From occupational employment demand to tasks and skills requirements

May 25, 2021, Jakarta
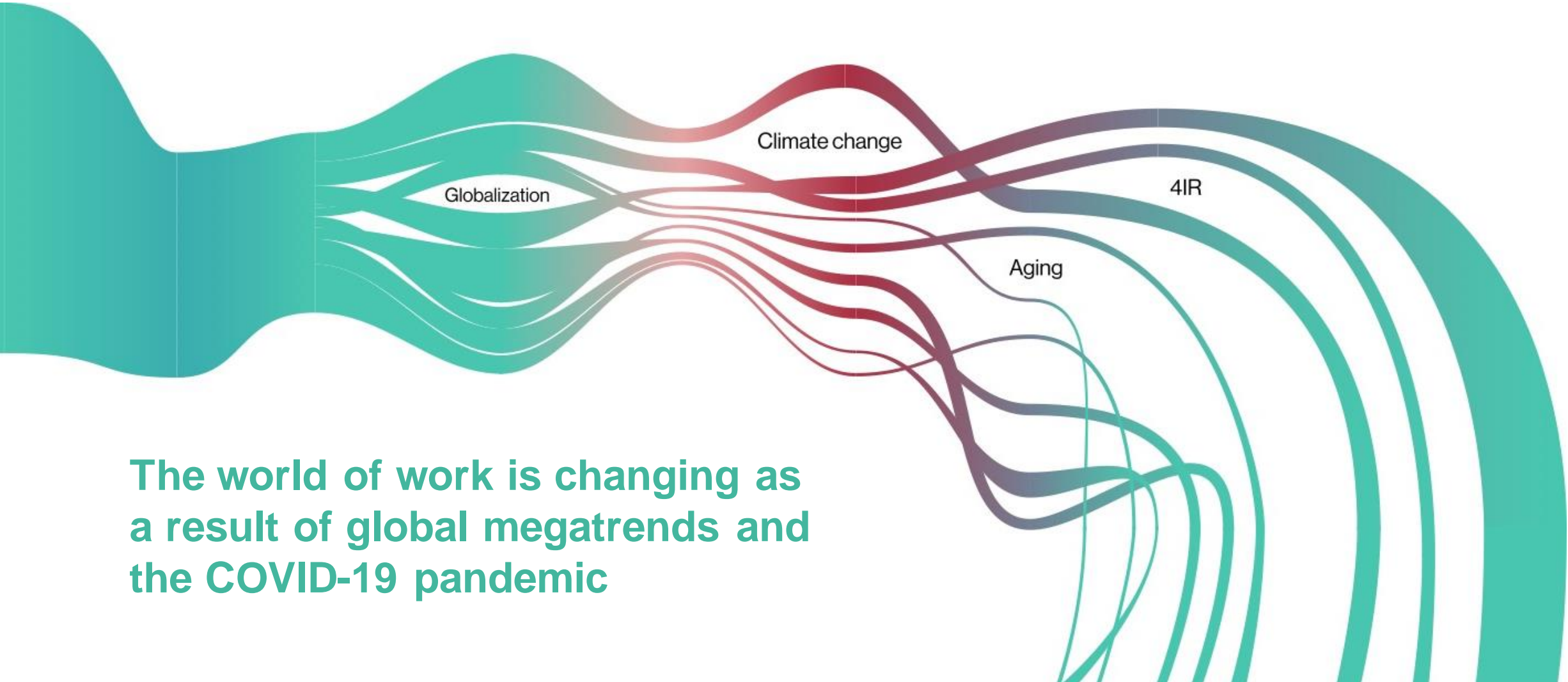
THE WORLD BANK
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Kementerian PPN/
Bappenas

Australian Government

**By 2045, Indonesia aims to achieve high- income status and almost completely eradicate poverty.**

Investing more and better in human capital is the pathway to meeting these ambitious goals.

Human capital investments need to respond to the changing labor demand.

The world of work is changing as a result of global megatrends and the COVID-19 pandemic

Globalization

Climate change

4IR

Aging

To become a middle-class and knowledge society,

Indonesians need to **invest now**

in the skills needed in the jobs of the future.
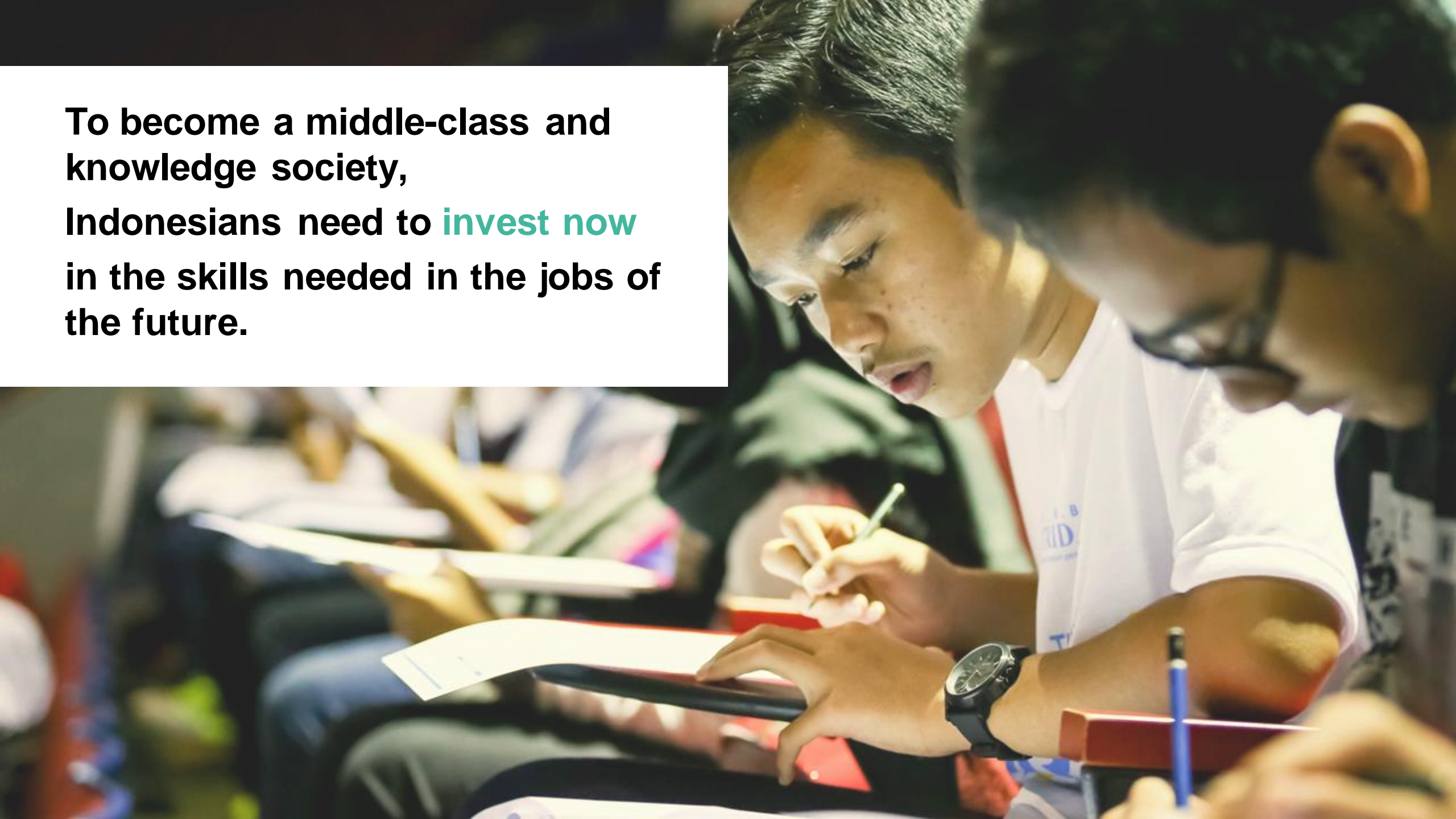
Choosing the right field of study to be prepared for in-demand occupations increases individual wellbeing and boosts growth

Recent academic **evidence from around the world** suggests **providing information pays off**: it increases the level of education, results in better allocation of workers across field of studies, improves the job match, and increases wages.

In the U.S., **$3,665 additional income per year** can be materialized by providing information on returns to different fields of study in college.

20-40% of growth in per capita GDP during the last 50 years can be explained by the improved allocation of talent alone.
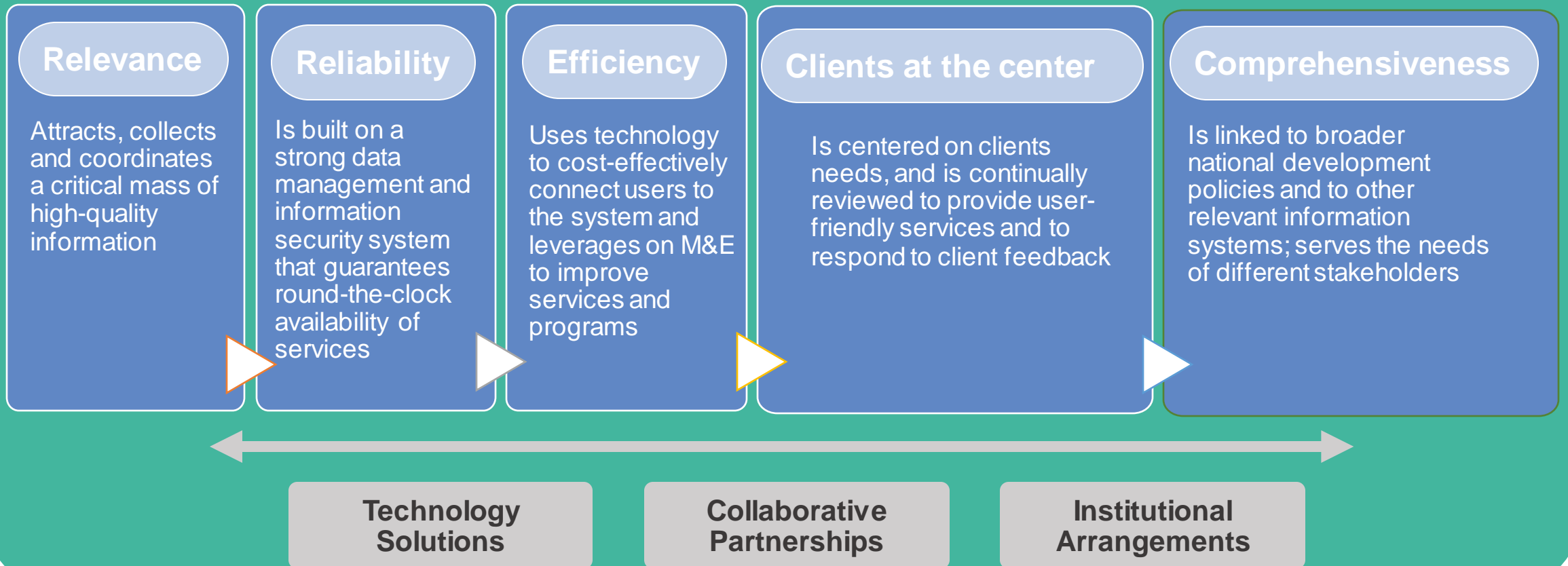
Governments have the responsibility to inform the society which are the jobs and skills in-demand
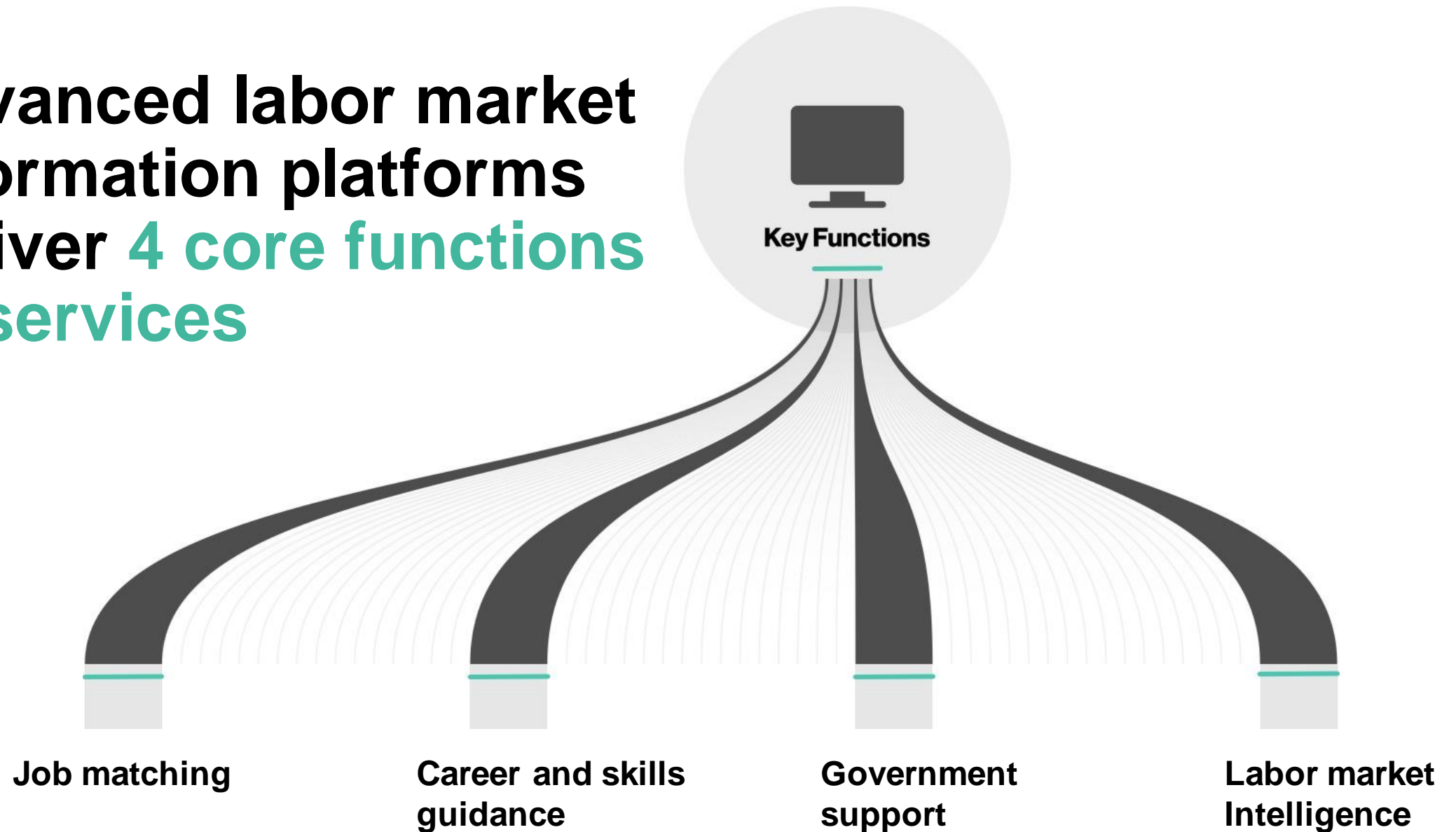
The **labor market information platform is the main vehicle to inform** students, workers, job seekers, employers, teachers and policymakers **about the occupations and skills in demand** and **to help job seekers and employers to find each other.**

The implementing regulations of the Job Loss Guarantee (Jaminan Kehilangan Pekerjaan, JKP) define the LMIS as **the digital ecosystem around the online platform for all public services and activities on labor provided by national and local governments**

Five key capabilities of an advanced LMIS

Relevance

Attracts, collects and coordinates a critical mass of high-quality information

Reliability

Is built on a strong data management and information security system that guarantees round-the-clock availability of services

Efficiency

Uses technology to cost-effectively connect users to the system and leverages on M&E to improve services and programs

Clients at the center

Is centered on clients needs, and is continually reviewed to provide user-friendly services and to respond to client feedback

Comprehensiveness

Is linked to broader national development policies and to other relevant information systems; serves the needs of different stakeholders

Technology Solutions

Collaborative Partnerships

Institutional Arrangements

Advanced labor market information platforms deliver 4 core functions or services

Key Functions

Job matching

Career and skills guidance

Government support

Labor market Intelligence

The Ministry of Manpower is revamping SISNAKER and its functions

- Developing a digital ecosystem for SIAPKERJA

- Link & Match policy that integrates training, certification and job placement into one system

- Developing a market intelligence systems in migrant workers' destination countries

- Transforming Balai Latihan Kerja to now include online trainings and certification

While Bappenas is furthering investments in the LMIS

- Reforming TVET system through LMIS development
- Budget planning that supports stronger education and labor market systems

To strengthen labor market information services of the LMI platform it is needed to

1. Fill in data gaps

2. Advance analysis

3. Make results available to the public in a user-friendly manner

Bappenas and the World Bank partnered to fill in labor information gaps

1 **Collected** new pilot surveys to retrieve information on occupations and skills

2 **Analyzed** the data to illustrate its potential to expand information service in the LMI platform

3 **Results** are already useful to understand most probable the jobs of the future

4 Generate insights to **further improve** labor market system

What are the occupations with better prospects in the coming years?

Indonesia's Occupational Employment Outlook

Short-term Occupational Prospects 2020

Pilot survey collected new information on occupational demand

The survey interviewed **firms** in **economic group with high growth potential** and in **dynamic regions** of the country

3,839

INTERVIEWED FIRMS REPRESENTATIVE OF...
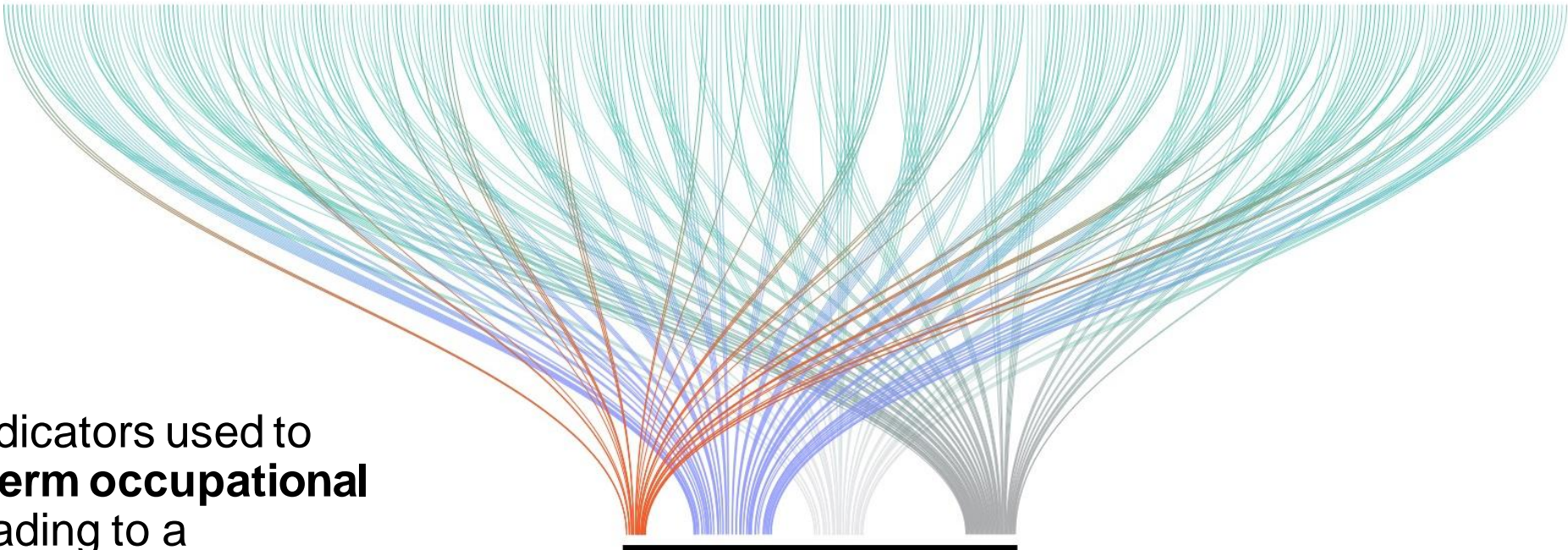
11

ECONOMIC SUBGROUPS

7

REGIONS

353

occupations assessed

353 occupations

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Net change in employment	Net employment growth	Vacancies	Vacancy rate	Number of firms hiring	Turnover rate	Hard to fill vacancies	Difficult to hire	Unopened vacancies	Total employment

10

complementary indicators used to determine **short-term occupational prospects** and leading to a

4-way classification

Bright **Stable** Dim **Flagged**

Students deciding on career paths **and workers** seeking to invest in more education and skills **should highly consider these occupations**

Policymakers should **ensure adequate supply of training** for these occupations
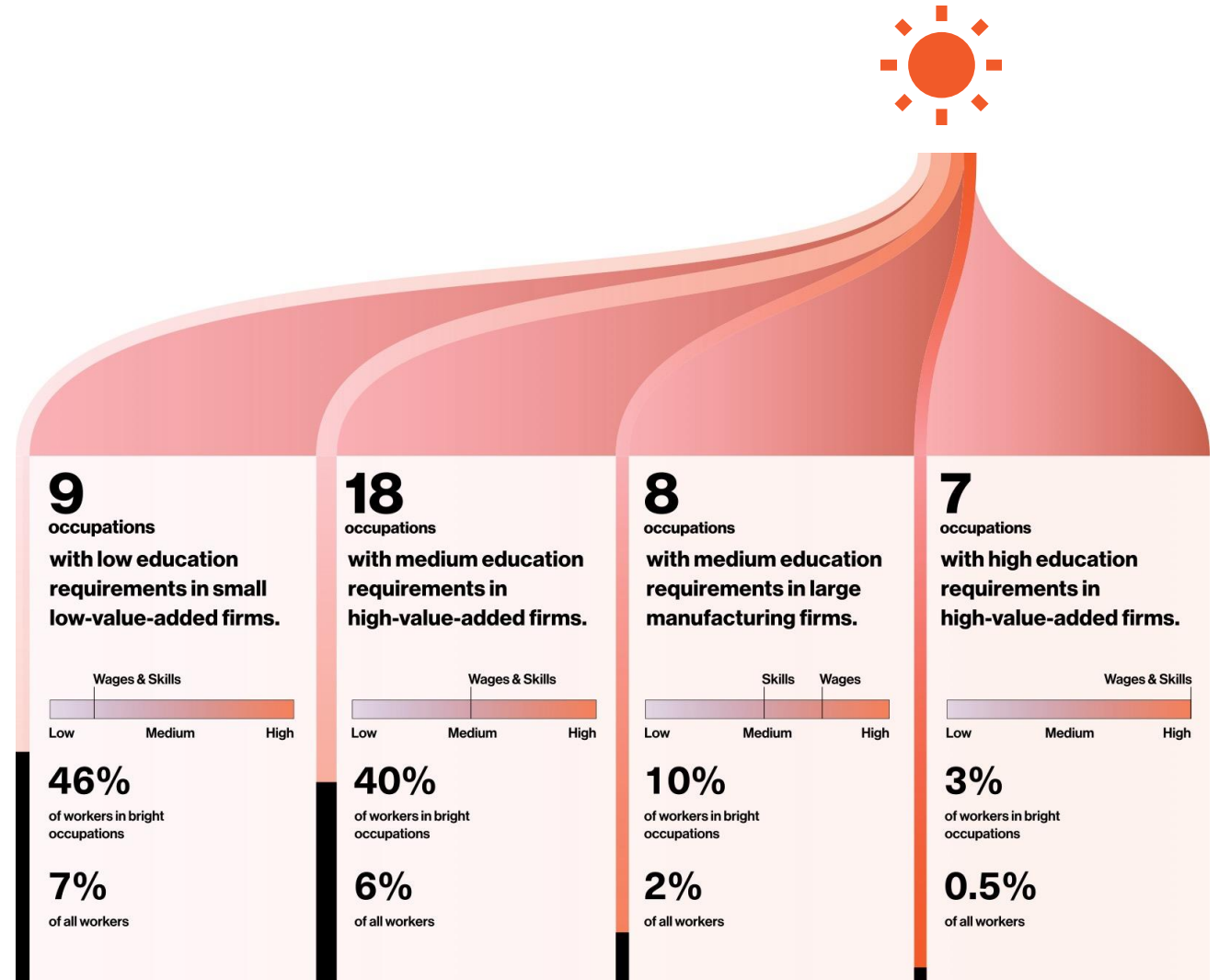
Bright

42 occupations

15% of employment

These occupations have high employment demand, firms are hiring workers, and had either high employment growth in the last year or present signs of skills shortages.

Bright occupations

In general, bright occupations

- require higher educational attainments than the average worker. However, not all bright occupations are high-skilled. There is room for everyone
- Pay higher wages: 83% of Bright occupations pay on average wages higher than the overall median wage
- They are most likely demanded in high-value-added services and manufacturing sectors
- Most jobs are at larger firms than micro

9 occupations **with low education requirements in small low-value-added firms.**

Wages & Skills
Low — Medium — High

46% of workers in bright occupations

7% of all workers

18 occupations **with medium education requirements in high-value-added firms.**

Wages & Skills
Low — Medium — High

40% of workers in bright occupations

6% of all workers

8 occupations **with medium education requirements in large manufacturing firms.**

Skills Wages
Low — Medium — High

10% of workers in bright occupations

2% of all workers

7 occupations **with high education requirements in high-value-added firms.**

Wages & Skills
Low — Medium — High

3% of workers in bright occupations

0.5% of all workers

Not all Bright occupations require high educational attainments (BA+)

Low requirements

(no or less than secondary)

- Messengers, package deliverers and luggage porters

- Manufacturing laborers not elsewhere classified

- Car, taxi and van drivers

Medium requirements

(TVET)

- Air conditioning and refrigeration mechanics

- Power production plant operators

- Chemical products plant and machine operators

Women are under-represented in bright occupations

- Overall, women hold 32% of bright occupations

- Women only have about 15% of jobs in software developers and 25% in financial analysts.

Software developers

2,410

13,331

■ Female ■ Male
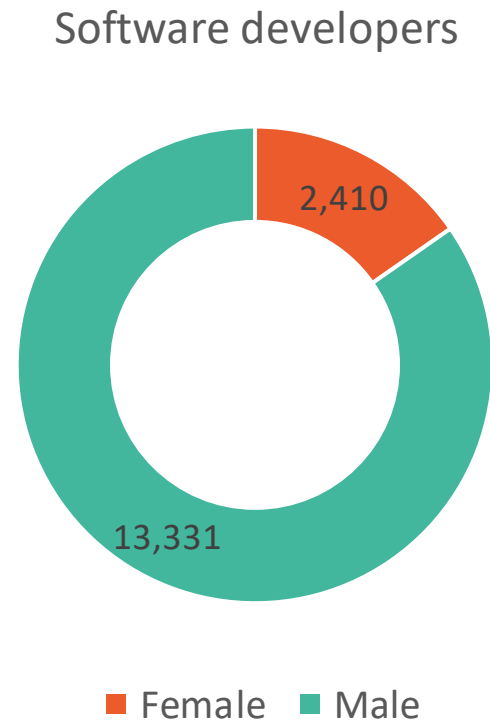
Students and workers should continue investing in these occupations and keep updating their skills according to employers' demand and innovations.

Stable

129 occupations

15% of employment

These occupations present an aligned labor supply and demand, and they have stable employment growth trends.

Students considering these occupations should think carefully if they really want to work on these occupations. Workers will need to invest in acquiring transversal skills demanded in other stable or bright occupations.

Dim

90 occupations

2% of employment

These occupations have low demand and seem to be shrinking over time.

Policymakers need to keep monitoring these occupations
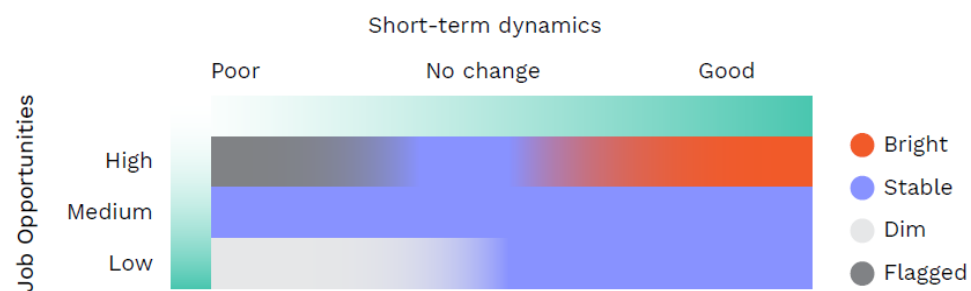
Flagged ⚑

92 occupations
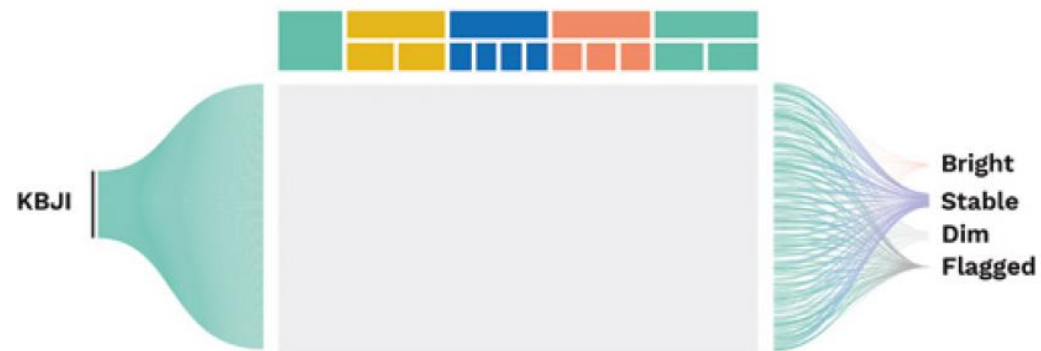
68% of employment

These are occupations presented contradictory signs. They may include occupations that have seasonal employment, or that are undergoing structural changes, or for which the data are inconsistent and a larger sample is needed with which to make an accurate assessment.

Find the technical details on the occupational score here

Short-Term Occupational Prospects Score

Indonesia
Occupational
Employment
Outlook

2020 Technical Report

WORLD BANK GROUP   Kementerian PPN/ Bappenas   Australian Government

Find the Short-term Occupational Prospects for the 353 occupations here

Indonesia's Occupational Employment Outlook

2020
Short-Term
Occupational
Prospects

WORLD BANK GROUP

What are the skills needed to perform the tasks required by in-demand occupations?

Indonesia's Occupational Tasks and Skill

From occupational employment demand to tasks and skills requirements

2020

Indotask collected data on
51 in demand occupations,
selected based on the 2018 Critical Occupations List and IOEO 2020

Indotask is the first attempt to replicate two modules of O*NET in Indonesia, and the third ongoing pilot outside the US , jointly with Uruguay and Vietnam.

O*NET

Countries all over the world rely on O*NET —a globally recognized occupational database— for policymaking and research, making the strong assumption that their underlying production technologies are the same as the one in the U.S.

Indotask confirmed the importance of having country measures, as the skills and tasks needed in a certain occupation vary between Indonesia and the U.S. For example, equipment maintenance, equipment selection and installation are 3 skills more important for Indonesia than for the United States.

Measuring skills and tasks is more important than ever before

Underlying **megatrends** (4IR, globalization, climate change), **COVID-19 pandemic**, and the **recently approved reforms to boost competitiveness** are altering employers demand for tasks and skills.

Indotask is a timely effort to fill in the data needs for workforce development policy and monitoring

Globalization

Climate change

4IR

Aging

29
High-skilled

18
Semi-skilled

4
Low-skilled
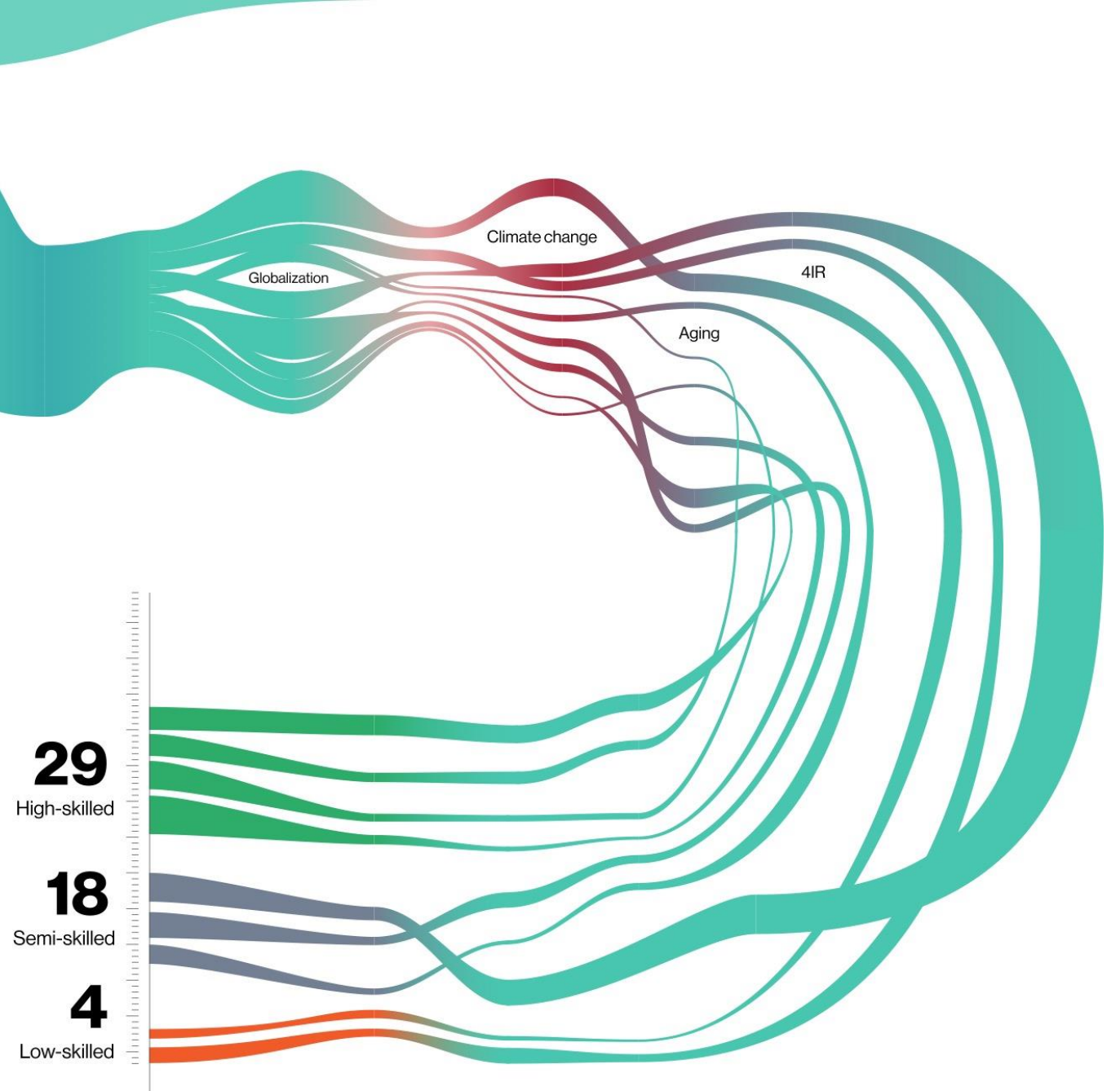
Indotask explores adjusting two modules of the O*NET content model: Worker Requirements and Occupation Specific Information

1. Tasks

The questionnaire lists all tasks commonly required at the specific occupation and requests respondents to rate each of them according to their relevancy (*yes/no*), frequency (*1, once a year; 7, hourly*) and importance (*1, not important; 5, extremely important*).

2. Formal requirements

Respondents provide information about the sought formal requirements on education, training and experience

3. Skills

Respondents rate 35 skills using two scales: the importance scale, which goes from 1 (*not important*) to 5 (*extremely important*); and the level needed to do the job scale, which goes from 1 (*basic*) to 7 (*sophisticated*) for a certain occupation.
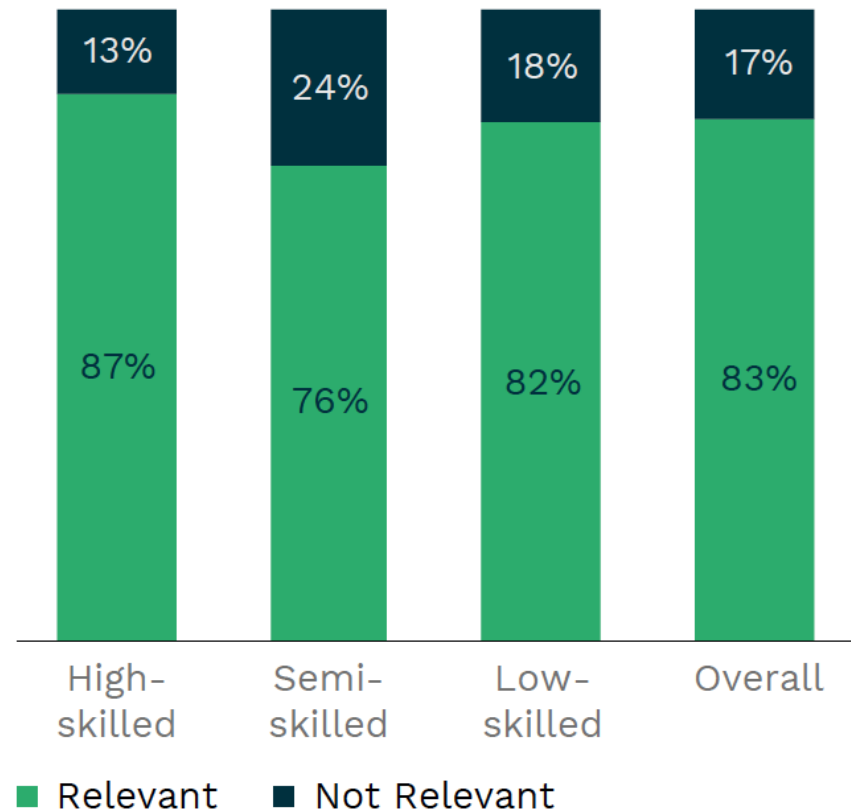
Tasks

1

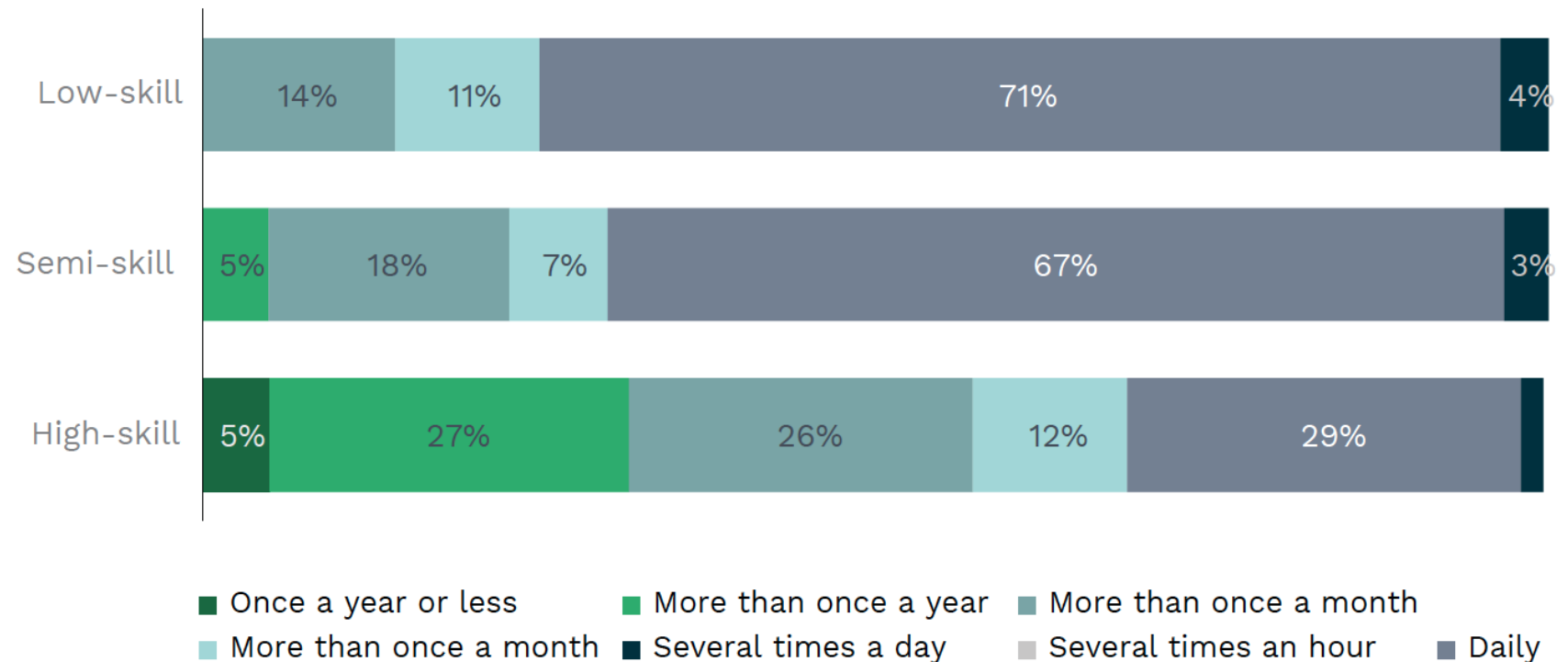# The majority of the pre-field tasks are relevant

Respondents rated unique task statements coming from the occupational manual (KBJI) to assess whether tasks are still relevant or becoming obsolete or what are the new tasks that an occupation involves.

Relevance of tasks by occupational skill level

|	High-skilled	Semi-skilled	Low-skilled	Overall
Not Relevant	13%	24%	18%	17%
Relevant	87%	76%	82%	83%

■ Relevant   ■ Not Relevant

The **type of tasks** occupations perform and its **frequency** is highly related to their skill level

Distribution of task frequency, by occupational skill level

| | | | |
|---|---|---|
| ■ Once a year or less | ■ More than once a year | ■ More than once a month |
| ■ More than once a month | ■ Several times a day | ■ Several times an hour ■ Daily |

High-skilled occupations are more likely to engage in tasks that are more abstract in nature while low-skilled occupations perform tasks that are more material in nature. Moreover, low-skilled occupations are more likely to engage in repetitive tasks.
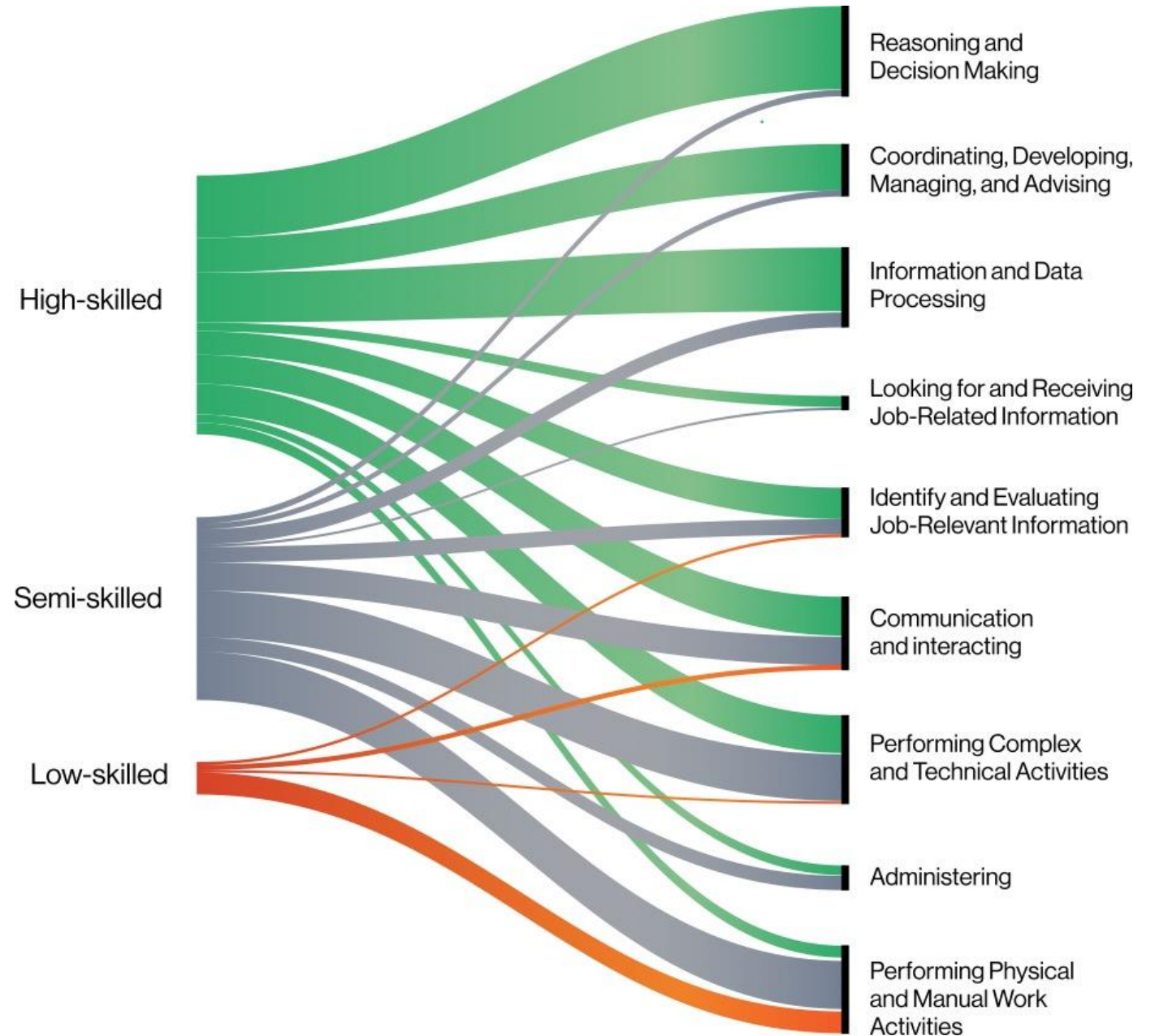
Education, training and experience requirements

2

The more skilled the occupation is, the more likely it is to require higher education level...

Formal Education

78%
89%
25%
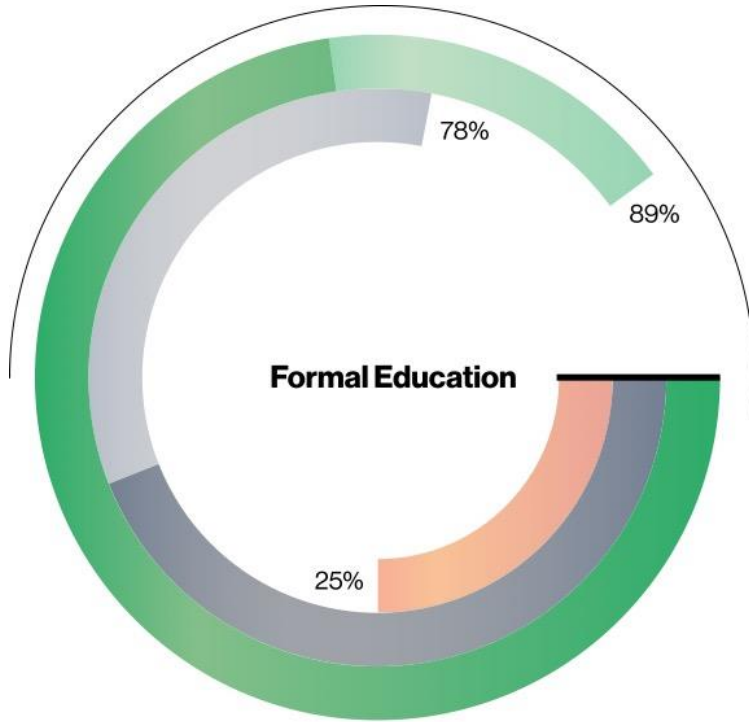
Share of occupations requiring a bachelors's degree (dark fill) and TVET (light fill).

Apprenticeship

High-skilled
Semi-skilled
Low-skilled

75%
89%
97%
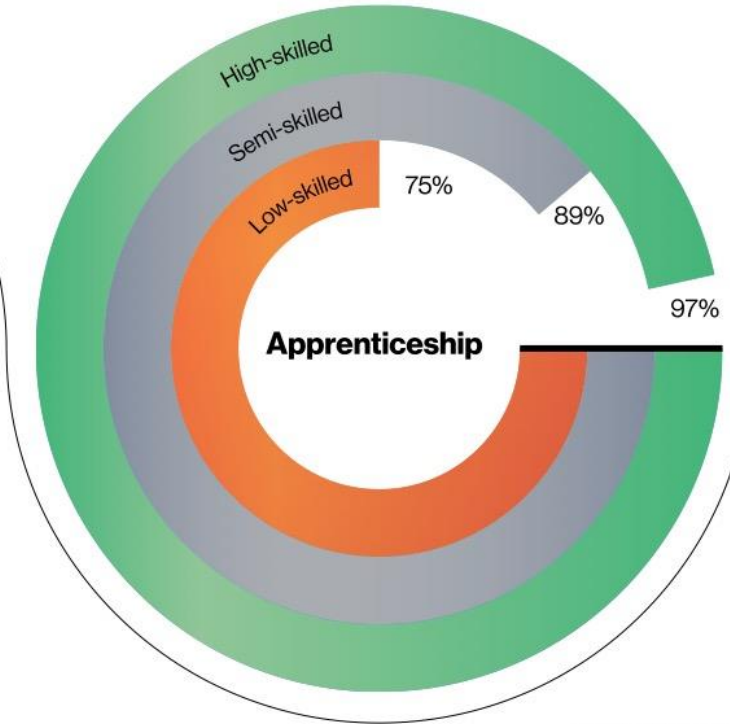
Importance given to certification and apprenticeship by occupational skill level.

Certification

74%
51%
0%
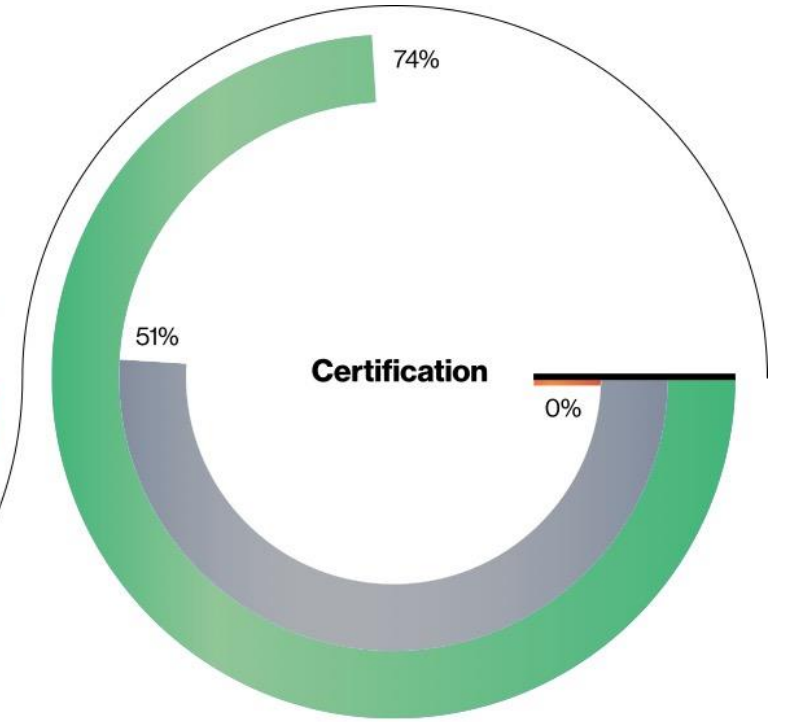
and value apprenticeships and certifications.

The more skilled the occupation is, the more likely it is to value prior experience …

Distribution of the most frequently required level of work experience, by occupational skill level

-Apprenticeships and internship programs for youth could be a way to kick off a career.-

Legend:
- None
- Up to and including 3 months
- Over 3 months, up to and including 6 months
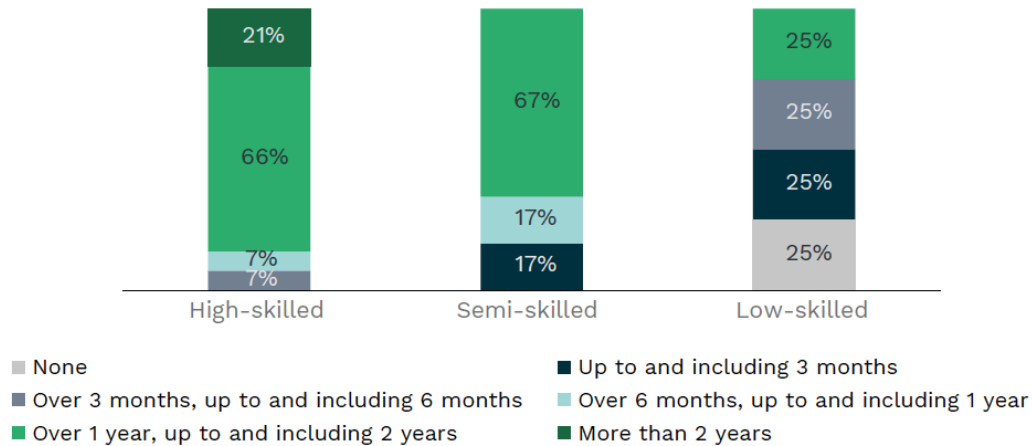- Over 6 months, up to and including 1 year
- Over 1 year, up to and including 2 years
- More than 2 years

… However, lack of experience is not necessarily compensated by training while employed

Distribution of length of (most frequent) training offered by employers, by occupational skill level, for on-site and on-the-job training arrangements

-The vast majority of employers provide some form of on-site training for new workers, the exception being a few low skill occupations.-

Legend:
- More than 6 months
- Over 3 months, up to and including 6 months
- Less than 1 month
- Over 1 month, up to and including 3 months
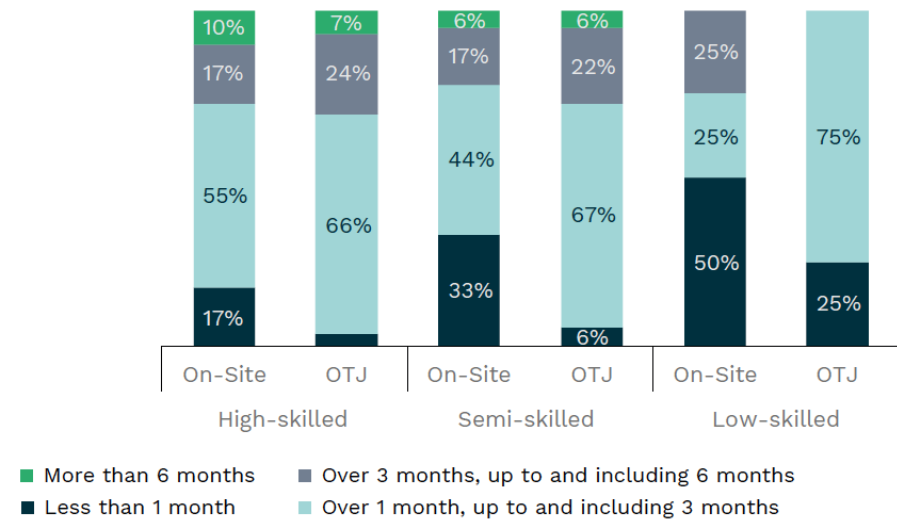
Skills

3

Basic skills are the most important for high demand occupations

a Most in-demand skills

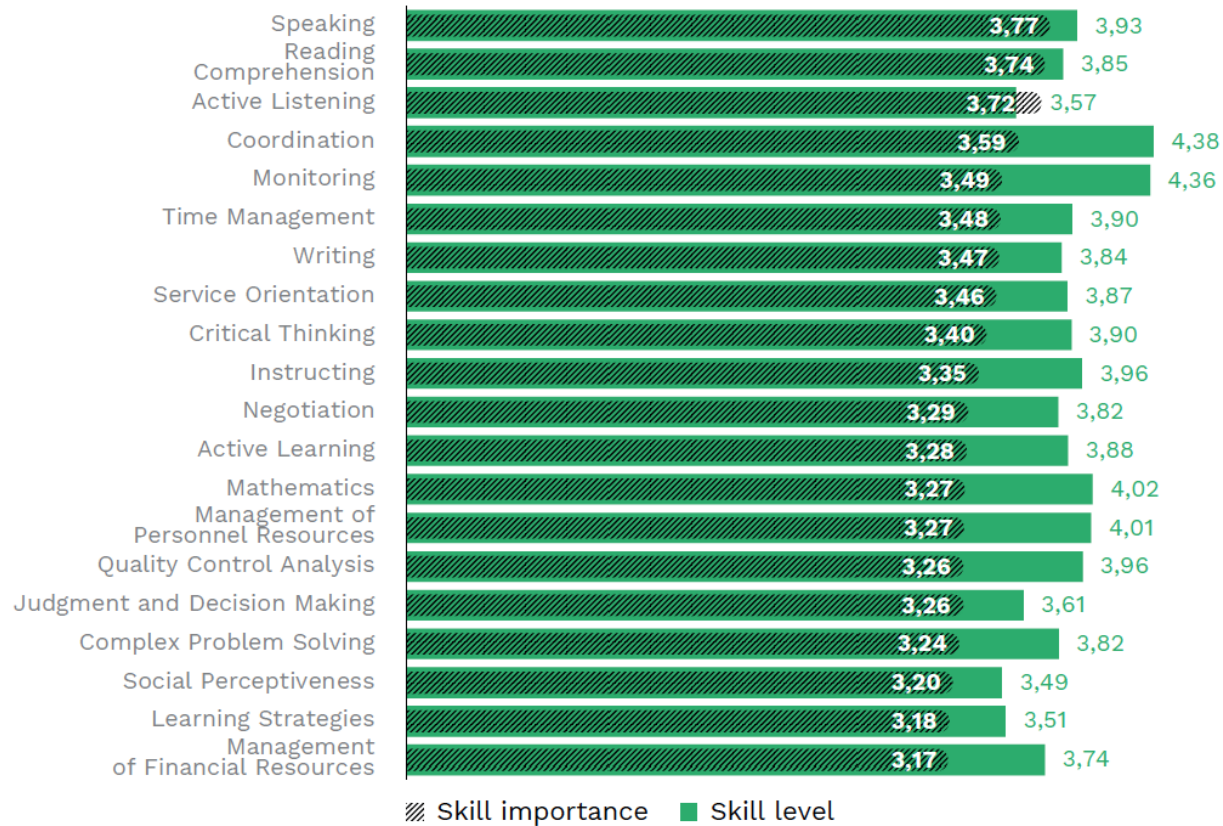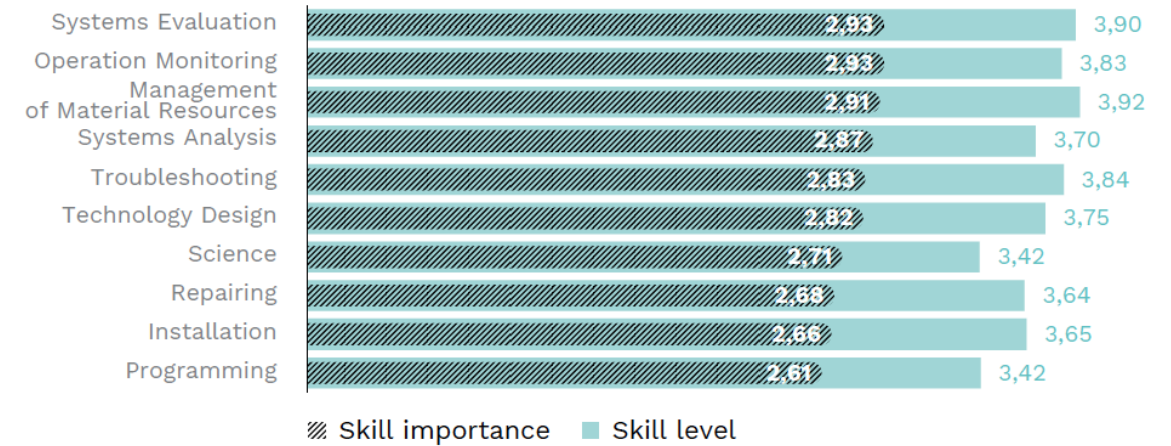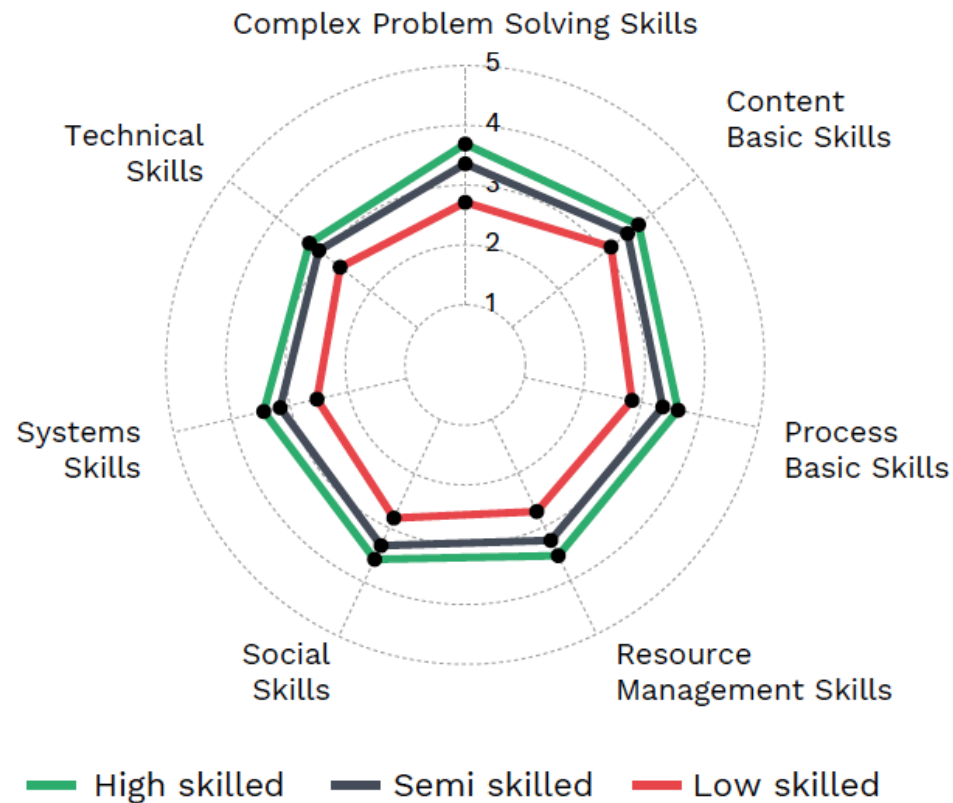| Skill	Skill importance	Skill level
Speaking	3,77	3,93
Reading Comprehension	3,74	3,85
Active Listening	3,72	3,57
Coordination	3,59	4,38
Monitoring	3,49	4,36
Time Management	3,48	3,90
Writing	3,47	3,84
Service Orientation	3,46	3,87
Critical Thinking	3,40	3,90
Instructing	3,35	3,96
Negotiation	3,29	3,82
Active Learning	3,28	3,88
Mathematics	3,27	4,02
Management of Personnel Resources	3,27	4,01
Quality Control Analysis	3,26	3,96
Judgment and Decision Making	3,26	3,61
Complex Problem Solving	3,24	3,82
Social Perceptiveness	3,20	3,49
Learning Strategies	3,18	3,51
Management of Financial Resources	3,17	3,74

▨ Skill importance   ▮ Skill level

b Least in-demand skills

Skill	Skill importance	Skill level
Systems Evaluation	2,93	3,90
Operation Monitoring	2,93	3,83
Management of Material Resources	2,91	3,92
Systems Analysis	2,87	3,70
Troubleshooting	2,83	3,84
Technology Design	2,82	3,75
Science	2,71	3,42
Repairing	2,68	3,64
Installation	2,66	3,65
Programming	2,61	3,42

▨ Skill importance   ▮ Skill level

Compared to **semi-** and **low-skilled** occupations, **high-skilled** occupations require more complex problem-solving skills and resource management skills.
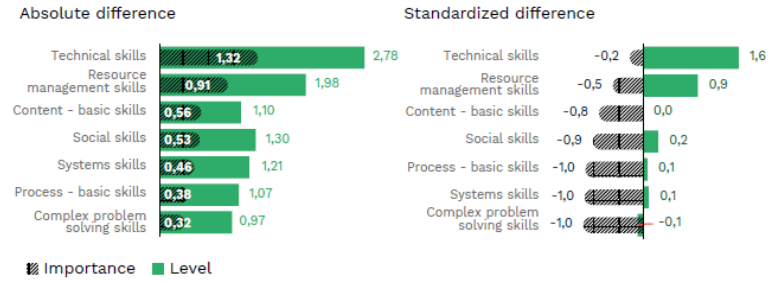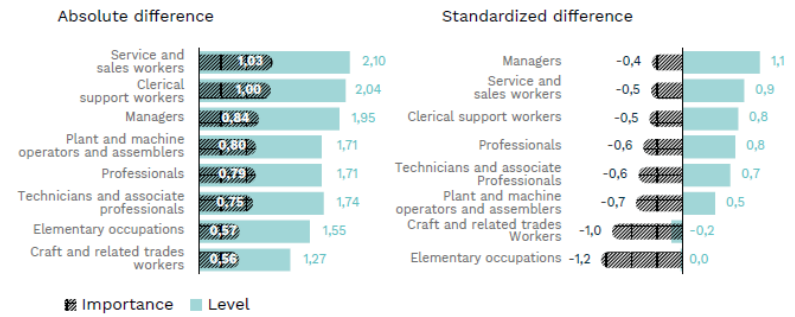
Find the technical details on the adaption of the O*NET methodology, the comparison with the US and the reliability of the measures

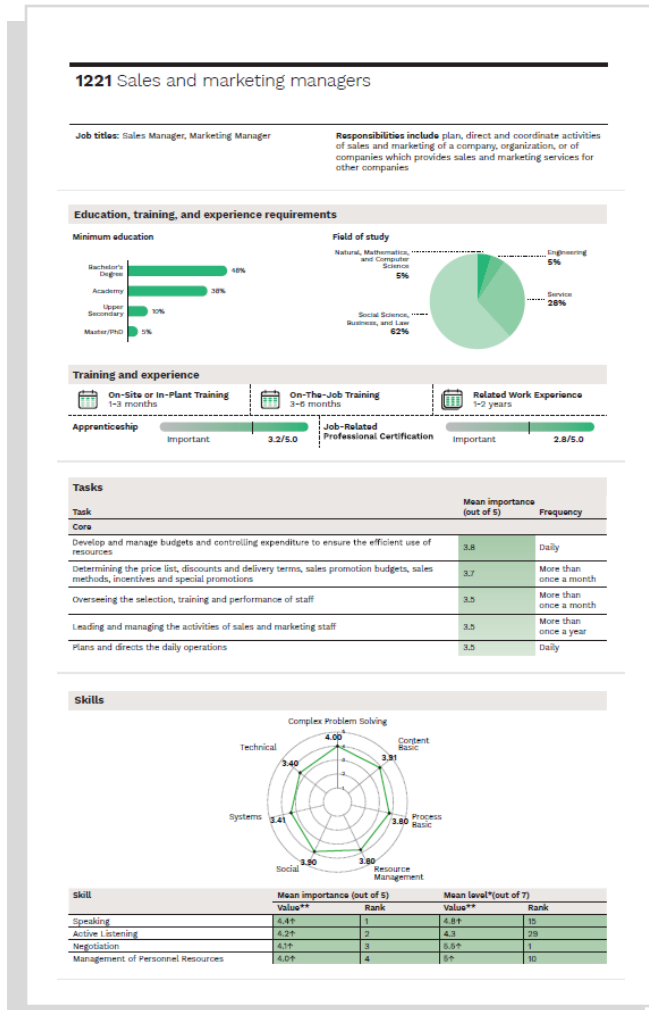**a** Absolute and standardized difference, by skill group

Absolute difference | Standardized difference

Technical skills	1,32	2,78
Resource management skills	0,91	1,98
Content - basic skills	0,56	1,10
Social skills	0,53	1,30
Systems skills	0,46	1,21
Process - basic skills	0,38	1,07
Complex problem solving skills	0,32	0,97

Technical skills	-0,2	1,6
Resource management skills	-0,5	0,9
Content - basic skills	-0,8	0,0
Social skills	-0,9	0,2
Process - basic skills	-1,0	0,1
Systems skills	-1,0	0,1
Complex problem solving skills	-1,0	-0,1

Importance ■ Level

a Absolute and standardized difference, by occupation group

Absolute difference | Standardized difference

Service and sales workers	1,03	2,10
Clerical support workers	1,00	2,04
Managers	0,84	1,95
Plant and machine operators and assemblers	0,80	1,71
Professionals	0,79	1,71
Technicians and associate professionals	0,75	1,74
Elementary occupations	0,57	1,55
Craft and related trades workers	0,56	1,27

Managers	-0,4	1,1
Service and sales workers	-0,5	0,9
Clerical support workers	-0,5	0,8
Professionals	-0,6	0,8
Technicians and associate Professionals	-0,6	0,7
Plant and machine operators and assemblers	-0,7	0,5
Craft and related trades Workers	-1,0	-0,2
Elementary occupations	-1,2	0,0

Importance ■ Level

Find the detailed Tasks and skills profiles for the 51 occupations here

Indonesia's Occupational Tasks and Skills

Tasks and Skills Profiles
2020

WORLD BANK GROUP   Kementerian PPN/ Bappenas   Australian Government

Recommendations
and lessons learned

Recommendations

1

▲ **Be mindful of generalizing the results nationwide**
The pilots relies on respondents from selected economic groups and geographic regions

▲ **Keep in mind these are pilots**
Exert cautions when using variables since reliability tests showed that some work well while others may need a larger sample

▲ **The differences in result with other country efforts may be related to differences on the production processes**
The comparison is useful as it confirms the suspicion that the productions processes vary substantially.

Recommendations for the general public

STUDENTS	Get information about occupations prospects before deciding your level of education, career path, and field of study to make the most out of educational investments.
PARENTS	Invest in good quality education since basic skills, that are the building blocks of other skills and that are learned during the formative years, are highly important.
CURRENT WORKERS	Get informed about your occupations prospect and what skills are in demand. If you are in a Dim occupation, consider acquiring transversal skills that may help you transition to stable or bright occupations.
FIRMS	The data can provide you information on how difficult it is to fing a worker in the specific occupation you are looking for, what type of skills you should be requiring when hiring, and what skills training would be relevant to provide.

Recommendations for Policymakers

- Expand the menu of programs to support workers in in dim occupations to skill to skill up, reskill, or both to maintain employment. On-the-job training programs could be an effective instrument to swiftly provide support to workers and employers in filling skills shortages.

- Help workers to transition to jobs and occupations in demand by enhancing job-matching services.

- Improve the menu of support programs for low skilled workers and youth.

Apprenticeships and internship programs for youth could be a way to kick off a career since employers hiring in-demand occupations consider important these type of accreditations.

- Incorporate information from employers' demand into the education and training system.

- Continue investing in the labor market information platform to maintain users updated with relevant and comprehensive information about future occupational and skills demand.

Lessons learned and next steps

2

IOEO

1. Adopt the new pilot for the collection of data in a regular basis to monitor occupational shifts and inform workforce development policy according to current demands.

2. Consider expanding data collection to other economic groups and regions of the country

3. Consider carrying out this survey through online forms supported by phone, based on international examples.

4. Consider adding variables to measure occupational turnover and gender-specific demand

5. Expand the number of respondents to increase the validity of certain estimates, such as wages

6. Continue to validate results with firms and educational institutions.

7. Explore potential changes that might be arising due to responses to the COVID-19 pandemic and crisis

Indotask

1. Field other modules of O*NET, starting by work activities and work context

2. Do not attempt to collect all the modules in one go

3. Continue with online surveys supported by phone, but consider introducing face-to-face interviews for low-skilled occupations

4. Continue interviewing the same raters

5. Expand the number of respondents, especially experts with work experience, and include female raters

6. Select occupations already interviewed to compare progress and expand the list to other occupations in high demand

7. Expand the list of tasks by incorporating those from O*NET

8. Conduct FGD to improve the design presentation of questions related to tasks and skills level of relevance

9. Carry out knowledge exchanges with O*NET

10. Explore potential changes that might be arising due to responses to the COVID-19 pandemic and crisis

Thank You
Terima kasih