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RESEARCH STUDY ON
UNDEREMPLOYMENT
IN SINGAPORE

Research Partnership between **National Trades Union Congress (NTUC)** and
Lee Kuan Yew Centre for Innovative Cities at the
Singapore University of Technology and Design (SUTD)

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Published by National Trades Union Congress.
For information, please contact strategy@ntuc.org.sg.

ISBN: 978-981-18-8727-7 (print)
ISBN: 978-981-18-8728-4 (digital)

CONTENT

Executive Summary

Economic competitiveness and productivity remain critical to Singapore's success and one factor is a highly skilled and motivated labour force. Yet, the labour force today is facing headwinds in matching human capital to industry's needs. Tasks and skill requirements are rapidly changing as industries digitise, digitalise, and integrate Artificial Intelligence (AI) into their operations, while career pathways from education are more varied and fluid than before. Employees are also rethinking their employment choices and work-life priorities, embarking on alternative or non-traditional career trajectories.

Collectively, these trends may contribute to underemployment, which occurs when there is an underutilisation of the productive capacity of the labour force in terms of availability to work and underutilisation of qualifications, skills, or experience. In theory, technology might free workers from menial tasks, allowing them to focus on higher value-added jobs. However, if workers' skills are not updated in line with industry needs or employers automate entry-level graduate positions, there will be a risk of underemployment. This study focuses on understanding how Singapore workers are redefining the changing balance between careers, aspirations, and personal lives and the implications on underemployment.

Through a survey conducted with 1,100 Singapore Citizens and Permanent Resident workers in October 2025, we found that the time-based indicator of underemployment, while useful, is not reflective of the holistic underemployment situation in Singapore. Expanding our tracking of underemployment to include skills, qualifications, and education field mismatches provides a more nuanced snapshot of the workforce.

Our study found that 22.5% of respondents were overskilled and 23.0% were overqualified for their jobs, while 31.4% worked in jobs that did not match their education field and 20.3% were overqualified for their occupational category. The skills-job mismatch is lower in Singapore for overskilled workers but higher for underskilled workers (22.5% overskilled; 24.5% underskilled) compared to the Organisation for Economic Co-operation and Development's Programme for the International Assessment of Adult Competencies (OECD PIAAC) 2023 average (26.1% overskilled; 9.6% underskilled). The education field-job mismatch is also lower in Singapore compared to OECD PIAAC's 2023 average (37.7%). The prevalence of qualification-job mismatch in Singapore is comparable to the OECD PIAAC average (23.4%). Likewise, the prevalence of qualification-occupation mismatch in Singapore is comparable with high-income countries' averages (2016-2018) as provided by the International Labour Organization (ILO). The detailed findings are presented in Chapter 3.

Combining the insights from the survey with in-depth interviews with underemployed workers, 8 vignettes are presented in Chapter 4. Each vignette tells the story and illustrates the challenges and trade-offs the workers made that led to underemployment.

As we recognise that career decisions and aspirations, and their underlying motivations, have been evolving in Singapore, our understanding of underemployment in Singapore needs to evolve too. It is also important to distinguish between voluntary and involuntary underemployment decisions. Efforts should be focused on supporting the involuntarily underemployed, and on ensuring those voluntarily underemployed are able to keep their skills and experience current to avoid becoming involuntarily underemployed in the future.

Youths, caregivers, and stay-at-home parents entering the workforce after extended periods away face greater challenges of securing jobs that match their skills, qualification, and field. Workers, especially youths, who desire to explore alternative career paths or turn their passions into a career should be given the opportunity and support for greater chances of success in atypical transitions.

Employers can play a part too. Better support from employers in terms of work arrangements can help workers balance their work and life commitments without sacrificing one's career and job.

The report puts forward seven key recommendations in Chapter 6 framed through a life-course approach that recognises how underemployment challenges may differ across career stages. Together, they offer a roadmap for building a resilient and inclusive workforce by supporting early-career transitions, lifelong skill development, flexible and meaningful work options, and system-level tools that anticipate and prevent underemployment.

Supporting Early-Career Transitions and Lifelong Skill Development

1. Targeted support for early-career individuals and fresh graduates as jobs and aspirations evolve

2. Enhancing employability through multi-skilling

Creating Multiple Pathways for Meaningful and Flexible Work

3. A hub to facilitate the pursuit of social entrepreneurships and passions

4. Community-based employment co-ops to create collective employment opportunities

5. Develop Career-Revisioning programme to facilitate future transition to next phase of career

6. Multi-strategy approach to enhance support for working parents and caregivers – pay-per-use childcare services and stronger organisation culture

System-Level Enablers that Expand Measurement of Underemployment

7. Expanding the official measure of underemployment in Singapore to reflect the underemployment situation in Singapore

Chapter 1: Background

Underemployment has been steadily increasing in many countries in the last few decades (OECD, 2019; ILO, 2021). Several factors have contributed to increasing underemployment, including periods of economic downturn and the recent COVID-19 pandemic (Avila & Lunsford, 2022), while more persistent structural changes in the nature of the economy and jobs are also playing a role. This includes the expansion of new technologies and the growth of certain industries, such as the service sector and platform-based work, which have led to an increase in non-standard forms of employment and low-skilled work (OECD, 2019).

Higher-skilled workers can also be underemployed, and mismatches in qualifications, skills, and jobs are becoming a growing policy concern globally (ILO, 2021). Other trends contributing towards underemployment include rapidly ageing populations and the accelerating diffusion of AI and automation technologies (Acemoglu & Autor, 2011; Montcho et al., 2021). While these advances enhance productivity and create new industries, they also reshape occupational structures, displace routine work, and increase the risk of skills obsolescence and underemployment if reskilling does not keep pace.

Typically, underemployment is broadly defined as the underutilisation of the productive capacity of the labour force in terms of availability to work and the underutilisation of qualifications, skills, or experience (ILO, 2013; Ministry of Manpower [MOM], 2022). In contrast to the more commonly known phenomenon of unemployment, where a person is looking for work but cannot find a job, underemployment refers to individuals who are already employed but are seeking to work more hours or are overqualified for their job (ILO, 2013).

Underemployment impacts individuals, organisations, and societies as it is an underutilisation of human capital. This signals inefficiency in the labour market, which hampers productivity and economic growth (McGowan & Andrews, 2015a). Underemployed workers are disadvantaged in the labour market and are more likely to receive lower hourly wages and less favourable working conditions than similar workers in full-time or voluntary part-time employment (Bell & Blanchflower, 2021; MacDonald & Giazitzoglu, 2019).

Underemployed workers are also more likely to become trapped in a cycle of low-paid and insecure work, limiting opportunities for upward mobility (MacDonald & Giazitzoglu, 2019). Underemployment not only impacts career and job prospects but is also associated with higher levels of stress, anxiety, depression, and psychological distress (Feldman & Turnley, 1995), and lower levels of job satisfaction, organisational commitment, and meaning at work (McKee-Ryan & Harvey, 2011; Roh et al., 2014; Wilkins, 2006).

While anyone can be impacted by underemployment, some groups are more vulnerable to underemployment (Gould & Kassa, 2020; OECD, 2019). Young people and recent

graduates face distinct challenges in finding jobs that match their qualifications, skills, education field, and personal interests when entering the labour market, which increases their risk of underemployment (Bell & Blanchflower, 2021; Churchill & Khan, 2021). Women and caregivers are at higher risk of underemployment as they take time out of the workforce and seek more flexible work arrangements to balance caregiving commitments (Acosta-Ballesteros et al., 2021). Young people, women, and other disadvantaged groups, such as racial and ethnic minorities and lower-income and less-skilled workers, are also more likely to be concentrated in low-wage and low-skilled jobs and industries that have higher rates of underemployment (Golden & Kim, 2020; Li et al., 2015). Thus, understanding how underemployment affects different groups of workers is therefore critical to policy development and the promotion of more inclusive labour markets (OECD, 2019). A full literature review of the causes and impact of underemployment is given in Annex A.

Despite its prevalence and negative effects, underemployment is less well-studied and understood than unemployment (Montcho et al., 2021). Underemployment is also commonly measured as visible or time-related underemployment, defined as the extent to which an employed person is insufficiently engaged in employment based on their hours of work (MOM, 2023a; ILO, 1998). However, this definition does not fully capture other factors and considerations underpinning underemployment (ILO, 2018; Wilkins & Wooden 2011). Skills and income-related underemployment are more difficult to define and measure, and there is currently no international agreement on how we should measure non-time-related underemployment (ILO, 2018; Montcho et al., 2021). Despite the challenges in measurement, there is growing recognition of the importance of measuring skills and income-related underemployment (Green & Henseke, 2016; Pelizzari & Finchen, 2017). A full review and discussion of the definitions and measures of underemployment is given in Annex B.

Furthermore, voluntary underemployment is a growing phenomenon that is generally understood as a situation where an individual chooses to work fewer hours or in a less demanding job that is not congruent with their skills and qualifications. Workers may opt to work in a less challenging role or fewer hours for a number of reasons, including better work-life balance, reduced stress, to prioritise family responsibilities, or to pursue other interests outside of work. Such workers may also choose work that provides greater flexibility or satisfaction and is more aligned with their passion and values. The growth of voluntary underemployment can also be attributed to the changing nature of work, such as a desire for increased flexibility and remote work, along with the rise of the gig economy and new career paths and opportunities (ILO, 2021). While voluntary underemployment may reflect a person's values and priorities, it could also have negative impacts on individuals working fewer hours or in a less demanding job as this may result in lower earnings and fewer opportunities for career advancement.

Chapter 2: The Untapped Potential in Singapore's Workforce

Economic competitiveness and productivity are critical to Singapore's success and the key to these is a highly skilled and motivated labour force. Yet, the labour force today is facing headwinds in matching human capital to industry's needs. Tasks and skills requirements are rapidly changing as industries digitise, digitalise, and integrate AI-driven processes, which necessitates continual skills upgrading or even AI-relevant reskilling. Career pathways from education are more varied and fluid than before as workers embrace Open Loop Careers[1] rather than linear, traditional careers. The COVID-19 pandemic has also caused many people to rethink their employment choices and work-life priorities. As individuals reassess their life goals and priorities and embark on alternative careers, the conventional definition of underemployment requires rethinking. Understanding how Singapore's workers adapt to these transitions is essential to unlocking the untapped potential of the labour force.

In Singapore, the underemployment rate is defined as the percentage of time-related underemployed persons to employed persons. Time-related underemployed persons are individuals aged fifteen years old and over who are working less than 35 hours a week (i.e. working part-time) and are willing and available to engage in traditional work (MOM, 2023b). Like in other global contexts, Singapore adopts the international statistical definition of time-related underemployment, measured through labour force surveys (ILO, 2008). While this approach provides an overall indicator of labour underutilisation, it is not able to provide a more holistic understanding of underemployment, such as skills and income-related underemployment, as well as voluntary and involuntary underemployment.

Time-related underemployment has varied, decreasing from 2012 and rising sharply during the COVID-19 pandemic (see Figure 1). In 2023 and 2024, the time-related under-employment rate in Singapore was stabilised at 2.3% (MOM, 2025).

There are only a small number of studies that have investigated underemployment in Singapore, focusing on underemployment among graduates who work in occupations classified as low-skilled or semi-skilled, outside professional or managerial classifications. Ng and Wong (2021) found that half of the Singaporean graduate full-time freelancers in the gig economy were considered underutilised and underemployed. Further, they found that underemployment had less effect on openness, conscientiousness, or attitudes toward reskilling, even though underemployed workers

[1] The concept of Open Loop Careers was coined by the Lee Kuan Yew Centre for Innovative Cities (LKYCIC) to refer broadly to an emerging pattern in individuals' careers whereby there is a notable absence of linearity and hierarchy of positions, jobs, and tasks in line with societal expectations and any other established norms. Instead, individuals construct their careers according to their own life choices, move between jobs and education freely, and have the intention and ability to hold jobs in various industries, positions, and sectors, sometimes very different in nature. This concept is currently validated in the research project *Empowering Singaporean Workers to Transition, and Map Careers Better in the Future of Work through Open Loop Careers* that is funded by The Workforce Development Applied Research Fund, Institute of Adult Learning (WDARF IAL).

reported a much higher degree of status discrepancy, which could affect future career attitudes and psychological well-being (Ng & Wong, 2021). Similarly, a study by the Ong Teng Cheong Labour Leadership Institute (OTCi) found that underemployed workers were more likely to be underpaid, experience job and income insecurity, and lack finances for daily expenses (Ng, 2017).

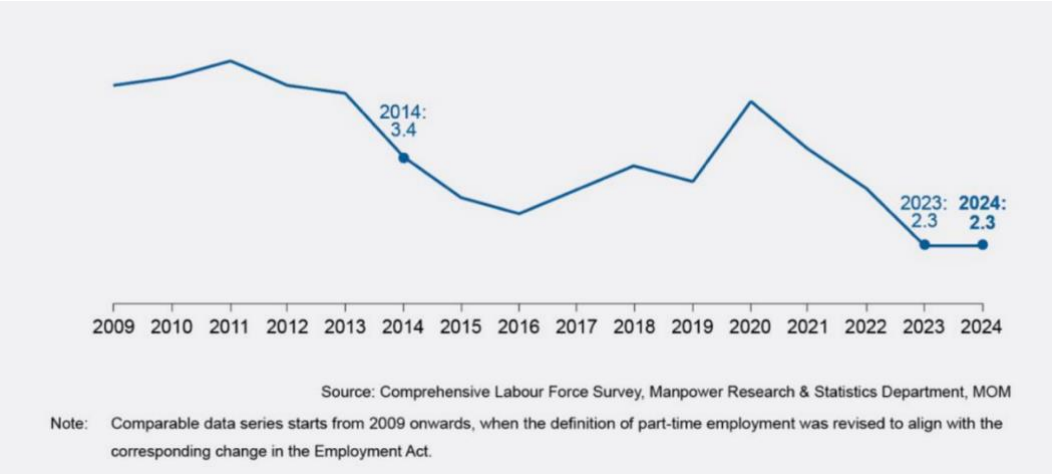

Figure 1. Singapore's time-related underemployment rate from 2009-2024 sourced from MOM (2025).

Focusing on skills utilisation among degree graduates in Singapore between 2013 and 2017, Green and Henseke (2021) found that graduates who were in task-unwarranted jobs (where the job does not have tasks requiring graduate-level skills) and in non-graduate jobs reported lower skills utilisation compared to their peers who worked in jobs with tasks that match their graduate-level skills. Moreover, they found a negative wage gap of 18% for graduates in task-unwarranted graduate jobs, and a negative wage gap of 31% for underemployed graduates (Green & Henseke, 2021).

Aside from the above studies, to date, there has been no comprehensive study conducted in Singapore focusing on the changing nature of career decisions post-COVID-19, including exploring a broader conceptualisation of underemployment (e.g. non-time-related underemployment). This is critically important considering global developments and rapid reconfigurations of jobs and industries. It is also important to understand which workers may be more vulnerable to the effects of underemployment.

Singapore's workforce possesses talent, experience, and adaptability. Yet, mismatches between workers' skills, aspirations, and available opportunities may constrain the full utilisation of this human capital. As industries transform, career trajectories are becoming less linear, with individuals seeking greater meaning, flexibility, and balance between professional and personal priorities. Addressing these mismatches requires not only stronger alignment between education, skills, and work opportunities, but also forward-looking strategies that help workers anticipate and adapt to technological change. As Singapore advances towards a technology-driven economy, it will be increasingly important to identify which workers are most vulnerable to underemployment, and design inclusive strategies that sustain meaningful and dignified employment across all career stages.

Chapter 3: Survey Findings

In this study, we set out to understand the complex nature of underemployment in Singapore. We focused on understanding the considerations underpinning job decisions leading to underemployment, whether voluntary or involuntary, as well as understanding the personal outcomes of being underemployed. To this end, the study focused on skills-job mismatch, qualification-job mismatch, education field-job mismatch, qualification-occupational category mismatch, and self-perceived underemployment. We did not focus on time-based underemployment and income-based underemployment as they have been comparatively better explored by MOM's Labour Force Survey and previous academic studies (e.g. Ng (2017) and Green et al. (2021)) respectively.

The research team collected two types of primary data. The first was an online survey with Singapore Citizen and Permanent Resident workers. The results are presented in this chapter. The second was a series of in-depth interviews with Singapore Citizen and Permanent Resident workers who embody different characteristics of underemployment. The personal accounts of our interviewees are combined with our survey findings and presented in a series of vignettes to elaborate on the different experiences and considerations of underemployment in the next chapter: Voices of the Workers.

The online survey was conducted with 1,100 Singapore Citizens and Permanent Resident workers in October 2025. The sample was representative of the population in Singapore. The survey comprised four modules to give a holistic understanding of underemployment arising from skills-job, qualification-job, education field-job, and qualification-occupation mismatches in our sample (see Figure 2). A detailed explanation of how skills-job, qualification-job, education field-job, and qualification-occupation mismatches were assessed is provided in Annex C.

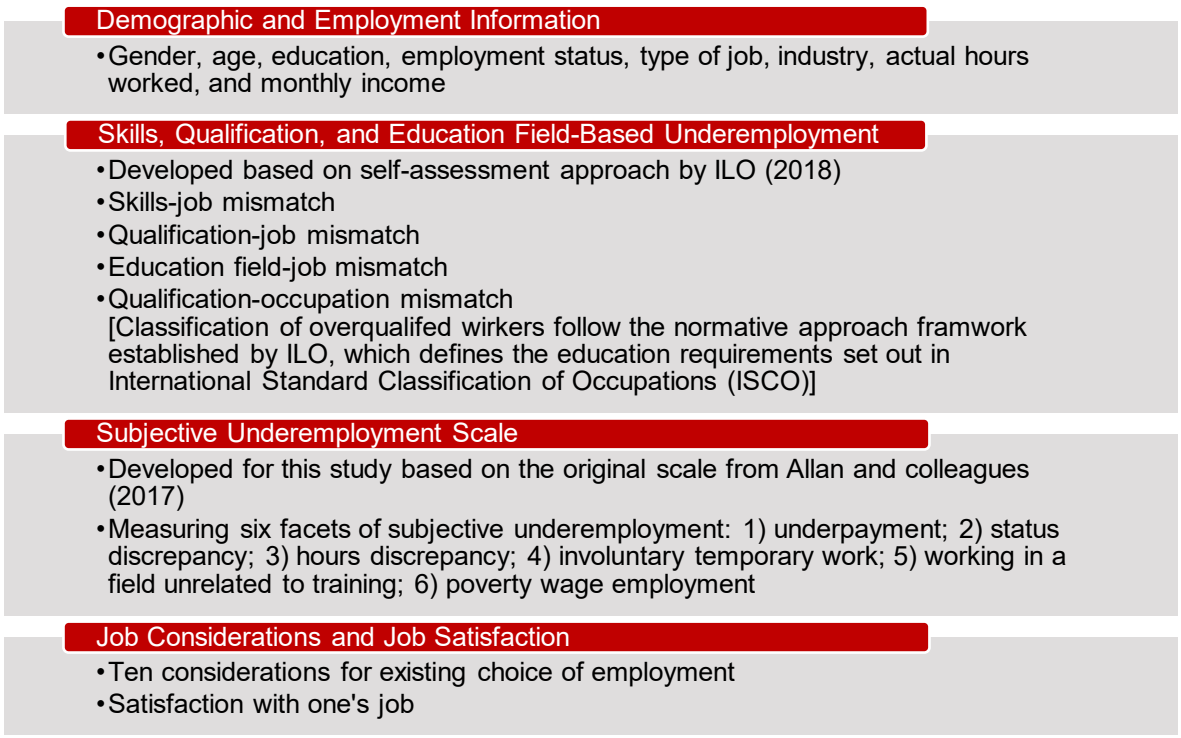

Figure 2. Survey modules.

The following pages summarise the key findings from the survey. A detailed description of the sample and the findings are available in the Annex D.

First, we focused on the four mismatches related to underemployment and compared the findings for skills-job, qualification-job, and education-field job mismatches in Singapore to similar analyses using OECD's 2023 Survey of Adult Skills PIAAC data from 29 OECD countries[2] (OECD, 2024), and qualification-occupation[3] mismatch findings to those of the International Labour Organization Database on International Labour Statistics' (ILOSTAT) data for 35 high-income countries[4].

We found that the most prevalent mismatch in our sample was education field-job mismatch, with a 31.4% prevalence rate among employed respondents, followed by qualification-job mismatch (23.0%), skills-job mismatch (22.5%), and qualification-occupation mismatch (20.3%). When compared to findings from OECD and high-income countries, we observed a comparable prevalence of qualification-job and qualification-occupation mismatch and a notably lower prevalence of skills-job and education field-job mismatch in Singapore.

[2] The sample reported in the study comes from 29 OECD countries from the second cycle of the PIAAC survey which took place in 2022–2023. The sample is limited to adults aged 25–65 years old who are not self-employed. The 29 countries are Austria, Belgium (Flemish Region), Canada, Chile, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Japan, South Korea, Latvia, Lithuania, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom (England), and the United States.

[3] The qualification–occupation mismatch is measured using a normative approach, which enables consistent comparison across time and countries. Following the ILO framework, educational requirements are defined for each major occupation group. Workers are classified as (i) "underqualified" when their educational attainment is below the level required for their occupation, (ii) "matched" when their qualification corresponds to the formal education required, and (iii) "overqualified" when their educational attainment exceeds the level required.

[4] The dataset used in the study is from ILOSTAT containing country-level data from the years 2016, 2017, or 2018 from 35 high-income countries: Austria, Belgium, Brunei Darussalam, Chile, Cyprus, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Israel, Italy, South Korea, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Palau, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Arab Emirates, United Kingdom, United States, and Uruguay.

Skills-Job Mismatch

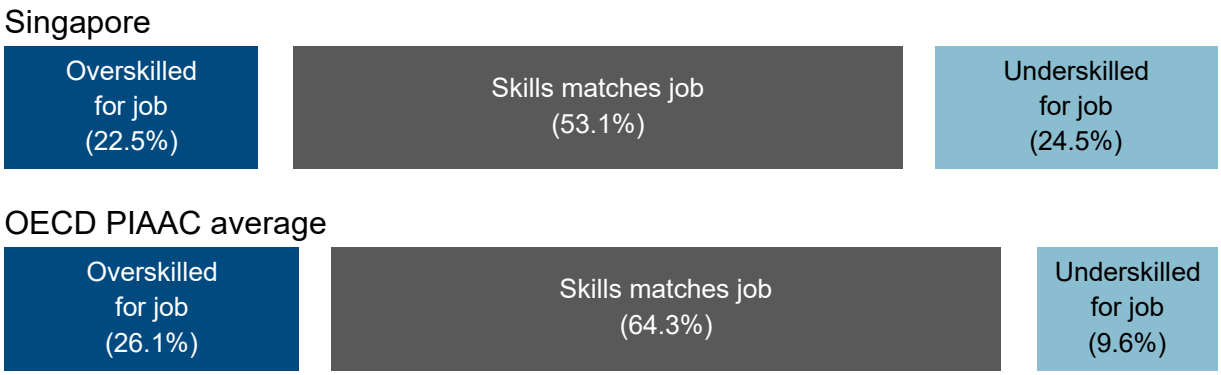

Figure 3. Underemployment related to skills-job mismatch. Percentages may not sum to 100 due to rounding.

Underemployment arising from skills-job mismatch was identified among 22.5% of respondents who were employed. In particular, the proportions of respondents who reported being overskilled for their jobs were higher among three profiles:

1) Males,
2) Middle to older adult respondents (30-65 years old), and
3) Late-middle career stage (16-25 years of work experience) (see Figure 4).

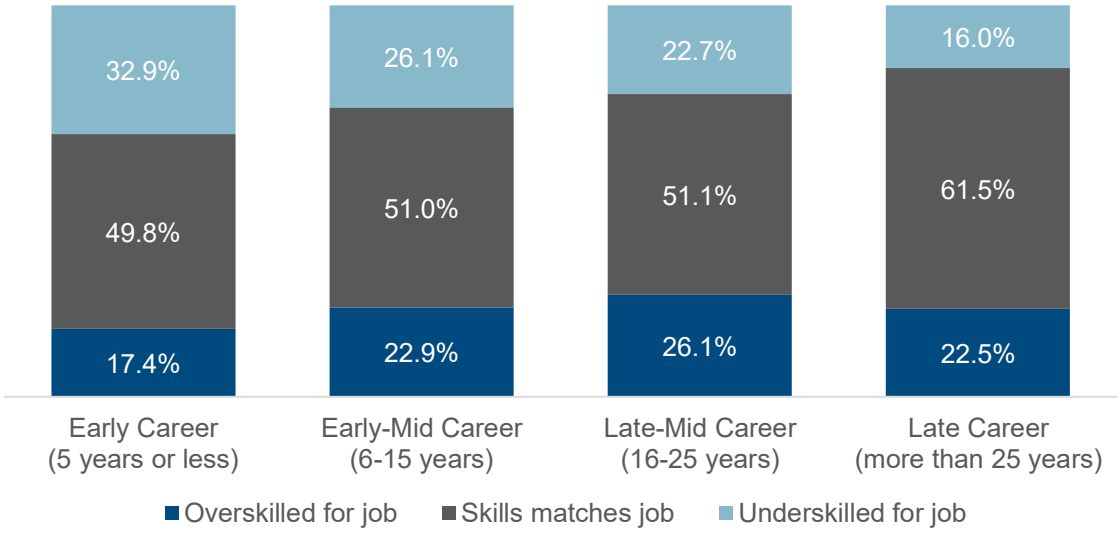

Figure 4. Skills-job mismatch among career stages. Percentages may not sum to 100 due to rounding.

Qualification-Job Mismatch

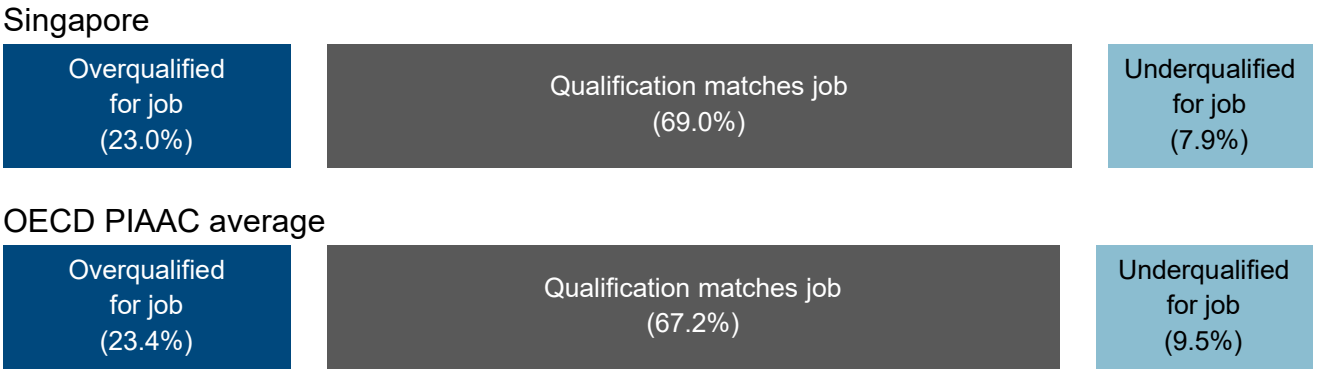

Figure 5. Underemployment related to qualification-job mismatch. Percentages may not sum to 100 due to rounding.

Underemployment arising from qualification-job mismatch was identified among 23.0% of respondents who were employed. In particular, the proportions of respondents who reported being overqualified for their jobs were higher among four profiles:

1) Younger adults (below 35 years old),
2) Degree or diploma and professional qualifications holders,
3) Part-timers, and
4) Early-mid career stage (15 years of work experience or less) (see Figure 6).

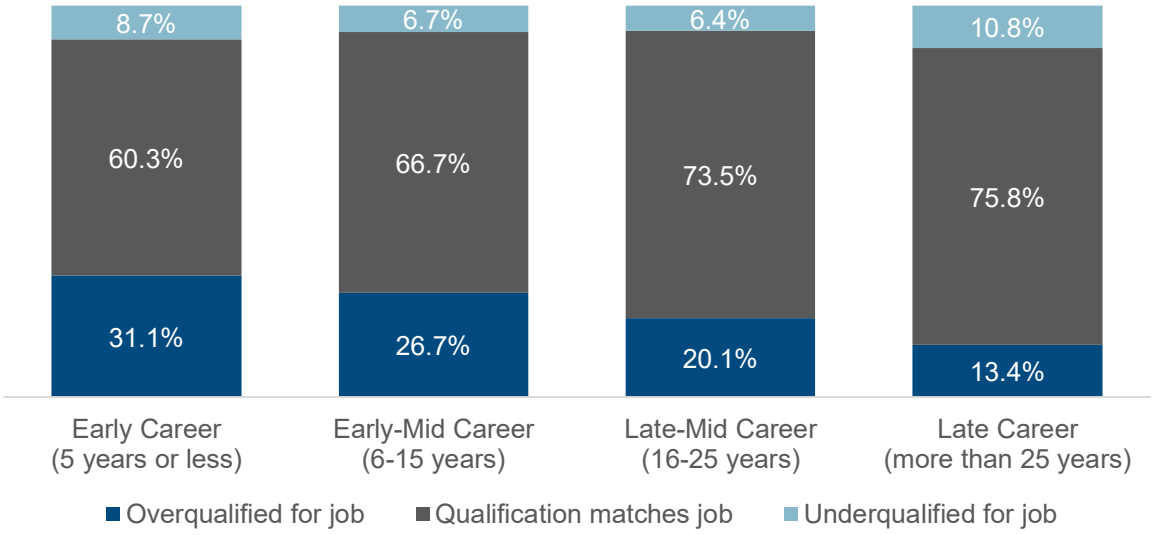

Figure 6. Qualification-job mismatch among career stages. Percentages may not sum to 100 due to rounding.

Education Field-Job Mismatch

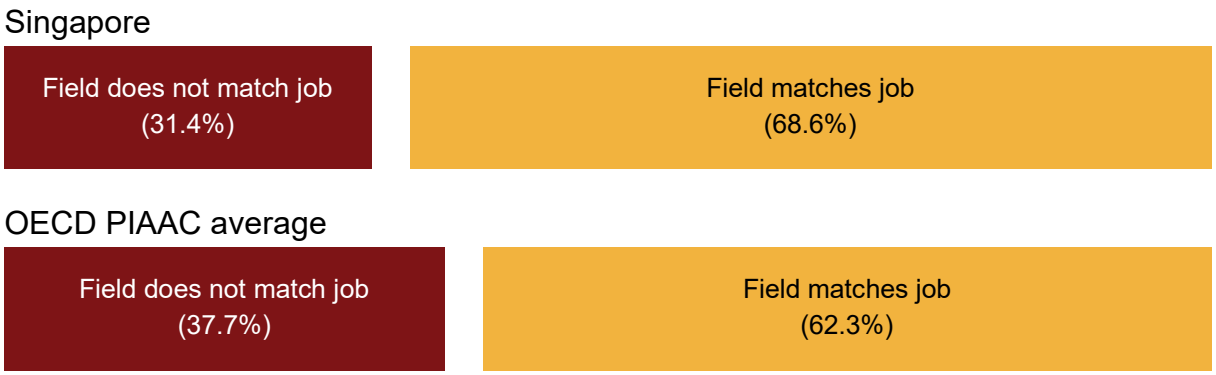

Figure 7. Underemployment related to education field-job mismatch.

Underemployment arising from education field-job mismatch was identified among 31.4% of respondents who were employed. In particular, the proportions of respondents who reported that their education field did not match their jobs were higher among three profiles:

1) Non-degree or diploma and professional qualifications holders,
2) Part-timers, and
3) Non-PMET respondents (see Figure 8).

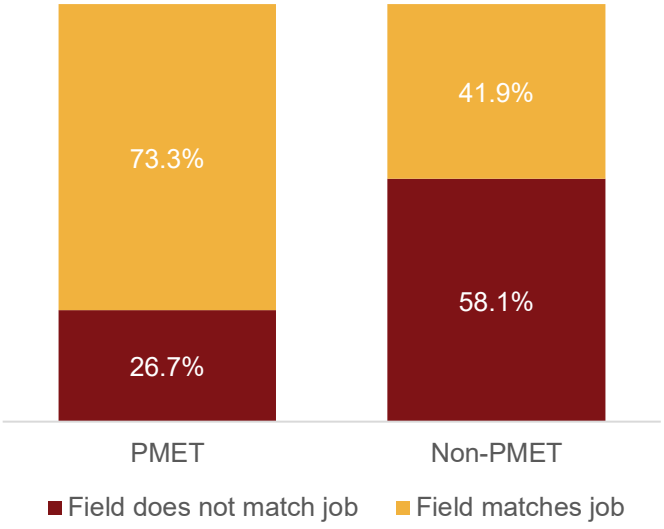

Figure 8. Education field-job mismatch among PMETs and non-PMETs.

The higher education field-job mismatch likely reflects career exploration and mobility in the early and early-mid career stages, where workers transition into roles that draw on transferable or cross-disciplinary skills. This makes education field-job mismatch a broader indicator of underemployment compared to qualification- or skills-based mismatches, which more directly capture whether workers' capabilities are being fully utilised. In addition, another dimension to consider is that workers may work in roles different from their higher education disciplines, and it is more important to continue gaining experience and skills as they progress in their jobs.

Qualification-Occupation Mismatch

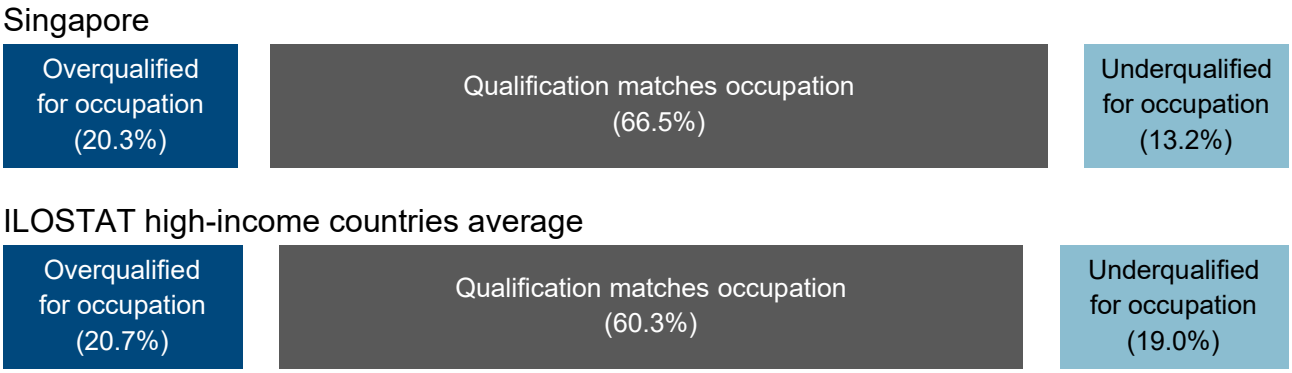

Figure 9. Underemployment related to qualification-occupation mismatch.

Unlike qualification-job mismatch[5], which compares a worker's qualifications to the specific requirements of their current role, qualification-occupation mismatch[6] assesses whether their qualifications exceed the educational norms for the broader occupational category.

Underemployment arising from qualification-occupation mismatch was identified among 20.3% of respondents who were employed. In particular, the proportions of respondents who reported educational attainments that were above the educational requirements set out in the Standard Classification of Occupations (ISCO) for their occupational group were higher among four profiles:

1) Younger adults (below 35 years old) and particularly so for the youngest (20-24 years old),
2) Degree or diploma and professional qualifications holders,
3) Part-timers, and
4) Early career stage (5 years or less of work experience) respondents (see Figure 10).

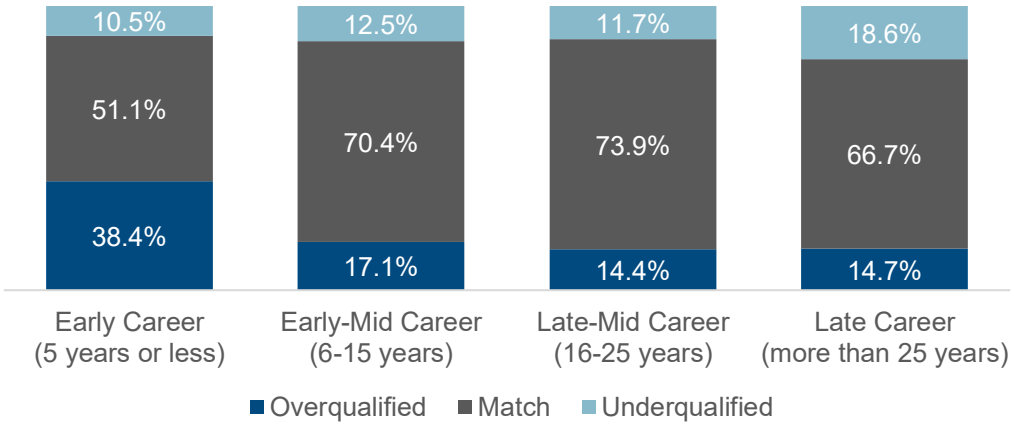

Figure 10. Qualification-job mismatch among career stages based on number of working years.

[5] Similar analysis using OECD's 2023 Survey of Adult Skills PIAAC data from 29 OECD countries (OECD, 2024).
[6] Similar analysis using International Labour Organization Database on International Labour Statistics' (ILOSTAT) data for 35 high-income countries.

Education Field Mismatch and Overqualification

A potential predictor of workers at risk of underemployment would be those who are both horizontally (referring to education field-job) and vertically (qualification-job) mismatched.

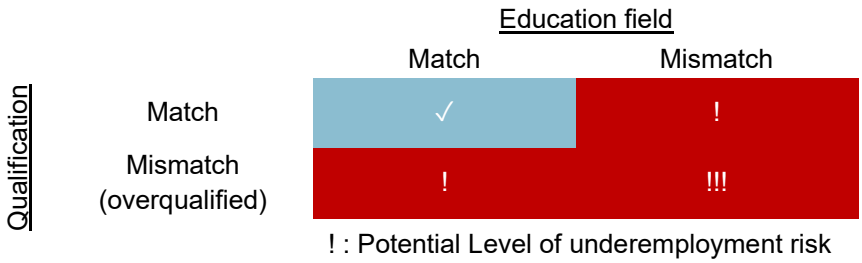

Figure 11. Horizontal and vertical underemployment.

Among our respondents, we found that 16.7% of those in full-time employment were mismatched by their education field but working at an adequate qualification level (mismatched horizontally, but not vertically). 9.9% were working in a different field from their education and overqualified in their job, while 13.1% were working in the same field from their education and overqualified in their job. These figures are comparable to the levels observed across OECD countries (see Table 1).

Table 1. Education field mismatch and overqualification.

	Singapore	OECD PIAAC average
Education field-job mismatch with well-matched qualifications	16.7%	25.4%
Education field-job mismatch with overqualifications	9.9%	12.9%
Education field-job match with overqualifications	13.1%	11.4%

We observed that age had a differentiated profiling with older adults who reported higher underemployment related to skills-job mismatches, but younger adults who reported underemployment related to qualification-job and qualification-occupation mismatches. Likewise, career stage had differentiated profiles with middle-late career stage respondents being related to skills-job underemployment, while early career stage respondents were related to qualification-job and qualification-occupation underemployment. Higher education (degree or diploma and professional qualifications holders or non-holders) was related to qualification-job and qualification-occupation underemployment, but lower education (non-tertiary and below) was related to education field-job mismatches. Consistently, employment status (part-time), and job type (non-PMET) emerged as distinguishing profiles indicators of underemployment related to qualification-job, education field-job, and qualification-occupation mismatches.

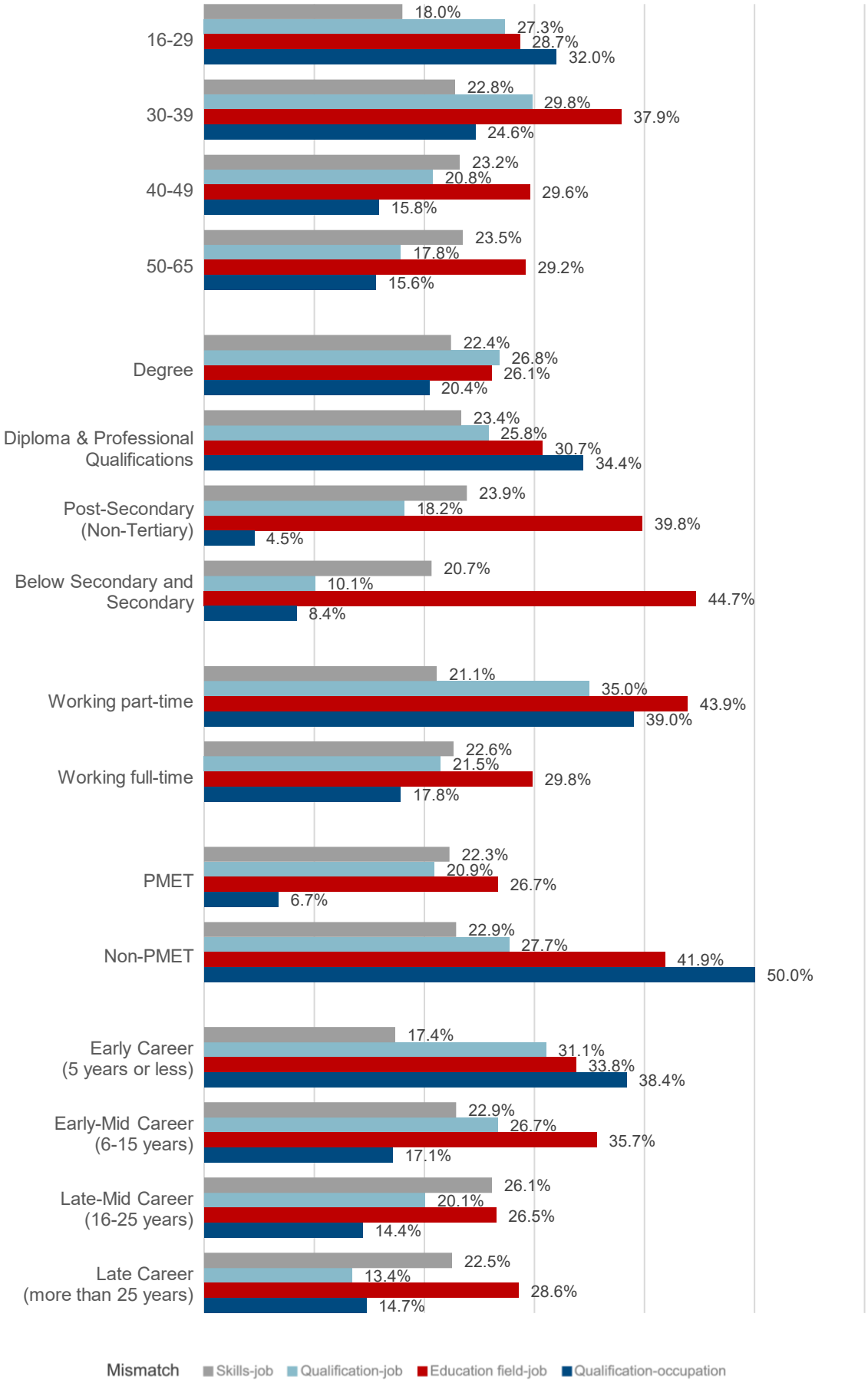

Figure 12. Demographic profiles of respondents with skills-job, qualification-job, education field-job, and qualification-occupation mismatches. Percentages may not sum to 100 due to rounding.

Differentiated Mismatch Among Work Experience Tenure

From the findings above (see Figure 12), the prevalence of underemployment related to skills-job mismatch is lowest among early-career workers (within 5 years of work experience). This could reflect that individuals entering the workforce may initially feel less confident of applying their skills to their new roles. Interestingly, the pattern is reversed for qualification-job and qualification-occupation mismatches which are the highest among this same group of early-career workers. This suggests that these new entrants to the workforce may be working in roles that do not fully meet the potential of their educational attainment as part of career exploration or to accumulate working experience. While our measurement focuses on workers' self-assessed skills utilisation, a recent study[7] highlighted minor differences between skills youths perceive as important and those valued by employers. Incorporating employer perspectives in future assessments could provide a more holistic understanding of skills-job match, particularly in identifying gaps where workers may overestimate or under recognise the relevance of certain skills.

Education field mismatch shows a slightly different pattern, peaking among early-mid career workers (6-15 years of work experience) at 35.7%, followed closely by those in their early-career stage (33.8%). This may reflect a period of career exploration where individuals take on roles outside their original field of study before finding a better fit. The subsequent decline in mismatch at later stages could also potentially signal upskilling to align field of training with occupational demands.

As experience accumulates, these mismatches narrow and reflect stronger alignment between qualifications, skills, and occupational roles over time. The convergence in later career stages may stem from career stability and progression, retraining, or a more accurate self-assessment of job fit among established workers.

[7] The research brief on the study, 'Workplace Success and Soft Skills: Bridging the Gap Between Youths' Perceptions and Employers' Expectations' is available on https://www.suss.edu.sg/docs/default-source/dept_cesg_docs/workplace-success-and-soft-skills-bridging-the-gap-between-youths-perceptions-and-employers-expectations.pdf?sfvrsn=6fae48ed_3.

Subjective Underemployment

Next, we focused on six major domains of underemployment identified by Feldman (1996) using a Subjective Underemployment Scale[8] (Allan et al., 2017).

Figure 13. Six domains of the Subjective Underemployment Scale.

Underpayment and status discrepancy were the two most reported domains of underemployment by employed respondents (see Figure 14). These suggest relatively stronger perceptions among respondents that they are underpaid and given lower status in the workplace than they expect to be accorded. Underpayment and status discrepancy were most prevalent among the following profiles:

1) Early and early-mid career stage (15 years of work experience or less), and
2) Self-assessed underemployed respondents who reported experiencing skills- or qualification-job mismatch.

The least reported domain of underemployment was hours discrepancy, with the exception of respondents who are in part-time work arrangements. This suggests that respondents working part-time are seeking to work more hours.

[8] Survey respondents responded using a short-form version of the Subjective Underemployment Scale that was developed for this study using a 7-point Likert scale from 1 = strongly disagree to 7 = strongly agree. The original scale was developed by Allan and colleagues (2017).

Relationships with Mismatch-Related Underemployment

Further, respondents who reported having skills-, qualification-, or education field-job mismatches as well as those who showed qualification-occupation mismatch also reported higher levels in four of the six domains of subjective underemployment (see Figure 14):

1) Being underpaid,
2) Having to work in their current job for the time being involuntarily,
3) Having to work in a field different from their education and skills, and
4) Not earning enough to make a decent living.

In particular, respondents who reported qualification-job mismatch also reported stronger perceptions of being underpaid and accorded a lower status at work than they expect, compared to those who show skills-job, education field-job, and qualification-occupation mismatches. Those who reported education field-job and qualification-job mismatches also reported stronger perceptions that they are not earning enough to make a decent living. In general, those who reported qualification-job mismatch reported the highest levels in all domains compared to the other three mismatches, except for hours discrepancy and involuntary temporary work.

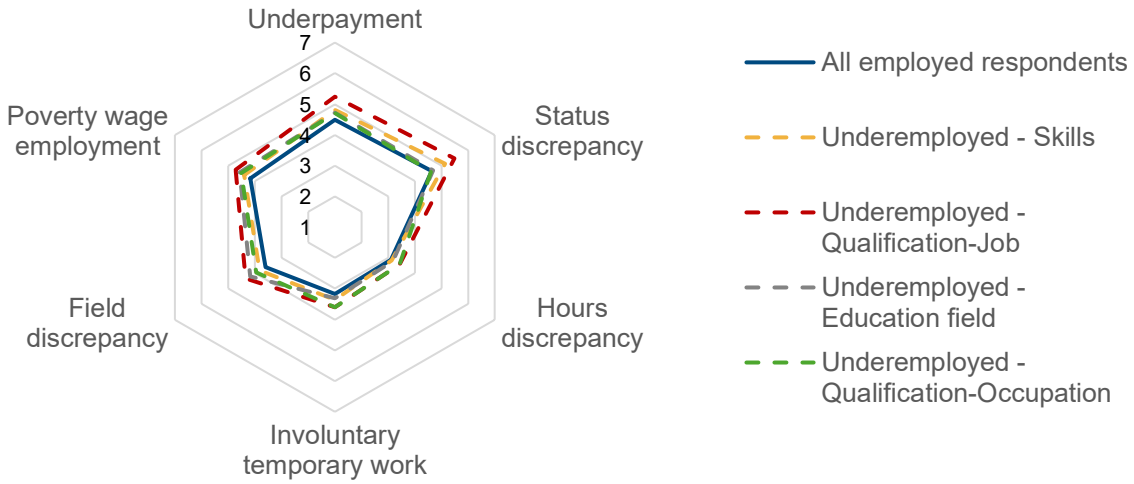

Figure 14. Responses on six domains of the Subjective Underemployment Scale by type of underemployment.

Considerations of the Voluntarily Underemployed

Investigating the different considerations that respondents who were underemployed by skills-job, qualification-job, education field-job, or qualification-occupation mismatches, it was evident that the considerations differed by the respondents' employment status (full-time or part-time employment). The majority (more than 85%) of underemployed respondents had one or more voluntary and pragmatic considerations for choosing their current employment.

The top three considerations for underemployed respondents with full-time employment observed across the four types of underemployment (skills-job, qualification-job, education field-job, or qualification-occupation mismatches) differed in exact ranks but in general included:

1) Income security,
2) Job security, and
3) Flexibility of work schedule.

For underemployed respondents with part-time employment, the top three considerations also differed in exact ranks but were consistently:

1) Flexibility of work schedule,
2) Family and caregiver responsibility, and
3) Work location.

The reported considerations by the underemployed respondents suggest that a greater priority was placed on security and certainty in their employment and financial situation and their life commitments rather than personal interest considerations (e.g. personal passion) or pro-social considerations (e.g. ability to make social impact).

The full list and ranking of considerations are presented in Figure 15.

Full-time employed	Mismatch			
	Skills-job	Qualification-job	Education field-job	Qualification-occupation
Income security	1	1	3	1
Job security	2	2	2	2
Work location	3	4	6	4
Attractive pay/income	3	5	4	5
Basic statutory employment benefits	5	6	7	6
Personal passion	5	6	8	7
Flexibility of work schedule	7	3	1	3
Did not have a choice	8	8	5	8
Family/caregiver responsibility	9	9	9	10
Ability to make social impact	10	10	10	9

Part-time employed	Mismatch			
	Skills-job	Qualification-job	Education field-job	Qualification-occupation
Flexibility of work schedule	1	1	1	1
Family/caregiver responsibility	2	3	3	3
Work location	3	2	2	2
Attractive pay/income	4	5	8	7
Personal passion	5	7	5	6
Ability to make social impact	5	5	9	5
Income security	5	7	9	7
Did not have a choice	5	4	3	4
Job security	9	9	6	7
Basic statutory employment benefits	10	10	6	10

Figure 15. Ranking of job considerations of underemployed respondents. 1 = top consideration; 10 = last consideration. Ranks may be identical where scores are tied.

Voluntary Underemployment

Underemployment can be voluntary or involuntary. Among underemployed respondents with full-time employment across the four types of underemployment, the vast majority (85.5%) were underemployed voluntarily, where they made a conscious decision to work in a job where their skills, qualification, or education field did not match the job. 14.5% were underemployed involuntarily, working in their current jobs because they did not have any other choice.

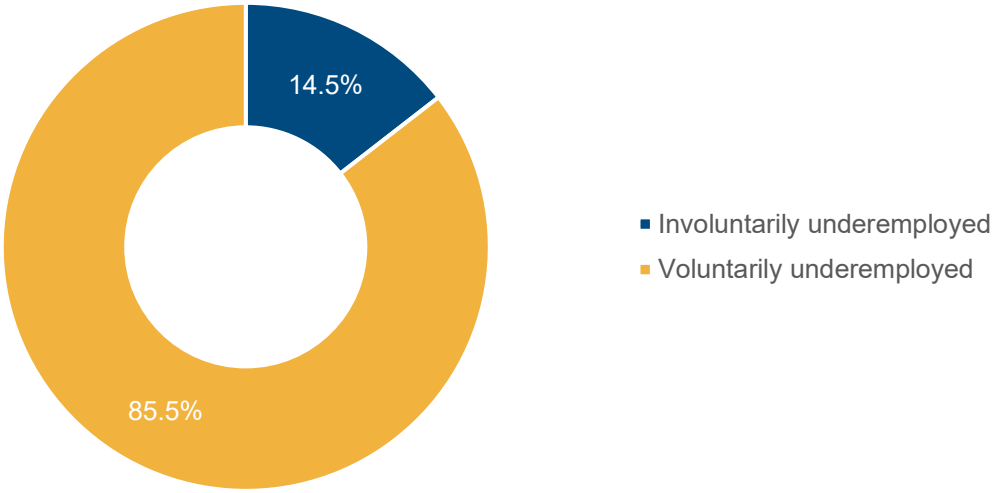

Figure 16. Voluntary and involuntary underemployment.

Differences in the profiles of those voluntarily and involuntarily underemployed were found. Those voluntarily underemployed tended to be respondents with either young or elderly dependents (see Figure 17).

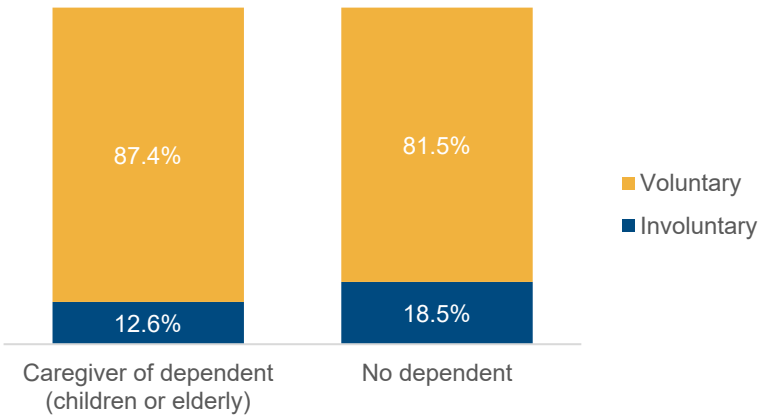

Figure 17. Voluntary and involuntary underemployment by caregiver status.

Impact of Underemployment on Job Satisfaction

The last set of analyses[9] focused on understanding how underemployment is related to well-being, specifically job satisfaction[10] for our respondents. A strong relationship is found, whereby respondents who are underemployed by qualification-job and education field-job mismatch were found to report much lower levels of job satisfaction. This result persisted even after taking into account the actual hours worked.

Lower job satisfaction was reported by respondents who reported higher levels in five of the six domains of subjective underemployment:

1) Being underpaid,
2) Having a lower status at work than they expect to be accorded,
3) Involuntary temporary work,
4) Having to work in a field different from their education and skills, and
5) Not earning enough to make a decent living[11].

On the other hand, higher job satisfaction was reported by respondents who reported that they were working fewer hours than they would like.

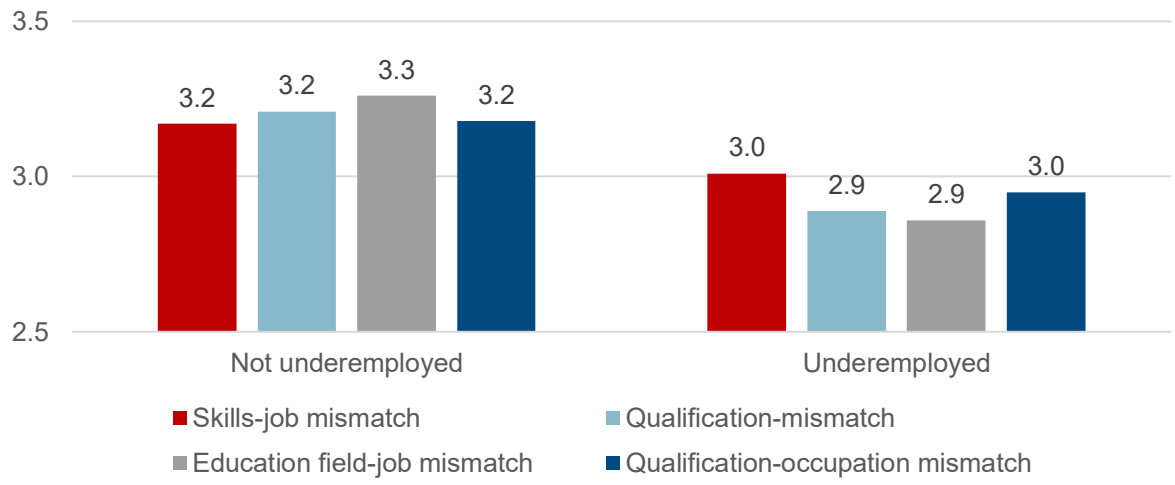

Figure 18. Job satisfaction scores across underemployed and non-underemployed respondents. Job satisfaction scores ranged from 1 to 5 with higher scores indicating greater job satisfaction.

[9] The analyses comprised of a series of multivariate linear regressions with job satisfaction as the outcome variable and different indicators of underemployment as predictors. Covariates of gender, age, education, employment status, and PMET status were included in the analyses.

[10] Job satisfaction was measured using a 5-point Likert scale, ranging from 1 to 5. Higher scores indicate greater job satisfaction.

[11] "Decent living" follows the wording used in the Subjective Underemployment Scale developed by Allan et al. (2017), which assesses individuals' perceptions of whether their current earnings allow them to maintain an acceptable standard of living. It reflects respondents' own evaluation of their ability to meet expected living needs and quality-of-life expectations, rather than an objective measure of income adequacy or basic needs.

Chapter 4: Voices of the Workers

To delve deeper into the considerations and circumstances of underemployment, in-depth interviews with 25 individuals who are presently experiencing or have experienced underemployment in Singapore were conducted. The interviewees provided a broad understanding of the various types of underemployment through the workers' own evaluation of their work situation. The types of underemployment covered include voluntary and involuntary underemployment and time-related, income-related, and skills-related underemployment.

Here, the findings are presented in the form of eight vignettes. The vignettes are composites of multiple interviewees whose life experiences are intertwined to 'tell the story' to help us discover the different faces of underemployment.

While the interviewees have been grouped according to their worker profile, some profiles such as 'Caregivers of Elderly' have more than one persona to illustrate the multiplicity of factors that influence underemployment and its disparate effects on an individual's career trajectory. To protect the identities of the participants, pseudonyms have been assigned to each persona.

Early Career Tertiary Graduate (working outside of field)

Early Career Tertiary Graduate (Entrepreneur path)

Self-employed/ Stay-at-home Mothers

Caregiver of Elderly

Mid-career PMET

Mid-career PMET, Mother

Mid-career non-PMET, Platform Worker

Late/End Career

Vignette 1: Early Career Tertiary Graduate (Working Outside of Field)

Joshua* (Age: 25; Early Career; Single; Temporary Healthcare Assistant)

* The name has been replaced with a pseudonym for anonymity. This profile is not gender-specific.

Type of Underemployment

- Skills-job, qualification-job, and education field-job mismatch
- Voluntary, but at risk of developing into involuntary

Key Challenges

- Preference for full-time employment rather than full-time training courses
- Slow career progression and salary growth in jobs outside education field
- Difficulty finding jobs during the pandemic has prolonged effect on underemployment

Support Needed

- Support for on-the-job training in field of education and funding for further studies from future employer or authorities
- Employer support for work-life balance

Joshua completed a Diploma in Electrical Engineering in 2019. He has been interested in Green Energy since young and chose to pursue his interest during polytechnic. However, after graduating and completing his National Service, he was not able to find a job in the sector due to the COVID-19 induced slowdown in hiring. Keen to start work and earn an income, he took on a temporary contract position as a Healthcare Assistant in a COVID-19 care facility.

While he had no prior knowledge of the medical field, Joshua felt that there was no harm exploring his options and trying out different ones while he was young, unattached, and did not have any major financial burdens. He enjoyed the 4-day work week while contributing meaningfully towards combating the pandemic. Toward the end of his three-year contract, he started feeling that it was time to secure a “proper” job. Looking around at his peers, he realised that some had flourishing careers and with higher salary. He saw his cousin earnestly saving up for a Build-to-Order (BTO) flat deposit and realised that if he wanted to settle down with a life-partner in the future, he needed to consider his own financial situation too.

Joshua is well aware of career resources such as the MyCareersFuture site and other job-matching portals and career counselling. However, there is no pressing need to tap on them since he feels that he is able to research and chart his future career. Currently, Joshua does not find it necessary to upskill as it is too time-consuming and might not be worth the financial investment. He shared, “I think the only thing that is off putting to me is time, the three or four years that you have to put in [for the specialist certification]. So for me, I think I would just prefer to start working straight-away and to upskill along the way”. Nonetheless, he hopes to be able to receive some financial support if he does decide to upskill.

For young graduates like Joshua, the line between voluntary and involuntary underemployment became blurred due to difficulty finding relevant jobs during the COVID-19 pandemic. While he desired higher pay and better prospects for career progression that came with “proper” jobs commensurate with his qualifications, he enjoyed his first job and its work-life balance. However, if he takes too long to secure a job in his desired field, he would appreciate access to upskilling and reskilling programmes with the promise of a job upon completion.

Vignette 2: Early Career Tertiary Graduate (Entrepreneur Path)

Grace* (Age: 30; Early Career; Single; Self-Employed/Small Business Owner)

* The name has been replaced with a pseudonym for anonymity. This profile is not gender-specific.

Type of Underemployment

- Qualification-job and education field-job mismatch
- Voluntary

Key Challenges

- Leaving job related to education field despite skills match due to burn out and office culture/work environment
- Limited opportunities for career progression and income growth in past job related to education field
- Reluctance to register for further training as it may affect their income

Support Needed

- Career counselling and mentorship specific to their career path
- Subsidies and/or funding for retraining and skills upgrading

Grace is a patissier who sells her baked goods online while running baking classes from home. After earning a bachelor's degree in social sciences eight years ago, Grace worked for four years in the civil service before resigning to enrol in an 18-month diploma programme on pastry-making and afterwards starting her pastry business. Grace left her full-time job in search of “more freedom, more creativity” and the opportunity to become an entrepreneur as she felt stifled by the hierarchical structure and lack of innovation in her previous job.

Furthermore, she was pessimistic about her opportunities for career progression and income growth. Her prospects seemed more promising in the Food and Beverages sector, especially after working at her friend’s cafe on the weekends and attending short courses on pastry-making before she resigned. She likened that experience as putting “stepping stones” in her path. Additionally, she felt it was better to leave her first job while she was still young and had few financial and family commitments.

A year after completing the programme, Grace has a better idea of the challenges as a self-employed patissier and feels positive about her future prospects. She has registered her business and has been conducting baking lessons in addition to taking pastry orders online. The rest of the time, she is working on her new recipe book and marketing her brand on social media. While she may be earning less than before, she feels that will

change as her business picks up. To continue growing her business and stay on top of future trends, she is currently undergoing the Workforce Skills Qualifications (WSQ) Advanced Certification in Learning and Performance (ACLP) which would give her the necessary credentials to offer WSQ baking courses.

She acknowledged the challenges of Continuing Education and Training (CET) for self-employed individuals like herself, especially since she has fully used her SkillsFuture credits on the WSQ Diploma programme. She suggested that perhaps there could be greater flexibility in the SkillsFuture credits scheme and noted that she could extract greater utility from her parents' unused credits as they were planning to retire in a few years. She also feels that because she chose a less conventional career path, many of the existing formal training courses and career advisory services may not be relevant for her.

Vignette 3: Self-Employed/Stay-at-Home Mothers

Sharifah* (Age: 34; Early-Career; Married; Stay-at-Home Mother and Freelance Translator, Copywriter)

* The name has been replaced with a pseudonym for anonymity.

Type of Underemployment

- Income-related and skills-job mismatch
- Voluntary

Key Challenges

- Requires flexible work arrangements to manage child caregiving responsibilities
- Difficulty committing to training courses as she needs to be available for acute caregiving duties as they arise (e.g. sick children)

Support Needed

- Flexible work opportunities and family-friendly workplace policies
- Subsidised childcare support and/or childcare options to enable mothers to work
- Flexibility in the design and implementation of training courses to accommodate childcare duties
- More financial support for upskilling and/or retraining

Sharifah is a mother of two children aged 18 months and three. After graduating with a Double Degree (Hons.) in Psychology and Communications about a decade ago, Sharifah started her career in a job as an editor in a publishing firm. Two years later, looking for a career with more meaning, Sharifah undertook retraining to become a teacher in a special needs education centre. After getting married and starting to plan for children, she realised that having to work evenings and on weekends was not ideal, leading her to resign after five years in the job. Subsequently, after having her first child, Sharifah found a new position with more flexible hours as a curriculum developer in the same sector. However, after having her second child, and struggling to find centre-based care for her infant, she decided to stop work again.

Sharifah has since switched over to freelance translation and copywriting work, utilising global online platforms like Upwork and LinkedIn to market herself and secure assignments. She also has a pipeline of assignments offered by her social network. However, she is currently only able to take on short assignments or those with flexible deadlines so that she can work around her caregiving responsibilities. She acknowledged that it made more financial sense for her to stay at home rather than her husband as "... his job, the benefits, and all that is definitely way better than mine."

Sharifah hopes to return to the workforce when her children are a little older and the "acute phase" of caregiving has passed. This is not just to supplement the family income, but to continue contributing to the education sector with her hard-earned skills and experiences. She realises that she will need to attend upskilling and/or reskilling courses after years of working in a freelance capacity but wishes that the timing and format of these courses could be more accommodating of her child caregiving duties. Furthermore, when she begins applying for jobs in the future, Sharifah hopes there would be more options offering a family-friendly work environment and flexible arrangements for mothers like herself.

Vignette 4: Caregiver of Elderly

Jun Jie* (Age: 46; Mid-Career; Single; Part-Time Retail Assistant and Freelance Public School Relief Teacher)

* The name has been replaced with a pseudonym for anonymity. This profile is not gender-specific.

Type of Underemployment

- Skills-job mismatch; time and income-related
- Involuntary

Key Challenges

- Difficulty finding a full-time job with a flexible working arrangement to accommodate elderly caregiving duties
- Only being able to work part-time to cope with caregiving needs and financial obligations as the sole breadwinner, leading to job and income insecurity

Support Needed

- Flexible work opportunities and family-friendly workplace policies
- Guaranteed employment after retraining and/or upskilling training to support those in caregiving roles re-entering the workforce
- Unemployment support for parental caregivers who are in-between jobs
- Discount or waiver of union membership fee and better rebates at union social enterprises

In 2014, Jun Jie left his full-time position as an accountant in a Multinational Corporation (MNC) to become the primary caregiver for his ailing mother and father. In the seven years that followed, he had to navigate the job market while juggling the various responsibilities that came with caring for his parents as the sole breadwinner of the household. While he earned his degree in Accounting and Finance, working in this field required long office hours that often bled into the weekend. He found that this part-time, freelance work arrangement gave him the necessary flexibility to schedule his time

around his caregiving duties, especially when his parents are prone to frequent hospitalisation.

Treading an unconventional career path outside of his field of education and work experience meant that Jun Jie had to take the initiative to seek relevant training courses, learn on the job, and engage in self-learning. As for exploring external training to remain employable, Jun Jie recognised that he was quickly approaching the late stage of his career and needed to undertake ongoing training to diversify his skillset. He said, "I went through eight modules last year and tried to finish up as many security officer courses to diversify my skill."

Jun Jie shared that he faced many obstacles when searching for a job as flexible work arrangements were few and far in between. He suggested that authorities could offer unemployment support for workers with caregiving responsibilities. Additionally, support for older workers could be provided in the form of supporting workers in securing employment after retraining and upskilling efforts. On top of living expenses and his parents' medical expenses, which are not covered by their Central Provident Fund (CPF), Jun Jie must pay the mortgage of his 3-room flat. As such, he hopes to gain more financial rebates and benefits from union membership.

Vignette 5: Mid-Career PMET

Benjamin* (Age: 47; Mid-Career; Married; Freelance Business Consultant and Jobseeker)

* The name has been replaced with a pseudonym for anonymity. This profile is not gender-specific.

Type of Underemployment

- Time and income-related
- At first voluntary, then involuntary

Key Challenges

- Wanted to pursue a socially-fulling role in religious field, but it does not pay well
- Willing to pivot to other fields, but not sure which would be suitable and provide sufficient flexibility for other personal priorities (i.e. church work)

Support Needed

- Customised career-matching and advisory services for mid-career workers attempting switch in industries/job roles
- Sufficient income support in the midst of such a switch

After completing his Degree in Hospitality at a local university and entering the workforce, Benjamin successfully rose the ranks to join middle management as a Business Development Manager at a travel agency. As a deeply religious man and aspiring pastor, he resigned in 2012 to pursue further studies at a Bible College in South Korea. Four years later, Benjamin returned to Singapore and joined his church as a full-time paid employee and served as an assistant pastor and missionary. However, seeing that his

church was small and had access to limited funding, he eventually decided to continue in an unpaid position.

To financially support himself and his family as well as ensuring he had time to fulfil his role within the church, Benjamin began taking up short-term contractual work as a business development consultant. However, when the hospitality and tourism industries took a nosedive during the COVID-19 pandemic, his clients stopped reaching out with job offers.

As a self-employed individual during the pandemic, Benjamin benefitted from quarterly cash payouts of S$3,000 in May, July, and October 2020 as part of the Self-Employed Person Income Relief Scheme (SIRS). He shared that the financial assistance helped tide his family through a period of no income, “That was a really big help for us, especially when we have… no work, no income.” He also benefitted from GO1, an NTUC LearningHub (LHUB) platform with free online courses curated for learners seeking for upskilling and reskilling opportunities amid the COVID-19 crisis. He attended various courses, such as robotic process automation and cybersecurity “...to gain some knowledge about different fields, different sectors...”.

The online courses piqued Benjamin’s interest, but he is still uncertain about which path to pursue. To aid his job search, he thinks that career counselling would be helpful for job matching to his requirements and receiving advice on which courses would equip him with the skills needed for the career he chooses to pursue. He hopes his future career would be flexible enough to enable him to dedicate time to his church work on the side.

Vignette 6: Mid-Career PMET, Mother

Joanna* (Age: 50; Mid-Career; Married; Clerical Support Worker)

* The name has been replaced with a pseudonym for anonymity.

Type of Underemployment

- Income, skills-job, and education-field job mismatch
- At first voluntary, then involuntary

Key Challenges

- Difficulty finding suitable job upon rejoining workforce after break to raise children
- Stymied career progression
- "Mummy's guilt" upon re-entering workforce
- Upskilling/career conversion programmes not suitable for needs

Support Needed

- Family-friendly workplace practices, including flexi-hours
- Customised upskilling/career conversion programmes and job-matching for mothers who want to re-enter workforce

As a mother and working professional, the demands of Joanna’s family are a key factor directing and shaping the trajectory of her career. Prior to getting married, Joanna graduated with upper second-class honours from a local university with a degree in

Psychology and began working in business development and marketing. She felt a sense of pride in her work as such corporate jobs were seen as a well-respected career path among her peers. Later, seeking to pursue her passion for socially meaningful and impactful work, Joanna switched jobs to work as a policy analyst in a government agency. Despite having to re-start at a lower position and salary than before, she enjoyed the job and looked forward to rapid career progression in the future.

About two years into the job-switch, she found out that she had a high-risk pregnancy and decided to apply for no-pay leave for the next two years. Later, Joanna and her husband decided to have another child and further postponed her plans to re-enter the workforce. Explaining her choice, Joanna emphasised the importance of spending time with her children, especially in their first few years, “[b]ecause in Chinese like when you bring up a kid, I believe like *sān suì dìng sān shí*, that means the first three years of the kid's life will determine the first 30 years of his or her life…”.

After becoming a full-time stay-at-home mum for six years, her marriage broke down and she went through a divorce. Without a steady source of income, she felt like she had no other alternative but to return to work. To her dismay, the job searching process was difficult. During interviews, Joanna was baffled when prospective employers seemed more concerned about her long career break rather than her previous career achievements.

Fortuitously, she eventually found an administrative support position through her personal networks. While the pay was lower than what could be expected by someone with her qualifications and experience, it allowed her to work remotely throughout the week. As her children are now approaching their teens, Joanna has started thinking about re-entering the workforce and rebooting her career. She would appreciate tailored support such as job matching for working mothers seeking a mid-career change like herself.

Vignette 7: Mid-Career Non-PMET/Platform Worker

Zhi Hao* (Age: 41; Mid-Career; Married; Platform Food Delivery Rider)

* The name has been replaced with a pseudonym for anonymity. This profile is not gender-specific.

Type of Underemployment

- Skills-job mismatch; time and income-related
- Voluntary

Key Challenges

- Lack of eligibility for upskilling courses based on prior qualifications
- Competition for jobs in IT-sector
- Did not find career advisory and career-matching services helpful

Support Needed

- More upskilling options for non-tertiary school leavers (e.g. Higher Nitec or 'O'-level certificate holders)
- More outreach to raise awareness on suitable upskilling programmes and career support services

Zhi Hao graduated from the Institute of Technical Education (ITE) and received his Higher Nitec Certificate in Information Technology (IT) Systems and Networks in 2002. After serving National Service, he enlisted in the Central Narcotics Bureau as a Narcotics Officer. For 12 years, he enjoyed his work on the field and received many accolades and recognition for his contribution to high-profile cases before being re-deployed to headquarters and assigned to an office job. Used to being on his feet the entire day, Zhi Hao had trouble getting used to this new job scope.

Unsatisfied with his assignment and jaded by the inflexible nature of working in a uniformed career, he decided that it was time to resign and look for a new job outside the civil service. With the advent of platform applications like Grab and FoodPanda, Zhi Hao decided to make the switch to food delivery.

He liked that the job afforded him flexibility of time and greater autonomy over his work schedule. “One thing I like Grab a lot because I work near my house. Sunday, I want to work, Saturday I don't want to work, you know? I don't need to apply [for] leave, I don't need to ask permission. Yeah, so it's a bit of freedom.” Moreover, as a food delivery rider, his work was significantly more easy-going compared to his job as a Narcotics Officer. However, Zhi Hao has since observed that the demand for the service was volatile and began considering pivoting to another career, especially one with opportunities for advancement and greater job security.

The way he saw it, upgrading is the only way to access better job prospects, especially within the IT industry. However, he has found that as a Higher Nitec Certificate holder, options for skills upgrading are limited. He had tried to seek career counselling, but did not have a pleasant experience as he was recommended jobs that he was not interested in. As he said, “When you [are looking for a] job right, you just want to do what you really

look out for. You don't try to sell me something that I don't want to do." He has also become somewhat disillusioned by the lack of jobs available for Singaporeans with his educational qualifications, especially when competing with foreign workers.

Vignette 8: Late/End Career

Richard* (Age: 60; Late-Career; Single; Part-time Customer Service Manager)

* The name has been replaced with a pseudonym for anonymity. This profile is not gender-specific.

Type of Underemployment

- Qualification-job mismatch; Work experience-job mismatch
- Involuntary

Key Challenges

- Career progression possibly hindered by racial discrimination
- Could not find permanent job commensurate with past work experience after having to stop freelance work during COVID-19
- Lack of options for career-conversion programmes and did not find career advisory services to be helpful

Support Needed

- Schemes for late-career workers to ease into retirement while keeping active and continuing to supplement their CPF savings

With an A-Level certificate, Richard began working in 1984 at a logistics company. Over 25 years, he transitioned from a temporary position to eventually securing a hard-won managerial position. Throughout this job, Richard recalls instances where he felt discriminated against as a racial minority, hindering his career progression. To strengthen his prospects in light of the "obvious emphasis… on education in those days", Richard pursued his higher education part-time over the years while working full-time, taking on a Business Diploma in 2000, an undergraduate degree in 2002, and a Master's in 2004.

In 2008, after taking a few months off to rest and regroup, Richard returned to the workforce as an Operations Manager in a telecommunications company. He was able to secure the job due to his previous work experience. At the same time, he obtained a tour guide licence and thereafter started doing tour guiding over the weekends. In 2019, Richard quit full-time employment and started to focus more fully on tour guiding, seeing it as a good way to transition into retirement; he could still earn a good income while working fewer hours.

However, COVID-19 put a stop to that, and he had to return to admin/operational jobs. While he found difficulty securing permanent jobs and had to settle on temporary contract jobs (he attributes this to his age and race), he eventually decided that this was the best way to continue being gainfully employed while waiting for the tourism industry to recover. Being single, and without a family to support, he is not too worried about finances, though he notes that health expenses may become a concern in the future.

Richard is still exploring future career options in his last few years before fully retiring. Dealing with corporate culture in a fast-paced industry makes the job sometimes “frustrating” for him, and he feels that he “couldn’t catch up” with the rising young talent and structural changes in the sector. He had sent in applications to some mid-career conversion programmes, such as one to retrain as a radiographer, but none succeeded. He also had bad experiences with some career coaches who made the process “so hard, so difficult”, and seemed more interested in fulfilling their Key Performance Indicators (KPIs) rather than to assist jobseekers like him to find a good match related to their interests and strengths.

Chapter 5: Key Learnings

- Career decisions and aspirations and their underlying motivations have been evolving in Singapore. Our understanding of underemployment in Singapore needs to evolve too.

- Time-based indicator of underemployment, while useful, is not reflective of the underemployment situation in Singapore. Expanding our tracking of underemployment to include skills, qualification, and field mismatches provides a more nuanced snapshot of the workforce.

- Our study found that 22.5% of respondents were overskilled, 23.0% were overqualified, 31.4% worked in jobs that did not match their field, and 20.3% had qualifications higher than education requirements of their occupation group, which are figures much higher than MOM's reported 2.3% prevalence of time-based underemployment for 2024.

- Our study found that the skills-job mismatch is considerably different in Singapore (22.5% overskilled; 24.5% underskilled) compared to OECD PIAAC average (26.1% overskilled; 9.6% underskilled). This suggests the continued importance of skills training for employed workers.

- The prevalence of qualification-job, education field-job, and qualification-occupation mismatches in Singapore is comparable to past studies with the OECD PIAAC and ILOSTAT high-income countries averages. With a growing shift toward skills-based hiring, education field-job mismatch is expected to evolve as workers gain experience and broaden their skillsets, particularly in the early and early-mid career stages where career mobility and cross-disciplinary roles may be more common.

- Underemployment manifests differently across the stages of a person's working life. Qualification-job and qualification-occupation mismatches are highest at the early stages of one's career while skill-job mismatches increase over one's career.

- Nevertheless, it is important to distinguish between voluntary and involuntary underemployment decisions. Efforts should be focused on the involuntarily underemployed, and on ensuring those voluntarily underemployed are able to keep their skills and experience current to avoid becoming involuntarily underemployed in the future.

- The considerations of staying in the job while being underemployed differ between those in full-time and part-time employment. Full-time employees require assurance in job and income security, and part-time employees require flexibility if they were to change to jobs that better match their skills, qualification, and field.

- Middle-aged and older (30-65 years old) workers were more likely to report skills-job mismatch, and this is related to the multiple life responsibilities (e.g. caregiving) that may have been prioritised higher than their careers. There are also higher opportunity costs if they were to seek a new job that matches their skills better. While this may be voluntary underemployment, with time, this predisposes these workers to be at greater risk of being involuntarily underemployed.

- Youths, caregivers, and stay-at-home parents entering the workforce after extended periods away face greater challenges of securing jobs that match their skills, qualification, and field.

- Particularly for youths, those who have spent extended durations between tertiary graduation and re-entering the first job are at higher risk of involuntary underemployment due to their “out of practice” skills and lack of working experience.

- Better support from employers in terms of work arrangements is needed to address the current challenges faced in working in a matching job while balancing family and life commitments (e.g. caring for the young and aged simultaneously).

- Workers, especially youths, who desire to explore alternative career paths or turn their passions into a career require mentorship and guidance to give these atypical transitions greater chances of success. Encouraging a “skills-first” approach, where demonstrated competencies, problem-solving abilities, and adaptability are valued as much as, if not more than, formal credentials, will further support these transitions and improve their prospects of success.

Chapter 6: Recommendations

Underemployment evolves with individuals' career trajectories, life circumstances, and aspirations. This study shows that workers face different challenges at different stages of their working lives: fresh graduates and early-career workers may struggle to secure meaningful first jobs that match their qualifications; mid-career workers may face skill obsolescence and limited mobility opportunities; and late-career workers may encounter barriers in adapting to digitalisation and AI-driven changes in the workplace. Recognising these differences, the recommendations in this chapter adopt a life-course approach to support Singaporeans at each stage of their working journey while strengthening collective adaptability in an era of technological disruption.

The seven recommendations are structured according to this life- and career-stage framing. The first set focuses on early-career support (Recommendation 1) and lifelong skill development (Recommendation 2), ensuring that workers can transition smoothly into the labour market and build resilience through continuous learning and adaptation to automation and AI. The next set (Recommendations 3 to 6) centres on broadening opportunities for meaningful and flexible work, through alternative pathways such as social entrepreneurship, community-based employment, mid-career re-visioning, and stronger support for working parents and caregivers navigating evolving work arrangements. Finally, the last recommendation (Recommendation 7) addresses system-level enablers that expand the measurement of underemployment and developing data-driven tools that leverage AI insights to identify and prevent underemployment early.

Collectively, these offer an integrated roadmap towards a resilient, inclusive, and future-ready labour force.

1) Targeted Support for Early-Career Individuals and Fresh Graduates as Jobs and Aspirations Evolve

The transition from education to work is becoming increasingly complex as industries transform under digitalisation, automation, and AI. As routine and entry-level tasks become increasingly automated or supported by AI tools, some companies may rely more on technology rather than expanding junior hiring, reducing opportunities for fresh graduates to fully apply and develop their skills. This can result in young workers entering roles that underutilise their qualifications or skills, which may have long-term implications for career progression and income growth. Targeted interventions are therefore needed to strengthen employability outcomes for fresh graduates and early-career individuals as their aspirations and job pathways evolve.

1.1) Encourage A "Skills-First" Approach and Redefine Success in Learning and Work

Hiring and career development practices should shift toward a "skills-first" orientation, where demonstrated competencies, problem-solving abilities, and adaptability are valued as much as, if not more than, formal credentials. A "skills-first, degree-second" mindset redefines success in learning and working by recognising that skills can be developed through multiple pathways, including formal education, work experience, community engagement, or self-directed learning.

Employers can play a pivotal role by redesigning job descriptions to specify essential skills and competencies rather than rigid educational requirements, while Institutes of Higher Learning (IHLs) can embed modular and stackable micro-credentials that reflect industry-recognised capabilities. This shift not only broadens access to opportunities for diverse learners but also strengthens the responsiveness of Singapore's workforce to fast-changing labour-market needs.

1.2) Expand Structured Career Pathways and Personalised Coaching Through Human-AI Collaboration

To ensure smoother school-to-work transitions, there is a need to integrate structured early-career pathways with adaptive career guidance. Programmes such as the GRaduate Industry Traineeships (GRIT) programme and SkillsFuture Work-Study Programmes provide meaningful work placements that combine valuable industry experience with structured on-the-job training, supporting smoother transitions into full-time roles. These programmes also offer traineeship allowance or salary support, depending on programme design and co-funding arrangements between the Government and the host organisations. More of such traineeship schemes and work-study schemes should be implemented and scaled up. These could also be complemented by personalised, data-driven career support that leverages both human expertise and AI-enabled tools.

NTUC's AI Career Coach, powered by NTUC's Employment and Employability Institute (e2i), is one such example for such human-AI collaboration. By harnessing AI to analyse labour-market data and skill trends, it can provide timely, tailored recommendations to help graduates and young professionals identify in-demand skills, explore career options, and plan development pathways. When paired with guidance from human career coaches embedded in IHLs, unions, and public career centres, this hybrid approach ensures that early-career individuals receive both contextual insight and personalised support to mitigate skills mismatches and underemployment risks.

1.3) Strengthen Collaboration With IHLs to Anticipate Future Skill Demands

IHLs should continue to deepen collaboration with industry partners, government agencies, and the Labour Movement, to forecast emerging skill needs and align education and training pathways with the demands of a rapidly evolving economy. This involves expanding AI- and data-literacy modules across disciplines, integrating workplace-based learning, and embedding future-oriented career planning into tertiary education and continuing education programmes.

Equally important is preparing students and workers for a future where AI operates not merely as a tool but as a collaborative partner. Education and training systems should help learners and employees alike understand where humans excel, where AI performs better, and how human–AI collaboration can generate outcomes far greater than what either can achieve alone.

By nurturing these capabilities across the learning-to-working continuum, IHLs can support the retraining of the current workforce alongside the preparation of future graduates to ensure that Singapore's talent pipeline remains adaptive, innovative, and ready to thrive in the digital and AI-enabled economy.

2) Enhancing Employability Through Multi-Skilling

Our study found that about 1 in 4 workers did not have the skills required for their jobs (underskilled). This further underscores the importance of CET for workers to ensure that skills gaps are plugged through lifelong learning and skills upgrading. However, we also identified that about 3 in 10 workers were in jobs that did not match their education field and this phenomenon is likely to be more common as industries and jobs change with more widespread introduction of technology, automation, and AI. This suggests that CET programmes should focus on helping adult learners build career resilience by broadening their deep skills and competencies.

Adult learners should be encouraged to learn knowledge and pick up skills across traditional disciplinary boundaries and academic silos. IHLs have recognised the need for interdisciplinarity and have in recent years increased the interdisciplinary offerings and focus of their programmes. However, adult learners who have been working in their industries for many years will also benefit from broadening their knowledge and skillsets. By doing so, adult learners might be able to expand their job options and career trajectories, especially in emerging fields, which often require the confluence of two or more distinct skillsets.

A recent example is the job of a prompt engineer, whose job demand surged as the development of generative AI tools intensifies globally. The ideal prompt engineer would be a person with both the technical understanding of developing AI tools and a humanities background to be well-versed with language and words. These two sets of knowledge and skills are traditionally from two different academic disciplines.

Hence, workers could be encouraged to develop two or more sets of deep knowledge and skills from different but potentially complementary disciplines to enhance their career resilience and trajectories.

In order to help adult learners identify the second set of deep knowledge and skills that they could pursue, SkillsFuture Singapore (SSG), together with the industry representatives and NTUC, could build upon the existing Skills Framework and the annual Skills Demand for the Future Economy Report to analyse and map out potentially complementary sets of deep knowledge and skills for each family of jobs. IHLs and training providers could develop and curate their training and CET programmes based on the complementary sets of deep knowledge and skills to enable adult learners to build their resilience in their skills and competencies, enhancing their career resilience through multi-skilling.

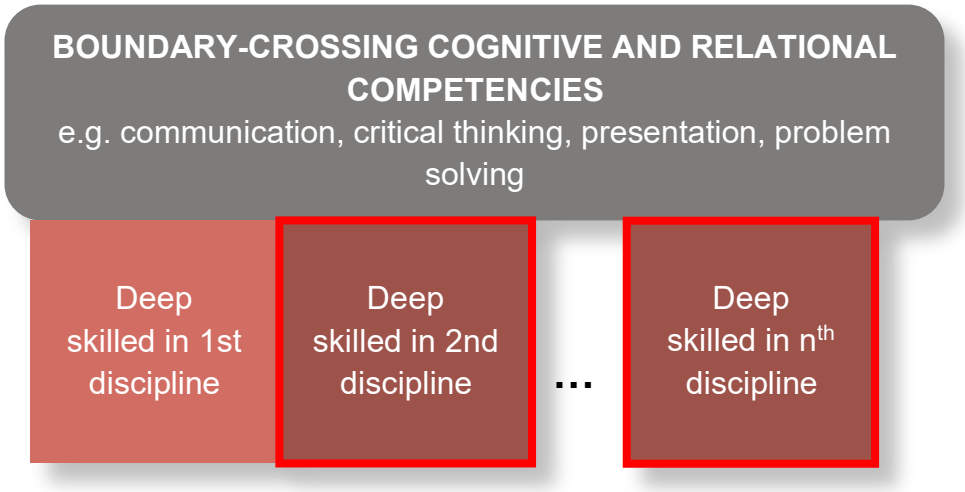

Figure 19. Multi-skilling to enhance employment and employability of workers.

3) A Hub to Facilitate the Pursuit of Social Entrepreneurship and Passions

Increasingly, more youths are becoming interested in social causes. Some may become interested in starting their own social enterprises after graduating. Thus, there could be an opportunity to consider empowering young workers to explore entrepreneurship or other passions by setting up a virtual hub for job crafting and social entrepreneurs.

Such a hub for job crafting and social entrepreneurs could bring like-minded individuals to support one another as they craft new (alternative) job opportunities, share advice, and exchange experience on starting social enterprises, and research different pathways together. By empowering workers to chart their own development and create multiple pathways to success, the hub can support individuals in building confidence, expanding their opportunities, and pursuing meaningful careers aligned with their strengths and interests.

Some topics of interest this virtual hub could host include:

- Starting a social enterprise,
- Starting a home-based business, and
- Skills-based volunteering programmes.

The hub can harness an innovative Peer-to-Peer learning andragogy for its programmes, to facilitate support groups for workers to learn something new together. Peer-to-Peer learning also empowers individuals by allowing them to share and connect with like-minded others and share the expertise they have developed through their own life experiences, while getting the feedback necessary for self-improvement.

The hub could also offer young workers the opportunities to put their interests and skills to greater use through Skills-Based Volunteering Programmes. These programmes enable underemployed individuals to contribute their expertise to non-profit organisations or social enterprises. By volunteering their skills, individuals can gain practical experience, expand their networks, and enhance their resumes while making a positive impact in their communities.

The hub can start off as a virtual hub, providing opportunities for individuals to participate across time and space. Freelancers and those in search of a new job that aligns with their interests and passions might be interested to pick up a new skill with like-minded individuals or bounce off ideas on how they might achieve their aspirations together. Full-time National Servicemen, especially Diploma and Nitec qualification holders who are more likely to join the workforce after serving their National Service, could also leverage Skills-Based Volunteering Programmes to expand their network, develop meaningful relationships in the communities, and have opportunities to apply and hone their professional skills.

4) Community-Based Employment Co-Ops to Create Collective Employment Opportunities

We found many underemployed individuals with spare capacity and time in their schedule to be able to take on some work, though this work often has to be on a flexible schedule for them to arrange it around their existing commitments (e.g. caregivers). A community-based employment co-op could be established to organise these underemployed individuals to pool their diverse skillsets, experiences, and resources to create collective employment opportunities.

The co-op model would be best suited to organise underemployed individuals interested in pooling their resources as it will be a membership-based enterprise that operates on the principles of self-help and mutual assistance. The co-op would then have a social mission of helping underemployed individuals put their skills to productive and prosocial use. This way, the co-op model will allow underemployed workers to venture into new areas and hone their skills while providing income when looking out for a better job that matches their skills, qualification, and education field.

Over time, different co-ops can be set up according to how the skillsets, experiences, and resources are pooled together. These co-ops can also involve various sectors, such as freelance work, gig economy projects, or community-focused initiatives.

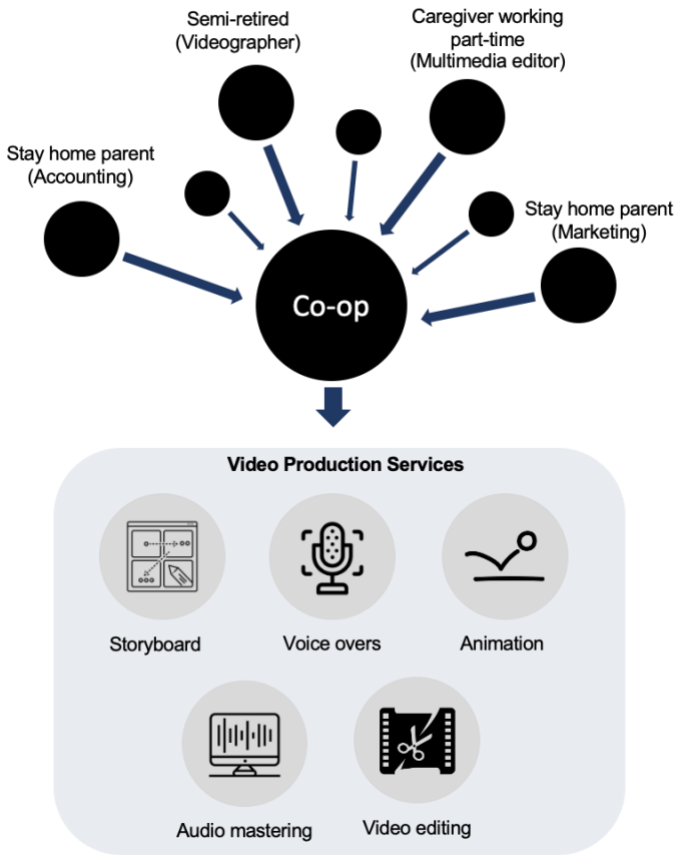

Figure 20. An illustration of a community-based employment co-op model.

5) Development of Career-Revisioning Programme to Facilitate Future Transition to the Next Phase of Career

As workers are approaching their mid-career (from 40-59 years old) and beyond, it is vital for them to assess and evaluate their skills, interests, and goals to support them in making informed and fulfilling decisions about the next phase of their careers. Currently, such conversations do not take place or only take place when workers are already in late career, which is often too late to rectify the issue of skills-mismatch and opportunities for other job roles. Hence, the Career-Revisioning Programme can benefit:

(a) Mid-career workers aged 40-55 years old

This programme can build on the Government's efforts to give Singaporeans more personalised recommendations on their careers and skills pathway. It aims to help them assess their careers, explore alternative career paths, and develop a roadmap to transition to the next phase of their career. It also helps them plan early for retirement/post-retirement career to ensure career resilience while meeting their interests and life goals.

This programme can also situate itself under the broader Forward Singapore efforts to support the broad middle of Singaporeans in their career planning, through digital career planning tools, and improved access to effective career guidance services. We propose to extend the assistance provided by existing career conversion and placement programmes available to help mid-career workers transition to new jobs by engaging them in longer-term visioning and planning of their careers, ensuring career resilience while meeting their interests and life goals. The personalised approach with career coaching further increases the likelihood of developing attainable pathways to other jobs (if needed) that also minimises the underemployment risks seen in mid- and late-careers.

(b) Late-career workers aged above 55 years old

This programme can focus on preparing mid-career workers for their transition into the next career cycle or preparing for their re-employment through reskilling or upskilling programmes to ensure that they continue to possess relevant and in-demand skillsets.

We need to also recognise that workers in this late-career stage might want to have a slower pace of life and curtail the amount and hours they work, even as they hold a wealth of industry knowledge and experience. The programme can also help late-career workers transition into part-time and/or mentoring roles and/or micro-jobs to ensure that the younger workers continue to benefit from the knowledge and experience of these workers.

6) Multi-strategy Approach to Enhance Support for Working Parents and Caregivers — Pay-Per-Use Childcare Services, and Stronger Organisation Culture

6.1) Pay-Per-Use Childcare Services

Stay-home parents who have taken time off their career to care for their children full-time are at risk of underemployment when they return to the workforce because of the currency of their skills but more critically, because many seek a job that offers flexibility to ensure that they can continue to care for their children.

Thus, to encourage and support more stay-home parents to return to work, a pilot pay-per-use childcare services could be carried out to assess its viability before scaling. This pay-per-use childcare arrangement is particularly suitable for parents who have irregular work schedules or part-time jobs, offering them the flexibility to access childcare services without having to commit to long-term contracts or set schedules. This will also help stay-home parents to progressively transition into the workplace and allow them to be meaningfully engaged in part-time or flexible work.

6.2) Creation of a Stronger Culture in Organisations to Provide Career Support and Development

Another area that tripartite partners could focus on is the co-creation of a stronger culture of providing career support and development within organisations beyond the established learning and development programmes. Organisations could facilitate open discussions and explorations about new growth areas and skills that employees could gain competency to help organisations venture into new growth areas while strengthening the worker's career resilience.

7) Expanding the Official Measure of Underemployment to Better Reflect the Underemployment Situation in Singapore

MOM currently follows the international measurement of underemployment in its labour force statistics which is on time-related underemployment. MOM reported a 2.3% prevalence of time-based underemployment for 2024. However, as we have shown, there are different types of underemployment in Singapore. Our study found that 22.5% of respondents were overskilled, 23.0% were overqualified, 31.4% worked in jobs that did not match their field, and 20.3% had qualifications higher than education requirements of their occupation group, which are much higher than MOM's reported time-based underemployment figures. Expanding the measurement of underemployment provides a more holistic and multifaceted understanding of the complex nature of underemployment issues in Singapore.

The measure of underemployment in Singapore could be expanded to capture skills, qualification, field, and income-related underemployment, once there are internationally standardised methods to determine them. This can be through the job, skills, education, and income data already collected in the Labour Force Survey conducted by MOM or data from the government's administrative records. Importantly, the expanded measurement should take into account the multiple dimensions and perspectives of underemployment. Focusing solely on qualification-job or field-job mismatch also poses risks in overlooking the progress made through continuous training and skills upgrading. Nevertheless, maintaining reference to educational attainment remains important for consistency and comparability across studies and international benchmarks. The key thus lies in striking a balance by adopting multiple dimensions spanning both skills and education.

An expanded definition and measure of underemployment in Singapore will provide policymakers with a more granular tracking of the underemployed segment of the labour force. These could inform the formulation and recalibration of education and skills training policies and programmes to ensure that they are responsive to the changing needs of workers, as well as to better match the supply of qualified and skilled workers with the industry demands.

Tracking of these different measures of underemployment will also help identify evolving career aspirations in the population, especially in the midst of rapid digitalisation and reconfiguration of industries. This could be done by including these measures in the Labour Force Survey that is conducted regularly by MOM. The data and analysis will help the government, employers and Labour Movement to understand the underemployment situation in Singapore better, especially in monitoring the employment outcomes and career development of graduates across the range of tertiary and vocational qualifications.

As such, we support MOM's ongoing work with the ILO to develop an internationally recognised method to measure qualification-related under-employment. The Manpower Research & Statistics Department of MOM is part of an ILO workgroup to develop a framework to measure underemployment. We look forward to an expanded official definition of underemployment, as internationally standardised methods to determine underemployment are developed.

Time-Related Underemployed Persons are persons aged fifteen years old and over who are working less than 35 hours a week (i.e. working part-time) and are willing and available to engage in additional work.

Time-Related Underemployment Rate is defined as the percentage of time-related underemployed persons to employed persons.

Skills-Related Underemployment refers to the situation whereby a worker's skills are not adequately utilised in their current job. These could be skills acquired through formal education, on-the-job training, and/or non-formal and informal learning activities.

Qualification-Related Underemployment arises when a worker has higher qualifications than are required by their job.

Education Field-Related Underemployment refers to the situation whereby the worker is employed in a job outside of their field of study.

Income-Related Underemployment occurs when a worker is underpaid in relation to their qualifications and/or skills.

Figure 21. Expanding the definition of underemployment in Singapore. The time-related underemployment definition is extracted from MOM (2025).

Chapter 7: Conclusion

Singapore's labour market is undergoing a profound transformation as industries digitalise, organisations restructure, and AI becomes embedded across production, services, and knowledge work. These shifts are reshaping job roles, altering career pathways, and redefining how workers navigate aspirations, constraints, and life responsibilities. Against this backdrop, underemployment has emerged not only as an economic inefficiency but also as a reflection of the evolving realities of work, skills, and personal life in a technology-driven economy.

This study reveals that underemployment in Singapore is far more multidimensional than time-based measures alone suggest. Significant proportions of workers experience skills-job mismatches, qualification-occupation gaps, or employment in fields unrelated to their training. These mismatches, however, do not occur uniformly. Instead, they manifest differently across career and life stages. Early-career workers may struggle with qualification and field mismatches. Mid-career workers may face rising skill obsolescence amid caregiving responsibilities and competing priorities. Older workers often encounter barriers to transition despite strong accumulated experience. At the same time, many workers voluntarily downshift, recalibrate work intensity, or pursue unconventional pathways searching for meaning, balance, or personal growth. These diverse trajectories underscore the need to view underemployment not as a single condition, but as a dynamic interaction between workforce capabilities, labour market structures, and life-course developments.

This report makes seven recommendations that respond to these insights through a career-stage lens. The first set of recommendations focuses on supporting early-career transitions and lifelong skill development by helping fresh graduates secure stronger first-job matches and enabling workers to build employment resilience through multi-skilling as work evolves with digitalisation and AI. The second set broadens opportunities by creating multiple pathways for meaningful and flexible work, including through social entrepreneurship, community-based employment options, mid-career re-visioning, and stronger organisational support for working parents and caregivers. The final recommendation strengthens the system-level measurement of underemployment by expanding the official measure of underemployment in Singapore to better capture the diverse realities of work today and guide more responsive workforce strategies. Together, these recommendations emphasise the need for Singapore's education and workforce systems to prepare both students and workers to operate confidently in environments where human strengths such as judgement, creativity, empathy, and collaboration become even more critical.

Ultimately, this report highlights that addressing underemployment is not merely a manpower issue but a national priority for economic resilience, social mobility, and the dignity of work. A life-course approach allows us to recognise workers' varied pressures and aspirations at different stages, and design interventions that are more targeted, humane, and future-ready. By concerted effort, Singapore can build a labour force that is not only highly skilled and productive, but also adaptable, empowered, and optimistic about the future of work.

Annex A: The Causes and Impacts of Underemployment

The causes and impacts of underemployment are multifaceted and interconnected, and they vary according to a range of factors at the individual, organisational, and macroeconomic levels. Understanding the causes and effects of underemployment on individuals, groups, and society as a whole is critical for developing targeted policies and interventions to support specific profiles of workers and to enhance the productive capacity of the labour force. This section will review the causes and impacts of underemployment, with attention to how underemployment affects different groups of workers and across different life stages.

Causes of Underemployment

Underemployment is a complex phenomenon with many possible predictors. The causes of underemployment can be broadly divided into three categories: macroeconomic conditions, demographic and socio-economic factors, and job-related characteristics (Li et al., 2015; Mc-Kee Ryan & Harvey, 2011; Feldman, 1996). It is also worth noting how these factors may intersect and reinforce one another. For example, while all groups may be susceptible to underemployment during periods of downturn, some groups, such as young people and women, may be particularly vulnerable (Churchill & Khan, 2021; Li et al., 2015; Salin & Natti, 2019). Industry and job transitions also impact the nature of underemployment, as seen in the differences in underemployment rates across industries and job roles (Avila & Lunsford, 2022).

Nevertheless, studies suggest that underemployment can happen to anyone, regardless of demographic background and occupation, when faced with difficult personal or economic circumstances (McKee-Ryan & Harvey, 2011). While much of the literature has focused on the causes of involuntary underemployment, there is an increasing focus on voluntary forms of underemployment. This section mainly focuses on the causes of involuntary underemployment; voluntary underemployment may have additional causes such as self-identity, values, and motivations (Kim & Allan, 2020).

1) Macroeconomic Conditions

Macroeconomic conditions influence underemployment in both the short and long term. During economic downturns and recessions, levels of underemployment coincide with unemployment rates, where companies may reduce their workforce or cut back on employee hours across the labour market (Avila & Lunsford, 2022; Wilkins & Wooden, 2011). Historically, high levels of underemployment have followed periods of economic crisis, even once unemployment rates recover, as was the case during the Great Recession from 2007-2009 (Avila & Lunsford, 2022). During the Great Recession, many countries experienced increased levels of time-related underemployment (Buchanan et al., 2010; Li et al., 2015). Similarly, time-related underemployment rates in the US rose sharply during the Global Financial Crisis and the resulting recession (Avila & Lunsford, 2022). While there is less demand for labour overall during economic downturns and

times of crisis, some groups, such as young people and historically marginalised groups are consistently impacted by underemployment (Avila & Lunsford, 2022; Churchill & Khan, 2021; Golden & Kim, 2020).

The recent COVID-19 pandemic has also led to a significant increase in underemployment (Golden & Kim, 2020). Across countries, economic disruptions resulting from lockdowns drastically reduced hours of work and new job opportunities, particularly in sectors that could not pivot to remote work, such as aviation, retail, hospitality, transportation, and real estate, among others (ILO, 2020; Li et al., 2021). The COVID-19 outbreak also had a significant negative impact on Small and Medium- Sized Enterprises (SMEs), which account for a sizeable share of the labour force (Bartik et al., 2020).

Aside from economic downturns and pandemics, which tend to be temporary in nature, broader structural changes, such as the impact of technology and the growth of lower-skilled occupations and non-standard forms of work, are impacting underemployment rates (OECD, 2019). For example, in recent decades, underemployment has increased due to the rise of the service industry, which has led to an increasing proportion of low-skilled occupations and the proliferation of non-standard forms of employment (MacDonald, 2019; OECD, 2019).

The COVID-19 pandemic accelerated the adoption of new digital technologies and advances in AI, which are impacting the nature of jobs and skills required by workers (Karakose et al., 2021; Trenerry et al., 2021). While new technologies are creating new opportunities in the labour market, there are growing concerns about job polarisation as manual and repetitive tasks become automated, affecting workers across a range of industries, from manufacturing and service sectors to professionals and managers in traditionally ‘white-collar’ job roles (Goos et al., 2014). As technology continues to advance, more jobs may become automated, leading to a decrease in demand for workers and resulting in even higher levels of underemployment (Acemoglu & Autor, 2011).

Other workers may face increased job precarity due the rise in ‘gig’ and platform-based work, which could potentially reinforce underemployment (ILO, 2020). While some workers may prefer the flexibility and autonomy provided by gig and platform-based work, others may be pushed into involuntary part-time employment and less secure work due to a lack of full-time job opportunities (Anwar & Graham, 2021). For example, according to a recent study on Gojek drivers by the Institute of Policy Studies (IPS) in Singapore, 46% of respondents became drivers because they could not find other work (Mathews et al., 2022). Similarly, other studies have found that economic pressures and a lack of full-time jobs motivated workers to join crowdsourced work (Barnes et al., 2015).

2) Demographic and Socio-Economic Characteristics

Existing literature on the effect of demographic characteristics on underemployment is largely inconclusive, with many studies producing mixed results or non-significant correlations (McKee-Ryan & Harvey, 2011). Nevertheless, there is evidence that some groups in the labour market are consistently vulnerable to underemployment (Gould & Kassa, 2020; OECD, 2019). A number of studies suggest that women face a higher risk of being underemployed (Li et. al, 2015; Salin & Natti, 2019), while racial and ethnic minorities, individuals from lower-income households, and individuals with lower levels of education also face a heightened risk of underemployment (Batalova & Fix, 2021). Life and career stage also influence underemployment, specifically for young people aged between 16 and 24 years old (Gould & Kassa, 2020; Churchill & Khan, 2021). Below, we examine demographic groups in more detail, noting important intersections between different demographic variables.

2.1) Young People and Recent Graduates

Young people are typically defined as being aged between 15 and 24 years old (United Nations, 2020). However, some have suggested that this definition should be expanded to include persons over 24 years old to reflect how many young people are entering the workforce, leaving home, and starting a family later (Churchill & Khan, 2021). Young people and recent graduates face distinct challenges in entering the labour market, which can increase their risk of underemployment. In particular, they are more likely to be engaged in involuntary part-time work, working significantly fewer hours than their older peers, despite wanting to increase their working hours (Bell & Blanchflower, 2021; Raghunath, 2021). Young people engaged in involuntary part-time work are also more likely to receive lower hourly wages and have worse working conditions (Bell & Blanchflower, 2021; MacDonald, 2019). In turn, underemployed young people can become trapped in a cycle of low-paid and insecure work, limiting opportunities for upward mobility in the labour market (MacDonald & Giazitzoglu, 2019).

Due to having less work experience, young people are less secure in the labour market, tend to be lower-paid, and are concentrated in industries and occupations that are more vulnerable to economic shocks, such as the service sector (ILO, 2020; Wilkins, 2006). Job losses or reduced work hours at earlier career stages can be particularly damaging for young people, who need to establish financial independence and are willing and able to work more hours. Young people are also increasingly working in informal employment, which has poorer working conditions, fewer benefits, and weaker trade union representation (ILO, 2020).

Additionally, young people are also more likely to be impacted by macroeconomic conditions and face higher rates of unemployment and underemployment than older workers during economic downturns (Avila & Lunsford, 2022; Gould & Kassa, 2020). For example, while the COVID-19 pandemic affected many workers, young people were more severely impacted (ILO, 2020). In the US, over one-third of young workers (aged 16 to 24 years old) were underemployed during the COVID-19 pandemic in 2020, an almost doubling of the pre-pandemic rate in 2019 (Gould & Kassa, 2020). Other studies have

shown that the changing structure of the economy, specifically the rise of service industry jobs, is increasing the share of younger people in part-time jobs (Dhillon & Cassidy, 2018).

Another issue that impacts young people, particularly fresh graduates, is the rise in credentialism, defined as excessive reliance on credentials, especially academic degrees, in determining hiring decisions (Brown, 2022). This means that employers are requiring increasingly higher qualifications, even for entry-level jobs. In particular, young people with non-tertiary education are facing worsening labour market outcomes in several countries (OECD, 2019). Together with an oversupply of graduates and a lack of high-skilled jobs, underemployment "has become a transitory state... a normative feature of young people's lives" (Churchill & Khan, 2021, p. 4). Despite hoping for better opportunities, this can end up in young people becoming trapped "in a series of low-paid, insecure, dead-end jobs" (Chesters & Wyn, 2019; MacDonald & Giazitzoglu, 2019, p. 733).

While underemployment affects young people from a range of backgrounds, their responses and coping mechanisms tend to differ (Churchill & Khan, 2021). For example, upper and middle-class young people, who commonly have better access to social networks and parental resources, can afford to "wait out" (Churchill & Khan, 2021, p. 5) unfavourable economic conditions and take on employment opportunities, such as internships, which may not meet their expectations in the short-term but could help open future opportunities. Young people in this category are more likely to view their underemployment status as temporary, compared to those from lower-income backgrounds who have no choice but to accept involuntary part-time work not compatible with their qualifications. Youth underemployment is also gendered: young women are also more likely to be underemployed than young men (Australian Bureau of Statistics, 2023; OECD, 2019). Since women still tend to take on the primary caregiver role, they are more likely to experience time-related underemployment as they seek work with part-time or flexible hours to better balance work and family. They are also less likely to be employed in jobs that match their skills and qualifications and tend to receive lower remuneration than their male counterparts (Churchill & Khan, 2021).

2.2) Women and Caregivers

Studies suggest that women are more likely to be underemployed due to a number of intersecting factors. As mentioned above, since women still tend to take on the primary caregiver role, they are more likely to experience time-related underemployment to better balance work and family. Taking time out of the workforce to have children means that women commonly experience disadvantages in earnings, career progression, and opportunities for training (Anderson et al., 2002; Churchill & Khan, 2021; Deming, 2022). In balancing caregiving roles, women may also choose to work in more flexible or less demanding roles, which may be lower paid and not consistent with their skills and qualifications, thus leading to skills and income-related underemployment.

Along with caring for young children, women are also more likely to take on other caregiving roles, such as caring for disabled or ill family members and/or elderly parents (Koreshi & Alpass, 2022). Career disruption enhances the likelihood of underemployment due to a “loss of job skills and social contacts”, which in turn hampers future job-seeking (Bainbridge & Broady, 2017, pp. 59-60). A study in Taiwan found that highly educated mothers of younger children with intellectual disabilities or with family members with disabilities were more likely to be underemployed (Chou et al., 2017). Mid-career workers also face increasing burdens and responsibilities in caring for both children and older parents, termed the “sandwich generation” (Parker & Patten, 2013). Like other caregivers, this group of workers may experience underemployment by having to reduce their work hours or work in jobs that provide more flexible working arrangements (Earle & Heymann, 2012).

Alongside these challenges, there is also a higher incidence of underemployment in female-dominated occupations, such as administrative, retail, cleaning, and the care sector, and in jobs that are often part-time, low-paid, and with limited opportunities for training and career progression (Acosta-Ballesteros et al., 2021). For example, a cross-national study of time-related underemployment in Europe found that women’s underemployment was linked to their participation in secondary labour markets, which typically include less-stable positions, non-standard forms of work, lower wages, and fewer opportunities for advancement (Salin & Natti, 2019). Conversely, there are fewer women in higher-paid jobs, leadership roles, and more secure industries such as science, technology, and engineering (Acosta-Ballesteros et al., 2021; Brussevich et al., 2018). Technological advances, such as the rise of AI, may also make women more vulnerable to underemployment. Recent studies have shown that less well-educated, older female workers who work in lower-skilled roles such as clerical, service, and sales positions may be more likely to be impacted by automation (Brussevich et al., 2018).

Women also face multiple biases in the workplace, including in hiring practices, pay, performance review processes, and opportunities for promotion, which impact their employment status (Stamarski & Son Hing, 2015). Bias can include perceptions of lower competence, ambition, assertiveness, and rationality, all of which have an impact on pay and job status (Heilman, 2012). Moreover, women are often perceived as primary caregivers, which can make them more susceptible to discrimination in hiring and promotion processes due to perceptions about work commitment due to caregiving responsibilities (Kamerāde & Richardson, 2018; Stephenson et al., 2023).

Gender bias and discrimination also intersect with other forms of bias based on race/ethnicity and age. Research has shown that women from ethnic/racial-minority backgrounds experience higher levels of bias and harassment in the workplace, making them more vulnerable to underemployment (Mays et al., 1996; Raver & Nishii, 2010). In Australia, a longitudinal study based on a 12-year dataset (from 2001-2012) of individuals born from 1951-1964 found that older women face an elevated risk of underemployment (Li et al., 2015). In terms of household characteristics, the presence of older dependent children and a non-English-speaking foreign-born background exacerbated the risk.

2.3) Mature-Age Workers

Mature-age workers are another group that faces unique challenges in the workforce and is at risk of underemployment. Some countries, such as Singapore, define a mature-aged worker as being aged above 40 years old, while other countries define mature-aged workers as being 50 years old and above (Tripartite Alliance for Fair and Progressive Employment Practice, 2010). Labour force studies conducted in Australia and the US have found that mature-aged workers experience high rates of underemployment than other cohorts (Li et al., 2015; Slack & Jensen, 2008). In the Australian study, underemployment impacted women aged between 45 and 55 years old, while men were more likely to be underemployed when they were nearing retirement age (55 years old and above).

Despite being highly experienced, mature-aged workers may lack opportunities for career advancement and become trapped in jobs that do not match their skills and experiences (Wong & Tetrick, 2017). Older workers are also more likely to face displacement by younger workers, such as during retrenchment processes (McKee-Ryan & Harvey, 2011). For example, Koeber and Wright (2001) maintain that the displacement of older workers is a structural issue that "economically benefits employers" (p. 344). This is because older workers are typically paid more than younger ones and are thus more expensive to hire and retain.

Mature-aged workers also experience higher levels of bias and discrimination in hiring practices and in the workplace, which can perpetuate their difficulties in finding jobs appropriately matched to their skills and experience and preferred income (Bae & Choi, 2022; Virick & McKee-Ryan, 2014). For example, experimental studies have found that hiring managers have more negative attitudes towards hiring older workers, which is positively related to their avoidance of hiring older workers (Fasbender & Wang, 2017). Similarly, Lössbroek et al. (2021) found that older candidates received lower hireability scores across different countries and sectors in Europe.

Mature-age workers also face greater difficulties in re-employment after job loss (Virick, 2011). A recent meta-analysis found that older workers received fewer job offers, were less likely to gain re-employment, and took longer to be re-employed than younger workers following job loss (Wanberg et al., 2016). This has implications for underemployment, where mature-age workers might be forced to take on lower-paid jobs with fewer hours than they would like (Virick & McKee-Ryan, 2014).

As older workers get closer to retirement age, they are generally less likely to desire to work more hours compared to younger workers; however, there are some important exceptions. For example, a UK study based on data from the UK Labour Force Survey from 2001–2008 found that a significant and increasing proportion of older workers would prefer to work more hours (Bell & Rutherford, 2013). This includes self-employed individuals and other workers who cannot afford to retire yet and need to continue their income to cover living expenses and health related costs (Koreshi & Alpass, 2022; van Solinge, 2013). Moreover, as the retirement age is increasing across a number of

countries, many older adults are engaging in transitional forms of employment prior to full retirement (van Solinge, 2013).

In Singapore, the statutory retirement and re-employment age framework seeks to ensure that older workers can continue to be employed until the statutory re-employment age if they are able and wish to do so (Tan, 2021). In 2021, the government announced plans to increase the retirement and re-employment age to 65 and 70 years old, respectively, by 2030. An initial increase to 63 and 68 years old have taken effect since July 2022. Employers were furthermore encouraged to raise their internal retirement and re-employment ages above the statutory requirements. This framework is expected to minimise unemployment among older workers. However, it may not necessarily reduce underemployment, since re-employment opportunities could be part-time in nature, presenting a potential mismatch with some older workers' desire to continue working full-time.

3) Job-Related Characteristics

Job-related characteristics also impact underemployment and can include job-type, occupation, industry, career history, and job-search strategies (Feldman, 1996; Li et al., 2015; Mc-Kee Ryan & Harvey, 2011). Studies suggest that workers who are more proactive in their job-search are less likely to be underemployed, while laid-off workers who delay their job search and/or are too psychologically affected to put in the necessary effort to get a new job may stay underemployed for longer (Waters, 2007).

Job-type, occupation, and industry are the most common predictors of underemployment (Wilkins, 2006). Underemployment tends to be concentrated in low-wage and low-skilled jobs and industries such as retail, service, and transportation, which also carry high levels of precarity and instability (Golden & Kim, 2020). Individuals in jobs that are seen as less essential may be especially vulnerable to getting laid off and becoming underemployed, a trend that is particularly worrying due to the rise of automation and AI (Nakamura, 2020).

There are also variations in the wage penalty experienced by voluntary underemployed workers versus those who are involuntarily underemployed (Pratap et al., 2021). A US study found that voluntary part-time workers earn more on average than involuntary part-timers who have more limited job options (Golden, 2016; Pratap et al., 2021). Similarly, UK data has shown that part-timers wanting full-time employment had lower hourly wages than voluntary part-time and full-time workers (Bell & Blanchflower, 2018, Pratap et al., 2021).

Impacts of Underemployment

Underemployment affects individuals, organisations, and societies as a whole, impacting not only the labour market and economic growth but public health outcomes (Pratap et al., 2021). The impact of underemployment can be conceptualised at three levels: the individual-level (career outcomes and impacts on health and well-being); the organisational-level; and the macro-economic level (economy and labour market).

1) Individual-Level Impacts

1.1) Job and Career Outcomes

Underemployed workers face a number of disadvantages in the labour market (OECD, 2019). In comparison to similar workers in full-time or voluntary part-time employment, they frequently earn lower hourly wages and endure poorer working conditions (MacDonald, 2019). In turn, underemployment hampers future employment prospects, wages, and career trajectories (Verbruggen et al., 2015), and leads to persistent unemployment or underemployment in the future (Mavromaras et al., 2015). For example, experimental studies have found that underemployed college graduates received lower callback rates than job applicants who were adequately employed (Nunley et al., 2017). Nunley et al. propose that underemployment is often interpreted by employers as a "strong negative signal" (p. 668) of potential unproductivity or negative work attitudes, hence limiting their job prospects. Other studies have found that underemployment is countercyclical and persistent, with newly underemployed workers earning substantially less than their non-underemployed counterparts and finding it more difficult to move up the job ladder (Barnichon & Zylberberg, 2019).

For individuals, underemployment can also exacerbate issues of career mobility and job precarity, issues that are increasing due to the rise of non-standard and more precarious forms of work (ILO, 2020; OECD, 2019). For example, gig and platform-based workers may find it increasingly difficult to find other jobs, despite taking on gig work temporarily and being qualified for full-time work (Anwar & Graham, 2021; Mathews et al., 2022). Involuntary part-time workers in the gig economy and other sectors, such as the service sector, also face job insecurity due to temporary contracts and irregular and unpredictable schedules (Golden, 2016; OECD, 2019). These issues have been exacerbated by the emergence of new contractual arrangements, such as "on-call or zero-hours contracts, where people are not guaranteed any fixed hours or, indeed, any hours at all" (OECD, 2019).

Alongside these issues, underemployed workers face higher levels of income and job insecurity. For example, there is a strong link between employability, underemployment, and job insecurity, with overqualified and temporary workers likely to experience higher levels of job insecurity (Peiró et al., 2012). Another study on underemployment conducted in Singapore found that some workers lacked sufficient income for daily expenses, while only 27% and 38% of respondents felt that their income and jobs were secure, respectively (Ng, 2017). Further issues include a lack of protections and benefits for self-employed individuals and other workers in non-standard forms of work, which contribute to income insecurity and the ability to save for retirement (Donovan et al., 2016).

Many countries are now trying to bridge the gap in protections and benefits for self-employed workers. For example, in Singapore, the Advisory Committee on Platform Workers (2022) has identified gaps in the basic protection for platform workers, particularly in terms of insurance coverage for work-related injuries, housing adequacy, and CPF contributions for retirement. Following this review, the Singaporean Government

has accepted all 12 recommendations of the Advisory Committee to strengthen the protection of platform workers, including better income security.

There is also evidence that underemployment is negatively correlated with job attitudes, such as job satisfaction, work commitment, job involvement, and work motivation (McKee-Ryan & Harvey, 2011). The negative association between underemployment and job attitudes can be linked to lower satisfaction with both intrinsic and extrinsic rewards, such as salary and feeling of accomplishment (Feldman, 1996). Studies have found that perceived underemployment leads to lower levels of job satisfaction; however, the extent of job-dissatisfaction can differ according to different dimensions of underemployment (e.g. perceived job-degree mismatch, perceived overqualification, and involuntary part-time and/or temporary status) and different aspects of job satisfaction (e.g. job, pay, promotion etc.) (Khan & Morrow, 1991; Maynard et al., 2006; McKee-Ryan & Harvey, 2011). Perceived overqualification has also been associated with lower affective commitment and higher turnover intentions (Bolino, 2000; Maynard et al., 2006). This is because underemployed workers are more likely to be dissatisfied with their current job and seek other opportunities, and are therefore less likely to be involved or committed to their jobs (Feldman, 1996).

Underemployment also likely negatively impact career attitudes and career outcomes; however, evidence on these relationships is more mixed (McKee-Ryan & Harvey, 2011). However, given the overall negative outcomes associated with underemployment, it is likely that underemployment will negatively impact an individual's career outlook (McKee-Ryan & Harvey, 2011). Studies of reemployed workers have found that underemployment affects future wages (Hijzen et al., 2010) and can contribute to a decline in skills and knowledge, and impact future career outcomes (Feldman et al., 2002).

1.2) Impacts on Physical, Mental and Psychological Well-Being

While the impact of underemployment on individual health and well-being has been less well studied than unemployment, there is increasing research on this aspect (Pratap et al., 2021). Studies have found that underemployment is associated with negative effects on physical health and mental and psychological well-being, including higher levels of stress, anxiety, depression, substance abuse, and psychological distress (Bell & Blanchflower, 2019; Friedland & Price, 2003; Montcho et al., 2021; Roh et al., 2014; Virick & McKee-Ryan, 2014).

Underemployment is also linked to lower self-esteem and feelings of aimlessness, alienation, and frustration — emotions that can pervade other aspects of an individual's life beyond the workplace (Cunningham, 2016; McKee-Ryan & Harvey, 2011; Prause & Dooley, 1997). Overqualification specifically can lead to increased disillusionment and negative impacts of on mental health as underemployed workers feel underutilised and unable to find meaning in their work (Allan et al., 2020; Wu et al., 2015).

The negative impacts of underemployment are also disproportionate, affecting certain demographic groups more than others. For example, studies have found that underemployed individuals who have better access to financial resources and relational support were more likely to reframe their experience of underemployment as an opportunity for growth (Blustein et al., 2013). Similarly, individual circumstances and attitudes, such as personal goals, values, and motivation, can make some underemployed workers more resilient and proactive in seeking opportunities to improve their situation (McKee-Ryan & Harvey, 2011).

2) Organisational Impacts

Underemployment also impacts organisations, where reduced organisational commitment and job satisfaction among individuals can lead to high turnover rates (Montcho et al., 2021; Wang, 2018). In a study of underemployed workers in Canada, Wang (2018) found underemployed workers are more likely to leave organisations that relied heavily on part-time workers (Montcho et al., 2021). However, these effects were moderated by human resource practices that provided opportunities for part-time workers to move into full-time positions has been found to reduce turnover (Wang, 2018). Underemployment can also have a negative impact on organisational climate and morale, where employee perceptions that some workers are underutilising their skills and being treated unfairly can contribute to broader organisational impacts (Erdogan et al., 2012).

While evidence is mixed on the impact of underemployment on productivity, some studies suggest that underemployment negatively affects productivity, as employees who are not fully engaged and challenged in their work are likely to perform well (Green & Heywood, 2008). However, another study of retail sales workers found that underemployed workers actually performed better than other employees, especially when their working conditions were improved (Erdogan & Bauer, 2009). Underemployment also has implications for talent development, where individuals who believe that they are underpaid or that their skills and/or qualifications are underutilised will seek job opportunities elsewhere (Thompson et al., 2013).

3) Macro-level Impacts on the Economy, Labour Market, and Public Health

Underemployment limits the productive capacity of the labour force, which in turn impacts economic growth through an underutilisation of human resources. For instance, time-related underemployment does not fully utilise the working hours which workers are available and willing to work, while under/over-qualification and skills mismatches under-utilise employees' skills, qualifications, and work experience. This reflects productive inefficiency in the wider economy. As resources are not being fully utilised, the economy is unable to produce at full capacity, hence putting valuable resources to waste and limiting economic growth (McGowan & Andrews, 2015a). The underutilisation of human capital is especially damaging for an ageing population like Singapore with an already shrinking workforce.

Underemployment is also indicative of allocative inefficiency within the labour market, where mismatches are widespread, and jobs are not optimally distributed (McGowan & Andrews, 2015a). The labour market thus does not function ideally and is unable to efficiently allocate each worker to their appropriate and desired job. This has a trickle-down effect, where higher-skilled workers taking up jobs they are overqualified for, thereby displacing lower-skilled workers from these positions, resulting in further persistent unemployment and job mismatches (Barnichon & Zylberberg, 2019). For example, labour market segmentation occurs when the labour market is divided into sub-markets based on occupation, qualification, or other demographic characteristics (Reich et al., 1973). This can result in a highly unequal dual market of good jobs and bad jobs

(Dickens & Lang, 1985; Hudson, 2007), reinforcing income gaps and economic and social inequalities.

Underemployment also impacts existing issues of overqualification and credentialism (Brown, 2022). While some degree of underemployment is naturally inevitable in the labour market, this can lead to monopsonies, lack of flexibility in wage bargaining, or exploitative and restrictive hiring practices (McGowan & Andrews, 2015b). In particular, it is common for hiring to be based on candidates holding certain credentials (usually degree-level) or have formal work experience.

As discussed above, the impact of underemployment of individuals can have significant ramifications on public health as a whole (Pratap et al., 2021). These effects further limit productivity and discourage the underemployed from finding other jobs or participating in reskilling programmes. The economic and psychological impacts of underemployment are hence mutually reinforcing, leading to persistent underemployment.

Annex B: The Challenge of Studying Underemployment — A Review of Definitions and Measures

Underemployment is defined in relation to the underutilisation of the productive capacity of the labour force in terms of availability to work and underutilisation of qualifications, skills, or experience (ILO, 2013). In contrast to unemployment, where a person is looking for work but cannot find a job, underemployment refers to individuals who are already employed but are seeking to work more hours or are overqualified for their job (ILO, 2013).

Underemployment is a complex and multidimensional construct and is therefore difficult to define and measure (McKee-Ryan & Harvey, 2011). Underemployment is also studied from a range of disciplines, including labour economics, sociology, industrial and organisational psychology, and management studies (Maynard et al., 2006). Each discipline has a different way of measuring and defining underemployment. For example, at the country level, labour economists measure underemployment across the labour force using statistical measures. Other disciplines such as organisational psychology and management have developed measures to understand worker perceptions of underemployment within and across organisations and according to different work settings and contexts. Sociological approaches focus on the socio-demographic characteristics of underemployment and its impacts on individuals, organisations, and societies as a whole (Montcho et al., 2021).

ILO (2013; 2018) distinguishes between two main types of underemployment: time-related underemployment and inadequate underemployment. Time-related underemployment is defined in relation to hours of work, which can be measured statistically at the country level (Görg & Strobl, 2001). There is a standardised international framework for measuring visible or time-related employment created by ILO which has made it easier to measure. Inadequate underemployment refers to individuals working in jobs where their skills are not adequately utilised or their income is insufficient in relation to their skills/qualifications (ILO, 2013; 2018). Inadequate employment is more subjective and difficult to measure as it relies on workers' own evaluation of their work situation (ILO, 2013). Below, we provide further detail on the key definitions and measurement tools for time-related underemployment and inadequate employment. Specifically, we look at how these concepts are defined according to international standard definitions or by labour economists, before considering other measures adopted in organisational contexts.

Time-Related Underemployment

Visible underemployment, also called time-related underemployment, can be defined as the extent to which an employed person is insufficiently engaged in employment based on their hours of work (Ministry of Manpower, 2022). The ILO has adopted the

international statistical definition of time-related underemployment in relation to three criteria: (i) persons who were willing to work additional hours; (ii) persons who were available to work additional hours; and (iii) persons who had worked less than a specified threshold (ILO, 1998). The willingness to work additional hours is the main criterion for measuring time-related underemployment and is defined as people who prefer to work more hours, regardless of the number of hours they have already worked. The second criterion implies that workers are ready and available to work additional hours. For the third criterion, individuals must work below a defined threshold, which can be determined as the boundary between full-time and part-time employment, or averages, means, or working hour norms (ILO, 1998).

The international statistical definition of underemployment does not specify a value for this threshold, which can vary across countries and according to differing labour practices, legislation, and collective agreements (ILO, 1998). For example, the OECD defines the threshold for part-time employment as 30 hours per week, while other countries such as the US, adopt a threshold of 35 working hours or less for working part-time (Bell & Blanchflower, 2021). Similarly, Singapore defines time-related underemployment as those who are working less than 35 hours per week (Ministry of Manpower, 2022).

Despite current international frameworks, there are several limitations to existing time-related measures of underemployment. For instance, Bell and Blanchflower (2013) argue that current measures only account for the number of part-time workers who want to increase their hours, and do not include data on how many extra hours these workers would like to work or whether other workers, such as voluntary part-time and full-time workers, would also prefer to increase their hours. Differences in data collection across countries also mean that it is not possible to construct a comparable comprehensive measure of underemployment across countries. Instead, the authors propose an index, which adds working hours as an indicator of underemployment, and captures the combined effects of unemployment and underemployment to provide a more comprehensive picture of labour market underutilisation (Bell & Blanchflower, 2021). The Dynamic Labour Utilisation Framework is another approach that uses a continuum of labour utilisation indicators, including hours of work, skills and education, training, and work experience to measure underemployment (Montcho et al., 2021).

Another component in the definition of time-related unemployment is whether the employees sought to work additional hours or only stated their desire to do so (ILO, 2015). Some countries prefer to measure only the former. Such variations complicate efforts to compare the level of time-related unemployment between countries. When defining time-related unemployment, it is also important to consider whether workers actively sought more work or just expressed an interest in doing so (ILO, 2015). Some countries prefer to just measure the first indicator. Overall, these differences mean that comparisons of time-related unemployment between countries are more difficult to measure. Other critiques of current measures of time-related underemployment, including establishing the correct cut-off point, where there are substantial differences in average work hours

between developed and developing countries (Sugiyarto, 2008). Existing measures also commonly ignore the actual number of hours which are underutilised (Wilkins & Wooden, 2011).

Skills, Qualification, and Income-Related Underemployment

In contrast to time-related underemployment, other forms of underemployment include situations where individuals are working in jobs where their skills are not adequately utilised or their income is insufficient in relation to their skills/qualifications (ILO, 2018; Wilkins & Wooden 2011). Skills and income-related underemployment are inherently more difficult to define and measure. This is recognised by the ILO, which instead adopts the term inadequate underemployment to refer to other forms of labour market underutilisation (Montcho et al., 2021; Wilkins & Wooden, 2011). According to the ILO (2013), there are three types of inadequate employment situations: (i) skill-related inadequate employment; (ii) income-related inadequate employment; and (iii) inadequate employment related to excessive work hours (ILO, 2013). However, measuring inadequate employment is difficult due to the subjectivity involved, the reliance on workers' own evaluations of their work situation, and the challenges of looking at differences in income or the use of workers' skills and education (ILO, 2013). Inadequate employment situations may differ among countries, where the statistical definitions and techniques needed to characterise these conditions still need to be established (ILO, 2013).

Despite these challenges, there is growing recognition of the importance of measuring skills-related underemployment, with a substantial body of work by labour and education economists who have attempted to quantify and understand the policy impacts of skill-related underemployment (Wilkins & Wooden, 2011). However, the vast majority of studies have focused on qualification or educational mismatches, as data on workers' qualifications are more easily available than data on workers' skills (Green & Henseke, 2016; Quintini, 2011). Overqualification has also received more academic attention than underqualification due to fears of the oversupply of university and college graduates in many developed nations (Quintini, 2011). The ILO (2018) maintains that skill and qualification mismatches are two distinct phenomena that must be measured and analysed separately, where educational qualifications are insufficient to assess actual work-related skills. This is because qualifications, if not used, can become obsolete over time, while skills are commonly gained outside of formal education, such as through on-the-job training, experience, and informal and/or self-directed learning (ILO, 2018). Additionally, a person's qualifications do not necessarily reflect their abilities, as people with the same qualifications may possess very different skills (ILO, 2018; Livingstone 2019).

Qualification Mismatch

Qualification mismatch arises when a worker has more qualifications than their job requires and can include mismatches by level of education and training or mismatch by field of study (ILO, 2018). There are three main approaches to measuring qualification mismatch identified in the literature: normative, statistical, and self-assessment

approaches, all of which are based on the highest level of educational attainment (ILO, 2018). In the normative approach, a professional job analyst can estimate overeducation based on job classification databases (e.g. the Occupational Information Network [O*NET]), which specify a minimum level of educational attainment for each occupation or group of occupations (ILO, 2018). In the statistical approach, the level of education required for a job is based on the distribution of workers' education levels within each occupation or occupational group and can be calculated by comparing an individual worker's actual level of education/years of schooling to the modal level of education/years of schooling of all workers in their occupation or occupational group (ILO, 2018). In the self-assessment approach, mismatch is determined by workers' responses to a question about their self-perceived match between their level of education and the level required by their job, or by a question about the level of education required to either get or perform their current job, which is then compared to their actual level of education (ILO, 2018).

There are strengths and weaknesses in each approach. While the normative approach benefits from a job analysts' knowledge of job requirements, the classifications are not always available at the country-level and are susceptible to change, particularly technological change as jobs become more complex with greater educational requirements. The statistical approach is easy to measure based on existing variables in labour-force surveys or other household surveys. However, it assumes that the educational requirements for all jobs with the same occupational code are homogenous (ILO, 2018). Similar problems exist with using average years of schooling, which assumes that all years of schooling have equal value. A key advantage of self-assessment is that it better accounts for job heterogeneity because respondents know their jobs and tasks best. On the other hand, the subjectiveness of this approach is a disadvantage, as one person's assessment of the education necessary to perform a job may differ from that of another person performing a similar job (ILO, 2018).

Skill Mismatch

Skill mismatch is more difficult to measure, because unlike educational qualifications, skills are not certified and therefore harder to quantify (ILO, 2018; Wilkins & Wooden, 2011). Measuring skill mismatch is particularly challenging due to the lack of direct information about workers' skills and job requirements (Pelizzari & Finchen 2017). Measures of skill-related underemployment are not provided by national statistical agencies as part of regular data collection processes (Wilkins & Wooden, 2011). Skills are also shaped by individual and workplace/job characteristics and policy-related variables that differ across countries (McGowan & Andrews, 2015b; Pelizzari & Finchen, 2017).

Therefore, there are difficulties in measuring skill mismatch statistically because this requires the inclusion of additional variables on skill-related job characteristics in labour force surveys or other statistical surveys (ILO, 2018). Measurement is also complicated by the fact that measurement of both the skill requirements of different jobs and skill levels among workers is needed to determine potential mismatches (Wilkins & Wooden, 2011).

According to the ILO (2018) there is currently no international classification or operational measure of skills (ILO, 2018). While taxonomies such as the O*NET contain extensive information about different job roles and tasks, and required skills and knowledge, it is difficult to include long lists of different skills and abilities in statistical surveys (ILO, 2018).

There are similar concerns about using classification systems such as the International Standard Classification of Occupations (ISCO) due to challenges in keeping information up to date and significant variations in job requirements, skill sets, and tasks across industries and sectors (ILO, 2018). There are also different types of skills to be measured, such as technical and soft skills, while skills vary widely between occupations and change over time. The rapid expansion of new digital technologies, such as AI and robotics, are making it even harder to keep pace with rapid changes in skills requirements.

Based on these conceptual challenges, priority has been given to the development of non-statistical measures of skill mismatch, predominately self-reports of the perceived match between worker's level of skills and the skills required by the job (ILO, 2018). This approach also accounts for the fact that workers are increasingly acquiring new skills outside formal education settings such as on-the-job training and experience and self-directed learning. Finally, a lot of work has been done by industrial and organisational psychologists in relation to underemployment, including how it relates to overqualification and underutilisation of skills (Maynard 2011). Several self-report survey measures have been developed to measure underemployed among workers and in organisations such as the Subjective Underemployment Scales (SUS) (Allan et al., 2017) and Scale of Perceived Overqualification (SPOQ) (Maynard et al., 2006). These survey tools seek to measure underemployment across multiple different dimensions (e.g. perceived overqualification; income, status and hours discrepancy, and involuntary part-time work etc.).

Income-Related Underemployment

Conceptually, there is also income-related underemployment, which occurs when a worker is underpaid in relation to their qualifications and/or skills. Assuming a perfect labour market, wages can be used as a proxy to measure workers' productivity in their occupations (Dearden et al., 2006). If there is a mismatch between market wages and what employees are actually paid, this could be a sign of underemployment where workers are undervalued or underutilised. For instance, Feldman defines income underemployment as when workers are paid 20% or less than their previous job (Feldman, 1996). Yet as wages and the labour market are often distorted due to employer practices and macroeconomic conditions, it is difficult to accurately link wages to the valuation of employees (Sugiarto et al., 2019).

In contrast to time-related and skills-related underemployment, income-related underemployment has received less academic attention, although many economists have studied issues of income inadequacy (Wilkins & Wooden, 2011). According to the ILO (2018), income-related underemployment occurs when a worker's income is lower than it would normally be, which should ideally be linked to inadequate workplace

characteristics. This can be measured at the country-level by using a threshold for current income earned, above which persons are excluded (ILO, 2018); however, as Wilkins and Wooden (2011, p. 16) state, “attempting to measure this accurately for a single worker seems optimistic, let alone for a large, nationally representative sample”.

Voluntary Underemployment

Voluntary underemployment is a growing phenomenon that is generally understood as a situation where an individual chooses to work fewer hours or in a less demanding job that is not congruent with their skills and qualifications. Workers may opt to work in a less challenging role or fewer hours for a number of reasons, including better work-life balance or reduced stress, to prioritise family responsibilities, or pursuing other interests outside of work. Such workers may also choose work that provides greater flexibility or satisfaction and is more aligned with their passion and values.

The COVID-19 pandemic has also caused many people to rethink their employment choices and work-life priorities. As individuals reassess their life goals and priorities and embark on alternative careers, the conventional definition of underemployment requires rethinking. The growth of voluntary underemployment can also be attributed to the changing nature of work, such as a desire for increased flexibility and remote work, along with the rise of the gig economy and new career paths and opportunities (ILO, 2021). While voluntary underemployment may reflect a person’s values and priorities, it could also have negative impacts for individuals: working fewer hours or in a less demanding job may result in lower earnings and reduced opportunities for career advancement. We identify a number of key trends shaping voluntary underemployment below.

Shifting Work Priorities and the Changing Nature of Work

One major driver of voluntary underemployment is shifting work priorities, including a desire for greater flexibility and work-life balance. While it is quite common for older workers nearing retirement age to seek fewer working hours (Bell & Rutherford, 2013), mid-career or even younger workers are also voluntarily choosing to move from full-time to part-time work or to work in jobs outside of their field of study for increased flexibility and work-life balance. For example, a study conducted in 2017 found that a flexible work schedule was a key motivator for 83% of Singaporean freelancers (Lum et al., 2017). Similarly, a study of crowdworkers in the UK found that flexibility and work-life balance were the main drivers for undertaking up crowdsourced work (Barnes et al., 2015).

The COVID-19 pandemic has accelerated changes to the nature of work such as the shift to remote work and more flexible work arrangements (Vyas, 2022; Yang et al., 2022). However, the pandemic has also exacerbated issues of burnout and poor well-being, forcing many workers to question their work priorities (Lluch et al., 2022).

In China, efforts to counter the culture of overwork has emerged, most notably the “996.ICU” movement. A “viral worker-led protest campaign” that began in 2019 (Tan, 2022, p. 33), its name alludes to the typical work schedule in tech firms that runs from 9

a.m. to 9 p.m. six days a week, with "ICU" suggesting the outcome of such a punishing schedule – falling ill enough to end up in a hospital's intensive care unit. Terms such as *tangping* (lie flat) and *bai lan* (let it rot) (Yip & Woo, 2022) have also become popularised, calling for youths to reject punishing work hours and poor working conditions by quitting or choosing other types of jobs. *Bai lan,* a basketball terminology, takes reference from the strategy of retreating when encountering a losing battle. It proposes more drastic measures than *tangping*, including minimising work hours as much as possible, and is directed at a broader group than just technology workers. Similar trends such as "quiet quitting" and "The Great Resignation" were observed in the US and beyond in the wake of the pandemic (Constanz, 2022; Wu, 2022).

Increased Desire for Flexibility and Autonomy

Underpinning such recent trends is a desire to include greater prioritisation of flexibility and work-life balance. Indeed, the COVID-19 pandemic and the shift to remote work have challenged traditional working arrangements and shifted worker and employer attitudes towards new ways of working (Vyas, 2022). There have also been increases in non-standard forms of work, such as gig and platform-based work, enabling workers to switch to freelance, part-time, and flexible employment (Anwar & Graham, 2021). For example, a recent study on ride-share (Gojek) workers found that one of the main reasons people engage in platform work is because they think it gives them greater freedom and choice in how they schedule their work hours and/or take on jobs, with younger participants citing the importance of increased flexibility and independence the most (Mathews et al., 2022). More broadly, the narrative of work is shifting from a single vertical and stable career track to Open Loop Careers, where workers move horizontally between sectors, taking on jobs of varying positions, skills, and qualifications.

Alignment of Values, Passion, and Identity

Another emerging trend, especially among younger workers, is the notion of identity-based alignment with one's passions and interests (Arnett, 2014). This is often associated with shifts to creative and social impact industries. In the OTCi study (Ng, 2017) conducted in Singapore, 73% of respondents said that passion was a key motivation for freelancing, while 49% of respondents wanted to pursue work with greater social impact. In some cases, these workers voluntarily embrace instability, overqualification, and skills mismatch in order to pursue passion and a more authentic work life. For example, in one study, "passion and work precarity" were increasingly linked with job stability, which was even "seen as stifling" (Umney & Kretsos, 2015, p. 328). Overqualification could also be seen as a form of commitment reinforcement, where employees settle for entry-level jobs in their desired industries or career paths to affirm their commitment to their passions or as a "stepping stone or bridge" to their dream careers (Scurry & Blenkinsopp, 2011, p. 646). For instance, an aspiring environmental lawyer might refuse to take up corporate law jobs and instead take up entry-level jobs in the environmental sector (Adler, 2021). This prioritisation of passion and identity over job stability hence motivates voluntary underemployment and overqualification. As earlier mentioned, such pathways seem to be more likely for those from upper and middle-class family backgrounds, who have additional resources and support (Churchill & Khan, 2021).

Annex C: Survey Methodology — Measuring the Mismatches Leading to Underemployment

The methodology detailed by ILO was adopted for the self-assessment[12] and direct approach to identify skills-job, qualification-job, and education field-job mismatches and the normative[13] approach to identify qualification-job mismatch in our survey.

Skill-job mismatch: Respondents answered a question on the match between their skill level and the skill level required by their job. In this approach, a person in employment is considered to be overskilled/underskilled if they report having skills at a higher/lower than that required to perform their current job.

Qualification-job mismatch: Respondents answered a question on the match between their level of education and the level of education required by their job. In this approach, a person in employment is considered to be overeducated/undereducated if they report having a level of education that is higher/lower than that required to perform their current job.

Education field-job mismatch: Respondents answered a question on the match between their field of study and the field of their job. In this approach, a person in employment is considered to be mismatched if she/he reports having a field of study that is inappropriate for her/his current job.

Qualification-occupation mismatch: Respondents' highest educational attainment is measured against the educational requirements set out in the ISCO for each of the eight major occupational groups: Managers and Administrators; Professionals; Associate Professionals & Technicians; Clerical Support Workers; Service & Sales Workers; Craftsmen & Related Trades Workers; Plant & Machine Operators & Assemblers; Cleaners/Labourers.

The main advantage of the self-assessment approach is that it takes the heterogeneity of jobs into account because the respondents are most knowledgeable about their jobs and the tasks they require. The main disadvantage of this approach is its subjectivity: it depends on the perception of the respondent. One person's assessment of the education and skill required to perform their job may not match that of another person performing a similar job. To complement this, we included a normative measure of qualification-occupation mismatch. While this provides a more objective benchmark, it too has limitations as formal occupational classifications may not fully reflect the evolving skill requirements of jobs in Singapore's dynamic labour market.

[12] Stoevska, V. (2018, October). Measurement of Qualifications and Skills Mismatches of Persons in Employment. In 20th International Conference of Labour Statisticians, Geneva (Vol. 10, p. 19).

[13] International Labour Organization. (2018). Guidelines concerning measurement of qualifications and skills mismatches of persons in employment. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_648557.pdf

Annex D: Detailed Description of the Survey Sample

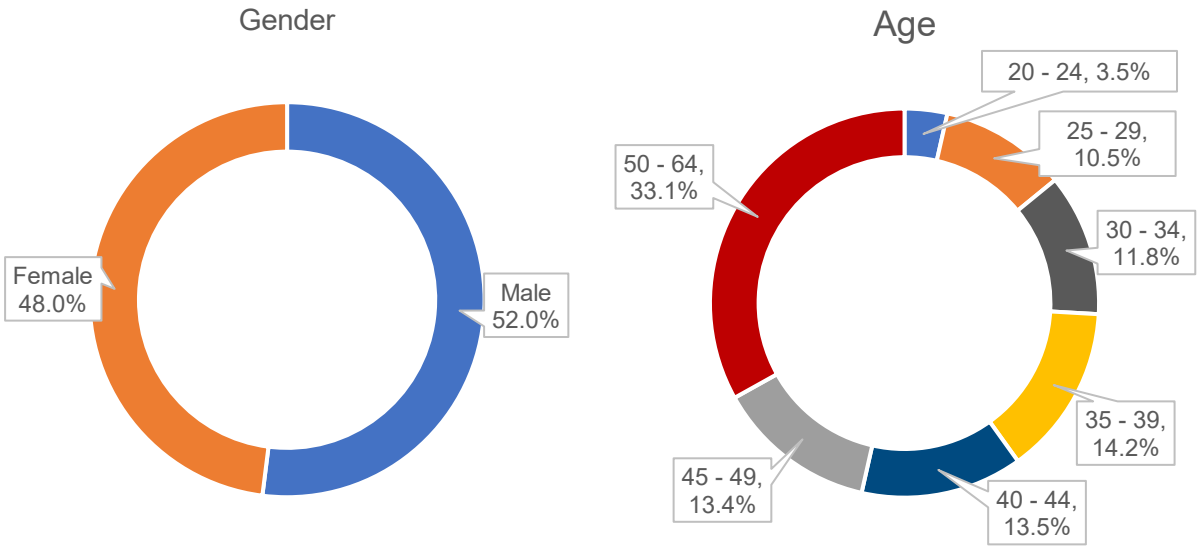

Figure D1. Distribution of gender and age.

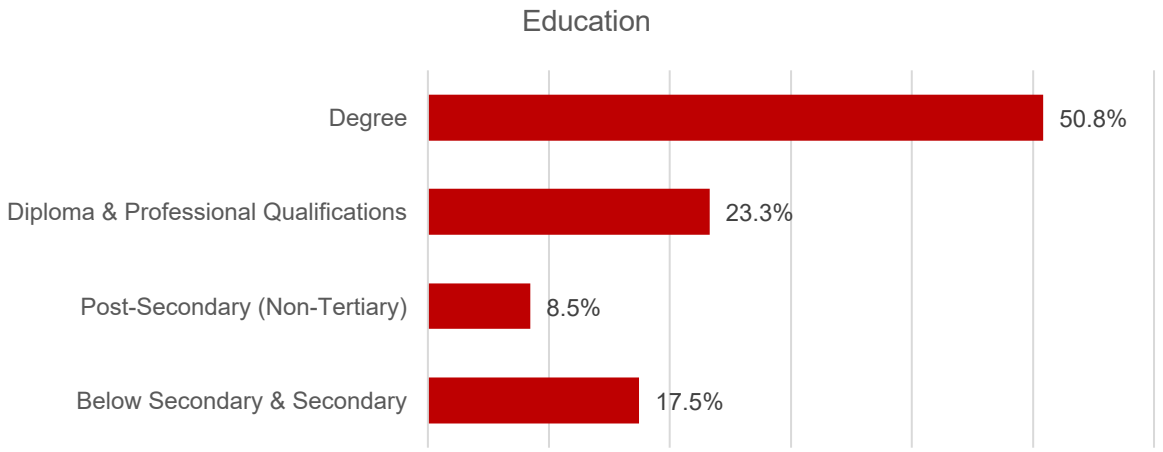

Figure D2. Distribution of highest educational qualifications.

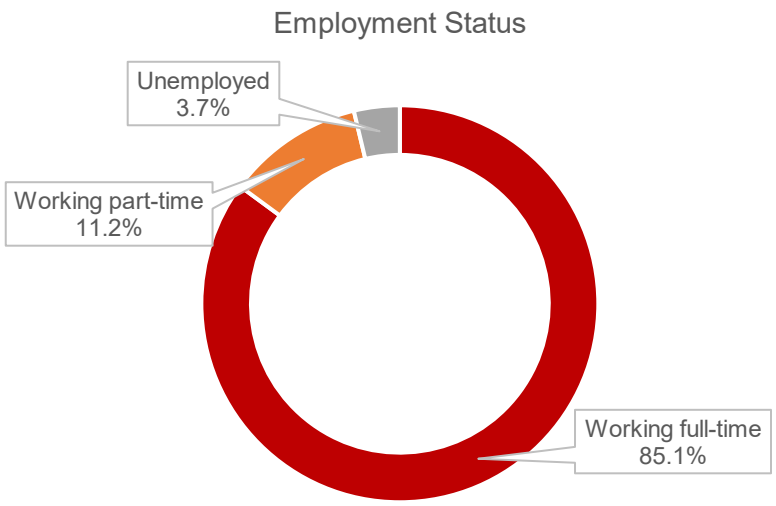

Figure D3. Distribution by employment status.

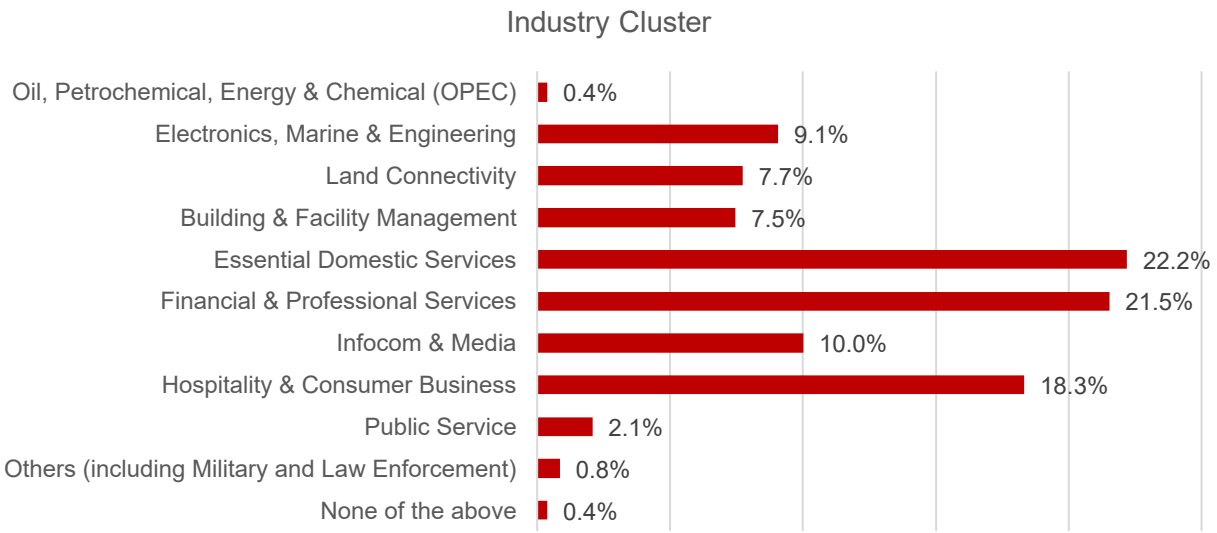

Figure D4. Distribution by the Union's industry clusters.

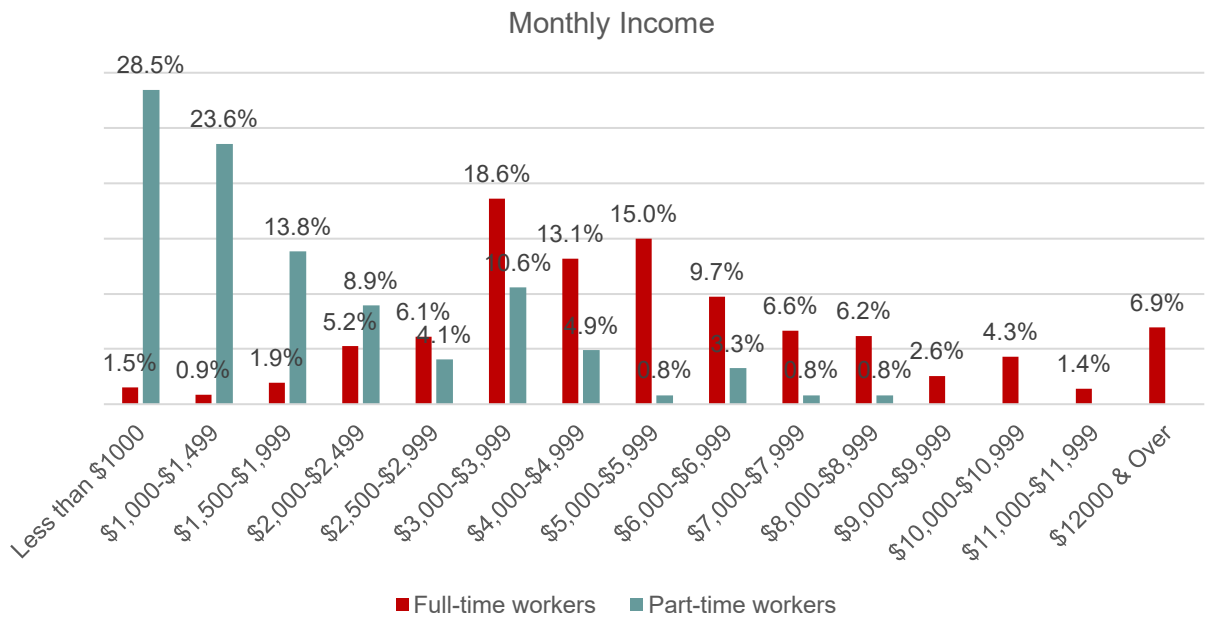

Figure D5. Distribution by monthly gross income.

Figure D6. Distribution by PMET/non-PMETs and union membership.

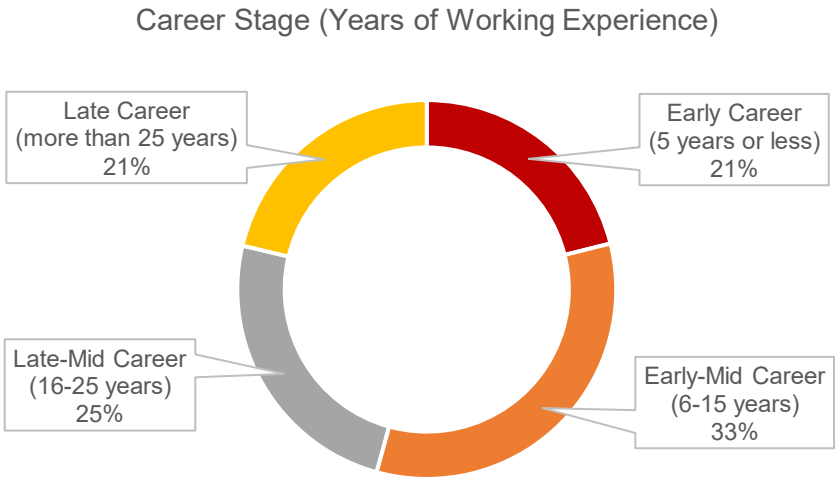

Figure D7. Distribution by career stage.

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Research Project Team

National Trades Union Congress

1. Mr Patrick Tay
   Director, Strategy

2. Mr Shawn Seah
   Deputy Director, Strategy

3. Ms Kang Ruihan
   Assistant Director, Strategy

4. Dr Yang Silin
   Deputy Director, Strategy (Former)

Singapore University of Technology and Design

1. Dr Samuel Chng
   Research Assistant Professor, Lee Kuan Yew Centre for Innovative Cities

2. Dr Sarah Chan
   Research Fellow, Lee Kuan Yew Centre for Innovative Cities

3. Dr Brigid Trenerry
   Research Fellow, Lee Kuan Yew Centre for Innovative Cities

4. Ms Rabi'ah Binte Ghazali
   Research Associate, Lee Kuan Yew Centre for Innovative Cities

5. Ms Ariel Tan
   Research Assistant, Lee Kuan Yew Centre for Innovative Cities

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National Trades Union Congress
NTUC Centre
1 Marina Boulevard Level 10
One Marina Boulevard
Singapore 018989

Tel: +65 6213 8000
www.ntuc.org.sg