to supporting firms and livelihoods.
<b>REFERENCES</b>	<p>Bacha, E.L. 1990. A three-gap model of foreign transfers and the GDP growth rate in developing countries. <i>Journal of Development Economics</i>. 32(2): 279–296.</p> <p>Otani, I. &amp; Villanueva, D. 1990. Long-Term Growth in Developing Countries and Its Determinants: An Empirical Analysis. <i>World Development</i>. 18(6): 769–783.</p> <p>De Gregorio, J. 1992. Economic growth in Latin America. <i>Journal of Development Economics</i>. 39(1): 59–84.</p> <p>Japelli, T. &amp; Pagano, M. 1994. Saving, growth and liquidity constraints. <i>The Quarterly Journal of Economics</i>. 109(1): 83–109.</p> <p>Kriekhaus, J. 2002. Reconceptualizing the developmental state: public savings and economic growth. <i>World Development</i>. 30(10): 1697–1712.</p> <p>Misztal, P. 2011. The relationship between savings and economic growth in countries with different levels of economic development. <i>Financial Internet Quarterly</i>. 7(2): 17–29.</p> <p>Naidoo, P. 2021. South African savings rate at 11-year high on virus uncertainty. <i>Bloomberg</i>. Available: <a href="https://www.bloomberg.com/news/articles/2021-06-29/south-african-savings-rate-at-11-year-high-on-virus-uncertainty">https://www.bloomberg.com/news/articles/2021-06-29/south-african-savings-rate-at-11-year-high-on-virus-uncertainty</a>. (Accessed 28 February 2023).</p>

## 5.1.6 Gross fixed capital formation

DEFINITION	The acquisition of produced assets (including purchases of second-hand assets), including the production of such assets by producers for their own use, minus disposals.
PURPOSE	Gross fixed capital formation (GFCF) is a proxy for domestic investment, which is an important contributor to economic growth.
CALCULATION	<p><i>Type of institution approach:</i></p> <p>GFCF = Private sector GFCF + Public corporation GFCF + General government GFCF</p> <p><i>Type of asset approach:</i></p> <p>GFCF = Residential buildings + Non-residential buildings + Construction works + Transport equipment + Machinery equipment + Computers and other equipment + Transfer costs.</p>
DATA REQUIRED	This data is published by the SARB and is not required to be calculated by the user.
DATA SOURCE	The SARB publishes data on GFCF on a quarterly basis as part of its <i>Quarterly Bulletin</i> report. Cross-country data is also published by the World Bank.
PRACTICAL APPLICATION	'Through the National Development Plan, South Africa has set an official goal of increasing gross fixed capital formation to 30% of gross domestic product (GDP) with the aim of using such spending to create the platform for economic growth and improved service delivery' (Creamer, 2021).
TYPE OF DISAGGREGATION	None.
INTERPRETATION	Theoretically, a rise in investment should contribute to higher aggregate demand and increased productive capacity. Thus, increasing investment should lead to higher economic growth in the long term (if the investment is efficient and skills planning was undertaken to ensure that there is a supply of adequately skilled labour).
LIMITATIONS	GFCF is called 'gross', because the measure does not make any adjustments to deduct the consumption of fixed capital (depreciation of fixed assets) from the investment figures. GFCF is also not a measure of total investment, because only the value of net additions to fixed assets is measured and all kinds of financial assets are excluded, as well as stocks of inventories and other operating costs. Finally, land sales and purchases are excluded from GFCF.
REFERENCES	Creamer, T. 2021. Big business to approach government with solutions for accelerating infrastructure spending. <i>Creamer Media's Engineering News</i> . Available: <a href="https://www.engineeringnews.co.za/article/big-business-to-approach-government-with-solutions-for-accelerating-infrastructure-spending-2021-03-26/">https://www.engineeringnews.co.za/article/big-business-to-approach-government-with-solutions-for-accelerating-infrastructure-spending-2021-03-26/</a> . (Accessed 7 February 2023).

## 5.2 Labour market indicators

### 5.2.1 Labour force participation rate

<b>DEFINITION</b>	The LFPR refers to the share of the working-age population aged 15–64 years currently participating in the labour force (i.e., who are either employed or unemployed).
<b>PURPOSE</b>	The LFPR indicates the extent to which the working-age population is engaged in the labour market. Because the LFPR relates the size of the labour force to the working-age population, changes in the LFPR may be linked to changes in the unemployment rate, as more or fewer working-age adults opt into the labour force.
<b>CALCULATION</b>	<p>The LFPR is calculated by expressing the labour force as a proportion of the working-age population</p> $\text{LFPR} = \frac{\text{Size of the labour force}}{\text{Size of the working-age population}}$ <p>and is expressed as a percentage. Since there are two definitions of the labour force – the narrow and the expanded definitions – it is possible to calculate a narrow LFPR and an expanded LFPR by changing the numerator in the equation above.</p>
<b>DATA REQUIRED</b>	Size of the labour force (or total number of employed and total number of unemployed adults), and the size of the working-age population.
<b>DATA SOURCE</b>	Stats SA Quarterly Labour Force Survey (QLFS).
<b>PRACTICAL APPLICATION</b>	'The labour force participation rate, which measures the working-age population actively engaged in labour by being employed or available to work, was 58.8%; the 2030 target is 65%' (Omarjee, 2018).
<b>TYPE OF DISAGGREGATION</b>	Age, race, gender, educational attainment, geography.
<b>INTERPRETATION</b>	A high LFPR usually indicates a healthy labour market, where job opportunities exist for many workers across the skills spectrum. High LFPRs are also only possible in contexts where there are no constraints to participating in the labour market imposed on large sub-populations. A good example relates to gender: where women are not able to freely access the labour market, LFPRs cannot achieve high levels (Gammarano, 2020). A low LFPR, on the other hand, indicates a sclerotic labour market where job opportunities are scarce. High levels of discouragement lead to large gaps between narrow and expanded participation rates.
<b>LIMITATIONS</b>	The LFPR only describes the level of participation; it does not provide any information on what that participation looks like (i.e., whether labour force participants are employed or unemployed). Furthermore, the indicator does not present information regarding differences in working conditions and job quality among the employed.
<b>REFERENCES</b>	<p>Gammarano, L. 2020. Gendered social norms continue to shape labour force participation, new data show. <i>UN Women</i>. Available: <a href="https://data.unwomen.org/features/gendered-social-norms-continue-shape-labour-force-participation-new-data-show">https://data.unwomen.org/features/gendered-social-norms-continue-shape-labour-force-participation-new-data-show</a>. (Accessed 7 February 2023).</p> <p>Omarjee, L. 2018. Unemployment rate drops to 26.7%. <i>News24</i>. Available: <a href="https://www.news24.com/fin24/Economy/just-in-unemployment-rate-drops-to-267-20180213">https://www.news24.com/fin24/Economy/just-in-unemployment-rate-drops-to-267-20180213</a>. (Accessed 7 February 2023).</p>



## 5.2.2 Employment-to-population ratio

<b>DEFINITION</b>	The number of employed individuals as a percentage of the working-age population (aged 15–64 years).
<b>PURPOSE</b>	This indicator measures the ability of an economy to provide employment to the population.
<b>CALCULATION</b>	<p>The employment-to-population ratio is readily calculated from labour market data as</p> $\text{Employment-to-population ratio} = \frac{\text{Number of employed}}{\text{Working-age population}}$ <p>and is expressed as a percentage.</p>
<b>DATA REQUIRED</b>	Total number of people aged 15–64 years who are employed and the total population aged 15–64 years (the working-age population).
<b>DATA SOURCE</b>	Stats SA, QLFS. Stats SA publishes estimates of the employment-to-population ratio in the QLFS statistical release, referring to it as <i>employed/population ratio (absorption)</i> .
<b>PRACTICAL APPLICATION</b>	‘The absorption rate, which measures the percentage of the working-age population (aged 15 to 64) that is employed, was 37.5%. For women of all races it was 32.4%. In the Eastern Cape only 27.9% of the working-age population is employed... the absorption rate in upper middle-income countries is 60%’ (Gqubule, 2020).
<b>TYPE OF DISAGGREGATION</b>	Gender, race, age, educational level.
<b>INTERPRETATION</b>	The employment-to-population ratio provides information on the number of jobs that are available in the economy (relative to the people who are eligible to work) and, when tracked over time, can be used to compare the relative pace of employment and population growth.
<b>LIMITATIONS</b>	Cross-country comparability may be complicated by differences in the definitions used for employment and population figures. We cannot disentangle the effects of changes in the LFPR and unemployment rate based on the employment-to-population ratio.
<b>REFERENCES</b>	<p>Gqubule, D. 2020. SA’s unemployment is a national disgrace. Available: <a href="https://allafrica.com/stories/202101060764.html">https://allafrica.com/stories/202101060764.html</a>. (Accessed 7 February 2023).</p> <p>ILO. 2020a. <i>ILOSTAT Database description: employment-to-population ratio</i>. Available: <a href="https://ilostat.ilo.org/resources/concepts-and-definitions/description-employment-to-population-ratio/#elementor-toc__heading-anchor-5">https://ilostat.ilo.org/resources/concepts-and-definitions/description-employment-to-population-ratio/#elementor-toc__heading-anchor-5</a>. (Accessed 7 February 2023).</p> <p>Stats SA. 2010. Concepts &amp; definitions for Statistics South Africa, Version 3. Pretoria: Statistics South Africa. Available: <a href="http://www.statssa.gov.za/standardisation/Concepts_and_Definitions_%20StatsSAV3.pdf">http://www.statssa.gov.za/standardisation/Concepts_and_Definitions_%20StatsSAV3.pdf</a> (Accessed 10 February).</p>

### 5.2.3 Unemployment rate

<b>DEFINITION</b>	The unemployment rate is the percentage of the labour force that is unemployed. There are two common definitions of the unemployment rate: under the narrow definition, an individual who is not employed but who is willing and able to work is only regarded as unemployed if they have also searched for a job (or taken steps to start their own business) four weeks prior to being interviewed. The broad unemployment rate includes these individuals, as well as those who have not taken any active steps to either find work or start their own business.
<b>PURPOSE</b>	Provides insight into the share of the labour force that is unemployed.
<b>CALCULATION</b>	<p>The unemployment rate is calculated from labour market data as</p> $\text{Unemployment rate} = \frac{\text{Unemployed}}{\text{Labour force}}$ $= \frac{\text{Unemployed}}{\text{Employed} + \text{Unemployed}}$ <p>and is expressed as a percentage.</p>
<b>DATA REQUIRED</b>	The number of people who are unemployed and size of the labour force. The labour force is calculated as the sum of the employed and the unemployed.
<b>DATA SOURCE</b>	Stats SA QLFS.
<b>PRACTICAL APPLICATION</b>	'South Africa's unemployment rate jumped to a new record high of 32.5% in the fourth quarter of 2020 from 30.8%' (Toyana, Kumwenda-Mtambo & Evans, 2021).
<b>TYPE OF DISAGGREGATION</b>	Gender, age, race, province, educational attainment.
<b>INTERPRETATION</b>	The unemployment rate provides information on the performance of the labour market and the state of the economy. A high and rising unemployment rate suggests a high level of unutilised labour supply and the possibility that an economy is in a recessionary period. Alternatively, a low unemployment rate suggests a healthy labour market and an expanding economy.
<b>LIMITATIONS</b>	The unemployment rate does not convey information regarding the quality of jobs among the employed, the situation of those outside the labour force and the condition of the unemployed. Furthermore, the indicator does not provide the type of unemployment, which has important implications for policy.
<b>REFERENCES</b>	<p>International Labour Organization (ILO). 2019. <i>Quick guide on interpreting the unemployment rate</i>. Geneva: International Labour Office. Available: <a href="https://ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_675155.pdf">https://ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_675155.pdf</a>. (Accessed 7 February 2023).</p> <p>ILO. 2021. <i>ILOSTAT Database description: Unemployment Rate</i>. Available: <a href="https://ilostat.ilo.org/resources/concepts-and-definitions/description-labour-force-statistics/">https://ilostat.ilo.org/resources/concepts-and-definitions/description-labour-force-statistics/</a>. (Accessed 7 February 2023).</p> <p>OECD. 2021. Unemployment rate (indicator). Available: <a href="https://data.oecd.org/unemp/unemployment-rate.htm">https://data.oecd.org/unemp/unemployment-rate.htm</a>. (Accessed on 23 February 2021).</p> <p>Toyana, M., Kumwenda-Mtambo, O. &amp; Evans, C. 2021. South Africa's unemployment rate rises to 32.5% in Q4 2020. <i>Reuters</i>. Available: <a href="https://www.reuters.com/article/uk-safrica-economy-unemployment-idUSKBN2AN0T1">https://www.reuters.com/article/uk-safrica-economy-unemployment-idUSKBN2AN0T1</a>. (Accessed 7 February 2023).</p>

## 5.2.4 Youth not in employment, education or training rate

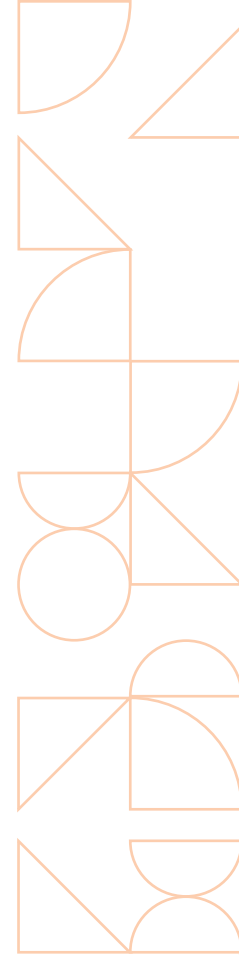
DEFINITION	The share of the youth who are not in employment, education or training (NEET) as a percentage of the total number of the youth. In South Africa, youth are defined as those aged 15–34 years (Stats SA, 2019), although the standard international definition defines youth as aged 15–24 years.
PURPOSE	This indicator serves as a broad measure of untapped youth potential that could contribute to the economy.
CALCULATION	<p>The youth NEET rate is calculated from labour market data as</p> $\text{Youth NEET rate} = \frac{\text{Youth} - \text{Employed youth} - \text{Non-employed youth in education or training}}{\text{Total youth population}}$ <p>and is expressed as a percentage.</p>
DATA REQUIRED	Total number of people aged 15–34 and status of the youth (employed, studying, training or doing none of these three activities).
DATA SOURCE	Stats SA QLFS.
PRACTICAL APPLICATION	‘Statistics South Africa has consistently been measuring the youth NEET rate since 2009. To date a whopping 8.5 million youths (15–34-year-olds) are not in employment, education or training. Millions of young people, the majority of them girls and young women, are not productively engaged. Youth in the Northern Cape province are recorded as the least engaged’ (Ngoma, 2020).
TYPE OF DISAGGREGATION	Gender, race, educational attainment, geography.
INTERPRETATION	A high NEET rate is a cause for concern, because it represents un- or under-utilised human capital. Furthermore, a high NEET rate may also suggest a high level of discouragement among the youth, suggesting they have little hope that their lives will improve.
LIMITATIONS	International comparability may be difficult, due to differences in the definition of employment and participation in education or training. The NEET rate is unable to identify the reasons for low engagement in either employment or education.
REFERENCES	<p>ILO. 2020b <i>ILOSTAT Database description: share of youth not in employment, education or training</i>. Available: <a href="https://ilostat.ilo.org/resources/concepts-and-definitions/description-youth-neet/">https://ilostat.ilo.org/resources/concepts-and-definitions/description-youth-neet/</a>. (Accessed 7 February 2023).</p> <p>Ngoma, A. 2020. A net to catch the NEETs. <i>Mail &amp; Guardian</i>. Available: <a href="https://mg.co.za/opinion/2020-08-21-a-net-to-catch-the-neets/">https://mg.co.za/opinion/2020-08-21-a-net-to-catch-the-neets/</a>. (Accessed 7 February 2023).</p>

## 5.3 Other contextual indicators

### 5.3.1 Population growth rate

<b>DEFINITION</b>	The population growth rate refers to the pace at which the population changes over time.
<b>PURPOSE</b>	The size of the population is an important determinant of the volume of resources required to provide education and training opportunities. A growing population suggests that more resources are required to provide the same level of opportunities per person. A contracting population, on the other hand, creates room for reduced spending or the redirection of existing spending to increase quality.
<b>CALCULATION</b>	<p>The average annual population growth rate is calculated as</p> $\left[ \left( \frac{\text{Population}_{t+n}}{\text{Population}_t} \right)^{\frac{1}{n}} - 1 \right] \times 100$ <p>where <math>t</math> is the earlier or 'base' period and <math>t+n</math> refers to the later period. Where <math>n</math> is equal to one – in other words, when comparing population totals for two consecutive years – this simplifies to</p> $\left( \frac{\text{Population}_{t+1}}{\text{Population}_t} - 1 \right) \times 100$ <p>Population growth rates are expressed as percentages.</p>
<b>DATA REQUIRED</b>	Estimates of the size of the population at the beginning and the end of the period of interest.
<b>DATA SOURCE</b>	<p>Stats SA publishes estimates of the South African population each year, typically in July or August. The <i>Mid-Year Population Estimates</i> are published in report format as the P0302 Statistical Release. They can also be downloaded in Excel format from the Stats SA website. To project the mid-year population, Stats SA uses a model that draws from various data sources, including the census, and international estimates of migration. The model also accounts for the impact of HIV/Aids.</p> <p>The size and structure of the South African population is also estimated independently by other institutions, both locally and internationally. For example, the Actuarial Society of South Africa (ASSA) has its own model that provides estimates of the South African population. A key international data source is the <i>World Population Prospects</i>, published by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. This database includes various historical estimates and future projections of national populations, and various other demographic indicators. Population estimates in various global databases, such as the <i>World Development Indicators</i>, are often taken from the <i>World Population Prospects</i>.</p>
<b>PRACTICAL APPLICATION</b>	'[T]he overall rate of growth for the South African population has increased between 2002 and 2020. The estimated overall growth rate increased from approximately 1,0% for the period 2002–2003 to 1,4% for the period 2019–2020' (Stats SA, 2020a).

<p><b>TYPE OF DISAGGREGATION</b></p>	<p>This indicator can be calculated for various groups within the population. Useful disaggregations for skills planning may include geographical location (e.g., by province, district council, city or town, or for urban/rural areas) and age (e.g., children or youth, or for the school-aged population), providing the basis for more nuanced intelligence for skills planning.</p>
<p><b>INTERPRETATION</b></p>	<p>The population growth rate provides a measure of the rate at which the population is changing over time. From the perspective of skills planning, it provides a sense of how demand for education and training might change over time. The rate of population growth is impacted by the fertility rate (the number of live births per woman), the mortality rate (the number of deaths per 1000 population) and migration.</p>
<p><b>LIMITATIONS</b></p>	<p>Due to differing methodologies and assumptions, population estimates published by Stats SA can differ from those published in international databases by the United Nations and other organisations. Where cross-country comparisons are important, it might be best to use an international data source; however, where cross-country comparisons are not important, a national data source may be preferable. Certainly, should it be required that official statistics are used, Stats SA's <i>Mid-Year Population Estimates</i> should be used.</p> <p>Stats SA continually incorporates new estimates and data into its model, and therefore produces revised historical estimates of the population. For example, the 2020 publication includes the most up-to-date estimates for each year between 2002 and 2020. This means that, when calculating population growth rates, it is best to use estimates from the latest available publication.</p>
<p><b>REFERENCES</b></p>	<p>Stats SA. 2020a. Mid-year population estimates 2020. Statistical Release P0302. Pretoria: Stats SA. Available: <a href="http://www.statssa.gov.za/publications/P0302/P03022020.pdf">http://www.statssa.gov.za/publications/P0302/P03022020.pdf</a>. (Accessed 7 February 2023).</p> <p>UN Population Division, 2019. The 2019 Revision of World Population Prospects. Available: <a href="https://population.un.org/wpp/">https://population.un.org/wpp/</a>. (Accessed 7 February 2023).</p>



### 5.3.2 Poverty headcount ratio (poverty rate)

<b>DEFINITION</b>	The proportion of the population living below the national poverty line.
<b>PURPOSE</b>	The poverty headcount ratio (or the poverty rate) gives an indication of the extent of poverty in a country.
<b>CALCULATION</b>	<p>This indicator is calculated by expressing the number of individuals in poverty as a share of the total population</p> $\text{Poverty Headcount Ratio} = \frac{\text{Number of individuals in poverty}}{\text{Total population}}$ <p>and is expressed as a percentage.</p>
<b>DATA REQUIRED</b>	Income or expenditure by household, household size, total population.
<b>DATA SOURCE</b>	Stats SA regularly publishes official estimates of poverty in South Africa. Estimates are also available from the World Bank, which compiles data from official government sources using national poverty lines.
<b>PRACTICAL APPLICATION</b>	'More than half of South Africans were poor in 2015, with the poverty headcount increasing to 55,5% from a series low of 53,2% in 2011' (Stats SA, 2017).
<b>TYPE OF DISAGGREGATION</b>	Age, race, gender, educational attainment, geography.
<b>INTERPRETATION</b>	The poverty headcount ratio gives an indication of the country's wealth, with a high poverty headcount ratio indicating a poor country and a low poverty headcount ratio suggesting a wealthy country.
<b>LIMITATIONS</b>	The poverty headcount ratio considers everyone equally poor and thus does not measure the intensity of poverty.
<b>REFERENCES</b>	<p>Stats SA. 2017. Poverty on the rise in South Africa. <i>Stats SA</i>. Available: <a href="https://www.statssa.gov.za/?p=10334">https://www.statssa.gov.za/?p=10334</a>. (Accessed 7 February 2023).</p> <p>World Bank. 2022b. DataBank: metadata glossary. Available: <a href="https://databank.worldbank.org/metadataglossary/environment-social-and-governance-(esg)-data/series/SI.POV.NAHC#:~:text=National%20poverty%20headcount%20ratio%20is,national%20poverty%20line(s).&amp;text=Long%20definition-,National%20poverty%20headcount%20ratio%20is%20the%20percentage%20of%20the%20population,subgroup%20estimates%20from%20household%20surveys">https://databank.worldbank.org/metadataglossary/environment-social-and-governance-(esg)-data/series/SI.POV.NAHC#:~:text=National%20poverty%20headcount%20ratio%20is,national%20poverty%20line(s).&amp;text=Long%20definition-,National%20poverty%20headcount%20ratio%20is%20the%20percentage%20of%20the%20population,subgroup%20estimates%20from%20household%20surveys</a>. (Accessed 24 May 2022).</p>

### 5.3.3 Gini coefficient

<b>DEFINITION</b>	A measure that quantifies the level of inequality within a country.
<b>PURPOSE</b>	The Gini coefficient quantifies the extent of inequality within a population.
<b>CALCULATION</b>	The Gini coefficient is easily available from several published sources; therefore, it is normally not necessary to calculate it manually.
<b>DATA REQUIRED</b>	Distribution of income across the population.
<b>DATA SOURCE</b>	Stats SA regularly publishes official estimates of the Gini coefficient based on household survey data it collects. Estimates for countries around the world are available from the World Bank, which compiles the data based on primary household data.
<b>PRACTICAL APPLICATION</b>	“Based on Gini coefficients of consumption (or income) per capita, South Africa, the largest country in Sacu, is the most unequal country in the world, ranking first among 164 countries in the World Bank’s global poverty database,” says the report, which was released on 9 March’ (Stoddard, 2022).
<b>TYPE OF DISAGGREGATION</b>	Not typically disaggregated, although it is possible to calculate Gini coefficients by province, for example.
<b>INTERPRETATION</b>	The Gini coefficient ranges from zero to one, with zero representing perfect equality and one representing perfect inequality. The higher the Gini coefficient, the greater the extent of inequality in a population.
<b>LIMITATIONS</b>	In addition, absolute differences in income are not captured by the Gini coefficient. For example, income equality can increase, while the number of individuals in poverty decreases.
<b>REFERENCES</b>	<p>Chitiga, M., Owusu-Sekyere, E. &amp; Tsoanamastsie, N. 2014. Income inequality and limitations of the Gini index: the case of South Africa. <i>HSRC Review</i>. 12(5): 9–11. Available: <a href="http://www.hsrc.ac.za/en/review/hsrc-review-november-2014/limitations-of-gini-index">http://www.hsrc.ac.za/en/review/hsrc-review-november-2014/limitations-of-gini-index</a>. (Accessed 7 February 2023).</p> <p>Stoddard, E. 2022. South Africa the world’s most unequal country – World Bank report. <i>Daily Maverick</i>. Available: <a href="https://www.dailymaverick.co.za/article/2022-03-13-south-africa-the-worlds-most-unequal-country-world-bank-report/">https://www.dailymaverick.co.za/article/2022-03-13-south-africa-the-worlds-most-unequal-country-world-bank-report/</a>. (Accessed 7 February 2023).</p>



**PART 6**

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# **Skills demand indicators**



## 6.1.1 Employment by occupation and qualification across industry

<b>DEFINITION</b>	The number of individuals employed by occupation and qualification across industries.
<b>PURPOSE</b>	This indicator enables an analysis of the occupational and qualification trends occurring across industries, allowing policymakers to monitor the progress of a country's short-, medium- and long-term goals in relation to employment. The indicator can also provide information on possible future employment trajectories, leading to the identification of future pressure points.
<b>CALCULATION</b>	This indicator is a disaggregation of total employment and would normally be calculated from household survey microdatasets that include variables denoting employment, occupation, qualification and industry. Since occupation and industry information is available at different levels of detail (one-digit, two-digit or more), this indicator can be presented with more or less detail, depending on the user's requirements.
<b>DATA REQUIRED</b>	Microdata with employment, occupation, qualification and industry variables.
<b>DATA SOURCE</b>	Stats SA QLFS.
<b>PRACTICAL APPLICATION</b>	'The unemployment rate among high-skilled people (managers, professionals, technicians, etc.) is currently 2.3%, whereas 90.7% of unemployed people who previously had work were employed in low-skilled occupations (such as domestic workers and general workers) and semi-skilled occupations (such as sales assistants and basic machine operators)' (Staff Writer, 2019).
<b>TYPE OF DISAGGREGATION</b>	Age, gender, race, geography (although disaggregations are not recommended when using more detailed occupational or industry data, due to concerns around sample size).
<b>INTERPRETATION</b>	A substantial positive change in the employment levels of individuals in specific industries in particular occupations or with particular qualifications can indicate an increase in skills demand. Conversely, a substantial decrease in employment levels can indicate a decrease in skills demand. The distribution of employment across occupation or qualification provides a measure of the skills intensity of different industries: higher proportions of high-skilled occupations or higher National Qualifications Framework (NQF)-level qualifications would indicate a greater skills intensity of employment.
<b>LIMITATIONS</b>	Given the nature of survey data in South Africa, this indicator is generally only used at a broad level, either for occupations or for qualifications. This is due to the challenge of small sample sizes, which limit the reliability of the estimates. For that reason, further disaggregations – such as by age, gender or geography – should be approached with caution.
<b>REFERENCES</b>	Staff Writer. 2019. Skills vs employment in South Africa and the truth about getting a job. <i>Business Tech</i> . Available: <a href="https://businesstech.co.za/news/business/332367/skills-vs-employment-in-south-africa-and-the-truth-about-getting-a-job/">https://businesstech.co.za/news/business/332367/skills-vs-employment-in-south-africa-and-the-truth-about-getting-a-job/</a> (Accessed 15 February).

## REPLACEMENT AND EXPANSION DEMAND

### Replacement Demand

Replacement demand is defined as 'the jobs resulting from the departures of workers that need to be filled by new workers' (Willems & de Grip, 1993:173). There are several reasons why workers leave a job, including retirement, death, debilitating sickness or injury, emigration, an offer of a better job elsewhere and, in the case of women especially, family formation (Cedefop, 2010). In South Africa, there is limited data available on key variables such as emigration and number of retirements per year. However, Adelzadeh (2017) has developed a simplified framework to estimate replacement demand.

To begin modelling replacement demand, a starting and ending date must be chosen. In general, the longer the period the better, as it is more likely that large, irregular fluctuations in variables (like the number of people employed) cannot distort results in a meaningful way. After the dates have been finalised, the size of the population cohorts must be compared across the two dates. If the size of the population cohort has decreased between the two dates, then we conclude there has been a net outflow of individuals, implying that some of these individuals need to be replaced. Alternatively, if the size of the population cohort has increased between the two dates, no outflows are assumed and, hence, no replacement demand. An important caveat of this method is that the cohorts are not identical – different individuals are tracked across the different years. However, this is not a problem, as we are concerned only with the size of the various population cohorts. If a net outflow has been established, the analysis then proceeds to estimate the number of job openings that arise from individuals leaving the workforce. To do that, data on gender and age across the workforce is needed, as these are key determinants relating to retirement and mortality (Cedefop, 2010).

### Expansion Demand

Expansion demand refers to 'net new job openings arising from change in industry demand for labour by occupation' (Gasskov, 2018:18). Industry demand can be influenced by the increase (or decrease) of sectoral GDP, technological change and productivity improvements, which may require fewer workers or different types of workers to be hired (Gasskov, 2018). Expansion demand plays an important role in skills planning, as it is used to project the future skills needs of the economy.

Expansion demand is the demand corollary of the skills supply pipeline. It is the flow that takes us from the current demand for skills to the future demand for skills, just like the skills supply pipeline takes us from current supply to future supply. However, unlike the skills supply pipeline, expansion demand cannot easily be observed: data on the number of students enrolled is easily available but firms' expansion plans are not. Furthermore, it is important to note that expansion demand is a concept that emanates from the labour supply and demand model – it is part of the mechanism that moves the model from the present to the future. The combination of these factors makes it difficult to easily quantify expansion demand.

## 6.1.2 Employment growth rate by occupation and qualification across industry

<b>DEFINITION</b>	The rate of change in the number of individuals employed by occupation and qualification across different industries.
<b>PURPOSE</b>	This indicator enables an analysis of the occupational and qualification trends occurring across industries, allowing policymakers to monitor the progress of a country's short-, medium- and long-term goals in relation to employment. The indicator can also provide clues to possible future employment trajectories, leading to the identification of future pressure points.
<b>CALCULATION</b>	<p>The average annual employment growth rate is calculated as</p> $\left[ \left( \frac{\text{Employment}_{t+n}}{\text{Employment}_t} \right)^{\frac{1}{n}} - 1 \right] \times 100$ <p>where <math>t</math> is the earlier or 'base' period and <math>t+n</math> refers to the later period, and the employment totals refer to the occupation- or qualification-specific employment within a particular industry. Where <math>n</math> is equal to one – in other words, when comparing employment totals for two consecutive years – this simplifies to</p> $\left( \frac{\text{Employment}_{t+1}}{\text{Employment}_t} - 1 \right) \times 100$ <p>Employment growth rates are expressed as percentages.</p>
<b>DATA REQUIRED</b>	Microdata with employment, occupation, qualification and industry variables.
<b>DATA SOURCE</b>	Stats SA QLFS.
<b>PRACTICAL APPLICATION</b>	Between 2010 and 2020, the proportion of craft and related trade workers in the wholesale and retail industry with a secondary complete education increased from 30.3% to 33.9%, representing an overall employment growth rate of 11.9% over the period (own calculations, <i>Labour Market Dynamics</i> data [Stats SA, 2021c]).
<b>TYPE OF DISAGGREGATION</b>	Age, gender, race, geography (although disaggregations are not recommended, due to challenges relating to sample size).
<b>INTERPRETATION</b>	Depending on the magnitude and direction of the change in employment, a large, positive change can indicate a large increase in demand for specific occupations with associated qualifications in particular industries. Likewise, negative employment growth might indicate the beginning of a declining industry and the changing economic structure of an economy.
<b>LIMITATIONS</b>	This indicator can only reliably be used for occupations at the one-digit level, as samples for more detailed occupations are typically too small for analytical purposes. This indicator is not able to discern increases in demand for workers with particular occupations or qualifications if there is limited supply of these workers: without the supply of suitable workers, employment will not increase or the increase will be constrained.
<b>REFERENCES</b>	Stats SA. 2021c. <i>Labour Market Dynamics South Africa</i> . [Dataset]. Pretoria: Stats SA.

### 6.1.3 Change in employment intensity

<b>DEFINITION</b>	The change in weekly hours worked of full-time workers over a specified period of time.
<b>PURPOSE</b>	Provides insight into the demand for skills across occupations and industries.
<b>CALCULATION</b>	<p>Change in employment intensity is calculated as the change in the number of hours worked per week relative to the number of hours worked in the base week</p> $\text{Change in employment intensity} = \frac{(\text{Weekly hours worked})_{t+1} - (\text{Weekly hours worked})_t}{(\text{Weekly hours worked})_t}$ <p>where <math>t</math> is the earlier or 'base' week and <math>t+1</math> is the later week. The indicator is expressed as a percentage.</p>
<b>DATA REQUIRED</b>	Microdata with variables denoting employment status, number of hours worked, industry and occupation.
<b>DATA SOURCE</b>	Stats SA QLFS.
<b>PRACTICAL APPLICATION</b>	Between Q3:2021 and Q3:2022, the weekly number of hours worked decreased from 42.1 hours to 41.9 hours, representing a decrease in employment intensity of 0.5% (own calculations, QLFS Q3:2021 [Stats SA, 2021a] and QLFS Q3:2022 [Stats SA: 2022]).
<b>TYPE OF DISAGGREGATION</b>	Occupation and industry.
<b>INTERPRETATION</b>	An increase in employment intensity suggests there has been increased demand for certain skills associated with a specific occupation or industry. In contrast, a decrease in employment intensity suggests the demand for a specific occupation might have decreased.
<b>LIMITATIONS</b>	A reduction or increase in working hours might not reflect an increase or decrease in the demand for skills. For example, average hours for an occupation might decrease if wages have increased substantially over the same period of time.
<b>REFERENCES</b>	<p>DNA Economics. 2020a. <i>Methodologies for Identifying Occupations for the 2020 List of Occupations in High Demand, Critical Skills List, and List of Priority Occupations</i>. Produced for the Department of Higher Education and Training as part of the Labour Market Intelligence research programme.</p> <p>Stats SA. 2021a. Quarterly Q3: 2021. [Dataset]. Pretoria: Stats SA.</p> <p>Stats SA. 2022a. Quarterly Q3: 2022. [Dataset]. Pretoria: Stats SA.</p>

## 6.1.4 Change in employment duration

<b>DEFINITION</b>	The change in the proportion of employees with tenure of less than one year.
<b>PURPOSE</b>	Provides insight into the demand for skills across occupations and industries by considering the patterns of tenure among the employed.
<b>CALCULATION</b>	<p>The change in employment duration is calculated as the rate of change of the number of employees with tenure of less than one year relative to the number of employees with tenure of less than one year in the base year:</p> $\text{Change in employment duration} = \frac{(\text{Employees with tenure} < 1 \text{ year})_{t+1} - (\text{Employees with tenure} < 1 \text{ year})_t}{(\text{Employees with tenure} < 1 \text{ year})_t}$ <p>where <math>t</math> is the earlier or 'base' year and <math>t+1</math> is the later year. The indicator is expressed as a percentage.</p>
<b>DATA REQUIRED</b>	Microdata with variables indicating employment status, number of years worked for current employer, industry and occupation.
<b>DATA SOURCE</b>	Stats SA, QLFS.
<b>PRACTICAL APPLICATION</b>	Between 2020 and 2021, the number of employees who were at their current employer for less than one year was 1 719 177. The corresponding figure between 2021 and 2022 was 2 451 531, which represents a change in employment duration of 42.6% (own calculations, QLFS Q3:2020 [Stats SA, 2020c], Q3:2021 [Stats SA, 2021a], Q4:2021 [Stats SA, 2021b], Q3:2022 [Stats SA, 2022]).
<b>TYPE OF DISAGGREGATION</b>	Occupation and industry.
<b>INTERPRETATION</b>	An increase in the proportion of employees with a job tenure of less than one year suggests that new employees might not have the skills that employers expect, resulting in early termination of their employment. On the other hand, a decrease in the proportion of workers with less than a year's tenure might indicate that employers are content with the skills demonstrated by their employees and are happy to keep them on.
<b>LIMITATIONS</b>	An increase or reduction in the proportion of workers with less than one year may be due to other factors besides the increase or decrease in the demand for skills. For example, during a recession, hiring activity typically slows down, which would typically result in an increase in job tenure, as inexperienced workers are not hired. Alternatively, employers may have offered more cost-effective short-term contracts, resulting in a higher proportion of employees with less work experience, but which is not a reflection of the current skills base in the labour market.
<b>REFERENCES</b>	<p>DNA Economics. 2020a. <i>Methodologies for Identifying Occupations for the 2020 List of Occupations in High Demand, Critical Skills List, and List of Priority Occupations</i>. Produced for the Department of Higher Education and Training as part of the Labour Market Intelligence research programme.</p> <p>Stats SA. 2020c. Quarterly Q3: 2020. [Dataset]. Pretoria: Stats SA.</p> <p>Stats SA. 2021a. Quarterly Q3: 2021. [Dataset]. Pretoria: Stats SA.</p> <p>Stats SA. 2021b. Quarterly Q4: 2021. [Dataset]. Pretoria: Stats SA.</p> <p>Stats SA. 2022a. Quarterly Q3: 2022. [Dataset]. Pretoria: Stats SA.</p>

## 6.1.5 Growth rate of average gross earnings across industry

<b>DEFINITION</b>	This indicator measures the rate of change over a specified period of time of average earnings at the industry level.
<b>PURPOSE</b>	This indicator reflects the performance of the sector as expressed by the wages it pays, and may indicate pressures in terms of skills demand relative to skills supply (wage pressure increases signalling excess demand).
<b>CALCULATION</b>	<p>Depending on the data available, average gross earnings within a particular industry is calculated in one of two ways. For aggregated data, average gross earnings is calculated as:</p> $\text{Average gross earnings} = \frac{\text{Value of total gross earnings across all workers in the industry}}{\text{Number of workers in the industry}}$ <p>For individual-level microdata, average gross earnings is calculated as the mean of gross earnings across workers in the given industry. In both instances, the result would be expressed in terms of rands per worker.</p> <p>The average growth rate is calculated as</p> $\left[ \left( \frac{\text{Average gross earnings}_{t+n}}{\text{Average gross earnings}_t} \right)^n - 1 \right] \times 100$ <p>where <math>t</math> is the earlier or 'base' period and <math>t+n</math> refers to the later period. Where <math>n</math> is equal to one – in other words, when comparing average gross earnings for two consecutive years – this simplifies to</p> $\left( \frac{\text{Average gross earnings}_{t+n}}{\text{Average gross earnings}_t} - 1 \right) \times 100$ <p>and is expressed as a percentage. If the average gross earnings data is not deflated to account for inflation, the resulting growth rate will be a nominal growth rate and will include the impact of inflation on wages. Comparisons using real gross earnings data are preferred in most instances.</p>
<b>DATA REQUIRED</b>	Gross earnings for all employees per industry, and the total number of employees in those industries, or microdata including variables indicating employment status, gross earnings and industry.
<b>DATA SOURCE</b>	Stats SA Quarterly Employment Statistics (QES) and QLFS.
<b>PRACTICAL APPLICATION</b>	According to Insurance Sector Education and Training Authority (Inseta) (2022), between 2016 and 2021, the average gross monthly earnings in the insurance sector increased from R47 653 per month to R52 508 per month. This represented an annual growth rate of 2.0% (own calculations, QES data [Stats SA, 2020b]).
<b>TYPE OF DISAGGREGATION</b>	Gender, age, race.
<b>INTERPRETATION</b>	Movements in average gross earnings can be affected by changes in both the level of earnings per employee and in the composition of the employed. A positive change in average earnings can represent an increased demand for occupations in that industry, a higher skillset of individuals who have entered the industry or predominantly lower-skilled individuals exiting the sector. Likewise, a decrease in average earnings can represent a lower demand for occupations in that sector, people with lower skillsets entering the industry or predominantly higher-skilled individuals exiting the sector.

LIMITATIONS	<p>QLFS data does not capture wages perfectly, with some respondents reporting net earnings rather than gross earnings. Furthermore, high non-response rates among certain groups could provide a false impression of wage levels.</p> <p>QES data excludes agriculture and the informal sector. Furthermore, it does not distinguish between full-time and part-time workers, and the data cannot be disaggregated further.</p>
REFERENCES	<p>Insurance Sector Education and Training Authority (INSETA). 2022. <i>2023–24 INSETA Sector Skills Plan Submission</i>. Available: <a href="https://inseta.org.za/wp-content/uploads/2022/10/INSETA-SECTOR-SKILLS-PLAN-SSP.pdf">https://inseta.org.za/wp-content/uploads/2022/10/INSETA-SECTOR-SKILLS-PLAN-SSP.pdf</a>. (Accessed 28 February 2023).</p> <p>Stats SA. 2020b. <i>Quarterly Employment Statistics</i>. Pretoria: Stats SA. Available: <a href="https://www.statssa.gov.za/?page_id=1866&amp;PPN=P0277&amp;SCH=73245">https://www.statssa.gov.za/?page_id=1866&amp;PPN=P0277&amp;SCH=73245</a>. (Accessed 7 February 2023).</p>

### 6.1.6 Wage percentile ratio

DEFINITION	The wage percentile ratio is the ratio of wage incomes of workers located at different percentiles in the income distribution.
PURPOSE	Provides an indication of the extent of wage inequality in the labour force.
CALCULATION	$\text{Wage percentile ratio} = \frac{\text{Value of wage at } n^{\text{th}} \text{ percentile}}{\text{Value of wage at } m^{\text{th}} \text{ percentile}}$ <p>where <math>n &gt; m</math>. For example, the p90/p50 wage ratio compares the average wage at the 90<sup>th</sup> percentile with the average wage at the 50<sup>th</sup> percentile.</p>
DATA REQUIRED	Wages across the earnings distribution. Using microdata, the employed are divided into 100 equal groups and the average wage is calculated for each of these percentiles. Microdata, including variables relating to employment status and wages, is required, as well as any variables needed for chosen disaggregations.
DATA SOURCE	Stats SA <i>Labour Market Dynamics</i> .
PRACTICAL APPLICATION	‘These inequality estimates rank South Africa as one of the most unequal in the world. Broeke et al. (2017) showed various inequality measures for gross hourly wages across 29 OECD countries from two rounds of a comparable survey, the Survey of Adult Skills. The lowest p90/p50 ratio was 1.56 in Denmark and the highest was 3.33 in Turkey. In the latest GHS, it was 5, whilst it was just under 6 in the QLFS’ (Kerr, 2021).
TYPE OF DISAGGREGATION	Gender, age, race, occupation, industry, province.
INTERPRETATION	An increase in the wage percentile ratio over time indicates that wage inequality – with reference to the chosen percentiles – is worsening, while a decrease indicates that wage inequality is narrowing.
LIMITATIONS	Wage percentile ratios ignore incomes between the two deciles of interest, and incomes above the higher decile and below the lower decile. They therefore provide a very specific view of inequality.
REFERENCES	<p>Kerr, A. 2021. <i>Measuring earnings inequality in South Africa using household survey and administrative tax microdata</i>. SA-TIED Working Paper No. 180.</p> <p>Trapeznikova, I. 2019. <i>Measuring income inequality</i>. <i>IZA World of Labor</i>. Available: <a href="https://wol.iza.org/articles/measuring-income-inequality/long">https://wol.iza.org/articles/measuring-income-inequality/long</a>. (Accessed 7 February 2023).</p>

## 6.1.7 Median wage growth

<b>DEFINITION</b>	The change in median wages over a specified period of time.
<b>PURPOSE</b>	This indicator enables an analysis of how wages in the middle part of wage distribution have changed over time.
<b>CALCULATION</b>	<p>Median wage growth is calculated as the percentage change in median wages between two periods, designated as <math>t</math> and <math>t-1</math>:</p> $\text{Median wage growth} = \frac{\text{Median wage}_t - \text{Median wage}_{t-1}}{\text{Median wage}_{t-1}}$
<b>DATA REQUIRED</b>	Microdata that includes wages for all workers. In order to measure real growth, a price index (such as the Consumer Price Index [CPI]) is also needed to deflate the wage data.
<b>DATA SOURCE</b>	Stats SA <i>Labour Market Dynamics</i> .
<b>PRACTICAL APPLICATION</b>	'The private sector real median grew from R2 435 to R3 358, while the public sector median growth was flatter (in percentage terms), growing from R7 499 to R8 394' (Finn, 2015).
<b>TYPE OF DISAGGREGATION</b>	Gender, age, race, occupation, industry, province, sector (public/private).
<b>INTERPRETATION</b>	An increase in the real median wage is associated with rising demand for labour and a robust labour market. Likewise, a decrease in the real median wage is associated with a sclerotic labour market and challenging economic conditions.
<b>LIMITATIONS</b>	Changes in the median wage can be misleading, due to the changes in demographic characteristics of the samples across the two time periods (Wood, 2016).
<b>REFERENCES</b>	<p>Finn, A. 2015. A national minimum wage in the context of the South African labour market. <i>National Minimum Wage Research: Working Paper Series No.1</i>. University of the Witwatersrand. Available: <a href="https://nationalminimumwage.co.za/wp-content/uploads/2015/09/NMW-RI-Descriptive-Statistics-Final.pdf">https://nationalminimumwage.co.za/wp-content/uploads/2015/09/NMW-RI-Descriptive-Statistics-Final.pdf</a>. (Accessed 7 February 2023).</p> <p>Wood, J. 2016. How meaningful are median household income estimates? Available: <a href="https://gardner.utah.edu/how_meaningful_are_median_household_income_estimates/">https://gardner.utah.edu/how_meaningful_are_median_household_income_estimates/</a>. (Accessed 7 February 2023).</p>



## OCCUPATIONS IN HIGH DEMAND

A key output related to skills demand and skills imbalances in the LMI research programme is the List of Occupations in High Demand (OIHD). As outlined by DNA Economics (2020b), the purpose of this list, inter alia, is to:

- signal the potential for creating new educational qualifications;
- act as a signal for enrolment planning; and
- provide information on careers to learners and work-seekers.

Conceptually, an occupation is considered in high demand if it has exhibited strong employment growth in the past or present and potentially in the future; if it has been identified as being in shortage; or, if it is a novel occupation that is expected to increase in demand, due either to technological change or through strategic focus by the government (DNA Economics, 2020b). DNA Economics (2020b) apply a rigorous quantitative approach to identifying such occupations: they use nine indicators to measure multiple dimensions: employment pressure, wage pressure, vacancy pressure and strategic demand. Examples of such indicators include:

- employment growth;
- mean wage growth; and
- vacancy duration.

By creating an index based on these nine indicators, occupations that score above the 75<sup>th</sup> percentile are deemed to be in high demand. Examples of such occupations include hotel managers, chemical engineers, dentists and software developers.

For more information on the construction of OIHD, as well as the associated occupations, please refer to the *2020 List of Occupations in High Demand: A Technical Report* (DNA Economics, 2020b).

A vertical decorative bar on the left side of the page, featuring a repeating pattern of white geometric shapes (squares, circles, and triangles) on an orange background. The shapes are arranged in a grid-like fashion, with some overlapping and some cut off by the edges of the bar.

**PART 7**

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# **Skills supply indicators**

## 7.1.1 National Senior Certificate pass rate

DEFINITION	The proportion of learners in the cohort writing the examination who fulfil the NSC examination pass requirements.
PURPOSE	The NSC pass rate is used to monitor the supply of students available to move from Grade 12 into PSET institutions, and to understand the quantity and quality of the pool that progresses to higher education institutions (HEIs).
CALCULATION	<p>The NSC pass rate is calculated by expressing the number of candidates who fulfilled the NSC pass requirements as a proportion of the number of candidates who wrote the NSC examinations</p> $\text{NSC pass rate} = \frac{\text{Candidates who fulfilled the NSC pass requirements}}{\text{Candidates who wrote the NSC examinations}}$ <p>and is expressed as a percentage.</p>
DATA REQUIRED	Total number of candidates who wrote the NSC examinations in a given year and the total number who passed in that year.
DATA SOURCE	Department of Basic Education (DBE): NSC database.
PRACTICAL APPLICATION	'South Africa's pass rate has increased from 78.2% in 2018 to 81.3% for the class of 2019' (Mabuza & Masweneng, 2020).
TYPE OF DISAGGREGATION	Subject, geography, gender, age, race, school.
INTERPRETATION	This indicator measures the number and proportion of students who have obtained at least 40% in their home language, at least 40% in two other subjects and at least 30% in two other subjects.
LIMITATIONS	This indicator on its own is not considered a true reflection of the educational quality in the country, due to the high levels of repetition in earlier grades and the inability of the indicator to capture the proportion of students who drop out of the schooling system prematurely.
REFERENCES	<p>DBE. 2018. <i>NSC examinations 2018: technical report</i>. Republic of South Africa: DBE.</p> <p>Mabuza, E. &amp; Masweneng, K. 2020. 81.3% pass rate for class of 2019. <i>Times Live</i>. Available: <a href="https://www.timeslive.co.za/news/south-africa/2020-01-07-813-pass-rate-for-class-of-2019/">https://www.timeslive.co.za/news/south-africa/2020-01-07-813-pass-rate-for-class-of-2019/</a>. (Accessed 7 February 2023).</p>

## 7.1.2 National Senior Certificate Bachelor's pass rate

DEFINITION	The proportion of learners in the cohort writing the NSC examination who achieved a Bachelor's pass.
PURPOSE	Provides an indication of the potential number and proportion of students who can enter a university or a university of technology.
CALCULATION	<p>The NSC Bachelor's pass rate is calculated by expressing the number of candidates who passed the NSC examinations at the Bachelor's level as a proportion of the number of candidates who wrote the NSC examinations</p> $\text{NSC Bachelor's pass rate} = \frac{\text{Candidates who passed the NSC examinations at the Bachelor's level}}{\text{Candidates who wrote the NSC examinations}}$ <p>and is expressed as a percentage.</p>
DATA REQUIRED	Total number of candidates who wrote the NSC examinations in a given year and the total number who achieved a Bachelor's pass in that year.

<b>DATA SOURCE</b>	DBE: NSC database.
<b>PRACTICAL APPLICATION</b>	'Nationally, bachelors passes improved by eight percentage points in 2019 compared to 2018 with 36.9% of candidates qualifying to apply for bachelor studies' (Nicolson & Mthethwa, 2020).
<b>TYPE OF DISAGGREGATION</b>	Geography, gender, age, race, school.
<b>INTERPRETATION</b>	This indicator measures the number and proportion of students who have obtained at least 40% in their home language, at least 50% in four High Credit <sup>1</sup> subjects and at least 30% in two other subjects. A higher Bachelor's pass rate suggests a larger pool of individuals who qualify to enter the higher education system and is therefore an indicator relating to the supply of skills.
<b>LIMITATIONS</b>	This indicator on its own is not considered a true reflection of the educational quality in the country, due to the high levels of repetition in earlier grades and the inability of the indicator to capture the proportion of students who drop out of the schooling system prematurely.
<b>REFERENCES</b>	DBE. 2018. <i>NSC examinations 2018: technical report</i> . Republic of South Africa: DBE. Nicolson, G. & Mthethwa, A. 2020. Record pass rate for matrics of 2019. <i>Daily Maverick</i> . Available: <a href="https://www.dailymaverick.co.za/article/2020-01-08-record-pass-rate-for-matrics-of-2019/">https://www.dailymaverick.co.za/article/2020-01-08-record-pass-rate-for-matrics-of-2019/</a> . (Accessed 7 February 2023).

### 7.1.3 Highest level of education among the employed

<b>DEFINITION</b>	The highest level of education completed by employed individuals.
<b>PURPOSE</b>	Changes in the highest level of education among the employed can highlight several significant trends in the labour market.
<b>CALCULATION</b>	This indicator is essentially a disaggregation of total employment. It would normally be calculated using household survey microdatasets that include variables denoting employment and education.
<b>DATA REQUIRED</b>	Microdata with employment and education variables.
<b>DATA SOURCE</b>	Stats SA QLFS.
<b>PRACTICAL APPLICATION</b>	'On average, across the primary, secondary, and tertiary sectors, there has been an increase in: <ul style="list-style-type: none"> <li>• The number of employed with incomplete secondary schooling, from 4.7 million to 5.4 million people, representing an annual average growth rate of 1.2 percent;</li> <li>• The number of employed with completed secondary schooling, from 4.1 million to 5.3 million people, representing an annual average growth rate of 2.6 percent;</li> <li>• The number of employed with diplomas or certificates, from 1.7 million to 2 million people, representing an annual average growth rate of 1.9 percent; and</li> <li>• The number of employed with degrees, from 0.99 million to 1.5 million, representing an annual average growth rate of 4.1 percent, the highest of any educational cohort' (Asmal et al., 2020: 81).</li> </ul>
<b>TYPE OF DISAGGREGATION</b>	Gender, race, age, industry, occupation, geography.

<sup>1</sup> The following subjects qualify as High Credit subjects: all languages; accounting; agricultural science; business studies; consumer studies; dramatic arts; economics; engineering, graphics and design; geography; history, information technology; life sciences; mathematics; mathematical literacy; music; physical sciences; religion studies; visual arts.

<b>INTERPRETATION</b>	Higher levels of educational attainment are associated with higher employment rates, better labour market opportunities and higher earnings. When this indicator is examined over time, it can provide insight into the skills (as proxied by educational qualifications) demanded by employers.
<b>LIMITATIONS</b>	Educational attainment is not the best proxy for skills, especially skills that are difficult to measure, such as soft skills. Furthermore, educational attainment does not assess the quality of the education received.
<b>REFERENCES</b>	Asmal, Z., Bhorat, H., Culligan, S., Hofmeyr, H., Monnakgotla, J., Oosthuizen, M. & Rooney, C. 2020. Skills supply and demand in South Africa. Labour Market Intelligence Programme.

### 7.1.4 Highest level of education among the unemployed

<b>DEFINITION</b>	The highest level of educational attainment among the unemployed.
<b>PURPOSE</b>	This indicator can show the type of educational qualifications where demand for skills might not be particularly strong relative to supply.
<b>CALCULATION</b>	This indicator is essentially a disaggregation of total employment. It would normally be calculated from household survey microdatasets that include variables denoting unemployment and education.
<b>DATA REQUIRED</b>	Microdata with employment status and education variables.
<b>DATA SOURCE</b>	Stats SA QLFS.
<b>PRACTICAL APPLICATION</b>	'There was a decline in the number and share of the unemployed with primary or lower education (from 16.8 percent in Q2 2009 to 10.6 percent in Q2 2019). This decline, again, may be reflective of falling numbers of individuals in the population with this level of education. There was an increase in unemployment for all other education groups, with the greatest increase in absolute terms seen among those with incomplete secondary education (an increase of 1.2 million individuals, accounting for almost half of the increase in unemployment over the decade). While accounting for relatively smaller portions of the increase, the high growth rate in unemployment among those with diplomas and degrees remains of concern. The number of unemployed graduates increased from 38 000 in Q2 2009 to 149 000 in Q2 2019 – a more than six-fold increase' (Asmal et al., 2020: 58).
<b>TYPE OF DISAGGREGATION</b>	Gender, race, age, geography.
<b>INTERPRETATION</b>	This measure can provide insight into the educational qualifications that are not demanded by employers and can therefore provide policymakers with a signal of the educational qualifications currently considered inadequate by the labour market.
<b>LIMITATIONS</b>	Educational attainment is not the best proxy for skills, especially skills that are difficult to measure, such as soft skills. Furthermore, educational attainment does not assess the quality of the education received.
<b>REFERENCES</b>	Asmal, Z., Bhorat, H., Culligan, S., Hofmeyr, H., Monnakgotla, J., Oosthuizen, M. & Rooney, C. 2020. Skills supply and demand in South Africa. Labour Market Intelligence Programme.

## 7.1.5 Graduate unemployment rate by qualification

DEFINITION	The proportion of economically active graduates who are unemployed by qualification.
PURPOSE	Provides insight into the proportion of graduates who are unemployed by qualification.
CALCULATION	<p>For each qualification, the graduate unemployment rate is calculated from labour market data as</p> $\text{Graduate unemployment rate} = \frac{\text{Unemployed graduates}}{\text{Economically active graduates}}$ $= \frac{\text{Unemployed graduates}}{\text{Employed graduates} + \text{Unemployed graduates}}$ <p>and is expressed as a percentage.</p>
DATA REQUIRED	Number of graduates who are unemployed, their educational qualifications and size of the graduate labour force. The labour force is calculated as the sum of the employed graduates and unemployed graduates.
DATA SOURCE	Stats SA QLFS.
PRACTICAL APPLICATION	'The career category with the most unemployed respondents (23.1%) was human resources, industrial psychology and labour relations. About 15.4% of the unemployed graduates had majored in government or political studies. Another 15.4% had majored in accounting or finance and 11.5% in economics, psychology or sociology' (Mncayi, 2021).
TYPE OF DISAGGREGATION	Gender, race, age, province.
INTERPRETATION	The graduate unemployment rate by qualification provides information about which qualifications are valued most highly by the labour market. A high graduate unemployment rate in a specific qualification may indicate that there are too few jobs for the number of graduates. Alternatively, a qualification associated with a low unemployment rate may indicate high demand for such graduates.
LIMITATIONS	The graduate unemployment rate does not convey information regarding the quality of jobs among the employed graduates, the situation of those outside the graduate labour force and the condition of the unemployed graduates. Furthermore, the graduate unemployment rate does not convey the type of unemployment experienced by unemployed graduates, which has important implications for policy.
REFERENCES	Mncayi, N.P. 2021. South African graduates may be mostly employed, but skills and jobs often don't match. <i>News24</i> . Available: <a href="https://www.news24.com/citypress/careers/south-african-graduates-may-be-mostly-employed-but-skills-and-jobs-dont-match-20210713">https://www.news24.com/citypress/careers/south-african-graduates-may-be-mostly-employed-but-skills-and-jobs-dont-match-20210713</a> . (Accessed 7 February 2023).

## 7.1.6 The educational attainment of occupational groups

<b>DEFINITION</b>	This indicator measures the education levels of occupational groups over a specified period of time.
<b>PURPOSE</b>	Changes in the occupational skill structure over time can inform policymakers of the type of educational qualifications demanded by the labour market.
<b>CALCULATION</b>	This indicator is essentially a disaggregation of total employment by occupation. It would normally be calculated from household survey microdatasets that include variables denoting occupation and educational attainment.
<b>DATA REQUIRED</b>	Microdata with variables that indicate employment status, occupation and educational attainment.
<b>DATA SOURCE</b>	Stats SA QLFS.
<b>PRACTICAL APPLICATION</b>	Between 2010 and 2020, the proportion of technical and association professionals with a tertiary education increased from 53.5% to 54.7%, representing an overall increase of 2.2% (own calculations, <i>Labour Market Dynamics</i> data).
<b>TYPE OF DISAGGREGATION</b>	Gender, race, age.
<b>INTERPRETATION</b>	If education levels are rising (on average) in occupational groups, this could indicate the presence of skills-biased technological change or higher requirements on the part of employers, which has implications for skills planning – specifically the degree to which the education system can supply a sufficient number of graduates with the right level of education.
<b>LIMITATIONS</b>	Analysis of occupations can only be conducted at the one- or two-digit level because the sample size in the QLFS is too small to allow for a more granular analysis. This prevents researchers from providing information regarding specific occupations beyond the two-digit level.
<b>REFERENCES</b>	OECD. 2019. <i>Education at a glance 2019: South Africa</i> . Available: <a href="https://www.oecd.org/education/education-at-a-glance/EAG2019_CN_ZAF.pdf">https://www.oecd.org/education/education-at-a-glance/EAG2019_CN_ZAF.pdf</a> . (Accessed 7 February 2023).

## 7.1.7 Overall graduation rates from higher education institutions

DEFINITION	The number of students in HEIs who graduated in a particular year (irrespective of the first year of study), expressed as a percentage of the total number of students in higher education enrolled in that particular year.
PURPOSE	The indicator provides an indication of future skills supply in the labour market.
CALCULATION	<p>The HEI graduation rate is calculated as the ratio of the number of students graduating from HEIs in a given year to the total number of students enrolled at HEIs in that year</p> $\text{HEI graduation rate} = \frac{\text{Graduating HEI students}}{\text{Total students enrolled at HEIs}}$ <p>and is expressed as a percentage.</p>
DATA REQUIRED	Total number of graduating students and total number of enrolled students in HEIs.
DATA SOURCE	DHET: Higher Education Management Information System (HEMIS).
PRACTICAL APPLICATION	'Graduation rates (the number of students who graduate divided by the total number of students enrolled in that year) in public universities stood at 20.8% in 2016, which represents a substantial improvement. Females have a higher graduation rate (21.9%) than males (19.3%), a gap that has widened. Whites maintain the highest graduation rate, although graduation rates improved for all population groups' (DHET, 2019a).
TYPE OF DISAGGREGATION	Gender, race, field of study, institution (type).
INTERPRETATION	A higher graduation rate suggests a more efficient higher education system: many students who enter the higher education system graduate, increasing the available supply of skills. A lower graduation rate suggests a number of inefficiencies within the higher education system and a potential waste of human potential.
LIMITATIONS	Intercountry comparisons rely heavily on the extent to which countries have used consistent field definitions. Detailed or aggregate information may not be fully comparable at the international level due to exclusions, the double counting of students, partial data, etc. Furthermore, differences in duration, intensity and degree of theoretical and applied content can bias comparisons between countries.
REFERENCES	<p>DHET. 2019a. <i>Post-school education and training monitor: macro-indicator trends</i>. Pretoria: DHET. Available: <a href="https://www.dhet.gov.za/SiteAssets/Post-School%20Education%20and%20Training%20Monitor%20Report_March%202019.pdf">https://www.dhet.gov.za/SiteAssets/Post-School%20Education%20and%20Training%20Monitor%20Report_March%202019.pdf</a>. (Accessed 7 February 2023).</p> <p>UNESCO. 2009. <i>Education indicators: technical guidelines</i>. Available at: <a href="http://uis.unesco.org/sites/default/files/documents/education-indicators-technical-guidelines-en_0.pdf">http://uis.unesco.org/sites/default/files/documents/education-indicators-technical-guidelines-en_0.pdf</a>. (Accessed 7 February 2023).</p>



## 7.1.8 Gross enrolment ratio in higher education

DEFINITION	The total enrolment in tertiary education, regardless of age, expressed as a percentage of the total population of those aged 20–24 years.
PURPOSE	The indicator considers the rate at which new entrants into higher education are being absorbed. A low GER suggests there is a large population of potential students without access to HEIs. In contrast, a high GER suggests higher education is accessible to a large proportion of the population.
CALCULATION	<p>The gross enrolment ratio (GER) in higher education is calculated by expressing the number of students in HEIs as a proportion of the population aged 20–24 years</p> $\text{Higher education GER} = \frac{\text{Students in HEIs}}{\text{Population aged 20–24 years}}$ <p>and is expressed as a percentage.</p>
DATA REQUIRED	Number of graduates enrolled in HEIs and the size of the population aged 20–24 years.
DATA SOURCE	DHET: HEMIS; Stats SA <i>Mid-year Population Estimates</i> .
PRACTICAL APPLICATION	‘The Gross Enrolment Ratio for black African students at public universities sits at 20 percent, while that of white students sits at about 49 percent’ (Khuluvhe et al., 2021).
TYPE OF DISAGGREGATION	Gender, race.
INTERPRETATION	An increase in the GER is regarded as a positive sign, as it could translate into an increase in skills supply. However, this is not a certainty, given the high dropout rate at South African universities. A low enrolment ratio could also indicate a lack of financial access for students or capacity constraints within the higher education sector.
LIMITATIONS	In certain instances, the GER can exceed 100%, due to the inclusion of students who either under- or over-aged. The GER cannot provide information on why this is the case, whether it be through a large number of early (or late) entrants or due to high repetition rates.
REFERENCES	<p>Khuluvhe, M., Netshifhefhe, E., Ganyaupfu, E &amp; Negogogo, V. 2021. Post-school education and training monitor: macro-indicator trends. Pretoria: DHET. Available: <a href="https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Post-School%20Education%20and%20Training%20Monitor%20-%20Macro-Indicator%20Trends%20-%20March%202021.pdf">https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Post-School%20Education%20and%20Training%20Monitor%20-%20Macro-Indicator%20Trends%20-%20March%202021.pdf</a>. (Accessed 7 February 2023).</p> <p>UNESCO. 2009. Education indicators: technical guidelines. Available at: <a href="http://uis.unesco.org/sites/default/files/documents/education-indicators-technical-guidelines-en_0.pdf">http://uis.unesco.org/sites/default/files/documents/education-indicators-technical-guidelines-en_0.pdf</a>. (Accessed 7 February 2023).</p> <p>UNESCO. 2021. Gross enrolment ratio. Available: <a href="http://uis.unesco.org/en/glossary-term/gross-enrolment-ratio#:~:text=Limitations,repetition%2C%20late%20entrants%2C%20etc.">http://uis.unesco.org/en/glossary-term/gross-enrolment-ratio#:~:text=Limitations,repetition%2C%20late%20entrants%2C%20etc.</a> (Accessed 7 February 2023).</p>

## 7.1.9 Certification rate in the technical and vocational education and training system by field of study

<b>DEFINITION</b>	The number of technical and vocational education and training (TVET) students who successfully completed a qualification in an academic year (irrespective of the first year of study), expressed as a percentage of the number of students who were eligible to complete a qualification and who wrote the examinations in that particular year.
<b>PURPOSE</b>	The indicator serves to understand the performance of the educational institutions concerned, as well as to measure the skills supply pipeline.
<b>CALCULATION</b>	<p>For each TVET field of study, we apply the following calculation:</p> $\text{TVET certification rate} = \frac{\text{Graduating TVET students}}{\text{Total students eligible to graduate}}$ <p>It is expressed as a percentage.</p>
<b>DATA REQUIRED</b>	Data is required on the number of graduates from TVET institutions in a given year, as well as the total number of students who were eligible to complete their qualification and who wrote their examinations in the same year. Calculations by field of study require the corresponding estimates for each relevant field of study.
<b>DATA SOURCE</b>	DHET: TVET Management Information System (TVETMIS).
<b>PRACTICAL APPLICATION</b>	'The number of students who wrote exit exams increased from 42 841 in 2013 to 117 641 in 2019. The certification rate for the N6 increased from 35.6 percent in 2013 to 96.4 percent in 2019, pointing to significant improvements over the period. Although N6 certification rates rose relatively consistently between 2013 and 2019, the 2018 certification rate deviates quite dramatically from this trend. At this stage, there is no explanation for the poor performance in 2018, and further research needs to be undertaken in this regard' (Khuluvhe et al., 2021).
<b>TYPE OF DISAGGREGATION</b>	Gender, race, mode of enrolment (part-time/full-time), field of study.
<b>INTERPRETATION</b>	A high graduation rate suggests an efficient higher education system: many students who enter the higher education system graduate, increasing the available supply of skills. A low graduation rate suggests a number of inefficiencies within the higher education system and a potential waste of human potential.
<b>LIMITATIONS</b>	Since TVET programmes can vary widely in duration, intensity and degree of theoretical and applied content, caution must be applied when performing intercountry comparisons.
<b>REFERENCES</b>	<p>DHET. 2017. <i>Statistics on post-school education and training in South Africa: 2015</i>. Pretoria: DHET. Available: <a href="https://www.dhet.gov.za/DHET%20Statistics%20Publication/Statistics%20on%20Post-School%20Education%20and%20Training%20in%20South%20Africa%202015.pdf">https://www.dhet.gov.za/DHET%20Statistics%20Publication/Statistics%20on%20Post-School%20Education%20and%20Training%20in%20South%20Africa%202015.pdf</a>. (Accessed 7 February 2023).</p> <p>Khuluvhe, M., Netshifhefhe, E., Ganyaupfu, E &amp; Negogogo, V. 2021. <i>Post-school education and training monitor: macro-indicator trends</i>. Pretoria: DHET. Available: <a href="https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Post-School%20Education%20and%20Training%20Monitor%20-%20Macro-Indicator%20Trends%20-%20March%202021.pdf">https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Post-School%20Education%20and%20Training%20Monitor%20-%20Macro-Indicator%20Trends%20-%20March%202021.pdf</a>. (Accessed 7 February 2023).</p>

## 7.1.10 Technical and vocational education and training participation rate

<b>DEFINITION</b>	The TVET participation rate refers to the share of 16–24-year-olds who are enrolled in TVET colleges.
<b>PURPOSE</b>	To measure the proportion of students participating in TVET colleges in relation to the population aged 16–24 years.
<b>CALCULATION</b>	<p>The TVET participation rate is calculated as the ratio of the number of 16–24-year-olds enrolled at TVET colleges relative to the total population aged 16–24 years:</p> $\text{TVET participation rate} = \frac{\text{16–24-year-olds at TVET colleges}}{\text{Population aged 16–24 years}}$ <p>It is expressed as a percentage.</p>
<b>DATA REQUIRED</b>	TVET enrolment for those aged 16–24 years and the size of the population aged 16–24 years.
<b>DATA SOURCE</b>	DHET: TVETMIS; Stats SA <i>Mid-Year Population Estimates</i> .
<b>PRACTICAL APPLICATION</b>	'Despite the significant increase in TVET participation rates in the last ten years, it is unlikely that the NDP target of 25.0 percent will be met by 2030, given the current slow growth trajectory' (Khuluvhe et al., 2021).
<b>TYPE OF DISAGGREGATION</b>	Age, gender, race, geography.
<b>INTERPRETATION</b>	A rise in the TVET participation rate suggests a TVET qualification might be valued more highly than in the past. A decrease in the TVET participation rate suggests young people do not view TVET qualifications highly.
<b>LIMITATIONS</b>	The indicator does not provide any information on reasons underlying learners' choices between the general schooling system and TVETs.
<b>REFERENCES</b>	<p>DHET. 2017. <i>Statistics on post-school education and training in South Africa: 2015</i>. Pretoria: DHET. Available: <a href="https://www.dhet.gov.za/DHET%20Statistics%20Publication/Statistics%20on%20Post-School%20Education%20and%20Training%20in%20South%20Africa%202015.pdf">https://www.dhet.gov.za/DHET%20Statistics%20Publication/Statistics%20on%20Post-School%20Education%20and%20Training%20in%20South%20Africa%202015.pdf</a>. (Accessed 7 February 2023).</p> <p>National Planning Commission (NPC). 2020. Analysis of PSET trends towards NDP 2030: draft NPC report. Available: <a href="https://www.nationalplanningcommission.org.za/assets/Documents/Post%20School%20Education%20and%20Training%20(PSET)%20Trends%20towards%202030.pdf">https://www.nationalplanningcommission.org.za/assets/Documents/Post%20School%20Education%20and%20Training%20(PSET)%20Trends%20towards%202030.pdf</a>. (Accessed 10 February).</p> <p>Khuluvhe, M., Netshifhefhe, E., Ganyaupfu, E &amp; Negogogo, V. 2021. Post-school education and training monitor: macro-indicator trends. Pretoria: DHET. Available: <a href="https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Post-School%20Education%20and%20Training%20Monitor%20-%20Macro-Indicator%20Trends%20-%20March%202021.pdf">https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Post-School%20Education%20and%20Training%20Monitor%20-%20Macro-Indicator%20Trends%20-%20March%202021.pdf</a>. (Accessed 7 February 2023).</p>

### 7.1.11 Highest level of educational attainment of international migrants

DEFINITION	The highest level of educational attainment of immigrants to and emigrants from South Africa.
PURPOSE	Immigration and emigration impact the supply of skills in the domestic labour market. As international migration rates can differ for individuals of different skill levels, it is important to understand the characteristics of those entering and leaving the country.
CALCULATION	This indicator is essentially a disaggregation of total migrants by educational attainment and could technically be done using microdata that has proper coverage and appropriate questions (although this would only cover immigrants).  Alternatively, the analysis could be done via official records on international migration (immigration and emigration).
DATA REQUIRED	Data that disaggregates working-age emigrants and immigrants by their highest level of educational attainment.
DATA SOURCE	Currently, there is no regular and comprehensive data source in South Africa. Census data may provide an indication; however, such data is not released regularly and is often not comprehensive.
PRACTICAL APPLICATION	'[Compared with South Africans, foreign-born] migrants have both the highest proportion of persons with no education, and a high proportion of persons with at least a secondary level of education' (Pretorius, 2016).
TYPE OF DISAGGREGATION	Gender, age.
INTERPRETATION	The type of educational qualification that immigrants or emigrants have attained can tell us not only the type of skills that they bring to or take from South Africa, but also the type of jobs they are likely to obtain.
LIMITATIONS	Migration statistics are not released on a regular basis, making it difficult for researchers and other interested persons to form an accurate picture of migrants in South Africa. Currently, the data does not exist to calculate this indicator.
REFERENCES	Pretorius, L. 2016. Factsheet: skill, work and education levels of foreign-born migrants in South Africa. <i>Africa Check</i> . Available: <a href="https://africacheck.org/fact-checks/factsheets/factsheet-skill-work-education-levels-foreign-born-migrants-south-africa">https://africacheck.org/fact-checks/factsheets/factsheet-skill-work-education-levels-foreign-born-migrants-south-africa</a> . (Accessed 7 February 2023).

## PART 8

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# Skills imbalance indicators



## 8.1.1 Employment shortages and surpluses by occupation

DEFINITION	<p>Employment shortage: Employment in occupations where employers are unable to recruit staff with required skills in the accessible labour market at the going rate of pay and working conditions.</p> <p>Employment surplus: Employment in occupations where there is an excess of skills supply relative to skills demand.</p>
PURPOSE	Employment shortages or surpluses in certain occupations indicate to policymakers that PSET institutions are providing the incorrect skills to individuals in relation to the country's current labour market structure.
CALCULATION	<p>The OECD occupational shortage index uses five sub-indices to provide a multi-dimensional picture of the surplus and shortage of workers. Wage pressure is proxied by hourly wage growth, employment pressure by total employment growth, the unemployment rate and growth in hours worked, and talent pressure by underqualification growth. The equation is as follows:</p> $\text{Occupational shortage index} = w(\Delta W_{c,i,t} - \Delta W_{c,t}) + 0.5w(\Delta E_{c,i,t} - \Delta E_{c,t}) + w(\Delta H_{c,i,t} - \Delta H_{c,t}) + w(U_{c,i,t} - U_{c,t}) + w(\Delta UQ_{c,i,t} - \Delta UQ_{c,t})$ <p>where, <math>\Delta W_{c,i,t}</math>, <math>\Delta E_{c,i,t}</math>, <math>\Delta H_{c,i,t}</math> and <math>\Delta UQ_{c,i,t}</math> refer to the yearly change in the estimated long-run trends of wages (W), employment (E), hours worked (H) and underqualification (UQ) in country <math>c</math> and two-digit occupation <math>i</math> and year <math>t</math>, respectively, and <math>U_{c,i,t}</math> is the inverse of the unemployment rate.</p> <p>An occupational shortage is denoted by a positive (+) sign, while a surplus is represented by a negative (-) sign.</p>
DATA REQUIRED	Wages, employment, hours worked and qualification data (both for jobs and on individuals). See relevant indicators in this document.
DATA SOURCE	OECD.
PRACTICAL APPLICATION	'Occupational shortages per skill level in South Africa are moderately concentrated more in low-skilled occupations relative to medium-skilled occupations and high-skilled occupations. Most managerial jobs are in shortage, and more than 50% of professionals, technicians and clerical support workers are employed in shortage occupations' (DHET, 2019b).
TYPE OF DISAGGREGATION	Knowledge areas, skills, abilities.
INTERPRETATION	The existence (and persistence) of occupational employment shortages or surpluses act as a constraint on growth, inhibiting the country from becoming productive. Occupational shortages and surpluses also suggest an inefficient education system in which skills demand and skills supply are unbalanced, leading to sub-optimal social and economic outcomes.
LIMITATIONS	The disaggregated occupational shortage index requires the use of the Occupational Information Network (O*NET) to describe skills and tasks. The O*NET database is constructed using skills data for each occupation in the United States and might differ in low- and middle-income countries, such as South Africa.
REFERENCES	<p>DHET. 2019b. <i>Skills supply and demand in South Africa</i>. Pretoria: DHET. Available: <a href="https://www.dhet.gov.za/SiteAssets/Report%20on%20Skills%20Supply%20and%20Demand%20in%20South%20Africa_%20March%202019.pdf">https://www.dhet.gov.za/SiteAssets/Report%20on%20Skills%20Supply%20and%20Demand%20in%20South%20Africa_%20March%202019.pdf</a>. (Accessed 7 February 2023).</p> <p>OECD. 2017a. <i>South Africa: Find new ways to boost growth and job growth</i>. Available: <a href="https://web-archiv.e.oecd.org/2017-07-24/446143-south-africa-find-new-ways-to-boost-growth-and-job-creation.htm">https://web-archiv.e.oecd.org/2017-07-24/446143-south-africa-find-new-ways-to-boost-growth-and-job-creation.htm</a>. (Accessed 7 February 2023).</p> <p>OECD. 2017b. <i>Getting skills right: skills for jobs indicators</i>. Paris, France: OECD Publishing.</p>

## 8.1.2 Average intensity of skills shortages and surpluses by occupational group

DEFINITION	Indicates the severity of skills shortages or surpluses by occupational group.
PURPOSE	The intensity of a skills shortage or surplus helps policymakers identify the severity: occupations with greater skills shortages (or surpluses) require more attention than occupations with low skills shortages or surpluses.
CALCULATION	<p>To calculate the average intensity of a skills shortage or surplus by occupational group, it is first necessary to obtain the occupational shortage index for each occupation that comprises each occupational group, which is explained in Section 8.1.1. We then calculate the average intensity as follows, with the subscript denoting a separate occupation:</p> $\text{Average shortage intensity} = \frac{\text{Shortage}_{occ_1} + \dots + \text{shortage}_{occ_n}}{\text{Number of occupations in shortage}}$ $\text{Surplus}_{occ_1} + \dots + \text{surplus}_{occ_n} = \frac{\text{Surplus}_{occ_1} + \dots + \text{surplus}_{occ_n}}{\text{Number of occupations in surplus}}$
DATA REQUIRED	Shortage and surplus intensity for each occupation (calculated in Section 8.1.1).
DATA SOURCE	OECD.
PRACTICAL APPLICATION	'According to the OECD Skills for Jobs database, many skills are in shortage in Australia, while only a few are in surplus – including knowledge of manufacturing and production, as well as physical abilities like fine manipulative abilities, control movement, and physical strength. But while several types of skills are in shortage, the intensity of the shortages of most skills is relatively low compared with other countries in the database' (OECD, 2018: 23).
TYPE OF DISAGGREGATION	Knowledge areas, skills, abilities.
INTERPRETATION	The existence (and persistence) of skills shortages in certain occupations indicates that the supply of individuals with the correct qualifications, work experience and knowledge is insufficient to keep up with demand in such occupations. On the other hand, skills surpluses suggest an excess supply of individuals (compared to demand) for certain occupations.
LIMITATIONS	The calculation only uses a simple arithmetic mean to calculate the average intensity of a skills shortage or surplus, rather than a weighted average (for example, by occupational size), which could provide a better representation of the extent of a skills shortage or surplus in each occupational group. Furthermore, the analysis of the occupational groups is limited to the one-digit Standard Industrial Classification (SIC) code.
REFERENCES	<p>OECD. 2017b. <i>Getting skills right: skills for jobs indicators</i>. Paris, France: OECD Publishing.</p> <p>OECD. 2018. <i>Getting Skills Right: Australia</i>. Paris, France: OECD Publishing.</p>

### 8.1.3 Job vacancy rate

DEFINITION	The job vacancy rate shows the number of job vacancies – a salaried post that is newly created, unoccupied or due to become vacant – as a proportion of the sum of currently occupied posts and number of job vacancies.
PURPOSE	This indicator expresses the unmet demand for specific occupations. It provides a good indication of the labour market requirements in terms of skills, qualifications and occupations at a particular point in time.
CALCULATION	$\text{Vacancy rate} = \frac{\text{Number of job vacancies}}{\text{Number of occupied posts} + \text{Number of job vacancies}} \times 100$
DATA REQUIRED	Job vacancies by Organising Framework for Occupations (OFO) code.
DATA SOURCE	There is currently no comprehensive up-to-date source for this type of data. One could try to use private sector sources, such as the Career Junction database; however, such sources are not representative of the labour market.
PRACTICAL APPLICATION	'The drop in vacancies from 234 000 to 114 000 (a reduction of 120 000 people, or a reduction in the vacancy rate from 17.3% to 8.8%) in a year – from 2012–2013 – seems massive (given that the public service only increased by 70 000 in this period, and not all of these were filled vacancies, a maximum of 50 000 could have been filled vacancies)' (Institute for Economic Justice, 2018).
TYPE OF DISAGGREGATION	Province, occupation and sector.
INTERPRETATION	A high number of job vacancies could indicate a skills supply issue, providing information to policymakers that can inform policies and employment opportunities. On the other hand, a low number of job vacancies could suggest a close alignment between skills demand and skills supply.
LIMITATIONS	The accessibility of private sector databases such as Career Junction is limited. Not only can the company owning the database refuse access for any reason, but the cost to access the database may be prohibitively expensive. Furthermore, the database may not be fully representative of the labour market.
REFERENCES	<p>Eurostat Statistics Explained. 2016. <i>Glossary: job vacancy rate (JVR)</i>. Available: <a href="https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Job_vacancy_rate_(JVR)">https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Job_vacancy_rate_(JVR)</a>. (Accessed 11 February).</p> <p>Institute for Economic Justice. 2018. <i>Public sector jobs</i>. Jobs Summit Policy Brief Series: Stream 4 Policy Brief 1. Available: <a href="https://iej.org.za/wp-content/uploads/2020/07/Stream-4-Policy-Brief-1-Public-Sector-Jobs.pdf">https://iej.org.za/wp-content/uploads/2020/07/Stream-4-Policy-Brief-1-Public-Sector-Jobs.pdf</a>. (Accessed 1 March 2023).</p>



## 8.1.4 Change in the mean vacancy duration

<b>DEFINITION</b>	The change in the mean vacancy duration shows the change over a specified period of time (usually 12 months) in the length of time that it typically takes to fill a vacancy.
<b>PURPOSE</b>	This indicator is used to gauge the extent of the challenges employers face in obtaining adequate skills in the labour market.
<b>CALCULATION</b>	$\text{Change in mean vacancy duration} = \frac{(\text{Mean vacancy duration})_t - (\text{Mean vacancy duration})_{t-1}}{(\text{Mean vacancy duration})_{t-1}}$
<b>DATA REQUIRED</b>	Job vacancies by OFO code.
<b>DATA SOURCE</b>	There is currently no comprehensive, up-to-date source for this type of data. One could try to use private-sector sources, such as the Career Junction database.
<b>PRACTICAL APPLICATION</b>	‘That’s supported by data: in August 2021, LinkedIn analysed 400,000 confirmed hires on its platform to see how long the recruitment process took. They found that the fields in which hiring took longest were engineering and research, which took a median of 49 and 48 days respectively; the shortest were customer service and administrative jobs, which took a median of 34 and 33 days respectively’ (Lufkin, 2021).
<b>TYPE OF DISAGGREGATION</b>	Sector, occupation.
<b>INTERPRETATION</b>	An increase in the mean duration of vacancies indicates a skills imbalance in the labour market, specifically on the supply side. On the other hand, a reduction in the mean vacancy duration suggests a healthy labour market with employers easily able to find applicants with the correct set of skills.
<b>LIMITATIONS</b>	Changes in the mean vacancy duration might indicate a general labour shortage rather than a skills shortage. The accessibility of private-sector databases such as Career Junction is limited. Not only can the company that owns the database refuse access for any reason, but the cost to access the database may be prohibitively expensive. Furthermore, the database might not be fully representative of the labour market.
<b>REFERENCES</b>	Lufkin, B. 2021. Why hiring takes so long. <i>British Broadcasting Corporation (BBC)</i> . Available: <a href="https://www.bbc.com/worklife/article/20211020-why-hiring-takes-so-long">https://www.bbc.com/worklife/article/20211020-why-hiring-takes-so-long</a> . (Accessed 7 February 2023).

## 8.1.5 Hard-to-fill vacancies

DEFINITION	Hard-to-fill vacancies refer to vacancies for which employers are unable to recruit or attract suitable talent for a period of more than six months.
PURPOSE	Hard-to-fill vacancies can be used to approximate the difficulties employers face in finding adequate skills in the current labour market. Specifically, the existence of such vacancies can point to inadequate skills on the part of job candidates or an inflexibility in the labour market.
CALCULATION	Hard-to-fill vacancies are identified in Sector Skills Plans (SSPs) submitted by the various Sector Education and Training Authorities (SETAs).
DATA REQUIRED	Job title, occupation, skills requirements and period taken to fill vacancy.
DATA SOURCE	SETA SSPs; LMI report on SETAs' employer interviews.
PRACTICAL APPLICATION	<p>'Looking at South Africa, the data shows that large companies (250+ employees) have the most difficulty filling positions; followed by medium (50-249 employees), micro (less than 10 employees) and small (10-49 employees) companies.</p> <p>Approximately 54% of large companies say that they are battling to fill roles, while just 25% of small companies are facing talent shortages.</p> <p>Lack of experience (29%), applicants which lack the required hard skills (18%) and applicants expecting higher pay than offered (14%) were named as the three top drivers of talent shortages in South Africa' (Staff Writer, 2018).</p>
TYPE OF DISAGGREGATION	Occupation and sector.
INTERPRETATION	If the number of hard-to-fill vacancies is high (relative to the overall number of vacancies), there are two main explanations: job applicants do not possess adequate skills or the industry is unattractive to new applications due to pay, working conditions or some other factor.
LIMITATIONS	Not all employers are required to submit Workplace Skills Plans (WSPs) to their SETAs, while some employers who are required to submit data might choose not to do so. As a result, the data collected might not be representative of all employers in the sector.
REFERENCES	Staff Writer. 2018. These 10 jobs are the hardest to fill in South Africa. <i>Business Tech</i> . Available: <a href="https://businesstech.co.za/news/business/283662/these-10-jobs-are-the-hardest-to-fill-in-south-africa/">https://businesstech.co.za/news/business/283662/these-10-jobs-are-the-hardest-to-fill-in-south-africa/</a> . (Accessed 7 February 2023).

## 8.1.6 Field-of-study mismatch

<b>DEFINITION</b>	A field-of-study mismatch exists where a worker is educated in a particular field (e.g., medicine) but works in another (e.g., engineering).
<b>PURPOSE</b>	The field-of-study mismatch indicates whether a country is effectively using the skills that are produced by its education system.
<b>CALCULATION</b>	<p>Field-of-study mismatches are identified first by the number of employees who are working in a field different to the one in which they studied. Then, by comparing this number to the total number of employees, a field-of-study mismatch can be computed.</p> <p>The rate of field-of-study mismatch can then be calculated as</p> $\text{Field-of-study mismatch} = \frac{\text{Number of employees working in a field different to their field of study}}{\text{All employees}} \times 100$ <p>which indicates the proportion of the employees who find themselves in a field-of-study mismatch.</p>
<b>DATA REQUIRED</b>	Data on the field of study in which employed individuals obtained their highest qualification and the field in which they are employed.
<b>DATA SOURCE</b>	Stats SA QLFS.
<b>PRACTICAL APPLICATION</b>	'In addition, more than 30% of South African workers are employed in an occupation unrelated to the field of study of the qualification that they hold' (Vandeweyer, 2017).
<b>TYPE OF DISAGGREGATION</b>	Gender, race, education level, industry.
<b>INTERPRETATION</b>	The existence (and persistence) of a field-of-study mismatch suggests that either the field studied is not providing enough jobs in relation to the number of graduates, or that the educational qualification provides workers with a skill set that is applicable to a number of fields.
<b>LIMITATIONS</b>	Different classification systems – in terms of assigning a degree to a particular field-of-study and describing the field in which an individual works – will hinder international comparisons.
<b>REFERENCES</b>	<p>Montt, G. 2015. The causes and consequences of field-of-study mismatch: An analysis of PIAAC. <i>OECD Social, Employment and Migration Working Papers</i>. No. 167.</p> <p>Vandeweyer, M. 2017. Getting skills right in South Africa. <i>OECD Skills and Work</i>. Available: <a href="https://oecdskillsandwork.wordpress.com/2017/11/14/getting-skills-right-in-south-africa/">https://oecdskillsandwork.wordpress.com/2017/11/14/getting-skills-right-in-south-africa/</a>. (Accessed 7 February 2023).</p>

## 8.1.7 Qualification mismatch

<b>DEFINITION</b>	A qualification mismatch occurs where workers are overqualified (underqualified) for their occupation by having attained a higher (lower) educational qualification than required for that occupation or than the modal educational qualification for that occupation.
<b>PURPOSE</b>	This indicator shows the extent to which workers' qualifications correspond with job requirements and is necessary to understand whether available skills supply is over- or under-utilised among the employed.
<b>CALCULATION</b>	<p>Qualification mismatches are identified first by determining the relevant comparator: either an appropriate qualification level is mapped to each occupation or the researcher must calculate the modal educational qualification for each occupation. Then, by comparing this information to the level of a worker's educational qualification, qualification mismatches can be determined.</p> <p>The rate of qualification mismatch can then be calculated as</p> $\text{Qualification mismatch} = \frac{\text{Number of overqualified (or underqualified) employees}}{\text{All employees}} \times 100$ <p>which indicates the proportion of the employees who find themselves in a qualification mismatch.</p>
<b>DATA REQUIRED</b>	Data on the highest educational qualification of the employed and, if this approach is chosen, the educational requirements for that specific occupation.
<b>DATA SOURCE</b>	Stats SA QLFS.
<b>PRACTICAL APPLICATION</b>	'In South Africa, an estimated 28.1 percent of the employed in 2016 were determined to be underqualified, while 24.3 percent were overqualified. This is indicative of considerable qualification mismatch in the South African economy.' (Khuluvhe, et al., 2022)
<b>TYPE OF DISAGGREGATION</b>	Gender, race, education level, field of study and occupation.
<b>INTERPRETATION</b>	The existence (and persistence) of qualification mismatch can potentially be used to detect the presence of skills shortages in specific occupations. Tracking the evolution of qualification mismatches can be useful in detecting the emergence or existence of skills shortages and surpluses across occupations.
<b>LIMITATIONS</b>	The most common educational qualification across occupations may vary over time, which will affect the level of comparability across time periods.
<b>REFERENCES</b>	<p>Khuluvhe, M., Borat, H., Oosthuizen, M., Asmal, Z., Ganyaupfu, E., Netshifhefhe, E., Martin, L., Monnakgotla, J. &amp; Rooney, C. 2022. <i>Skills supply and demand in South Africa</i>. Produced as part of the Labour Market Intelligence research programme.</p> <p>Mncwango, B. 2016. Public attitudes to work in South Africa. <i>LMIP</i>. Report No. 16.</p> <p>Powell, M. &amp; Reddy, V. 2014. Approaches and methods of understanding what occupations are in high demand and recommendations for moving forward in South Africa. <i>LMIP Policy Brief</i>, May 2014.</p>

## 8.1.8 Skills gap

<b>DEFINITION</b>	The deficit of skills possessed by individuals relative to the skills required by the job they hold.
<b>PURPOSE</b>	This indicator shows the skills that workers require for their job but which they do not currently possess. It is useful for indicating the type of skills training that may be required for workers to be able to do their jobs effectively.
<b>CALCULATION</b>	Conceptually, the skills gap can be thought of as the difference between the skills required for a job and the skills possessed by a worker. However, it is difficult to quantitatively measure skills requirements and skills possession in a consistent manner. Skills gaps are therefore typically identified by employers through employer interviews.
<b>DATA REQUIRED</b>	Data on the skills requirements of jobs and individual skills.
<b>DATA SOURCE</b>	Employer surveys; employers' WSPs or Annual Training Report submissions to SETAs.
<b>PRACTICAL APPLICATION</b>	Employers in the sector identified skills gaps at the high level (managers and professionals); mid-level (technicians, associate professionals and service workers); and the lower level (elementary occupations). Skills gaps identified for managers and professionals included leadership, industrial relation skills and project management skills. Skills gaps identified for mid-level occupations included communication and time management skills. Skills gaps identified for elementary occupations included literacy and computer skills. The gaps in terms of work-from-home skills, especially the use of technology, is applicable at all levels (Adapted from Health and Welfare Sector Education and Training Authority [HWSETA], 2022).
<b>TYPE OF DISAGGREGATION</b>	Occupation and industry.
<b>INTERPRETATION</b>	The greater the skills gap, the larger the difference between an individual's skills and the skills required for the job. More frequent or more extensive skills gaps may suggest a lack of collaboration between employers and PSET institutions.
<b>LIMITATIONS</b>	There is a paucity of data relating to skills gaps in South Africa.
<b>REFERENCES</b>	Health and Welfare Sector Education Training Authority (HWSETA). 2022. <i>Sector Skills Plan 2022–2023</i> . Available: <a href="https://www.hwseta.org.za/wp-content/uploads/2022/04/43293_HWSETA_Sector_Skills_Plan_2022.2023-LR.pdf">https://www.hwseta.org.za/wp-content/uploads/2022/04/43293_HWSETA_Sector_Skills_Plan_2022.2023-LR.pdf</a> . (Accessed 31 May 2023)

## CRITICAL SKILLS LIST

The Critical Skills List (CSL) is a list of occupations associated with the high-level skills that will potentially accelerate the growth of the economy. For an occupation to be included in the CSL, three criteria must be met: the occupation must either be in acute shortage or likely to be in the future, it must require high-level skills or an advanced educational qualification, and, lastly, it will be a long time before a domestic supply pipeline is developed (DNA Economics, 2020c).

DNA Economics, 2020c developed four CSL criteria dimensions based on the three requirements described above. For an occupation to be on the CSL, it must:

1. be in acute shortage; or
2. be a strategic priority;
3. require highly qualified or exceptionally skilled individuals; and
4. have a long lead time to develop a domestic pipeline.

In order to identify occupations for the CSL, DNA Economics (2020c) determine a number of indicators for each dimension. For example, indicators for an acute shortage include measuring hard-to-fill-vacancies and vacancy growth, while strategic priorities require a literature review of government economic documents. For dimension three, an occupation either needs an educational qualification equal to NQF Level 5 or above, or be included in the government gazette describing certain artisanal trades. In relation to dimension four, this requires a literature review on the time it typically takes to qualify for a particular occupation.

To generate the draft CSL, two occupational lists are created: one that shows occupations in acute shortage (based on the chosen indicators) and one that shows occupations that the government has strategically prioritised. In the next step, these lists are combined, following which both the minimum required qualifications and the length of time it takes to qualify for each occupation are analysed. The outcome of this process is the draft CSL, which is then finalised after six validation processes involving desktop reviews and stakeholder engagements. This reduces the original draft list of 279 occupations to 114 occupations. The occupations included in the final CSL are varied and include architect, travel agency manager, web designer and forensic accountant.

For the full list of CSL occupations and a more detailed explanation of the methodology behind the creation of the CSL, please refer to the *Technical Report for the 2020 Critical Skills List* (DNA Economics, 2020c).



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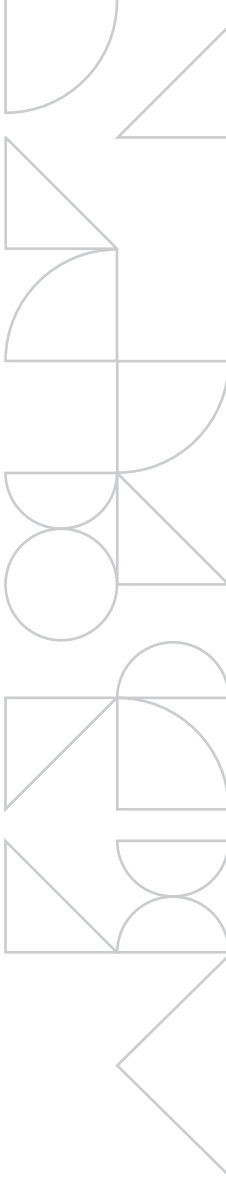
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**Notes**



Lined area for writing notes, consisting of 20 horizontal lines.









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